Rodeo Renewed Project

Draft Environmental Impact Report

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Table of Contents

Appendices

Tables

Figures

Acronyms

µg/m^3	microgram per cubic meter
AAS	Allision Avoidance Systems
AB	Assembly Bill
ABAG	Association of Bay Area Governments
APCD	Air Pollution Control District
API	American Petroleum Institute
AQMD	Air Quality Management District
ATB	articulated tug barges
ATS	automated information system
BCAQM	Butte County Air Quality Management District
BAAQMD	Bay Area Air Quality Management District
BACT	best available control technology
BART	Bay Area Rapid Transit
Basin Plan	Water Quality Control Plan for the San Francisco Bay Basin
BCDC	San Francisco Bay Conservation and Development Commission
BMPs	best management practices
BP	before present
bpd	barrels per day
BTC	Biodiesel Tax Credit
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CadnaA	Computer Aided Noise Abatement
CAFE	Corporate Average Fuel Economy
CAL FIRE	California Department of Forestry and Fire Protection
Cal/OSHA	California Division of Occupational Safety and Health
CalARP	California Accidental Release Prevention
CalEEMod	California Emissions Estimator Model
CalEnviroScreen	California Communities Environmental Health Screening Tool
CalEPA	California Environmental Protection Agency
CALVEG	Classification and Assessment with Landsat of Visible Ecological Groupings
CAP	Climate Action Plan
CARB	California Air Resources Board
CBC	California Building Code
CBE	California Board of Equalization
CCR	California Code of Regulations

CCTA	Contra Costa Transportation Authority
CDFW	California Department of Fish and Wildlife
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CGS	California Geological Survey (formerly California Division of Mines and Geology)
CH_4	methane
CI	carbon intensity
CNDDB	California Natural Diversity Database
CNEL	community noise equivalent level
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
CPUC	California Public Utilities Commission
CRPR	California Rare Plant Rank
CSLC	California State Lands Commission
CUPA	Certified Unified Program Agencies
CWA	Clean Water Act
CWHR	California Wildlife Habitat Relationships
CZLUO	Coastal Zone Land Use Ordinance
db	decibel
dBA	A-weighted decibels
DNL	day-night noise level
DPM	diesel particulate matter
DPS	distinct population segment
DTSC	Department of Toxic Substances Control
EIR	Environmental Impact Report
EMFAC2021	Emission Factor Model version 2021
EO	Executive Order
ESA	Endangered Species Act
ESU	evolutionarily significant unit
FEMA	Federal Emergency Management Agency
FOG	fats, oils, and grease
GHG	greenhouse gas
GIS	geographic information system
GWP	Global Warming Potential
H_2	hydrogen gas

H_2S	hydrogen sulfide
HMBP	Hazardous Materials Business Plan
HRA	health risk assessment
I-80	Interstate 80
IPaC	Information for Planning and Consultation
IPCC	Intergovernmental Panel on Climate Change
ISO	Industrial Safety Ordinance
LCFS	Low-Carbon Fuel Standard
LCP	Local Coastal Program
LUP	Land Use Permit
MBPD	thousand barrels per day
MDAQMD	Mojave Desert Air Quality Management District
MEIR	maximally exposed individual residents
MEIW	maximum worker net cancer risk
mgd	million gallons per day
MHHW	mean higher water mark
MLD	Most Likely Descendent
MLLW	Mean lower low water
MMBtu	million British thermal units
MMT	million metric tons
MOC	Management of Change
MOTEMS	Marine Oil Terminal Engineering and Maintenance Standards Program
mph	mile per hour
MS4	Municipal Separate Storm Sewer System
MSRC	Marine Spill Response Corporation
MT	metric ton(s)
MTC	Metropolitan Transportation Commission
MW	megawatt
MWh	megawatt-hour
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
National Register	National Register of Historic Places
NEHRP	National Earthquake Hazards Reduction Program
NFPA	National Fire Protection Association
NH_3	ammonia
NHTSA	National Highway Traffic Safety Administration

NIS	nonindigenous species
NM Plan	NOx Mitigation Plan
NMFS	National Marine Fisheries Service
NO	nitric oxide
NO_2	nitrogen dioxide
NOAA	National Oceanic and Atmospheric Administration
NOP	Notice of Preparation
NO_X	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NRP	Nipomo-Regional Park
NSAQMD	Northern Sierra Air Quality Management District
NWI	National Wetlands Inventory
NWIC	Northwest Information Center
ODSVRA	Oceano Dunes State Vehicular Recreation Area
OEHHA	Office of Environmental Health Hazard Assessment
OMP	Odor Management Plan
OPA	Oil Pollution Act
OPC	Ocean Protection Council
OPR	Office of Planning and Research
OSHA	Occupational Safety and Health Administration
OSPR	Office of Spill Prevention and Response
OSRO	Oil Spill Response Organization
OSRP	oil spill response plan
PAWSA	Ports and Waterways Safety Assessment
PCAPCD	Placer County Air Pollution Control District
PG&E	Pacific Gas and Electric
PGA	Peak Ground Acceleration
PHMSA	Pipeline and Hazardous Materials Safety Administration
PIG	pipeline inspection gage
PM_{10}	particulate matter with a diameter of 10 microns or less
$PM_{2.5}$	particulate matter with a diameter of 2.5 microns or less
POC	precursor organic compounds
PORTS	Physical Oceanographic Real Time System
PPV	peak particle velocity
PRC	Public Resources Code
Project or proposed Project	Rodeo Renewed Project
PSD	Prevention of Significant Deterioration

PSM	Process Safety Management
PTU	Pre-treatment Unit
RCRA	Resource Conservation and Recovery Act of 1976
RFG	refinery fuel gas
RFS	Renewable Fuel Standard
RMP	Risk Management Plan
RMS	root mean square
RNA	Regulated Navigation Areas
ROG	reactive organic gases
RPS	Renewables Portfolio Standard
RWQCB	Regional Water Quality Control Board
SAFE	Safer Affordable Fuel Efficient
SB	Senate Bill
SCCAB	South Central Coast Air Basin
Section 106	Section 106 of the National Historic Preservation Act of 1966
SEL	sound exposure levels
SF_6	sulfur hexafluoride
SFBAAB	San Francisco Bay Area Air Basin
SFEI	San Francisco Estuary Institute
SHAQMD	Shasta County Air Quality Management District
SJVAB	San Joaquin Valley Air Basin
SJVAPCD	San Joaquin Valley Air Pollution Control District
SPCC	Spill Prevention, Control, and Countermeasure
STU	Sulfur Treatment Unit
SVP	Society of Vertebrate Paleontology
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	toxic air contaminant
TCAPCD	Tehama County Air Pollution Control District
TCR	Tribal Cultural Resources
Trihydro	Trihydro Corporation
TSS	traffic separation scheme
UCO	used cooking oil
US	United States
USACE	US Army Corps of Engineers
USCG	US Coast Guard
USDOT	US Department of Transportation

USEIA	US Energy Information Administration
USEPA	US Environmental Protection Agency
USFS	US Forest Service
USFWS	US Fish and Wildlife Service
USGS	US Geological Survey
VdB	vibration decibels
VOC	volatile organic compounds
VSR	vessel speed reduction
VTS	vessel traffic service
WestCAT	Western Contra Costa County Transit Authority
ZEV	zero emission vehicle

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Executive Summary

This summary presents an overview of the proposed Rodeo Renewed Project, herein referred to as "Project" or "proposed Project." This section also summarizes the alternatives to the proposed Project, areas of controversy, issues to be resolved by Contra Costa County, including the choice among alternatives and whether or how to mitigate significant impacts, and conclusions of the analysis contained in Chapter 4 of this Draft Environmental Impact Report (Draft EIR). For a complete description of the proposed Project, see Chapter 3, *Project Description*, and for a complete description of Project Alternatives, see Chapter 5, *Alternatives Analysis*.

This Draft EIR addresses the environmental effects associated with the Project. The California Environmental Quality Act (CEQA) requires that local government agencies, prior to taking action on projects over which they have discretionary approval authority, consider environmental impacts of such projects. An EIR is a public document designed to provide the public, local, and state governmental agency decision-makers with an analysis of a project's potential environmental impacts to support informed decision-making.

This Draft EIR has been prepared pursuant to the requirements of CEQA and the state CEQA Guidelines to determine whether Project approval could have a significant impact on the environment. Contra Costa County, as the Lead Agency, has reviewed and revised, as necessary, the submitted drafts, technical studies, and reports to reflect its own independent judgment, including reliance on applicable County technical personnel and review of all technical subconsultant reports. Information for this Draft EIR was obtained from discussions with affected agencies; analysis of adopted plans and policies; review of available studies, reports, data, and similar literature in the public domain; and specialized environmental assessments (e.g., air quality including a health risk analysis, greenhouse gas (GHG) emissions, energy, noise and vibration, maritime risk assessment, and transportation and traffic).

Project Summary

Phillips 66 proposes to modify the existing Rodeo Refinery into a repurposed facility that would process renewable feedstocks into renewable diesel fuel, renewable components for blending with other transportation fuels, and renewable fuel gas. As a result of proposed modifications, the Rodeo Refinery would no longer process crude oil for petroleum-based fuels and would assist California in meeting its stated goals of reducing GHG emissions and ultimately transitioning to carbon neutrality.[1] The Project would also provide a mechanism for complying with California's Low-Carbon Fuel Standard and Cap-and-Trade programs and the federal Renewable Fuels Standard, while continuing to meet regional market demand for transportation fuels.

[1] Governor Newsom's Executive Order N-79-20 states: "clean renewable fuels play a role as California transitions to a decarbonized transportation sector" and "to support the transition away from fossil fuels consistent with the goals established in this Order and California's goal to achieve carbon neutrality by no later than 2045, the California Environmental Protection Agency and the California Natural Resources Agency, in consultation with other State, local and federal agencies, shall expedite regulatory processes to repurpose and transition upstream and downstream oil production facilities..." The Governor's Order also directs CARB to "develop and propose strategies to continue the State's current efforts to reduce the carbon intensity of fuels beyond 2030 with consideration of the full life cycle of carbon. Additionally, the California Air Resources Board's November 19, 2020, "California's Greenhouse Gas Goals and Deep Decarbonization" presentation anticipates that biofuels will comprise 19 percent of the transportation "fuel" sector by 2045."

Pre- and post-Project operational activities are shown in Table ES-1. Once the Project is operational, no crude oil would be processed at the Rodeo Refinery. As shown in Table 3-2, the Rodeo Refinery would no longer receive crude oil and gas oil at its Marine Terminal (35,000 barrels per day [bpd]) on a 12-month rolling average[2]) or from the pipelines connecting the Rodeo Refinery to the Santa Maria Site (70,000 bpd). The Rodeo Refinery would still receive gasoline and gasoline blendstocks (38,000 bpd, an increase over baseline of 28,000 bpd.

Table ES-1. Rodeo Refinery Pre- and Post-Project Operational Activity

	Baseline	Post-Project
Product Received		
Marine Terminal Crude and Gas Oil Received (1,000 bpd 12-month average)	35	0
Pipeline Crude Received (1,000 bpd 12-month average)	70	0
Renewable Feedstocks Received (1,000 bpd 12-month average)[a]	0	80
Gasoline and Blendstocks Received (1,000 bpd 12-month average)	10	38
Product Shipped		
Petroleum Products Shipped (1,000 bpd 12-month average)	121	40
Renewable Fuels Shipped (1,000 bpd 12-month average)	0	67
Treated Renewable Feedstock Shipped (1,000 bpd 12-month average)	0	25
Mode of Transportation		
Tanker Vessels (calls/year)	80	201
Barges (calls/year)	90	161
Carbon Plant Site Rail (average railcars per week)	6.96	0
Refinery Railcar Loading/Unloading Rack (average railcars per day)	4.7	16
Santa Maria Site Rail (railcars per year)	409	0
Refinery and Carbon Plant Truck Trips (roundtrips per year)	40,213	16,026
Santa Maria Site Truck Trips (roundtrips per year)	13,008	0
Rodeo Refinery Approximate Number of Employees and Contractors	650	650

[a] The facility currently has the capacity to produce approximately 12,000 bpd of renewable fuels from pretreated feedstocks using Unit 250, which was previously used to process petroleum-based feedstocks. However, renewable feedstocks and renewable fuels were not produced from U250 during the baseline period in 2019 and are not included in this table.

Up to 80,000 bpd of renewable feedstocks would be received at the Rodeo Refinery and would be processed in the proposed Feed Pre-treatment Unit (PTU). The majority of the time, the feedstocks treated by the PTU would be processed onsite to produce renewable fuels. In situations where excess treated feedstock produced by the PTU is not processed onsite, this material could be exported from the Rodeo Refinery via the Marine Terminal. Project emissions associated with processing at the PTU would be correlated with how much material is being processed and handled, rather than the specific type of material.

As shown on Table ES-1, once operational the Rodeo Refinery would supply up to 107,000 bpd of renewable fuels (67,000 bpd) and petroleum-based transportation fuels or gasoline (40,000 bpd). Of the 67,000 bpd of renewable fuels that would be produced, 55,000 bpd would occur as a result of the Project. This amount would be in addition to the Rodeo Refinery's existing capability (as of 2021) of producing 12,000 bpd from pretreated feedstocks using Unit 250 (previously used to process petroleum-based feedstocks). However, renewable feedstocks and renewable fuels were not produced from Unit 250

[2] All bpd amounts are based on a 12-month rolling average, unless otherwise noted.

during the CEQA baseline period in 2019 (refer to Chapter 3, Project Description, Section 3.13, CEQA Baseline); therefore, Table ES-1 indicates "0" for "Renewable Fuels Shipped."

To maintain the current facility capability to supply regional market demand for transportation fuels, including renewable and conventional fuels, the Rodeo Refinery could receive, blend, and ship up to 40,000 bpd of gasoline and gasoline blendstocks.

Because the Project would discontinue processing crude oil at the Rodeo Refinery, other sites owned and operated by Phillips 66 located throughout the state would be affected. Therefore, the Project consists of activities at the following four sites:

- **Rodeo Site** is within the Rodeo Refinery where the proposed modifications would occur.
- **Carbon Plant** is within the Rodeo Refinery in nearby Franklin Canyon and would no longer be necessary. It would be demolished.
- **Santa Maria Refinery** is located in San Luis Obispo County and would no longer be necessary to provide semi-refined feedstock to the Rodeo Refinery. It would be demolished.
- **Pipeline Sites** collect crude oil for the Santa Maria Refinery and deliver semi-refined feedstock to the Rodeo Refinery and, therefore, would not be necessary. The pipelines would be cleaned and taken out of service, or sold

Purpose of the EIR

An EIR is the most comprehensive form of environmental documentation identified in the CEQA statute and in the CEQA Guidelines. EIRs are intended to provide an objective, factually supported, full-disclosure analysis of the environmental consequences associated with a proposed project that has the potential to result in significant, adverse environmental impacts.

This Draft EIR assesses the environmental effects associated with implementation of the proposed Project, as well as anticipated future discretionary actions and approvals. The main objectives of this document as established by CEQA Section 15002(a) are to:

- Serve as an informational document to inform Contra Costa County's decision-makers and the public generally of the significant environmental impacts of the Project;
- Identify possible ways to minimize the significant effects and consider reasonable alternatives that could avoid or reduce one or more of the significant environmental effects that may be identified with respect to the Project;
- Obligate Contra Costa County to impose measures identified in the EIR to avoid or mitigate potentially significant effects, whenever it is feasible to do so;
- Grant Contra Costa County the right to approve the Project, despite identification of potential significant effects on the environment that cannot be mitigated due to economic, social, or other conditions; and
- Provide meaningful public disclosure, in a timely and cost-effective manner, of the potential environmental effects that Contra Costa County's considers to be significant.

Areas of Controversy

Contra Costa County issued a Notice of Preparation for the EIR December 21, 2020, for a 30-day review period. The Notice of Preparation was mailed to all federal, state, responsible, and trustee agencies involved in approving the project, as well as relevant local agencies and special districts with jurisdiction in the Project area. The mailing list also included organizations, members of the public, and local, regional, and state agencies who have expressed interest in participating in the CEQA process.

Twenty-six written letters were received during the public scoping period. In addition, Contra Costa County held one scoping meeting on January 20, 2021, during which 14 participants commented on the proposed Project.

County staff reviewed all of the scoping comments, and prepared a summary of each comment to provide an overview of the range of comments provided, and to facilitate consideration of the comments by analysts during preparation of the EIR. The comment summaries seek to capture the essence of every comment in a way that is meaningful for EIR preparers such that the comment can be addressed in the EIR (see Appendix A of this Draft EIR). Issues addressed in the EIR include:

- Public safety and health;
- Increased hazards from marine, rail, and truck imports/exports;
- Identification, sources, availability of renewable feedstocks;
- Air quality and GHG impacts;
- Continued use of crude oil and hydrogen throughput;
- Project relationship to state-wide electrification goals;
- Marine Terminal operations;
- Water quality impacts;
- Decommissioning and site remediation;
- Appropriate baseline for analysis;
- Appropriate No Project Alternative;
- Operational effects of the Project on the Santa Maria Facility, Franklin Canyon Carbon Plant, and pipelines;
- Alternatives to the Project;
- Analysis of offsite Project components;
- Consistency with local plans and regulations; and
- Net carbon footprint.

To the extent that these issues have environmental impacts and to the extent that analysis is required under CEQA, they are addressed in Chapters 4 through 6 of this Draft EIR.

EIR Format

This Draft EIR is organized into the following chapters:

- **Executive Summary:** Provides an overview of the Proposed Project and the alternatives evaluated in the EIR, and a summary of the environmental impacts and mitigation measures.
- **Chapter 1, Introduction**: Provides an overview of the EIR and CEQA process, identifies agency responsibilities, and identifies areas of controversy.
- **Chapter 2, Summary of Environmental Impacts:** Provides a summary of impacts and mitigation measures identified in Chapter 4.
- **Chapter 3, Project Description:** Provides the description of the proposed Project and background information.

- **Chapter 4, Environmental Setting, Impacts, and Mitigation Measures:** Contains descriptions of the environmental and regulatory setting for each resource topic and provides an assessment of the proposed Project's environmental impacts. If required, mitigation measures are identified.
- **Chapter 5, Alternatives Analysis:** Provides a description of the process used by the Contra Costa County to identify and select alternatives to be considered, describes each alternative, provides the analysis of alternatives, assesses the consistency of each alternative with the proposed Project objectives, and identifies the Environmentally Superior Alternative.
- **Chapter 6, CEQA Statutory Sections:** Provides a discussion of other CEQA considerations related to the proposed Project, including cumulative impacts, impacts found not to be significant, significant irreversible environmental changes, and growth-inducing impacts.
- **Chapter 7, Report Preparation.**
- **Chapter 8, References.**
- **Appendix A, Notice of Preparation and Public Comments**
- **Appendix B, Air Quality and Greenhouse Gas Emissions Technical Data, Project Consistency with 2017 Clean Air Plan**
- **Appendix C, Maritime Risk Assessment**
  - C-1. Maritime Risk Assessment for the P66 Rodeo Refinery Renewable Diesel Project (AcuTech May 2, 2021)
  - C-2. Rodeo Renewed Spill Modeling Report (ERM July 20, 2021)
- **Appendix D, Sea Level Rise and Climate Change Adaptation**
  - D-1. San Francisco Bay Regional Water Quality Control Board, Water Code Section 13383, *Order Requiring Submittal of Information on Climate Change Adaptation*
  - D-2. Long-Term Flood Protection Report, Phillips 66 San Francisco Refinery
- **Appendix E, Noise Technical Data**
- **Appendix F, Transportation Analysis**

Approach to Environmental Analysis

Level of Analysis

Under CEQA, a "project" subject to environmental review must be the "whole of an action" (CEQA Guidelines Section 15378(a)). This CEQA rule of analysis serves to ensure that a large project is not chopped up into many smaller ones, resulting in piecemeal or segmenting of environmental review and masking the full scope of project impacts. Courts have determined that an EIR must include analysis of the environmental effects of a future action if:

- it is a reasonably foreseeable consequence of the initial project; and
- the future action will be significant in that it will likely change the scope or nature of the initial project or its environmental effects.

This standard involves determining whether the EIR has left out of the environmental analysis a "crucial element" or "integral part" of the project, without which the project cannot go forward (National Parks & Conservation Association v. County of Riverside [1996] 42 Cal. App. 4th 1505, 1519).

Project Level Approach

A project-level EIR is described in Section 15161 of the CEQA Guidelines as one that examines the environmental impacts of a specific development project. A project-level EIR must examine all phases of the project, including construction, demolition, and operation and maintenance. Contra Costa County has determined that a project-level EIR fulfills the requirements of CEQA and is the appropriate level evaluation to address the potential environmental impacts of the proposed actions at the Rodeo Site and Carbon Plant Site, collectively called the Rodeo Refinery, the Santa Maria Site, and at the Pipeline Sites. Direct and indirect impacts of the Project are addressed in this EIR.

Santa Maria Site Approach

Demolition at the Santa Maria Site would be a direct consequence of the proposed Project. Therefore potential impacts of the demolition at the Santa Maria Site are addressed in this EIR. Demolition of the Santa Maria Site will undergo CEQA review by San Luis Obispo County because it has authority to determine whether or how to approve demolition and issue required county permits. The analysis is intended to provide both San Luis Obispo County and Contra Costa County, other governmental agencies, and the public with information necessary to understand the type of environmental impacts that could occur.

In addition, the specific types and sources of renewable feedstock to be used by the Project cannot be determined at this time (refer to Chapter 3, *Project Description*, for detailed discussion). Therefore, the EIR addresses categories of renewable feedstocks that could be used by the Project, but not the sources.

While the Santa Maria Refinery demolition activities are included in the EIR, future use and required level of remediation of the Santa Maria Site is unknown, and therefore not addressed in this EIR. Any potential future development of the Santa Maria Site, and the associated level of required remediation, is speculative at this time, and would be a separate project and evaluated in a separate CEQA process by San Luis Obispo County. The EIR acknowledges this uncertainty and incorporates these realities into the methodology to evaluate the environmental effects of demolition of the Santa Maria Refinery.

Project Location

The Phillips 66 Rodeo Refinery is located in unincorporated Contra Costa County, bordered by San Pablo Bay on the north and west, open land to the east and southeast, the town of Crockett and the NuStar Energy tank farm on the northeast, the Bayo Vista residential area of Rodeo to the southwest, and the residential enclave of Tormey, located east and adjacent to the Nustar Energy tank farm. The Rodeo Refinery comprises approximately 1,100 acres of land, but the Rodeo Site, where the main components of the Project would take place, is the 495-acre developed portion of the property northwest of Interstate 80. The remaining portion of the Rodeo Refinery, southeast of Interstate 80, consists of a tank farm, the Carbon Plant Site, and undeveloped land that serves as a buffer zone.

Summary of Alternatives

CEQA requires a lead agency to analyze a range of reasonable alternatives to a proposed project that could feasibly attain most of the basic objectives of the project while substantially reducing or eliminating significant environmental effects. The lead agency must identify an environmentally superior alternative among the alternatives and the project.

The EIR should also identify any alternatives that were considered by the lead agency but were rejected as infeasible during the scoping process and briefly explain the reasons underlying the lead agency's determination (CEQA Guidelines § 15126.6(c)). Section 5.1.4, *Alternatives Considered but Dismissed From Further Consideration*, addresses the following alternatives that were rejected as infeasible:

- Continued Operation of Rodeo Refinery and Shut-Down of Santa Maria and Pipeline Sites;
- Project without Gasoline Blending Element;

- Project at an Alternate Site;
- Pretreated Feedstocks Only Alternative (No Pretreatment Unit);
- Hydrogen Generation Technology Alternative; and
- Decommission All Facilities.

The following alternatives to the Project are evaluated in Chapter 5:

- Alternative 1: No Project Alternative
- Alternative 2: Reduced Project Alternative
- Alternative 3: Terminal-Only Alternative
- Alternative 4: No Temporary Increase in Crude Oil

The characteristics of these four alternatives, as well as those of the Project, are summarized in Table ES-2.

Table ES-2. Summary of Alternatives

	Project	No Project	Reduced Project	Terminal Only	No Temporary Increase in Crude Oil
Product Processed (bpd)					
Renewable Feedstock Received/Processed	80,000	0	55,000	0	80,000
Gasoline Blendstocks Received/Processed	38,000	115,000	38,000	0	38,000
Existing Renewable Fuels Processed	13,000	13,000	13,000	0	13,000
Product Produced (bpd)					
Renewable Fuels Produced/Shipped	55,000	0	50,000	75,000	55,000
Existing Renewable Fuels Produced	12,000	12,000	12,000		12,000
Conventional Fuels Produced/Shipped	40,000	100,000	40,000		40,000
Mode of Transportation[g]					
Ships (annual visits)	201	80	165	70	201
Barges (annual visits)	161	90	161	40	161
Truck Trips (roundtrips/year)	16,026	53,221	11,230	0	16,026
Railcars (per day)	16	5	16	8	16
Employees	650	650	630	75	650

Notes:

[a.] No Project and Terminal Only Alternatives would transport blend stock and product by pipeline, marine vessel, and rail.

[b.] The No Temporary Increase in Crude Oil Alternative at full buildout is identical to the Project; it differs only in the temporary change in throughput of crude oil during the construction period, and associated vessel calls, which is not reflected in this table. This difference, however, is described in the following discussion.

[c.] Up to 25,000 bpd excess capacity of pre-treated feedstocks could be sold elsewhere.

[d.] As explained in the Project Description, Section 3.7, *Project Operation*, the facility currently has the capacity to produce approximately 12,000 bpd of renewable fuels from pretreated feedstocks using Unit 250, which was previously used to process petroleum-based feedstocks. Unit 250 is not included in the Project as the Project does not propose any changes for Unit 250 and it would continue to produce 12,000 bpd of renewable fuels. Given that Unit 250 is not part of the Project, Unit 250 feedstock and production numbers are not included in this chart under the No Project Alternative.

[e.] 70,000 bpd out of 115,000 bpd would arrive by pipeline, the rest would arrive through the Marine Terminal.

[f] Blendstocks and product into the facility would arrive through the Marine Terminal and by rail, and products leaving the facility would be transported by pipeline and rail.

[g] Reflects operations (not construction) of the Project and Alternatives.

Environmentally Superior Alternative

Identification of an environmentally superior alternative is required under CEQA. The purpose of identifying such an alternative is to examine ways to eliminate or substantially reduce significant adverse impacts to lower levels of significance.

The Reduced Project Alternative would be the Environmentally Superior Alternative under CEQA. This alternative would meet or partially meet all but one of the Project objectives. The only objective not met is to maintain the facility's current capacity to supply regional market demand for transportation fuels, including renewable and conventional fuels. The Reduced Project Alternative would not maintain the capacity to produce approximately 120,000 bpd to supply regional market demand for both renewable and conventional fuels, as it would provide an overall supply of 102,000 bpd (50,000 bpd of renewable fuels, 40,000 bpd of conventional fuels, and 12,000 bpd of existing capacity for renewable fuels). However, this alternative would reduce the number of annual marine vessels to 326 instead of 362, as proposed under the Project. Other elements of the Reduced Project would be identical to the Project, including demolition of the Carbon Plant and the Santa Maria Site, and cleaning and removal from active service of the Pipeline Sites.

Because the Reduced Project Alternative would include two pre-treatment trains as opposed to three, and reduce the number of vessel calls at the Marine Terminal, impacts would be similar or lessened with the Reduced Project Alternative since less product is received and produced. Therefore, the Reduced Project Alternative is the Environmentally Superior Alternative.

Summary of Project Impacts and Mitigation Measures

Under CEQA, a significant impact on the environment is defined as a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the proposed Project.

The proposed Project has the potential to generate significant environmental impacts. Table ES-3 summarizes the conclusions of the environmental analysis contained in this Draft EIR by providing a table of impacts and mitigation measures identified. It is organized to correspond with the environmental issues discussed in Sections 4.2 through 4.17 addressing each Project phase including construction, demolition, and operation and maintenance.

Issues to be Resolved

Section 15123(b)(3) of the CEQA Guidelines require that an EIR identify issues to be resolved, including the choice among alternatives and whether or how to mitigate significant impacts. With regard to the proposed Project, the major issues to be resolved include decisions by Contra Costa County, as Lead Agency, related to:

- Whether this Draft EIR adequately describes the environmental impacts of the proposed Project.
- Whether the identified mitigation measures should be adopted or modified.
- Whether there are other mitigation measures that should be applied to the proposed Project besidesthose identified in the Draft EIR.
- Whether there are any alternatives to the proposed Project that would substantially lessen any of thesignificant impacts of the proposed Project and achieve most of the basic objectives.
- Whether the benefits of the proposed Project outweigh the significant and unavoidable impacts that would occur.

Table ES-3. Summary of Determinations and Mitigation for Proposed Project

Environmental Impacts	Construction and Demolition				Transitional	Operation and Maintenance			
	Rodeo Site	Carbon Plant Site	Santa Maria Site	Pipeline Sites	Rodeo Refinery	Rodeo Site	Carbon Plant Site	Santa Maria Site	Pipeline Sites
4.2 AESTHETICS									
IMPACT 4.2-1 Would the project have substantially adverse effect on a scenic vista?	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation n/a:	NI Mitigation: n/a	LTS Mitigation: None	NI Mitigation: n/a	LTS Mitigation: None	NI Mitigation: n/a
4.3 AIR QUALITY									
IMPACT 4.3-1 Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality?	LTSM Mitigation Measure: AQ-1	LTSM Mitigation Measure: AQ-1	LTS Mitigation: None	LTS Mitigation: None	LTSM Mitigation Measure: AQ-1	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
IMPACT 4.3-2 Would the project result in operational emissions of criteria pollutants?	LTSM Mitigation Measure: AQ-2	LTSM Mitigation Measure: AQ-2	LTS Mitigation: None	LTS Mitigation: None	LTSM Mitigation Measure: AQ-2	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
IMPACT 4.3-3 Would the project expose sensitive receptors to substantial pollutant concentrations?	LTS Mitigation: None	LTS Mitigation: None	LTS Mitigation: None	LTS Mitigation: None	LTS Mitigation: None	SU – Rail Transport Outside SFBAAB Mitigation: n/a	LTS Mitigation: one	LTS Mitigation: None	LTS Mitigation: None
IMPACT 4.3-4 Would the Project expose sensitive receptors to substantial pollutant concentrations?	LTS Mitigation: None	NI Mitigation: n/a	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: na
IMPACT 4.3-5 Would the Project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	LTS Mitigation: None	NI Mitigation: n/a	LTS Mitigation: None	LTS Mitigation: None	NI Mitigation: n/a	LTSM Mitigation Measure: AQ-4	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
4.4 BIOLOGICAL RESOURCES									
IMPACT 4.4-1 Would the Proposed Project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or US Fish and Wildlife Service? • Effects of Vessel Collisions (Ship Strikes)	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	LTSM Mitigation Measures: BIO-1a, BIO-1b	LTSM Mitigation Measures: BIO-1a, BIO-1b	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
IMPACT 4.4-2 Would the Proposed Project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or US Fish and Wildlife Service? • Effects of Vessel Noise	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	LTS Mitigation: None	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
IMPACT 4.4-3 Would the Proposed Project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or US Fish and Wildlife Service? • Effects of Sediment Resuspension and Deposition	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	LTS Mitigation: None	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
IMPACT 4.4-4 Would the Proposed Project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or US Fish and Wildlife Service? • Effects of Vessel Cargo Loading/Offloading Accidental Oil Spills	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	SU Mitigation Measure: BIO-2, BIO-3	SU Mitigation Measure: BIO-2, BIO-3	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
IMPACT 4.4-5 Would the Proposed Project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or US Fish and Wildlife Service. • Effects of Introductions of Nonindigenous Invasive Species	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	SU Mitigation Measure: BIO-4a, BIO-4b	SU Mitigation Measure: BIO-4a, BIO-4b	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a

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Environmental Impacts	Construction and Demolition				Transitional	Operation and Maintenance			
	Rodeo Site	Carbon Plant Site	Santa Maria Site	Pipeline Sites	Rodeo Refinery	Rodeo Site	Carbon Plant Site	Santa Maria Site	Pipeline Sites
IMPACT 4.4-6 Would the Project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	LTS Mitigation: None	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
IMPACT 4.4-7 Would the Project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means? • Effects of Vessel or Cargo Offloading Accidental Oil Spills • Effects of Introductions of Non-Indigenous Invasive Species	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	SU Mitigation Measure: BIO-5	SU Mitigation Measure: BIO-5	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
IMPACT 4.4-8 Would the Project Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites? • Effects of Vessel Collisions (Ship Strikes)	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	LTSM Mitigation Measure: BIO-1a, BIO-1b	LTSM Mitigation Measure: BIO-1a, BIO-1b	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
• Effects of Vessel Noise • Effects of Vessel Sediment Resuspension and Deposition	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	LTS Mitigation: None	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
IMPACT 4.4-9 Would the Project Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites? • Effects of Vessel or Cargo Offloading Accidental Oil Spills	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	SU Mitigation Measure: BIO-6	SU Mitigation Measure: BIO-6	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
IMPACT 4.4-10 Would the Project Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites? • Effects of Introductions of Non-Indigenous Invasive Species	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	SU Mitigation Measure: BIO-7	SU Mitigation Measure: BIO-7	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
IMPACT 4.4-11 Would the Project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional or state habitat conservation plan?	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	LTSM Mitigation Measure: BIO-8	LTSM Mitigation Measure: BIO-8	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
4.5 CULTURAL RESOURCES									
IMPACT 4.5-1 Would the project cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5?	LTS Mitigation: None	NI Mitigation: n/a	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
IMPACT 4.5-2 Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5?	LTSM Mitigation Measure CUL-1	NI Mitigation: n/a	LTSM Mitigation Measure: CUL-1	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
IMPACT 4.5-3 Would the project disturb any human remains, including those interred outside of formal cemeteries?	LTSM Mitigation Measure: CUL-2	NI Mitigation: n/a	LTSM Mitigation Measure: CUL-2	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
4.6 ENERGY CONSERVATION									
IMPACT 4.6-1 Would the Project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	LTS Mitigation: None	LTS Mitigation: None	NI Mitigation: n/a	LTS Mitigation: None	LTS Mitigation: None
IMPACT 4.6-2 Would the Project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?.	LTS Mitigation: None	NI Mitigation: n/a	LTS Mitigation: None	LTS Mitigation: None	NI Mitigation: n/a	LTS Mitigation: None	NI Mitigation: n/a	LTS Mitigation: None	LTS Mitigation: None
4.7 GEOLOGY / SOILS									
IMPACT 4.7-1 Would the proposed project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving: ii. Strong seismic ground shaking.	LTSM Mitigation Measure: GEO-1	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a

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Environmental Impacts	Construction and Demolition				Transitional	Operation and Maintenance			
	Rodeo Site	Carbon Plant Site	Santa Maria Site	Pipeline Sites	Rodeo Refinery	Rodeo Site	Carbon Plant Site	Santa Maria Site	Pipeline Sites
IMPACT 4.7-2 Would the project result in substantial soil erosion or the loss of topsoil?	LTS Mitigation: None	NI Mitigation: n/a	LTS Mitigation: None	NI Mitigation: n/a	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
IMPACT 4.7-3 Would the proposed project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving: iii. Seismic-related ground failure, including liquefaction Would the proposed project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in onsite or offsite landslide, lateral spreading, subsidence, liquefaction or collapse.	LTS Mitigation: None	LTS Mitigation: None	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
IMPACT 4.7-4 Would the proposed project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (International Conference of Building Officials 1994), creating substantial risks to life or property.	LTS Mitigation: None	NI Mitigation: n/a	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
4.8 GREENHOUSE GAS EMISSIONS									
IMPACT 4.8-1 Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	LTS Mitigation: None	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
IMPACT 4.8-2 Project operations would decrease emissions of GHGs that could contribute to global climate change.	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
IMPACT 4.8-3 Would the Project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	LTS Mitigation: None	LTS Mitigation: None	LTS Mitigation: None	LTS Mitigation: None	LTS Mitigation: None	LTS Mitigation: None	LTS Mitigation: None	LTS Mitigation: None	LTS Mitigation: None
4.9 HAZARDS / HAZARDOUS MATERIALS									
IMPACT 4.9-1 Would the Project create a significant hazard to the public or the environment through the routine transport, use or disposal of hazardous materials?	LTS Mitigation: None	LTS Mitigation: None	LTS Mitigation: None	LTS Mitigation: None	LTS Mitigation: None	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
IMPACT 4.9-2 Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	LTS Mitigation: none	NI Mitigation: n/a	LTS Mitigation: none	LTS Mitigation: None	SU Marine Vessel Spill Mitigation Measures: HAZ -1, HAZ-2	SU Marine Vessel Spill Mitigation Measures: HAZ -1, HAZ-2	LTS Mitigation: None	LTS Mitigation: None	LTS Mitigation: None
IMPACT 4.9-3 Would the Project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5, and as a result, would it create a significant hazard to the public or the environment?	LTS Mitigation: None	NI Mitigation: n/a	LTS Mitigation: None	NI Mitigation: n/a	LTS Mitigation: None	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
IMPACT 4.9-4 Would the Project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	LTS Mitigation: None	NI Mitigation: n/a	LTS Mitigation: None	NI Mitigation: n/a	LTS Mitigation: None	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
IMPACT 4.9-5 Would the Project expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildfire?	LTS Mitigation: None	NI Mitigation: n/a	LTS Mitigation: None	NI Mitigation: n/a	LTS Mitigation: None	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
4.10 HYDROLOGY / WATER QUALITY									
IMPACT 4.10-1 Would the Project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	LTS Mitigation: None	NI Mitigation: n/a	LTS Mitigation: None	NI Mitigation: n/a	SU Marine Vessel Spill Mitigation Measures: HAZ -1, HAZ-2	SU Marine Vessel Spill Mitigation Measures: HAZ -1, HAZ-2	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
IMPACT 4.10-2 Would the Project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	LTS Mitigation: None	NI Mitigation: n/a	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a

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Environmental Impacts	Construction and Demolition				Transitional	Operation and Maintenance			
	Rodeo Site	Carbon Plant Site	Santa Maria Site	Pipeline Sites	Rodeo Refinery	Rodeo Site	Carbon Plant Site	Santa Maria Site	Pipeline Sites
4.11 LAND USE / PLANNING									
IMPACT 4.11-1 Would the Proposed Project conflict with any applicable land use plan, policy, or the regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	LTS Mitigation: None	NI Mitigation: n/a	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	LTS Mitigation: None	NI Mitigation: n/a	LTS Mitigation: None	NI Mitigation: n/a
4.12 NOISE / VIBRATION									
IMPACT 4.12-1 Would the Project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	LTS Mitigation: None	LTS Mitigation: None	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
IMPACT 4.12-2 Operation of the Project would not result in exposure of persons to noise levels in excess of standards established by Contra Costa County.	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
IMPACT 4.12-3 Would the Project result in generation of excessive groundborne vibration or groundborne noise levels?	LTS Mitigation: None	NI Mitigation: n/a	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	LTS Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
4.13 TRANSPORTATION AND TRAFFIC									
IMPACT 4.13-1 Project construction/demolition would temporarily increase peak-hour traffic volumes, and could result in inadequate emergency vehicle access.	LTSM Mitigation Measure TRA -1	NI Mitigation: n/a	LTSM Mitigation Measure TRA -1	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
IMPACT 4.13-2 Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
IMPACT 4.13-3 Would the Project result in a Conflict with a plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, including transit, roadway, bicycle, and pedestrian facilities?	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
IMPACT 4.13-4 Cause substantial damage or wear of public roadways by increased movement of heavy vehicles?	LTS Mitigation: None	NI Mitigation: n/a	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
4.14 TRIBAL CULTURAL RESOURCES									
IMPACT 4.14-1 Would the Proposed Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in PRC Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is: a. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in PRC Section 5020.1(k)? b. 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 PRC Section 5024.1. In applying the criteria set forth in subdivision (c) of PRC Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?	LTSM Mitigation Measures TCR-1, TCR-2, TCR-3, TCR-4	NI Mitigation: n/a	LTSM Mitigation Measures TCR-1, TCR-2, TCR-3, TCR-4	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
4.15 WILDFIRE									
IMPACT 4.15-1 A project located in or near state responsibility areas or lands classified as very high fire hazard severity zones would cause adverse impacts related to wildfires if it would: a. Substantially impair an adopted emergency response plan or emergency evacuation plan.	LTS Mitigation: None	NI Mitigation: n/a	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
IMPACT 4.15-2 A project located in or near state responsibility areas or lands classified as very high fire hazard severity zones would cause adverse impacts related to wildfires if it would: 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.	LTS Mitigation: None	NI Mitigation: n/a	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a

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Environmental Impacts	Construction and Demolition				Transitional	Operation and Maintenance			
	Rodeo Site	Carbon Plant Site	Santa Maria Site	Pipeline Sites	Rodeo Refinery	Rodeo Site	Carbon Plant Site	Santa Maria Site	Pipeline Sites
4.16 SOLID WASTE									
IMPACT 4.16-2 a. Would the project generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals? b. Would the project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	LTS Mitigation: None	NI Mitigation: n/a	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	LTS Mitigation: None	NI Mitigation: n/a	LTS Mitigation: None	NI Mitigation: n/a

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Mitigation Measures

Mitigation Measure AQ-1: Implement BAAQMD Basic Control Measures

Construction contractors shall implement the following applicable BAAQMD basic control measures as best management practices (BMPs):

- All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
- All haul trucks transporting soil, sand, or other loose material offsite shall be covered.
- All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least 2 times per day, not less than 4 hours apart, on San Pablo Avenue, between the refinery and Interstate 80, and on the access roads between the Carbon Plant and Highway 4. The use of dry power sweeping is prohibited.
- All vehicle speeds on unpaved roads shall be limited to 15 miles per hour.
- All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
- Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 2 minutes as recommended by the BAAQMD, and not to exceed 5 minutes as required by the California airborne toxics control measure Title 13, Section 2485 of the California Code of Regulations (CCR). Clear signage shall be provided for construction workers at all access points.
- All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications.
- All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.
- Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.

Mitigation Measure AQ-2: Implement a NOx Mitigation Plan

Phillips 66 shall prepare a NOx Mitigation Plan (NM Plan) prior to the issuance of construction-related permits for site preparation. The purpose of the NM Plan is to document expected construction and transitional phase NOx emissions in detail; and, if necessary, to identify feasible and practicable contemporaneous measures to reduce aggregated construction and transition NOx emissions to below the BAAQMD's 54 pounds per day threshold of significance.

The NOx emissions estimate for the Project shall include consideration of readily available NOx construction and transition emission reduction measures, and/or other emission reduction actions, that shall be implemented during construction and transitional phase of the Project. The NM Plan shall describe the approximate amount of NOx emissions reductions that will be associated with each action and reduction measure on a best estimate basis.

The NM Plan shall be submitted to the Contra Costa County Department of Conservation and Development and the BAAQMD for review and approval, or conditional approval based on a determination of whether the NM Plan meets the conditions described below. The NM Plan shall

include those recommended measures listed below needed to reduce the Project's construction and transition NOx emissions to less than the BAAQMD's threshold of significance.

The NM Plan shall include a detailed description of the NOx emissions for all construction and transition activities based on BMPs and use data at the time of Project approval and current estimation protocols and methods. The plan shall, at a minimum, include the following elements:

1. **Project Construction and Transition NOx Emissions** – The Project's construction and transition NOx emission estimates presented in the NM Plan will be based on the emission factors for off-road and on-road mobile sources used during construction and transition, over and above baseline, along with the incorporation of vehicle fleet emission standards. Project construction and transition NOx emission estimates will be based upon the final Project design, Project-specific traffic generation estimates, equipment to be used onsite and during transition, and other emission factors appropriate for the Project prior to construction. The methodology will generally follow the approach used in this Draft EIR and in Appendix B.
2. **NOx Emission Reduction Measures** – The NM Plan shall include feasible and practicable NOx emission reduction measures that reduce or contemporaneously offset the Project's incremental NOx emissions below the threshold of significance. Planned emission reduction measures shall be verifiable and quantifiable during Project construction and transitional phase. The NM Plan shall be consistent with current applicable regulatory requirements. Measures shall be implemented as needed to achieve the significance threshold and considered in the following order: (a) onsite measures, and (b) offsite measures within the San Francisco Bay Area Air Basin. Feasible[3] onsite and offsite measures must be implemented before banked emissions offsets (emission reduction credits) are considered in the NM Plan.

   a. Recommended Onsite Emission Reduction Measures:

   i. Onsite equipment and vehicle idling and/or daily operating hour curtailments;

   ii. Construction "clean fleet" using Tier 4 construction equipment to the maximum extent practicable;

   iii. Reductions in Vessel and/or Rail Traffic;

   iv. Other onsite NOx reduction measures (e.g., add-on NOx emission controls); or

   v. Avoid the use of Suezmax vessels to the maximum extent practicable.

   Additional measures and technology to reduce NOx emissions may become available during the Project construction and operation period. Such measures may include new energy systems (such as battery storage) to replace natural gas use, new transportation systems (such as electric vehicles or equipment) to reduce fossil-fueled vehicles, or other technology (such as alternatively-fueled emergency generators or renewable backup energy supply) that is not currently available at the project-level. As provided in the NM Plan, should such measures and technology become available and be necessary to further reduce emissions to below significance thresholds, Phillips 66 shall demonstrate to the Contra Costa County Department of Conservation and Development and BAAQMD satisfaction that such measures are as, or more, effective as the existing measures described above.

[3] For the purposes of this mitigation measure, "feasible" shall mean as defined under CEQA "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors."

b. Recommended Offsite Emission Reduction Measures:

Phillips 66, with the oversight of the Contra Costa County Department of Conservation and Development and BAAQMD, shall reduce emissions of NOx by directly funding or implementing a NOx control project (program) within the San Francisco Bay Area Air Basin to achieve an annual reduction equivalent to the total estimated construction NOx emission reductions needed to lower the Project's NOx impact below the 54 pound per day significance threshold. The offsite measures will be based on the NOx reductions necessary after consideration of onsite measures.

To qualify under this mitigation measure, the NOx control project must result in emission reductions within the San Francisco Bay Area Air Basin that would not otherwise be achieved through compliance with existing regulatory requirements or other program participation. Phillips 66 shall notify Contra Costa County within six months of completion of the NOx control project for verification.

3. **Annual Verification Reports –** Phillips 66 shall prepare an Annual NM Verification Report in the first quarter of each year following construction or transitional phase activities, while Project construction activities at the site are ongoing. The reporting period will extend through the last year of construction. The purpose of the Report is to verify and document that the total Project construction and transitional phase NOx emissions for the previous year, based on appropriate emissions factors for that year and the effectiveness of emission reduction measures, were implemented.

   The Report shall also show whether additional onsite and offsite emission reduction measures, or additional NOx controls, would be needed to bring the Project below the threshold of significance for the current year. The Report shall be prepared by Phillips 66 and submitted to the Contra Costa County Department of Conservation and Development and the BAAQMD for review and verification. NOx offsets for the previous year, if required, shall be in place by the end of the subsequent reporting year. If Contra Costa County and the BAAQMD determine the report is reasonably accurate, they can approve the report; otherwise, Contra Costa County and/or the BAAQMD shall identify deficiencies and direct Phillips 66 to correct and re-submit the report for approval.

Mitigation Measure AQ-3: Mitigation Pre-empted by Federal Law

Mitigation Measure AQ-4: Implement Odor Management Plan

During the 2-year construction phase of the Project, an Odor Management Plan (OMP) shall be developed and implemented upon commencement of the renewable fuels processes, which will become an integrated part of daily operations at the Rodeo Refinery. The purpose of the OMP is to prevent any offsite odors and effect diligent identification and remediation of any potential odors generated by the Project. The OMP shall outline equipment that is in place and procedures that facility personnel shall use to address odor issues, facility wide. The OMP would include evaluation of the overall system performance, identifying any trends to provide an opportunity for improvements to the plan, and updating the odor management and control strategies, as necessary. This plan would be retained at the facility for County or other government agency inspection upon request.

Mitigation Measure BIO-1a: Update Pre-Arrival Documents

Phillips 66 shall update pre-arrival document materials and instructions sent to tank vessels agents/operators scheduled to arrive at the Marine Terminal with the following information and requests:

- Available outreach materials regarding the Blue Whales and Blue Skies incentive program;
- Whale strike outreach materials and collision reporting from NMFS;
- Request extra vigilance by ship crews upon entering the Traffic Separation Scheme shipping lanes approaching San Francisco Bay and departing San Francisco Bay to aid in detection and avoidance of ship strike collisions with whales;
- Request compliance to the maximum extent feasible (based on vessel safety) with the 10 knot voluntary speed reduction zone.
- Encourage participation in the Blue Whales and Blue Skies incentive program.

Mitigation Measure BIO-1b: California Department of Fish and Wildlife (CDFW) and Research Sturgeon Support

Phillips 66 will conduct and support the following activities to further the understanding of vessel strike vulnerability of sturgeon in San Francisco and San Pablo Bay.

Coordinate with CDFW and Research Sturgeon to ensure appropriate messaging on information flyers suitable for display at bait and tackle shops, boat rentals, fuel docks, fishing piers, ferry stations, dockside businesses, etc. to briefly introduce interesting facts about the sturgeon and research being conducted to learn more about its requirements and how the public's observations can inform strategies being developed to improve fisheries habitat within the estuary.

Mitigation Measure BIO-2: Implement Mitigation Measures HAZ-1 and HAZ-2.

Mitigation Measure BIO-3: Update and Review Facility Response Plan and Spill Prevention, Control, and Countermeasure Plan with OSPR

- The Facility Response Plan and Spill Prevention, Control, and Countermeasure (SPCC) Plan shall be updated to address the change in proposed feedstocks. Phillips 66 will consult with OSPR during update of the SPCC Plan, especially adequacy of booms at the Marine Terminal to quickly contain a spill of renewable feedstocks.
- In accordance with CCR Title 14, Chapter 3, Subchapter 3, several types of drills are required at specified intervals. Due to the potential for rapid dispersion of biofuels and oils under high energy conditions, Phillips 66 shall increase the frequency of the following drills to increase preparedness for quick response and site-specific deployment of equipment under different environmental conditions.
  - Semi-annual equipment deployment drills to test the deployment of facility-owned equipment, which shall include immediate containment strategies, are required on a semiannual pass/fail basis – if there is fail during first six months, then another drill is required. Phillips 66 will require that both semi-annual drills are conducted and schedule them under different tide conditions.
  - An OSRO field equipment deployment drill for on-water recovery is required at least once every three years. Phillips will increase the frequency of this drill to annual.
  - CDFW-OSPR shall be provided an opportunity to help design, attend and evaluate all equipment deployment drills and tabletop exercises. To ensure this, Phillips 66

shall schedule annual drills during the first quarter of each year to ensure a spot on OSPR's calendar.

Mitigation Measure BIO-4a: Prohibit Ballast Water Exchange

- Phillips 66 shall prohibit vessels from ballast water exchange at the Marine Terminal.

Mitigation Measure BIO-4b: Update Pre-Arrival Documentation

- Phillips 66 shall update pre-arrival document materials and instructions sent to tank vessels agents/operators to ensure they are advised prior to vessel departure of California's Marine Invasive Species Act and implementing regulations pertinent to (1) ballast water management, and (2) biofouling management. Additionally, Phillips 66 will request that vessel operations provide documentation of compliance with regulatory requirements (e.g., copy of ballast water management forms and logs of hull husbandry cleaning/inspections).

Mitigation Measure BIO-5: Implement Mitigation Measures BIO-4

Mitigation Measure BIO-6: Implement Mitigation Measures BIO-2 (HAZ-1 and HAZ-2) and BIO-3

Mitigation Measure BIO-7: Implement Mitigation Measures BIO-2 (HAZ-1 and HAZ-2) and BIO-3

Mitigation Measure BIO-8: Implement Mitigation Measures BIO-1 to BIO-4.

Mitigation Measure CUL-1: Inadvertent Discovery of Archaeological Resources

- Pursuant to CEQA Guidelines Section 15064.5(f), "provisions for historical or unique archaeological resources accidentally discovered during construction" shall be instituted. In the event that any cultural resources are discovered during ground-disturbing activities, all work within 100 feet of the find shall be halted and Phillips 66 shall consult with the County and a qualified archaeologist (as approved by the County) to assess the significance of the find pursuant to CEQA Guidelines Section 15064.5. If any find is determined to be significant, representatives of the County and the qualified archaeologist would meet to determine the appropriate course of action.
- Avoidance is always the preferred course of action for archaeological sites. In considering any suggestion proposed by the consulting archaeologist to reduce impacts to archaeological resources, the County would determine whether avoidance is feasible in light of factors such as the nature of the find, project design, costs, and other considerations. If avoidance is infeasible, other appropriate measures (e.g., data recovery, interpretation of finds in a public venue) would be instituted. Work may proceed on other parts of the Project site while mitigation for archaeological resources is carried out. All significant cultural materials recovered shall be, at the discretion of the consulting archaeologist, subject to scientific analysis, professional museum curation, and documented according to current professional standards.

Mitigation Measure CUL-2: Inadvertent Discovery of Human Remains

- The treatment of human remains and associated or unassociated funerary objects discovered during any ground-disturbing activity shall comply with applicable state law. Project personnel shall be alerted to the possibility of encountering human remains during Project implementation, and apprised of the proper procedures to follow in the event they are found. State law requires immediate notification of the County coroner, in the event of the coroner's determination that the human remains are Native American,

notification of the California Native American Heritage Commission (NAHC), which would appoint a Most Likely Descendent (MLD) (PRC Section 5097.98). The MLD would make all reasonable efforts to develop an agreement for the treatment, with appropriate dignity, of human remains and associated or unassociated funerary objects (CEQA Guidelines Section 15064.5[d]).

- The agreement shall take into consideration the appropriate excavation, removal, recordation, analysis, custodianship, curation, and final disposition of the human remains and associated or unassociated funerary objects. The PRC allows 48 hours to reach agreement on these matters. If the MLD and the other parties do not agree on the treatment and disposition of the remains and funerary objects, Phillips 66 shall follow PRC Section 5097.98(b), which states that "the landowner or his or her authorized representative shall reinter the human remains and items associated with Native American burials with appropriate dignity on the property in a location not subject to further subsurface disturbance."

Mitigation Measure GEO-1: Comply with Geotechnical Report

Phillips 66 shall comply with and implement all of the following measures designed to reduce potential substantial adverse effects resulting from strong seismic ground shaking:

- A California licensed geotechnical engineer or engineering geologist shall perform a comprehensive geotechnical investigation of all Project facilities based on adequate subsurface exploration, laboratory testing of selected samples, and engineering/geologic analysis of the data gathered. The information shall be compiled and presented as a geotechnical report that provides an evaluation of potential seismic and geologic hazards, including secondary seismic ground failures, and other geologic hazards, such as landslides, expansive and corrosive soils, and provides current California Building Code seismic design parameters, along with providing specific standards and criteria for site grading, drainage, berm, and foundation design.
- For construction requiring excavations, such as foundations, appropriate support and protection measures shall be implemented to maintain the stability of excavations and to protect construction worker safety. Where excavations are adjacent to existing structures, utilities, or other features that may be adversely affected by potential ground movements, bracing, underpinning, or other methods of support for the affected facilities shall be implemented.
- Recommendations in the approved geotechnical report shall be incorporated into the design and construction specifications and shall be implemented during build-out of the Project.
- The Project geotechnical engineer shall provide observation and testing services during grading and foundation-related work, and shall submit a grading completion report to the County prior to requesting the final inspection. This report shall provide full documentation of the geotechnical monitoring services provided during construction, including the testing results of the American Society for Testing and Materials. The Final Grading Report shall also certify compliance of the as-built Project with the recommendations in the approved geotechnical report.

Mitigation Measure HAZ-1: Implement Release, Monitoring and Avoidance Systems

The following actions shall be completed by Phillips 66 prior to Project operations, including the transitional phase, and shall include routine inspection, testing and maintenance of all equipment and systems conducted in accordance with manufacturers' requirements. Of note, the Marine Terminal has a remote release system that can be activated from a single control panel or at each quick-release mooring hook set. The central control system can be switched on in case of an emergency necessitating a single release of all mooring lines.

Remote Release Systems

- Provide and maintain mooring line quick release devices that shall be able to be activated within 60 seconds.
- These devices shall be capable of being engaged by electric/push button release mechanism and by integrated remotely-operated release system.
- Document procedures and training for systems use and communications between Marine Terminal and vessel operator(s).
- Routine inspection, testing and maintenance of all equipment and systems in accordance with manufacturers' recommendations and necessity are required to ensure safety and reliability.

This measure would allow a vessel to leave the Marine Terminal as quickly as possible in the event of an emergency (fire, explosion, accident, or tsunami that could lead to a spill). In the event of a fire, tsunami, explosion, or other emergency, quick release of the mooring lines within 60 seconds would allow the vessel to quickly leave the Marine Terminal, which could help prevent damage to the Marine Terminal and vessel and avoid and/or minimize spills. This may also help isolate an emergency situation, such as a fire or explosion, from spreading between the Marine Terminal and vessel, thereby reducing spill potential. The above would only be performed in a situation where transfer connections were already removed and immediate release would not further endanger terminal, vessel and personnel.

Tension Monitoring Systems

- Provide and maintain Tension Monitoring Systems to effectively monitor all mooring line and environmental loads, and avoid excessive tension or slack line conditions that could result in damage to the Marine Terminal structure and/or equipment and/or vessel mooring line failures.
- Line tensions and environmental data shall be integrated into systems that record and relay all critical data in real time to the control room, Marine Terminal operator(s) and vessel operator(s).
- System shall include, but not be limited to, quick release hooks only (with load cells), site-specific current meter(s), site-specific anemometer(s), and visual and audible alarms that can support effective preset limits and shall be able to record and store monitoring data.
- Document procedures and training for systems use and communications between Marine Terminal and vessel operator(s).

- Routine inspection, testing and maintenance of all equipment and systems in accordance with manufacturers' recommendations and necessity are required to ensure safety and reliability.
- Install alternate technology that provides an equivalent level of protection.

The Marine Terminal is located in a high-velocity current area and currently has only limited devices to monitor mooring line strain and integrated environmental conditions. Updated MOTEMS Terminal Operating Limits (TOLs), including breasting and mooring, provide mooring requirements and operability limits that account for the conditions at the terminal. The upgrade to devices with monitoring capabilities can warn operators of the development of dangerous mooring situations, allowing time to take corrective action and minimize the potential for the parting of mooring lines, which can quickly escalate to the breaking of hose connections, the breakaway of a vessel, and/or other unsafe mooring conditions that could ultimately lead to a petroleum product spill. Backed up by an alarm system, real-time data monitoring and control room information would provide the Terminal Person-In-Charge with immediate knowledge of whether safe operating limits of the moorings are being exceeded. Mooring adjustments can be then made to reduce the risk of damage and accidental conditions.

Allision Avoidance Systems

- Provide and maintain Allision Avoidance Systems (AASs) at the Marine Terminal to prevent damage to the pier/wharf and/or vessel during docking and berthing operations. Integrate AASs with Tension Monitoring Systems such that all data collected are available in the Control Room and to Marine Terminal operator(s) at all times and vessel operator(s) during berthing operations. The AASs shall also be able to record and store monitoring data.
- Document procedures and training for systems use and communications between Marine Terminal and vessel operator(s).
- Routine inspection, testing and maintenance of all equipment and systems in accordance with manufacturers' recommendations and necessity are required to ensure safety and reliability.

The Marine Terminal has a continuously manned marine interface operation monitoring all aspects of the marine interface. The Automatic Identification System is monitored through TerminalSmart and provides a record of vessel movements. The Marine Terminal has a compliant AAS which is not required for MOTEMS compliance so long as MOTEMS TOLs are followed.

Monitoring these factors would ensure that all vessels can safely berth at the Marine Terminal and comply with the minimum standards required in the MOTEMS. Excessive surge or sway of vessels (motion parallel or perpendicular to the wharf, respectively) and/or passing vessel forces may result in sudden shifts/redistribution of mooring forces through the mooring lines, which can quickly escalate to the failure of mooring lines, breaking of loading arm connections, the breakaway of a vessel, and/or other unsafe mooring conditions that could ultimately lead to a spill.

Mitigation Measure HAZ-2: USCG Ports and Waterways Safety Assessment (PAWSA) Workshops, Spill Response and Pilotage Requirements

- Phillips 66 shall participate in the USCG's PAWSA workshops for the San Francisco Bay Area (Bay Area) to support overall safety improvements to the existing Vessel Traffic Service in the Bay Area or approaches to the bay if such workshops are conducted by the USCG during the life of the lease.

- Spill Response to Vessel Spills. Phillips 66 shall respond to any spill near the Marine Terminal from a vessel traveling to or from the Marine Terminal or moored at the Marine Terminal as if it were its own, without assuming liability, until such time as the vessel's response organization can take over management of the response actions in a coordinated manner.
- For all tankers and barges, Phillips 66 shall require that pilotage is utilized while transiting the Bay Vessels 300 GRT or larger and will cooperate in meeting USCG/NOAA VSR program to keep speed limited to 10 knots in the Bay and lower upon approach to the Marine Terminal due to tug escort speed limitations.

Vessel owners/operators are responsible for spills from their tankers. Tanker and barge owners/operators are required by federal and state regulations to demonstrate that they have, or have under contract, sufficient response assets to respond to worst-case releases. Tankers and barges operating in United States and California waters must certify that they have the required capability under contract. All terminals are under contract with one or more OSRO to respond to spills with all the necessary equipment and manpower to meet the response requirements dictated by regulations. This mitigation would further reduce the risk of spills in the San Francisco Bay or near approaches to the bay by requiring participation in USCG Ports and Waterways Safety Assessment workshops for the Bay Area to improve transit issues and response capabilities in general, and to support overall safety improvements to the existing VTS in the future.

While vessel owners/operators are responsible for their spills, if a spill were to occur near the Marine Terminal, Phillips 66 and its contractors may be in a better position to provide immediate response to a spill using their own equipment and resources, rather than waiting for mobilization and arrival of the vessel's response organization. The Phillips 66 staff is fully trained to take immediate action in response to spills. Such action could result in a quicker response and more effective control and recovery of spilled product. This mitigation would also require Phillips 66 to respond to any spill from a vessel traveling in the San Francisco Bay to or from the Marine Terminal or moored at its wharf, without assuming liability, until the vessel's response organization can take over management of the response actions in a coordinated manner. This requirement would further limit the potential for impacts from spills in the San Francisco Bay from vessels calling at the Marine Terminal.

In addition, Phillips indicates that it is their policy to utilize pilots for all tankers and barges while within the bay, even if the tanker or barge is under the required size requirements, and to limit vessels speeds below the required maximum. This mitigation ensures that all tankers and barges utilize pilots and speed limits in order to reduce the probability of groundings, collisions or allisions.

Mitigation Measure TRA-1: Implement a Traffic Management Plan.

Prior to issuance of grading and building permits, Phillips 66 shall submit a Traffic Management Plan for review and approval by the Contra Costa County Public Works Department. At a minimum the following shall be included:

- The Traffic Management Plan shall be prepared in accordance with the most current California Manual on Uniform Traffic Control Devices, and will be subject to periodic review by the Contra Costa County Public Works Department throughout the life of all construction and demolition phases.
- Truck drivers shall be notified of and required to use the most direct route between the site and the freeway;
- All site ingress and egress shall occur only at the main driveways to the Project site;
- Construction vehicles shall be monitored and controlled by flaggers;

- If during periodic review the Contra Costa County Public Works Department, or the Department of Conservation and Development, determines the Traffic Management Plan requires modification, Phillips 66 shall revise the Traffic Management Plan to meet the specifications of Contra Costa County to address any identified issues. This may include such actions as traffic signal modifications, staggered work hours, or other measures deemed appropriate by the Public Works Department.
- If required, Phillips 66 shall obtain the appropriate permits from Caltrans for the movement of oversized or excessive load vehicles on state-administered highways

Mitigation Measure TCR-1: Awareness Training

- A consultant and construction worker tribal cultural resources awareness brochure and training program for all personnel involved in project implementation shall be developed by Phillips 66 in coordination with interested Native American Tribes (i.e. Wilton Rancheria). The brochure will be distributed and the training will be conducted in coordination with qualified cultural resources specialists and Native American Representatives and Monitors from culturally affiliated Native American Tribes before any stages of project implementation and construction activities begin on the Project site. The program will include relevant information regarding sensitive tribal cultural resources, including applicable regulations, protocols for avoidance, and consequences of violating state laws and regulations. The worker cultural resources awareness program will also describe appropriate avoidance and minimization measures for resources that have the potential to be located on the Project site and will outline what to do and whom to contact if any potential archaeological resources or artifacts are encountered. The program will also underscore the requirement for confidentiality and culturally-appropriate treatment of any find of significance to Native Americans and behaviors, consistent with Native American Tribal values.

Mitigation Measure TCR -2: Monitoring

To minimize the potential for destruction of or damage to existing or previously undiscovered burials, archaeological and tribal cultural resources and to identify any such resources at the earliest possible time during project-related earthmoving activities, Phillips 66 and its construction contractor(s) will implement the following measures:

- Paid Native American monitors from culturally affiliated Native American Tribes will be invited to monitor the vegetation grubbing, stripping, grading or other ground-disturbing activities in the project area to determine the presence or absence of any cultural resources. Native American representatives from cultural affiliated Native American Tribes act as a representative of their Tribal government and shall be consulted before any cultural studies or ground-disturbing activities begin.
- Native American representatives and Native American monitors have the authority to identify sites or objects of significance to Native Americans and to request that work be stopped, diverted or slowed if such sites or objects are identified within the direct impact area. Only a Native American representative can recommend appropriate treatment of such sites or objects.
- If buried cultural resources, such as chipped or ground stone, historic debris, building foundations, or bone, are discovered during ground-disturbing activities, work will stop in that area and within 100 feet of the find until an archaeologist who meets the Secretary of the Interior's qualification standards can assess the significance of the find and, if necessary, develop appropriate treatment measures in consultation with the California Department of Transportation, the State Historic Preservation Office, and other appropriate

agencies. Appropriate treatment measures may include development of avoidance or protection methods, archaeological excavations to recover important information about the resource, research, or other actions determined during consultation.

- In accordance with the California Health and Safety Code, if human remains are uncovered during ground disturbing activities, the construction contractor or the County, or both, shall immediately halt potentially damaging excavation in the area of the burial and notify the County coroner and a qualified professional archaeologist to determine the nature of the remains. The coroner shall examine all discoveries of human remains within 48 hours of receiving notice of a discovery on private or state lands, in accordance with Section 7050(b) of the Health and Safety Code. If the coroner determines that the remains are those of a Native American, they shall contact the NAHC by phone within 24 hours of making that determination (Health and Safety Code Section 7050[c]). After the coroner's findings are presented, the County, the archaeologist, and the NAHC-designated MLD shall determine the ultimate treatment and disposition of the remains and take appropriate steps to ensure that additional human interments are not disturbed.

Mitigation Measure TCR -3: Inadvertent Discoveries

- Phillips 66 shall develop a standard operating procedure, or ensure any existing procedure, to include points of contact, timeline and schedule for the project so all possible damages can be avoided or alternatives and cumulative impacts properly accessed.
- If potential tribal cultural resources, archaeological resources, other cultural resources, articulated, or disarticulated human remains are discovered by Native American Representatives or Monitors from interested Native American Tribes, qualified cultural resources specialists or other Project personnel during construction activities, work will cease in the immediate vicinity of the find (based on the apparent distribution of cultural resources), whether or not a Native American Monitor from an interested Native American Tribe is present. A qualified cultural resources specialist and Native American Representatives and Monitors from culturally affiliated Native American Tribes will assess the significance of the find and make recommendations for further evaluation and treatment as necessary. These recommendations will be documented in the project record. For any recommendations made by interested Native American Tribes which are not implemented, a justification for why the recommendation was not followed will be provided in the project record.
- If adverse impacts to tribal cultural resources, unique archeology, or other cultural resources occurs, then consultation with Wilton Rancheria regarding mitigation contained in the Public Resources Code sections 21084.3(a) and (b) and CEQA Guidelines section 15370 should occur, in order to coordinate for compensation for the impact by replacing or providing substitute resources or environments.

Mitigation Measure TCR -4: Avoidance and Preservation

Avoidance and preservation in place is the preferred manner of mitigating impacts to tribal cultural resources and shall be accomplished by several means, including:

- Planning construction to avoid tribal cultural resources, archaeological sites and/ or other resources; incorporating sites within parks, green-space or other open space; covering archaeological sites; deeding a site to a permanent conservation easement; or other preservation and protection methods agreeable to consulting parties and regulatory authorities with jurisdiction over the activity. Recommendations for avoidance of cultural resources will be reviewed by the CEQA lead agency representative, interested Native American Tribes and the appropriate agencies, in light of factors such as costs, logistics,

feasibility, design, technology and social, cultural and environmental considerations, and the extent to which avoidance is consistent with project objectives. Avoidance and design alternatives may include realignment within the project area to avoid cultural resources, modification of the design to eliminate or reduce impacts to cultural resources or modification or realignment to avoid highly significant features within a cultural resource. Native American Representatives from interested Native American Tribes will be allowed to review and comment on these analyses and shall have the opportunity to meet with the CEQA lead agency representative and its representatives who have technical expertise to identify and recommend feasible avoidance and design alternatives, so that appropriate and feasible avoidance and design alternatives can be identified.

- If the resource can be avoided, the construction contractor(s), with paid Native American monitors from culturally affiliated Native American Tribes present, will install protective fencing outside the site boundary, including a buffer area, before construction restarts. The construction contractor(s) will maintain the protective fencing throughout construction to avoid the site during all remaining phases of construction. The area will be demarcated as an "Environmentally Sensitive Area." Native American representatives from interested Native American Tribes and the CEQA lead agency representative will also consult to develop measures for long term management of the resource and routine operation and maintenance within culturally sensitive areas that retain resource integrity, including tribal cultural integrity, and including archaeological material, Traditional Cultural Properties and cultural landscapes, in accordance with state and federal guidance including National Register Bulletin 30 (Guidelines for Evaluating and Documenting Rural Historic Landscapes), Bulletin 36 (Guidelines for Evaluating and Registering Archaeological Properties), and Bulletin 38 (Guidelines for Evaluating and Documenting Traditional Cultural Properties); National Park Service Preservation Brief 36 (Protecting Cultural Landscapes: Planning, Treatment and Management of Historic Landscapes) and using the Advisory Council on Historic Preservation's Native American Traditional Cultural Landscapes Action Plan for further guidance. Use of temporary and permanent forms of protective fencing will be determined in consultation with Native American representatives from interested Native American Tribes.

1 Introduction

The California Environmental Quality Act (CEQA) of 1970 (Public Resources Code [PRC] Sections 21000 et seq.) and the CEQA Guidelines (California Code of Regulations Title 14, Section 15000) require a public agency with discretionary authority to issue a permit or other approval to evaluate the environmental impacts of its action. Phillips 66 submitted a Land Use Permit (LUP) application for its proposed Rodeo Renewed Project (Project) with the Contra Costa County Department of Conservation and Development in 2020. Approval or denial of the LUP is a discretionary action requiring review under CEQA (PRC Section 21080). As such, Contra Costa County has the principal responsibility for approving the proposed Project and is therefore the Lead Agency under CEQA (PRC Section 21067; California Code of Regulations Title 14, Section 15367).

1.1 Project Background

The applicant proposes the Phillips 66 Rodeo Renewed Project (County File# CDLP20-02040) to modify the existing Rodeo Refinery into a repurposed facility that would process renewable feedstocks into renewable diesel fuel, renewable components for blending with other transportation fuels, and renewable fuel gas. The Rodeo Refinery would eventually discontinue the processing of crude oil. Repurposing of the Rodeo Refinery would assist California in meeting its stated goals of reducing greenhouse gas (GHG) emissions and ultimately transitioning to carbon neutrality.[4] Because the Project would discontinue processing crude oil at the Rodeo Refinery, other sites owned and operated by Phillips 66 located throughout the state would be affected. Therefore, the Project consists of activities at the following four sites:

- **Rodeo Site** is within the Rodeo Refinery where the proposed modifications would occur.
- **Carbon Plant** is within the Rodeo Refinery in nearby Franklin Canyon and would no longer be necessary. It would be demolished.
- **Santa Maria Refinery** is located in San Luis Obispo County and would no longer be necessary to provide semi-refined feedstock to the Rodeo Refinery. It would be demolished.
- **Pipeline Sites** these collect crude oil for the Santa Maria Refinery and deliver semi-refined feedstock to the Rodeo Refinery and, therefore, would not be necessary. The pipelines would be taken out of service (decommissioned) or sold.

Chapter 3, *Project Description*, presents a complete description of the Project.

1.2 Purpose of the EIR

In enacting CEQA, the California State Legislature declared its intent regarding the purposes of an environmental impact report (EIR) in Section 21002.1 of the CEQA statute, as follows:

1. Serve as an informational document to inform Contra Costa County's decision-makers and the public generally of the significant environmental impacts of the Project;

[4] Governor Newsom's Executive Order N-79-20 states: "clean renewable fuels play a role as California transitions to a decarbonized transportation sector" and "to support the transition away from fossil fuels consistent with the goals established in this Order and California's goal to achieve carbon neutrality by no later than 2045, the California Environmental Protection Agency (CalEPA) and the California Natural Resources Agency, in consultation with other state, local and federal agencies, shall expedite regulatory processes to repurpose and transition upstream and downstream oil production facilities..." The Governor's Order also directs CARB to "develop and propose strategies to continue the state's current efforts to reduce the carbon intensity of fuels beyond 2030 with consideration of the full life cycle of carbon. Additionally, the California Air Resources Board's November 19, 2020, "California's Greenhouse Gas Goals and Deep Decarbonization" presentation anticipates that biofuels will comprise 19 percent of the transportation 'fuel' sector by 2045."

2. Identify possible ways to minimize the significant effects and consider reasonable alternatives that could avoid or reduce one or more of the significant environmental effects that may be identified with respect to the Project;
3. Obligate Contra Costa County to impose measures identified in the EIR to avoid or mitigate potentially significant effects, whenever it is feasible to do so;
4. Grant Contra Costa County the right to approve the Project, despite identification of potential significant effects on the environment that cannot be mitigated due to economic, social, or other conditions; and
5. Provide meaningful public disclosure, in a timely and cost-effective manner, of the potential environmental effects that Contra Costa County's considers to be significant.

CEQA Guidelines Section 15382 defines a significant effect to the environment as

> *A substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance. An economic or social change by itself shall not be considered a significant effect on the environment. A social or economic change related to a physical change may be considered in determining whether the physical change is significant.*

1.3 CEQA Process

The CEQA process includes the following steps.

1. **Notice of Preparation (NOP):** After deciding that an EIR is required, the lead agency must file an NOP soliciting input on the EIR scope to the State Clearinghouse, other concerned agencies, and parties previously requesting notice in writing (CEQA Guidelines Section 15082; Public Resources Code Section 21092.2). The NOP was released on December 28, 2020, for a 30-day public scoping period.
2. **Draft EIR:** The Draft EIR must contain (a) table of contents or index; (b) summary; (c) project description; (d) environmental setting; (e) discussion of significant impacts (direct, indirect, cumulative, growth-inducing and unavoidable impacts); (f) a discussion of alternatives; (g) mitigation measures; and (h) discussion of irreversible changes.
3. **Notice of Completion:** Upon completion of a Draft EIR, Contra Costa County must file a Notice of Completion with the State Clearinghouse and prepare a Public Notice of Availability of a Draft EIR. Contra Costa County must place the Notice in the County Clerk's office for 30 days (Public Resources Code Section 21092) and send a copy of the Notice to anyone requesting it (CEQA Guidelines Section 15087).
4. **Final EIR:** Following the close of the Draft EIR review period, a Final EIR is prepared. The Final EIR must include (a) the Draft EIR; (b) copies of comments received during public review; (c) a list of persons and entities commenting; and (d) Contra Costa County's responses to comments
5. **Final EIR Certification:** Prior to making a decision on a proposed project, Contra Costa County must certify that (a) the Final EIR has been completed in compliance with CEQA; (b) the Final EIR was presented to the decision-making body; and (c) the decision-making body reviewed and considered the information in the Final EIR prior to approving the project (CEQA Guidelines Section 15090).
6. **Lead Agency Project Decision:** Upon certification of an EIR, Contra Costa County makes a decision on the Project analyzed in the EIR. A lead agency may (a) disapprove the Project because of its significant environmental effects; (b) require changes to the Project to reduce or

avoid significant environmental effects; or (c) approve the Project despite its significant environmental effects, if the proper findings and statement of overriding considerations are adopted (CEQA Guidelines Sections 15042 and 15043).

7. **Findings/Statement of Overriding Considerations:** For each significant impact of the project identified in the EIR, Contra Costa County, based on substantial evidence, that either (a) the Project has been changed to avoid or substantially reduce the magnitude of the impact; (b) changes to the Project are within another agency's jurisdiction and such changes have or should be adopted; or (c) specific economic, social, or other considerations make the mitigation measures or Project alternatives infeasible (CEQA Guidelines Section 15091). If Contra Costa County approves a project with unavoidable significant environmental effects, it must prepare a written Statement of Overriding Considerations that sets forth the specific social, economic, or other reasons supporting the decision and explaining why the Project's benefits outweigh the significant environmental effects.
8. **Mitigation Monitoring/Reporting Program:** When significant effects identified in the EIR, a reporting or monitoring program for mitigation measures that were adopted or made conditions of project approval to mitigate significant effects must be adopted.

1.3.1 Notice of Preparation

To initiate the public scoping for this EIR, Contra Costa County prepared an NOP in compliance with CEQA Guidelines Section 15082. The NOP for the EIR was sent to all federal, state, responsible, and trustee agencies involved in approving the Project, as well as relevant local agencies and special districts with jurisdiction in the Project area. The distribution list also included organizations, members of the public, and local, regional, and state agencies who have expressed interest in participating in the CEQA process. The NOP was also made available at local libraries and was published in local newspapers and legal advertisements. Refer to Appendix A, *Notice of Preparation and Public Comments*, for additional information.

1.3.2 Scoping

Scoping is the process of early consultation with the affected agencies and public prior to completion of a Draft EIR. The comments provided by the public and agencies during the scoping process helped Contra Costa County identify pertinent issues, methods of analyses, and level of detail that should be addressed in the EIR. The scoping comments also assisted Contra Costa County in developing a reasonable range of feasible alternatives to be evaluated in the EIR. The scoping comments augmented the information developed by the Project applicant and Contra Costa County, which includes specialists in each of the environmental subject areas covered in the EIR. This combined input results in an EIR that is both comprehensive and responsive to issues raised by the public and regulatory agencies and that satisfies all CEQA requirements.

Scoping is not conducted to resolve differences concerning the merits of a project or to anticipate the ultimate decision on a proposal. Rather, the purpose of scoping is to help ensure that a comprehensive EIR is prepared, providing an informative basis for the decision-making process.

Contra Costa County held one scoping meeting on January 20, 2021. During the scoping meeting, 14 participants commented on the proposed Project. Twenty-six written letters were received during the public comment period. County staff reviewed all of the scoping comments and prepared a summary of each comment to provide an overview of the range of comments provided and facilitate consideration of the comments by analysts during preparation of the EIR. Commenting parties, summaries of the comments received, and the County's responses to those comments are provided in Appendix A, *Notice of Preparation and Public Comments*.

1.3.3 Areas of Known Controversy

The following key issues were raised during the public scoping process:

- Increased hazards from marine, rail, and truck imports/exports;
- Renewable feedstock identification, sources, and availability;
- Air quality and GHG impacts and the effect on the Rodeo Refinery's carbon footprint;
- Continued use of crude oil and hydrogen throughput;
- Appropriate baseline for analysis; and
- Operational effects of the Project on the Santa Maria Facility, Franklin Canyon Carbon Plant, and pipelines.

1.3.4 Scope of Analysis

The scope of analysis of this EIR is based on the public and agency comments received during the scoping process. Potentially significant impacts were identified in regard to the following topics, which are examined in detail in this EIR:

- Aesthetics
- Air Quality
- Biological Resources – Terrestrial and Marine
- Cultural Resources
- Energy Conservation
- Geology and Soils
- GHG Emissions
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Noise and Vibration
- Transportation and Traffic
- Tribal Cultural Resources
- Wildfire

Initial analysis determined that several environmental resource topics would not be significantly or adversely affected by the proposed Project. The following resource areas would result in a *No Impact* determination under CEQA and are eliminated from more detailed analysis as discussed in Section 4.1, *Resources Areas Eliminated from Further Analysis*:

- Agriculture and Forest Resources
- Mineral Resources
- Population and Housing
- Public Services

- Recreation
- Utilities and Service Systems

1.3.5 Other Issues of Concern

1.3.5.1 Environmental Justice

California state law recommends environmental justice analysis under certain conditions, but does not require it; therefore, analysis under CEQA generally does not include specific environmental justice analysis. However, when preparing an EIR, there is an opportunity to determine whether any environmental justice community exists (or whether the project itself is within an environmental justice community) and provide that information within relevant EIR sections. Adding selected environmental justice metrics can provide additional insights into the characteristics of a project area.

Because air quality is an environmental justice area of concern, and because recent case law has emphasized the need to explain the connection between poor air quality and health impacts, an environmental justice analysis is included in Section 4.17, *Environmental Justice*.

1.3.5.2 Sea Level Rise

The Intergovernmental Panel on Climate Change (IPCC) has determined emissions of GHGs in excess of natural ambient concentrations are responsible for intensifying the GHG effect and leading to a trend of unnatural global warming. Statewide and local initiatives to reduce the state's contribution to GHG emissions have raised awareness that although 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 adverse environmental, social, and economic effects in the long term.

As stated in the *Contra Costa County Sea Level Rise Vulnerability Report* (Contra Costa County 2016), industrial sites face a variety of vulnerabilities to sea level rise, both directly to their facilities as well as offsite issues that can impact their operations. Even though sea-level rise is an impact of the environment on the Project (i.e., reverse CEQA), and court decisions indicate that an EIR need not address reverse CEQA issues, Contra Costa County has included a sea-level rise analysis in this EIR. The analysis is provided in Section 4.8, *Greenhouse Gas Emissions*.

1.4 Approach to Environmental Analysis

1.4.1 Level of Analysis

Under CEQA, a "project" subject to environmental review must be the "whole of an action" (CEQA Guidelines Section 15378(a)). This CEQA rule of analysis serves to ensure that a large project is not chopped up into many smaller ones, resulting in piecemeal or segmenting of environmental review and masking the full scope of project impacts. Courts have determined that an EIR must include analysis of the environmental effects of a future action if:

1. it is a reasonably foreseeable consequence of the initial project; and
2. the future action will be significant in that it will likely change the scope or nature of the initial project or its environmental effects.

This standard involves determining whether the EIR has left out of the environmental analysis a "crucial element" or "integral part" of the project, without which the project cannot go forward (National Parks & Conservation Association v. County of Riverside [1996] 42 Cal. App. 4th 1505, 1519).

1.4.1.1 Project Level Approach

A project-level EIR is described in Section 15161 of the CEQA Guidelines as one that examines the environmental impacts of a specific development project. A project-level EIR must examine all phases of the project, including construction, demolition, and operation and maintenance. Contra Costa County has determined that a project-level EIR fulfills the requirements of CEQA and is the appropriate level evaluation to address the potential environmental impacts of the proposed actions at the Rodeo Site and Carbon Plant Site, collectively called the Rodeo Refinery, the Santa Maria Site (as explained further below), and at the Pipeline Sites. Direct and indirect impacts of the Project are addressed in this EIR.

1.4.1.2 Santa Maria Site Approach

Demolition at the Santa Maria Site would be a direct consequence of the proposed Project. Therefore potential impacts of the demolition at the Santa Maria Site are addressed in this EIR. Demolition of the Santa Maria Site will undergo CEQA review by San Luis Obispo County because it has the primary discretionary authority to determine whether or how to approve demolition and issue required county permits. The analysis is intended to provide both San Luis Obispo County and Contra Costa County, other governmental agencies, and the public with information necessary to understand the type of environmental impacts that could occur.

In addition, the specific types and sources of renewable feedstock to be used by the Project cannot be determined at this time (refer to Chapter 3, *Project Description*, for detailed discussion). Therefore, the EIR addresses categories of renewable feedstocks that could be used by the Project, but not the sources.

While the Santa Maria Refinery demolition activities are included in the EIR, future use and required level of remediation of the Santa Maria Site is unknown, and therefore not addressed in this EIR. Any potential future development of the Santa Maria Site, and the associated level of required remediation, is speculative at this time, and would be a separate project and evaluated in a separate CEQA process by San Luis Obispo County. The EIR acknowledges this uncertainty and incorporates these realities into the methodology to evaluate the environmental effects of demolition of the Santa Maria Refinery.

1.5 Organization of the EIR

This EIR is organized into the following chapters:

- **Executive Summary:** Provides an overview of the Proposed Project and the alternatives evaluated in the EIR, and a summary of the environmental impacts and mitigation measures.
- **Chapter 1, Introduction**: Provides an overview of the EIR and CEQA process, identifies agency responsibilities, and identifies areas of controversy.
- **Chapter 2, Summary of Environmental Impacts:** Provides a summary of impacts and mitigation measures identified in Chapter 4.
- **Chapter 3, Project Description:** Provides the description of the proposed Project and background information.
- **Chapter 4, Environmental Setting, Impacts, and Mitigation Measures:** Contains descriptions of the environmental and regulatory setting for each resource topic and provides an assessment of the proposed Project's environmental impacts. If required, mitigation measures are identified.
- **Chapter 5, Alternatives Analysis:** Provides a description of the process used by the Contra Costa County to identify and select alternatives to be considered, describes each alternative, provides the analysis of alternatives, assesses the consistency of each alternative with the proposed Project objectives, and identifies the Environmentally Superior Alternative.

- **Chapter 6, CEQA Statutory Sections:** Provides a discussion of other CEQA considerations related to the proposed Project, including cumulative impacts, impacts found not to be significant, significant irreversible environmental changes, and growth-inducing impacts.
- Chapter 7, Report Preparation.
- Chapter 8, References.
- Appendices.

1.6 Public Review of the Draft EIR

Consistent with Section 15205 of the CEQA Guidelines, the Draft EIR for the Project is subject to a public review period. Section 21091(e) of the PRC specifies if an EIR is submitted to the State Clearinghouse for review, the review period shall be a minimum of 45-days. This Draft EIR is being released for a 60-day public review period.

During the 60-day review period the Draft EIR is available at the following locations:

- Contra Costa County Department of Conservation and Development located at 30 Muir Road Martinez, between 8:00 a.m. and 5:00 p.m., Monday through Friday.
- County website: https://www.contracosta.ca.gov/3383/Conservation-Development
- Pleasant Hill Library, 100 Gregory Ln, Pleasant Hill, CA
- Rodeo Library, 220 Pacific Avenue, Rodeo, CA
- San Pablo Library, 13751 San Pablo Avenue, San Pablo, CA
- Crockett Library, 991 Loring Avenue, Crockett, CA

1.6.1 How to Submit Comments on the Draft EIR

To comment on the Draft EIR, please send comments to the Contra Costa County of Department of Conservation and Development, Community Development Division before the end of the comment period specified in the Notice of Availability:

- Contra Costa County
  Department of Conservation & Development Community Development Division
  30 Muir Road, Martinez, California 94553
  Attention: Gary Kupp, Senior Planner, or
  Email: gary.kupp@dcd.cccounty.us

All comments received on the Draft EIR during the public review period will be addressed in the Final EIR. The Final EIR will include all comments received and the County's responses, as well as any changes to the text, maps, or other graphics of the EIR. As Lead Agency, Contra Costa County will then consider certification of the EIR and, subsequently, consider whether to approve the Project as proposed.

1.7 Intended Uses of this EIR

Contra Costa County intends to rely on this EIR for consideration of denial or approval of the LUP for the proposed Project. Also required is discretionary or ministerial review and approval by a number of other public and quasi-public agencies with jurisdiction over specific aspects of the Project. Other agencies may rely on this EIR when considering approvals for the proposed Project. Table 1-1 lists the permits and approvals that may be necessary.

Table 1-1. Permits and Approvals

Permitting Agency	Required Approvals or Permits
San Francisco Bay Regional Water Quality Control Board	Stormwater, Groundwater and Discharge Permitting
Bay Area Air Quality Management District	Construction and Operating Permit
California State Lands Commission	Modification to Lease Marine Terminal and the Santa Maria Refinery Outfall Line
San Luis Obispo County Department of Planning and Building	Demolition and Grading Permits
Central Coast Regional Water Quality Control Board	Stormwater and Discharge Permitting for Demolition
San Luis Obispo County Air Pollution Control District	Air Emissions Source Permits for Demolition
Santa Barbara Air Pollution Control District	Air Emissions Source Permits for Demolition
San Joaquin Valley Air Pollution Control District	Air Emissions Source Permits for Demolition
Shasta County Air Quality Management District	Air Emissions Source Permits for Demolition

1.8 References

Contra Costa County. 2016. Adapting to Rising Tides: Contra Costa County Sea Level Rise Vulnerability Report. Final Report. February 2016. Available at: http://www.adaptingtorisingtides.org/project/contra-costa-county-adapting-to-rising-tides-project/contra-costa_art_final_report_web_2016-03-08/.

2 Summary of Environmental Impacts

Under CEQA, a significant impact on the environment is defined as a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the proposed Project.

The proposed Project has the potential to generate significant environmental impacts. Table 2-1 summarizes the conclusions of the environmental analysis contained in this Draft EIR by providing a table of impacts and mitigation measures identified. It is organized to correspond with the environmental issues discussed in Sections 4.2 through 4.17 addressing each Project phase including construction, demolition, and operation and maintenance.

For most adverse and significant environmental impacts of the Project, mitigation measures are proposed with the goal of reducing impacts to a level that is less than significant. The adoption and implementation of the recommended mitigation measures would reduce these impacts to a less-than-significant level. However, the Project would result in significant and adverse impacts that even with recommended mitigation measures, the impacts would remain significant and adverse. These significant and unavoidable impacts relate to water quality, hazardous materials, and marine biological resources that would occur as a result of increased marine vessel traffic, and potentially significant air quality impacts related to increased nitrogen oxide emissions from rail operations that would exceed air quality thresholds outside the San Francisco Bay Area Air Basin.

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Table 2-1. Summary of Impacts and Mitigation Measures for the Rodeo Renewed Project

Environmental Impacts	Construction and Demolition				Transitional	Operation and Maintenance			
	Rodeo Site	Carbon Plant Site	Santa Maria Site	Pipeline Sites	Rodeo Refinery	Rodeo Site	Carbon Plant Site	Santa Maria Site	Pipeline Sites
4.2 AESTHETICS									
IMPACT 4.2-1 Would the project have substantially adverse effect on a scenic vista?	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation n/a:	NI Mitigation: n/a	LTS Mitigation: None	NI Mitigation: n/a	LTS Mitigation: None	NI Mitigation: n/a
4.3 AIR QUALITY									
IMPACT 4.3-1 Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality?	LTSM Mitigation Measure: AQ-1	LTSM Mitigation Measure: AQ-1	LTS Mitigation: None	LTS Mitigation: None	LTSM Mitigation Measure: AQ-1	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
IMPACT 4.3-2 Would the project result in operational emissions of criteria pollutants?	LTSM Mitigation Measure: AQ-2	LTSM Mitigation Measure: AQ-2	LTS Mitigation: None	LTS Mitigation: None	LTSM Mitigation Measure: AQ-2	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
IMPACT 4.3-3 Would the project expose sensitive receptors to substantial pollutant concentrations?	LTS Mitigation: None	LTS Mitigation: None	LTS Mitigation: None	LTS Mitigation: None	LTS Mitigation: None	SU – Rail Transport Outside SFBAAB Mitigation: n/a	LTS Mitigation: one	LTS Mitigation: None	LTS Mitigation: None
IMPACT 4.3-4 Would the Project expose sensitive receptors to substantial pollutant concentrations?	LTS Mitigation: None	NI Mitigation: n/a	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: na
IMPACT 4.3-5 Would the Project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	LTS Mitigation: None	NI Mitigation: n/a	LTS Mitigation: None	LTS Mitigation: None	NI Mitigation: n/a	LTSM Mitigation Measure: AQ-4	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
4.4 BIOLOGICAL RESOURCES									
IMPACT 4.4-1 Would the Proposed Project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or US Fish and Wildlife Service? • Effects of Vessel Collisions (Ship Strikes)	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	LTSM Mitigation Measures: BIO-1a, BIO-1b	LTSM Mitigation Measures: BIO-1a, BIO-1b	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
IMPACT 4.4-2 Would the Proposed Project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or US Fish and Wildlife Service? • Effects of Vessel Noise	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	LTS Mitigation: None	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
IMPACT 4.4-3 Would the Proposed Project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or US Fish and Wildlife Service? • Effects of Sediment Resuspension and Deposition	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	LTS Mitigation: None	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
IMPACT 4.4-4 Would the Proposed Project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or US Fish and Wildlife Service? • Effects of Vessel Cargo Loading/Offloading Accidental Oil Spills	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	SU Mitigation Measure: BIO-2, BIO-3	SU Mitigation Measure: BIO-2, BIO-3	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
IMPACT 4.4-5 Would the Proposed Project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or US Fish and Wildlife Service. • Effects of Introductions of Nonindigenous Invasive Species	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	SU Mitigation Measure: BIO-4a, BIO-4b	SU Mitigation Measure: BIO-4a, BIO-4b	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a

NI = No impact — LTS = Less than significant impact — LTSM = Less than significant impact with mitigation — SU = Significant and unavoidable impact — n/a = not applicable

Environmental Impacts	Construction and Demolition				Transitional	Operation and Maintenance			
	Rodeo Site	Carbon Plant Site	Santa Maria Site	Pipeline Sites	Rodeo Refinery	Rodeo Site	Carbon Plant Site	Santa Maria Site	Pipeline Sites
IMPACT 4.4-6 Would the Project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	LTS Mitigation: None	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
IMPACT 4.4-7 Would the Project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means? • Effects of Vessel or Cargo Offloading Accidental Oil Spills • Effects of Introductions of Non-Indigenous Invasive Species	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	SU Mitigation Measure: BIO-5	SU Mitigation Measure: BIO-5	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
IMPACT 4.4-8 Would the Project Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites? • Effects of Vessel Collisions (Ship Strikes)	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	LTSM Mitigation Measure: BIO-1a, BIO-1b	LTSM Mitigation Measure: BIO-1a, BIO-1b	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
• Effects of Vessel Noise • Effects of Vessel Sediment Resuspension and Deposition	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	LTS Mitigation: None	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
IMPACT 4.4-9 Would the Project Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites? • Effects of Vessel or Cargo Offloading Accidental Oil Spills	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	SU Mitigation Measure: BIO-6	SU Mitigation Measure: BIO-6	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
IMPACT 4.4-10 Would the Project Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites? • Effects of Introductions of Non-Indigenous Invasive Species	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	SU Mitigation Measure: BIO-7	SU Mitigation Measure: BIO-7	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
IMPACT 4.4-11 Would the Project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional or state habitat conservation plan?	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	LTSM Mitigation Measure: BIO-8	LTSM Mitigation Measure: BIO-8	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
4.5 CULTURAL RESOURCES									
IMPACT 4.5-1 Would the project cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5?	LTS Mitigation: None	NI Mitigation: n/a	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
IMPACT 4.5-2 Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5?	LTSM Mitigation Measure CUL-1	NI Mitigation: n/a	LTSM Mitigation Measure: CUL-1	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
IMPACT 4.5-3 Would the project disturb any human remains, including those interred outside of formal cemeteries?	LTSM Mitigation Measure: CUL-2	NI Mitigation: n/a	LTSM Mitigation Measure: CUL-2	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
4.6 ENERGY CONSERVATION									
IMPACT 4.6-1 Would the Project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	LTS Mitigation: None	LTS Mitigation: None	NI Mitigation: n/a	LTS Mitigation: None	LTS Mitigation: None
IMPACT 4.6-2 Would the Project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?.	LTS Mitigation: None	NI Mitigation: n/a	LTS Mitigation: None	LTS Mitigation: None	NI Mitigation: n/a	LTS Mitigation: None	NI Mitigation: n/a	LTS Mitigation: None	LTS Mitigation: None
4.7 GEOLOGY / SOILS									
IMPACT 4.7-1 Would the proposed project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving: ii. Strong seismic ground shaking.	LTSM Mitigation Measure: GEO-1	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a

NI = No impact — LTS = Less than significant impact — LTSM = Less than significant impact with mitigation — SU = Significant and unavoidable impact — n/a = not applicable

Environmental Impacts	Construction and Demolition				Transitional	Operation and Maintenance			
	Rodeo Site	Carbon Plant Site	Santa Maria Site	Pipeline Sites	Rodeo Refinery	Rodeo Site	Carbon Plant Site	Santa Maria Site	Pipeline Sites
IMPACT 4.7-2 Would the project result in substantial soil erosion or the loss of topsoil?	LTS Mitigation: None	NI Mitigation: n/a	LTS Mitigation: None	NI Mitigation: n/a	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
IMPACT 4.7-3 Would the proposed project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving: iii. Seismic-related ground failure, including liquefaction Would the proposed project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in onsite or offsite landslide, lateral spreading, subsidence, liquefaction or collapse.	LTS Mitigation: None	LTS Mitigation: None	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
IMPACT 4.7-4 Would the proposed project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (International Conference of Building Officials 1994), creating substantial risks to life or property.	LTS Mitigation: None	NI Mitigation: n/a	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
4.8 GREENHOUSE GAS EMISSIONS									
IMPACT 4.8-1 Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	LTS Mitigation: None	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
IMPACT 4.8-2 Project operations would decrease emissions of GHGs that could contribute to global climate change.	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
IMPACT 4.8-3 Would the Project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	LTS Mitigation: None	LTS Mitigation: None	LTS Mitigation: None	LTS Mitigation: None	LTS Mitigation: None	LTS Mitigation: None	LTS Mitigation: None	LTS Mitigation: None	LTS Mitigation: None
4.9 HAZARDS / HAZARDOUS MATERIALS									
IMPACT 4.9-1 Would the Project create a significant hazard to the public or the environment through the routine transport, use or disposal of hazardous materials?	LTS Mitigation: None	LTS Mitigation: None	LTS Mitigation: None	LTS Mitigation: None	LTS Mitigation: None	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
IMPACT 4.9-2 Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	LTS Mitigation: none	NI Mitigation: n/a	LTS Mitigation: none	LTS Mitigation: None	SU Marine Vessel Spill Mitigation Measures: HAZ -1, HAZ-2	SU Marine Vessel Spill Mitigation Measures: HAZ -1, HAZ-2	LTS Mitigation: None	LTS Mitigation: None	LTS Mitigation: None
IMPACT 4.9-3 Would the Project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5, and as a result, would it create a significant hazard to the public or the environment?	LTS Mitigation: None	NI Mitigation: n/a	LTS Mitigation: None	NI Mitigation: n/a	LTS Mitigation: None	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
IMPACT 4.9-4 Would the Project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	LTS Mitigation: None	NI Mitigation: n/a	LTS Mitigation: None	NI Mitigation: n/a	LTS Mitigation: None	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
IMPACT 4.9-5 Would the Project expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildfire?	LTS Mitigation: None	NI Mitigation: n/a	LTS Mitigation: None	NI Mitigation: n/a	LTS Mitigation: None	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
4.10 HYDROLOGY / WATER QUALITY									
IMPACT 4.10-1 Would the Project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	LTS Mitigation: None	NI Mitigation: n/a	LTS Mitigation: None	NI Mitigation: n/a	SU Marine Vessel Spill Mitigation Measures: HAZ -1, HAZ-2	SU Marine Vessel Spill Mitigation Measures: HAZ -1, HAZ-2	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
IMPACT 4.10-2 Would the Project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	LTS Mitigation: None	NI Mitigation: n/a	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a

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Environmental Impacts	Construction and Demolition				Transitional	Operation and Maintenance			
	Rodeo Site	Carbon Plant Site	Santa Maria Site	Pipeline Sites	Rodeo Refinery	Rodeo Site	Carbon Plant Site	Santa Maria Site	Pipeline Sites
4.11 LAND USE / PLANNING									
IMPACT 4.11-1 Would the Proposed Project conflict with any applicable land use plan, policy, or the regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	LTS Mitigation: None	NI Mitigation: n/a	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	LTS Mitigation: None	NI Mitigation: n/a	LTS Mitigation: None	NI Mitigation: n/a
4.12 NOISE / VIBRATION									
IMPACT 4.12-1 Would the Project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	LTS Mitigation: None	LTS Mitigation: None	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
IMPACT 4.12-2 Operation of the Project would not result in exposure of persons to noise levels in excess of standards established by Contra Costa County.	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
IMPACT 4.12-3 Would the Project result in generation of excessive groundborne vibration or groundborne noise levels?	LTS Mitigation: None	NI Mitigation: n/a	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	LTS Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
4.13 TRANSPORTATION AND TRAFFIC									
IMPACT 4.13-1 Project construction/demolition would temporarily increase peak-hour traffic volumes, and could result in inadequate emergency vehicle access.	LTSM Mitigation Measure TRA -1	NI Mitigation: n/a	LTSM Mitigation Measure TRA -1	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
IMPACT 4.13-2 Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
IMPACT 4.13-3 Would the Project result in a Conflict with a plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, including transit, roadway, bicycle, and pedestrian facilities?	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
IMPACT 4.13-4 Cause substantial damage or wear of public roadways by increased movement of heavy vehicles?	LTS Mitigation: None	NI Mitigation: n/a	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
4.14 TRIBAL CULTURAL RESOURCES									
IMPACT 4.14-1 Would the Proposed Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in PRC Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is: a. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in PRC Section 5020.1(k)? b. 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 PRC Section 5024.1. In applying the criteria set forth in subdivision (c) of PRC Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?	LTSM Mitigation Measures TCR-1, TCR-2, TCR-3, TCR-4	NI Mitigation: n/a	LTSM Mitigation Measures TCR-1, TCR-2, TCR-3, TCR-4	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
4.15 WILDFIRE									
IMPACT 4.15-1 A project located in or near state responsibility areas or lands classified as very high fire hazard severity zones would cause adverse impacts related to wildfires if it would: a. Substantially impair an adopted emergency response plan or emergency evacuation plan.	LTS Mitigation: None	NI Mitigation: n/a	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a
IMPACT 4.15-2 A project located in or near state responsibility areas or lands classified as very high fire hazard severity zones would cause adverse impacts related to wildfires if it would: 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.	LTS Mitigation: None	NI Mitigation: n/a	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a	NI Mitigation: n/a

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Environmental Impacts	Construction and Demolition				Transitional	Operation and Maintenance			
	Rodeo Site	Carbon Plant Site	Santa Maria Site	Pipeline Sites	Rodeo Refinery	Rodeo Site	Carbon Plant Site	Santa Maria Site	Pipeline Sites
4.16 SOLID WASTE									
IMPACT 4.16-2 a. Would the project generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals? b. Would the project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	LTS Mitigation: None	NI Mitigation: n/a	LTS Mitigation: None	NI Mitigation: n/a	NI Mitigation: n/a	LTS Mitigation: None	NI Mitigation: n/a	LTS Mitigation: None	NI Mitigation: n/a

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Mitigation Measures

Mitigation Measure AQ-1: Implement BAAQMD Basic Control Measures

Construction contractors shall implement the following applicable BAAQMD basic control measures as best management practices (BMPs):

- All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
- All haul trucks transporting soil, sand, or other loose material offsite shall be covered.
- All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least 2 times per day, not less than 4 hours apart, on San Pablo Avenue, between the refinery and Interstate 80, and on the access roads between the Carbon Plant and Highway 4. The use of dry power sweeping is prohibited.
- All vehicle speeds on unpaved roads shall be limited to 15 miles per hour.
- All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
- Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 2 minutes as recommended by the BAAQMD, and not to exceed 5 minutes as required by the California airborne toxics control measure Title 13, Section 2485 of the California Code of Regulations (CCR). Clear signage shall be provided for construction workers at all access points.
- All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications.
- All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.
- Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.

Mitigation Measure AQ-2: Implement a NOx Mitigation Plan

Phillips 66 shall prepare a NOx Mitigation Plan (NM Plan) prior to the issuance of construction-related permits for site preparation. The purpose of the NM Plan is to document expected construction and transitional phase NOx emissions in detail; and, if necessary, to identify feasible and practicable contemporaneous measures to reduce aggregated construction and transition NOx emissions to below the BAAQMD's 54 pounds per day threshold of significance.

The NOx emissions estimate for the Project shall include consideration of readily available NOx construction and transition emission reduction measures, and/or other emission reduction actions, that shall be implemented during construction and transitional phase of the Project. The NM Plan shall describe the approximate amount of NOx emissions reductions that will be associated with each action and reduction measure on a best estimate basis.

The NM Plan shall be submitted to the Contra Costa County Department of Conservation and Development and the BAAQMD for review and approval, or conditional approval based on a determination of whether the NM Plan meets the conditions described below. The NM Plan shall

include those recommended measures listed below needed to reduce the Project's construction and transition NOx emissions to less than the BAAQMD's threshold of significance.

The NM Plan shall include a detailed description of the NOx emissions for all construction and transition activities based on BMPs and use data at the time of Project approval and current estimation protocols and methods. The plan shall, at a minimum, include the following elements:

1. **Project Construction and Transition NOx Emissions** – The Project's construction and transition NOx emission estimates presented in the NM Plan will be based on the emission factors for off-road and on-road mobile sources used during construction and transition, over and above baseline, along with the incorporation of vehicle fleet emission standards. Project construction and transition NOx emission estimates will be based upon the final Project design, Project-specific traffic generation estimates, equipment to be used onsite and during transition, and other emission factors appropriate for the Project prior to construction. The methodology will generally follow the approach used in this Draft EIR and in Appendix B.
2. **NOx Emission Reduction Measures** – The NM Plan shall include feasible and practicable NOx emission reduction measures that reduce or contemporaneously offset the Project's incremental NOx emissions below the threshold of significance. Planned emission reduction measures shall be verifiable and quantifiable during Project construction and transitional phase. The NM Plan shall be consistent with current applicable regulatory requirements. Measures shall be implemented as needed to achieve the significance threshold and considered in the following order: (a) onsite measures, and (b) offsite measures within the San Francisco Bay Area Air Basin. Feasible[5] onsite and offsite measures must be implemented before banked emissions offsets (emission reduction credits) are considered in the NM Plan.

   a. Recommended Onsite Emission Reduction Measures:

   i. Onsite equipment and vehicle idling and/or daily operating hour curtailments;

   ii. Construction "clean fleet" using Tier 4 construction equipment to the maximum extent practicable;

   iii. Reductions in Vessel and/or Rail Traffic;

   iv. Other onsite NOx reduction measures (e.g., add-on NOx emission controls); or

   v. Avoid the use of Suezmax vessels to the maximum extent practicable.

   Additional measures and technology to reduce NOx emissions may become available during the Project construction and operation period. Such measures may include new energy systems (such as battery storage) to replace natural gas use, new transportation systems (such as electric vehicles or equipment) to reduce fossil-fueled vehicles, or other technology (such as alternatively-fueled emergency generators or renewable backup energy supply) that is not currently available at the project-level. As provided in the NM Plan, should such measures and technology become available and be necessary to further reduce emissions to below significance thresholds, Phillips 66 shall demonstrate to the Contra Costa County Department of Conservation and Development and BAAQMD satisfaction that such measures are as, or more, effective as the existing measures described above.

[5] For the purposes of this mitigation measure, "feasible" shall mean as defined under CEQA "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors."

b. Recommended Offsite Emission Reduction Measures:

Phillips 66, with the oversight of the Contra Costa County Department of Conservation and Development and BAAQMD, shall reduce emissions of NOx by directly funding or implementing a NOx control project (program) within the San Francisco Bay Area Air Basin to achieve an annual reduction equivalent to the total estimated construction NOx emission reductions needed to lower the Project's NOx impact below the 54 pound per day significance threshold. The offsite measures will be based on the NOx reductions necessary after consideration of onsite measures.

To qualify under this mitigation measure, the NOx control project must result in emission reductions within the San Francisco Bay Area Air Basin that would not otherwise be achieved through compliance with existing regulatory requirements or other program participation. Phillips 66 shall notify Contra Costa County within six months of completion of the NOx control project for verification.

3. **Annual Verification Reports –** Phillips 66 shall prepare an Annual NM Verification Report in the first quarter of each year following construction or transitional phase activities, while Project construction activities at the site are ongoing. The reporting period will extend through the last year of construction. The purpose of the Report is to verify and document that the total Project construction and transitional phase NOx emissions for the previous year, based on appropriate emissions factors for that year and the effectiveness of emission reduction measures, were implemented.

   The Report shall also show whether additional onsite and offsite emission reduction measures, or additional NOx controls, would be needed to bring the Project below the threshold of significance for the current year. The Report shall be prepared by Phillips 66 and submitted to the Contra Costa County Department of Conservation and Development and the BAAQMD for review and verification. NOx offsets for the previous year, if required, shall be in place by the end of the subsequent reporting year. If Contra Costa County and the BAAQMD determine the report is reasonably accurate, they can approve the report; otherwise, Contra Costa County and/or the BAAQMD shall identify deficiencies and direct Phillips 66 to correct and re-submit the report for approval.

Mitigation Measure AQ-3: Mitigation Pre-empted by Federal Law

Mitigation Measure AQ-4: Implement Odor Management Plan

During the 2-year construction phase of the Project, an Odor Management Plan (OMP) shall be developed and implemented upon commencement of the renewable fuels processes, which will become an integrated part of daily operations at the Rodeo Refinery. The purpose of the OMP is to prevent any offsite odors and effect diligent identification and remediation of any potential odors generated by the Project. The OMP shall outline equipment that is in place and procedures that facility personnel shall use to address odor issues, facility wide. The OMP would include evaluation of the overall system performance, identifying any trends to provide an opportunity for improvements to the plan, and updating the odor management and control strategies, as necessary. This plan would be retained at the facility for County or other government agency inspection upon request.

Mitigation Measure BIO-1a: Update Pre-Arrival Documents

Phillips 66 shall update pre-arrival document materials and instructions sent to tank vessels agents/operators scheduled to arrive at the Marine Terminal with the following information and requests:

- Available outreach materials regarding the Blue Whales and Blue Skies incentive program;
- Whale strike outreach materials and collision reporting from NMFS;
- Request extra vigilance by ship crews upon entering the Traffic Separation Scheme shipping lanes approaching San Francisco Bay and departing San Francisco Bay to aid in detection and avoidance of ship strike collisions with whales;
- Request compliance to the maximum extent feasible (based on vessel safety) with the 10 knot voluntary speed reduction zone.
- Encourage participation in the Blue Whales and Blue Skies incentive program.

Mitigation Measure BIO-1b: California Department of Fish and Wildlife (CDFW) and Research Sturgeon Support

Phillips 66 will conduct and support the following activities to further the understanding of vessel strike vulnerability of sturgeon in San Francisco and San Pablo Bay.

Coordinate with CDFW and Research Sturgeon to ensure appropriate messaging on information flyers suitable for display at bait and tackle shops, boat rentals, fuel docks, fishing piers, ferry stations, dockside businesses, etc. to briefly introduce interesting facts about the sturgeon and research being conducted to learn more about its requirements and how the public's observations can inform strategies being developed to improve fisheries habitat within the estuary.

Mitigation Measure BIO-2: Implement Mitigation Measures HAZ-1 and HAZ-2.

Mitigation Measure BIO-3: Update and Review Facility Response Plan and Spill Prevention, Control, and Countermeasure Plan with OSPR

- The Facility Response Plan and Spill Prevention, Control, and Countermeasure (SPCC) Plan shall be updated to address the change in proposed feedstocks. Phillips 66 will consult with OSPR during update of the SPCC Plan, especially adequacy of booms at the Marine Terminal to quickly contain a spill of renewable feedstocks.
- In accordance with CCR Title 14, Chapter 3, Subchapter 3, several types of drills are required at specified intervals. Due to the potential for rapid dispersion of biofuels and oils under high energy conditions, Phillips 66 shall increase the frequency of the following drills to increase preparedness for quick response and site-specific deployment of equipment under different environmental conditions.
  - Semi-annual equipment deployment drills to test the deployment of facility-owned equipment, which shall include immediate containment strategies, are required on a semiannual pass/fail basis – if there is fail during first six months, then another drill is required. Phillips 66 will require that both semi-annual drills are conducted and schedule them under different tide conditions.
  - An OSRO field equipment deployment drill for on-water recovery is required at least once every three years. Phillips will increase the frequency of this drill to annual.
  - CDFW-OSPR shall be provided an opportunity to help design, attend and evaluate all equipment deployment drills and tabletop exercises. To ensure this, Phillips 66

shall schedule annual drills during the first quarter of each year to ensure a spot on OSPR's calendar.

Mitigation Measure BIO-4a: Prohibit Ballast Water Exchange

- Phillips 66 shall prohibit vessels from ballast water exchange at the Marine Terminal.

Mitigation Measure BIO-4b: Update Pre-Arrival Documentation

- Phillips 66 shall update pre-arrival document materials and instructions sent to tank vessels agents/operators to ensure they are advised prior to vessel departure of California's Marine Invasive Species Act and implementing regulations pertinent to (1) ballast water management, and (2) biofouling management. Additionally, Phillips 66 will request that vessel operations provide documentation of compliance with regulatory requirements (e.g., copy of ballast water management forms and logs of hull husbandry cleaning/inspections).

Mitigation Measure BIO-5: Implement Mitigation Measures BIO-4

Mitigation Measure BIO-6: Implement Mitigation Measures BIO-2 (HAZ-1 and HAZ-2) and BIO-3

Mitigation Measure BIO-7: Implement Mitigation Measures BIO-2 (HAZ-1 and HAZ-2) and BIO-3

Mitigation Measure BIO-8: Implement Mitigation Measures BIO-1 to BIO-4.

Mitigation Measure CUL-1: Inadvertent Discovery of Archaeological Resources

- Pursuant to CEQA Guidelines Section 15064.5(f), "provisions for historical or unique archaeological resources accidentally discovered during construction" shall be instituted. In the event that any cultural resources are discovered during ground-disturbing activities, all work within 100 feet of the find shall be halted and Phillips 66 shall consult with the County and a qualified archaeologist (as approved by the County) to assess the significance of the find pursuant to CEQA Guidelines Section 15064.5. If any find is determined to be significant, representatives of the County and the qualified archaeologist would meet to determine the appropriate course of action.
- Avoidance is always the preferred course of action for archaeological sites. In considering any suggestion proposed by the consulting archaeologist to reduce impacts to archaeological resources, the County would determine whether avoidance is feasible in light of factors such as the nature of the find, project design, costs, and other considerations. If avoidance is infeasible, other appropriate measures (e.g., data recovery, interpretation of finds in a public venue) would be instituted. Work may proceed on other parts of the Project site while mitigation for archaeological resources is carried out. All significant cultural materials recovered shall be, at the discretion of the consulting archaeologist, subject to scientific analysis, professional museum curation, and documented according to current professional standards.

Mitigation Measure CUL-2: Inadvertent Discovery of Human Remains

- The treatment of human remains and associated or unassociated funerary objects discovered during any ground-disturbing activity shall comply with applicable state law. Project personnel shall be alerted to the possibility of encountering human remains during Project implementation, and apprised of the proper procedures to follow in the event they are found. State law requires immediate notification of the County coroner, in the event of the coroner's determination that the human remains are Native American,

notification of the California Native American Heritage Commission (NAHC), which would appoint a Most Likely Descendent (MLD) (PRC Section 5097.98). The MLD would make all reasonable efforts to develop an agreement for the treatment, with appropriate dignity, of human remains and associated or unassociated funerary objects (CEQA Guidelines Section 15064.5[d]).

- The agreement shall take into consideration the appropriate excavation, removal, recordation, analysis, custodianship, curation, and final disposition of the human remains and associated or unassociated funerary objects. The PRC allows 48 hours to reach agreement on these matters. If the MLD and the other parties do not agree on the treatment and disposition of the remains and funerary objects, Phillips 66 shall follow PRC Section 5097.98(b), which states that "the landowner or his or her authorized representative shall reinter the human remains and items associated with Native American burials with appropriate dignity on the property in a location not subject to further subsurface disturbance."

Mitigation Measure GEO-1: Comply with Geotechnical Report

Phillips 66 shall comply with and implement all of the following measures designed to reduce potential substantial adverse effects resulting from strong seismic ground shaking:

- A California licensed geotechnical engineer or engineering geologist shall perform a comprehensive geotechnical investigation of all Project facilities based on adequate subsurface exploration, laboratory testing of selected samples, and engineering/geologic analysis of the data gathered. The information shall be compiled and presented as a geotechnical report that provides an evaluation of potential seismic and geologic hazards, including secondary seismic ground failures, and other geologic hazards, such as landslides, expansive and corrosive soils, and provides current California Building Code seismic design parameters, along with providing specific standards and criteria for site grading, drainage, berm, and foundation design.
- For construction requiring excavations, such as foundations, appropriate support and protection measures shall be implemented to maintain the stability of excavations and to protect construction worker safety. Where excavations are adjacent to existing structures, utilities, or other features that may be adversely affected by potential ground movements, bracing, underpinning, or other methods of support for the affected facilities shall be implemented.
- Recommendations in the approved geotechnical report shall be incorporated into the design and construction specifications and shall be implemented during build-out of the Project.
- The Project geotechnical engineer shall provide observation and testing services during grading and foundation-related work, and shall submit a grading completion report to the County prior to requesting the final inspection. This report shall provide full documentation of the geotechnical monitoring services provided during construction, including the testing results of the American Society for Testing and Materials. The Final Grading Report shall also certify compliance of the as-built Project with the recommendations in the approved geotechnical report.

Mitigation Measure HAZ-1: Implement Release, Monitoring and Avoidance Systems

The following actions shall be completed by Phillips 66 prior to Project operations, including the transitional phase, and shall include routine inspection, testing and maintenance of all equipment and systems conducted in accordance with manufacturers' requirements. Of note, the Marine Terminal has a remote release system that can be activated from a single control panel or at each quick-release mooring hook set. The central control system can be switched on in case of an emergency necessitating a single release of all mooring lines.

Remote Release Systems

- Provide and maintain mooring line quick release devices that shall be able to be activated within 60 seconds.
- These devices shall be capable of being engaged by electric/push button release mechanism and by integrated remotely-operated release system.
- Document procedures and training for systems use and communications between Marine Terminal and vessel operator(s).
- Routine inspection, testing and maintenance of all equipment and systems in accordance with manufacturers' recommendations and necessity are required to ensure safety and reliability.

This measure would allow a vessel to leave the Marine Terminal as quickly as possible in the event of an emergency (fire, explosion, accident, or tsunami that could lead to a spill). In the event of a fire, tsunami, explosion, or other emergency, quick release of the mooring lines within 60 seconds would allow the vessel to quickly leave the Marine Terminal, which could help prevent damage to the Marine Terminal and vessel and avoid and/or minimize spills. This may also help isolate an emergency situation, such as a fire or explosion, from spreading between the Marine Terminal and vessel, thereby reducing spill potential. The above would only be performed in a situation where transfer connections were already removed and immediate release would not further endanger terminal, vessel and personnel.

Tension Monitoring Systems

- Provide and maintain Tension Monitoring Systems to effectively monitor all mooring line and environmental loads, and avoid excessive tension or slack line conditions that could result in damage to the Marine Terminal structure and/or equipment and/or vessel mooring line failures.
- Line tensions and environmental data shall be integrated into systems that record and relay all critical data in real time to the control room, Marine Terminal operator(s) and vessel operator(s).
- System shall include, but not be limited to, quick release hooks only (with load cells), site-specific current meter(s), site-specific anemometer(s), and visual and audible alarms that can support effective preset limits and shall be able to record and store monitoring data.
- Document procedures and training for systems use and communications between Marine Terminal and vessel operator(s).

- Routine inspection, testing and maintenance of all equipment and systems in accordance with manufacturers' recommendations and necessity are required to ensure safety and reliability.
- Install alternate technology that provides an equivalent level of protection.

The Marine Terminal is located in a high-velocity current area and currently has only limited devices to monitor mooring line strain and integrated environmental conditions. Updated MOTEMS Terminal Operating Limits (TOLs), including breasting and mooring, provide mooring requirements and operability limits that account for the conditions at the terminal. The upgrade to devices with monitoring capabilities can warn operators of the development of dangerous mooring situations, allowing time to take corrective action and minimize the potential for the parting of mooring lines, which can quickly escalate to the breaking of hose connections, the breakaway of a vessel, and/or other unsafe mooring conditions that could ultimately lead to a petroleum product spill. Backed up by an alarm system, real-time data monitoring and control room information would provide the Terminal Person-In-Charge with immediate knowledge of whether safe operating limits of the moorings are being exceeded. Mooring adjustments can be then made to reduce the risk of damage and accidental conditions.

Allision Avoidance Systems

- Provide and maintain Allision Avoidance Systems (AASs) at the Marine Terminal to prevent damage to the pier/wharf and/or vessel during docking and berthing operations. Integrate AASs with Tension Monitoring Systems such that all data collected are available in the Control Room and to Marine Terminal operator(s) at all times and vessel operator(s) during berthing operations. The AASs shall also be able to record and store monitoring data.
- Document procedures and training for systems use and communications between Marine Terminal and vessel operator(s).
- Routine inspection, testing and maintenance of all equipment and systems in accordance with manufacturers' recommendations and necessity are required to ensure safety and reliability.

The Marine Terminal has a continuously manned marine interface operation monitoring all aspects of the marine interface. The Automatic Identification System is monitored through TerminalSmart and provides a record of vessel movements. The Marine Terminal has a compliant AAS which is not required for MOTEMS compliance so long as MOTEMS TOLs are followed.

Monitoring these factors would ensure that all vessels can safely berth at the Marine Terminal and comply with the minimum standards required in the MOTEMS. Excessive surge or sway of vessels (motion parallel or perpendicular to the wharf, respectively) and/or passing vessel forces may result in sudden shifts/redistribution of mooring forces through the mooring lines, which can quickly escalate to the failure of mooring lines, breaking of loading arm connections, the breakaway of a vessel, and/or other unsafe mooring conditions that could ultimately lead to a spill.

Mitigation Measure HAZ-2: USCG Ports and Waterways Safety Assessment (PAWSA) Workshops, Spill Response and Pilotage Requirements

- Phillips 66 shall participate in the USCG's PAWSA workshops for the San Francisco Bay Area (Bay Area) to support overall safety improvements to the existing Vessel Traffic Service in the Bay Area or approaches to the bay if such workshops are conducted by the USCG during the life of the lease.

- Spill Response to Vessel Spills. Phillips 66 shall respond to any spill near the Marine Terminal from a vessel traveling to or from the Marine Terminal or moored at the Marine Terminal as if it were its own, without assuming liability, until such time as the vessel's response organization can take over management of the response actions in a coordinated manner.
- For all tankers and barges, Phillips 66 shall require that pilotage is utilized while transiting the Bay Vessels 300 GRT or larger and will cooperate in meeting USCG/NOAA VSR program to keep speed limited to 10 knots in the Bay and lower upon approach to the Marine Terminal due to tug escort speed limitations.

Vessel owners/operators are responsible for spills from their tankers. Tanker and barge owners/operators are required by federal and state regulations to demonstrate that they have, or have under contract, sufficient response assets to respond to worst-case releases. Tankers and barges operating in United States and California waters must certify that they have the required capability under contract. All terminals are under contract with one or more OSRO to respond to spills with all the necessary equipment and manpower to meet the response requirements dictated by regulations. This mitigation would further reduce the risk of spills in the San Francisco Bay or near approaches to the bay by requiring participation in USCG Ports and Waterways Safety Assessment workshops for the Bay Area to improve transit issues and response capabilities in general, and to support overall safety improvements to the existing VTS in the future.

While vessel owners/operators are responsible for their spills, if a spill were to occur near the Marine Terminal, Phillips 66 and its contractors may be in a better position to provide immediate response to a spill using their own equipment and resources, rather than waiting for mobilization and arrival of the vessel's response organization. The Phillips 66 staff is fully trained to take immediate action in response to spills. Such action could result in a quicker response and more effective control and recovery of spilled product. This mitigation would also require Phillips 66 to respond to any spill from a vessel traveling in the San Francisco Bay to or from the Marine Terminal or moored at its wharf, without assuming liability, until the vessel's response organization can take over management of the response actions in a coordinated manner. This requirement would further limit the potential for impacts from spills in the San Francisco Bay from vessels calling at the Marine Terminal.

In addition, Phillips indicates that it is their policy to utilize pilots for all tankers and barges while within the bay, even if the tanker or barge is under the required size requirements, and to limit vessels speeds below the required maximum. This mitigation ensures that all tankers and barges utilize pilots and speed limits in order to reduce the probability of groundings, collisions or allisions.

Mitigation Measure TRA-1: Implement a Traffic Management Plan.

Prior to issuance of grading and building permits, Phillips 66 shall submit a Traffic Management Plan for review and approval by the Contra Costa County Public Works Department. At a minimum the following shall be included:

- The Traffic Management Plan shall be prepared in accordance with the most current California Manual on Uniform Traffic Control Devices, and will be subject to periodic review by the Contra Costa County Public Works Department throughout the life of all construction and demolition phases.
- Truck drivers shall be notified of and required to use the most direct route between the site and the freeway;
- All site ingress and egress shall occur only at the main driveways to the Project site;
- Construction vehicles shall be monitored and controlled by flaggers;

- If during periodic review the Contra Costa County Public Works Department, or the Department of Conservation and Development, determines the Traffic Management Plan requires modification, Phillips 66 shall revise the Traffic Management Plan to meet the specifications of Contra Costa County to address any identified issues. This may include such actions as traffic signal modifications, staggered work hours, or other measures deemed appropriate by the Public Works Department.
- If required, Phillips 66 shall obtain the appropriate permits from Caltrans for the movement of oversized or excessive load vehicles on state-administered highways

Mitigation Measure TCR-1: Awareness Training

- A consultant and construction worker tribal cultural resources awareness brochure and training program for all personnel involved in project implementation shall be developed by Phillips 66 in coordination with interested Native American Tribes (i.e. Wilton Rancheria). The brochure will be distributed and the training will be conducted in coordination with qualified cultural resources specialists and Native American Representatives and Monitors from culturally affiliated Native American Tribes before any stages of project implementation and construction activities begin on the Project site. The program will include relevant information regarding sensitive tribal cultural resources, including applicable regulations, protocols for avoidance, and consequences of violating state laws and regulations. The worker cultural resources awareness program will also describe appropriate avoidance and minimization measures for resources that have the potential to be located on the Project site and will outline what to do and whom to contact if any potential archaeological resources or artifacts are encountered. The program will also underscore the requirement for confidentiality and culturally-appropriate treatment of any find of significance to Native Americans and behaviors, consistent with Native American Tribal values.

Mitigation Measure TCR -2: Monitoring

To minimize the potential for destruction of or damage to existing or previously undiscovered burials, archaeological and tribal cultural resources and to identify any such resources at the earliest possible time during project-related earthmoving activities, Phillips 66 and its construction contractor(s) will implement the following measures:

- Paid Native American monitors from culturally affiliated Native American Tribes will be invited to monitor the vegetation grubbing, stripping, grading or other ground-disturbing activities in the project area to determine the presence or absence of any cultural resources. Native American representatives from cultural affiliated Native American Tribes act as a representative of their Tribal government and shall be consulted before any cultural studies or ground-disturbing activities begin.
- Native American representatives and Native American monitors have the authority to identify sites or objects of significance to Native Americans and to request that work be stopped, diverted or slowed if such sites or objects are identified within the direct impact area. Only a Native American representative can recommend appropriate treatment of such sites or objects.
- If buried cultural resources, such as chipped or ground stone, historic debris, building foundations, or bone, are discovered during ground-disturbing activities, work will stop in that area and within 100 feet of the find until an archaeologist who meets the Secretary of the Interior’s qualification standards can assess the significance of the find and, if necessary, develop appropriate treatment measures in consultation with the California Department of Transportation, the State Historic Preservation Office, and other appropriate

agencies. Appropriate treatment measures may include development of avoidance or protection methods, archaeological excavations to recover important information about the resource, research, or other actions determined during consultation.

- In accordance with the California Health and Safety Code, if human remains are uncovered during ground disturbing activities, the construction contractor or the County, or both, shall immediately halt potentially damaging excavation in the area of the burial and notify the County coroner and a qualified professional archaeologist to determine the nature of the remains. The coroner shall examine all discoveries of human remains within 48 hours of receiving notice of a discovery on private or state lands, in accordance with Section 7050(b) of the Health and Safety Code. If the coroner determines that the remains are those of a Native American, they shall contact the NAHC by phone within 24 hours of making that determination (Health and Safety Code Section 7050[c]). After the coroner's findings are presented, the County, the archaeologist, and the NAHC-designated MLD shall determine the ultimate treatment and disposition of the remains and take appropriate steps to ensure that additional human interments are not disturbed.

Mitigation Measure TCR -3: Inadvertent Discoveries

- Phillips 66 shall develop a standard operating procedure, or ensure any existing procedure, to include points of contact, timeline and schedule for the project so all possible damages can be avoided or alternatives and cumulative impacts properly accessed.
- If potential tribal cultural resources, archaeological resources, other cultural resources, articulated, or disarticulated human remains are discovered by Native American Representatives or Monitors from interested Native American Tribes, qualified cultural resources specialists or other Project personnel during construction activities, work will cease in the immediate vicinity of the find (based on the apparent distribution of cultural resources), whether or not a Native American Monitor from an interested Native American Tribe is present. A qualified cultural resources specialist and Native American Representatives and Monitors from culturally affiliated Native American Tribes will assess the significance of the find and make recommendations for further evaluation and treatment as necessary. These recommendations will be documented in the project record. For any recommendations made by interested Native American Tribes which are not implemented, a justification for why the recommendation was not followed will be provided in the project record.
- If adverse impacts to tribal cultural resources, unique archeology, or other cultural resources occurs, then consultation with Wilton Rancheria regarding mitigation contained in the Public Resources Code sections 21084.3(a) and (b) and CEQA Guidelines section 15370 should occur, in order to coordinate for compensation for the impact by replacing or providing substitute resources or environments.

Mitigation Measure TCR -4: Avoidance and Preservation

Avoidance and preservation in place is the preferred manner of mitigating impacts to tribal cultural resources and shall be accomplished by several means, including:

- Planning construction to avoid tribal cultural resources, archaeological sites and/ or other resources; incorporating sites within parks, green-space or other open space; covering archaeological sites; deeding a site to a permanent conservation easement; or other preservation and protection methods agreeable to consulting parties and regulatory authorities with jurisdiction over the activity. Recommendations for avoidance of cultural resources will be reviewed by the CEQA lead agency representative, interested Native American Tribes and the appropriate agencies, in light of factors such as costs, logistics,

feasibility, design, technology and social, cultural and environmental considerations, and the extent to which avoidance is consistent with project objectives. Avoidance and design alternatives may include realignment within the project area to avoid cultural resources, modification of the design to eliminate or reduce impacts to cultural resources or modification or realignment to avoid highly significant features within a cultural resource. Native American Representatives from interested Native American Tribes will be allowed to review and comment on these analyses and shall have the opportunity to meet with the CEQA lead agency representative and its representatives who have technical expertise to identify and recommend feasible avoidance and design alternatives, so that appropriate and feasible avoidance and design alternatives can be identified.

- If the resource can be avoided, the construction contractor(s), with paid Native American monitors from culturally affiliated Native American Tribes present, will install protective fencing outside the site boundary, including a buffer area, before construction restarts. The construction contractor(s) will maintain the protective fencing throughout construction to avoid the site during all remaining phases of construction. The area will be demarcated as an "Environmentally Sensitive Area." Native American representatives from interested Native American Tribes and the CEQA lead agency representative will also consult to develop measures for long term management of the resource and routine operation and maintenance within culturally sensitive areas that retain resource integrity, including tribal cultural integrity, and including archaeological material, Traditional Cultural Properties and cultural landscapes, in accordance with state and federal guidance including National Register Bulletin 30 (Guidelines for Evaluating and Documenting Rural Historic Landscapes), Bulletin 36 (Guidelines for Evaluating and Registering Archaeological Properties), and Bulletin 38 (Guidelines for Evaluating and Documenting Traditional Cultural Properties); National Park Service Preservation Brief 36 (Protecting Cultural Landscapes: Planning, Treatment and Management of Historic Landscapes) and using the Advisory Council on Historic Preservation's Native American Traditional Cultural Landscapes Action Plan for further guidance. Use of temporary and permanent forms of protective fencing will be determined in consultation with Native American representatives from interested Native American Tribes.

3 Project Description

This chapter presents a description of the proposed Project, including background and location, objectives, key features and components, construction and operational activities, and permits and approvals that are required to implement the Project. It also presents a description of the existing operations and processes at the Rodeo Refinery and summarizes the process changes that would be included in the Project.

3.1 Project Background

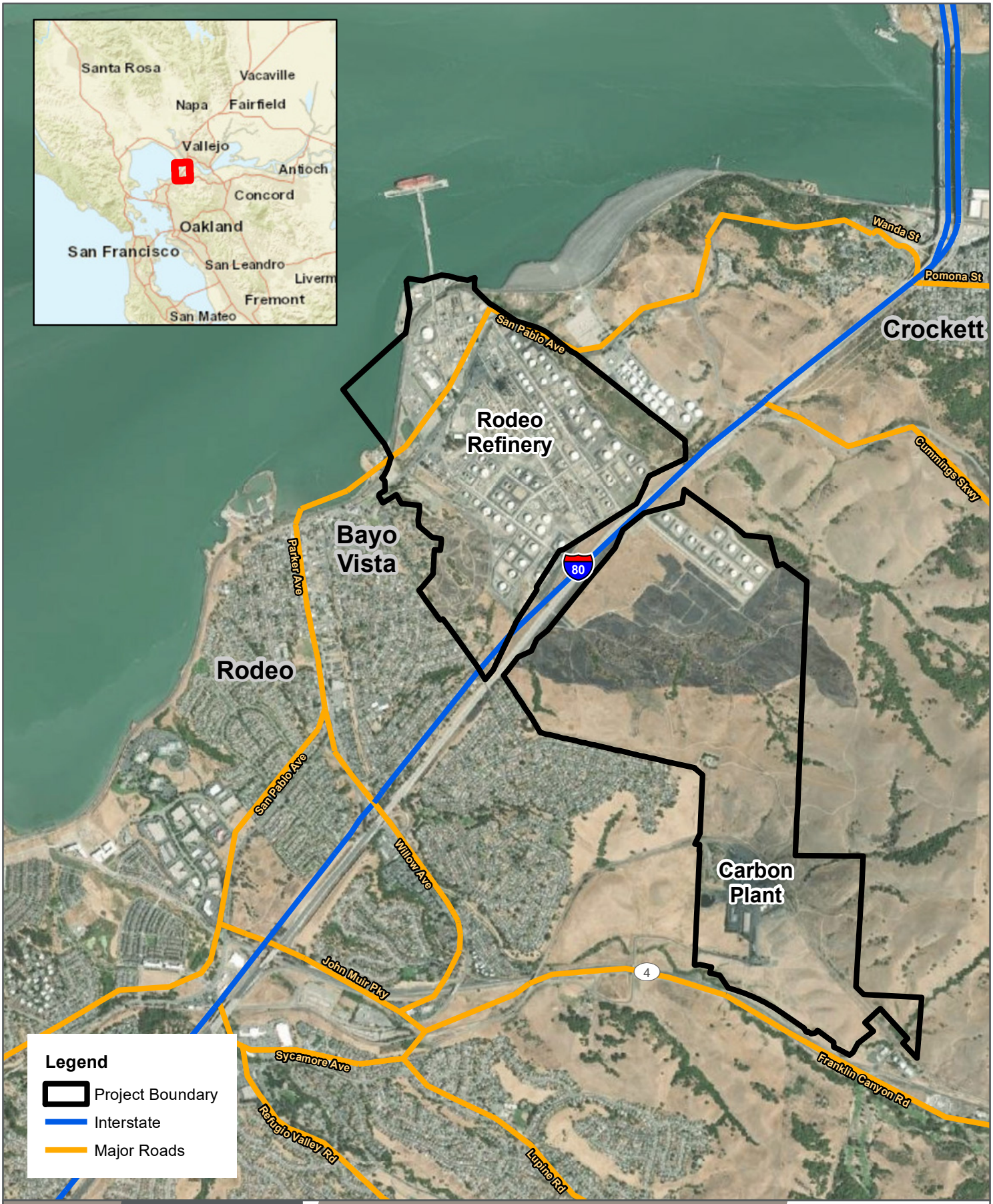
Refineries operating in California are subject to state, local, and federal air pollution control regulations and emission reduction programs designed to reduce GHG emissions. Under California Assembly Bill (AB) 32, the Global Warming Solutions Act of 2006, refineries are subject to regulations aimed at reducing California's global warming emissions and transitioning to a sustainable, low-carbon future (CARB 2021). The latest Update to the Climate Change Scoping Plan (CARB 2017) sets goals of a 40 percent GHG emission reduction below 1990 emission levels by 2030 and a substantial advancement toward the 2050 goal to reduce emissions by 80 percent below 1990 emission levels. To meet these goals, AB 32 directed the California Air Resources Board (CARB) to adopt measures aimed at achieving emissions reductions through regulations, monetary and non-monetary incentives, market-based mechanisms, and other actions. Key AB 32 regulations that affect refineries include the following (CARB 2021):

- Low-Carbon Fuel Standard (LCFS), which is intended to decrease the carbon intensity (CI) of California's transportation fuel pool and provide an increasing range of low-carbon and renewable alternatives, reducing petroleum dependency;
- Cap-and-Trade Regulation, which establishes a declining limit on major sources of GHG emissions throughout California with economic incentives to invest in cleaner, more efficient technologies;
- Mandatory Reporting of GHG Emissions Regulation, which requires fuel suppliers, among other major sources of emissions, to provide a summary of reported GHG emissions data; and
- Energy Efficiency and Co-Benefits Assessment of Large Industrial Facilities, which requires an energy efficiency assessment of California's large industrial facilities to determine the potential for GHG emission reductions and other pollution reduction co-benefits.

3.2 Project Location and Access

As shown in Figure 3-1, the Rodeo Refinery is bordered by San Pablo Bay on the north and west, open land to the east and southeast, the NuStar Energy tank farm on the northeast, the Bayo Vista residential area of Rodeo to the southwest, and the residential enclave of Tormey, located east and adjacent to the Nustar Energy tank farm. Originally constructed in 1896, at which time the land was essentially vacant and agricultural, the Rodeo Refinery occupied 22 acres. During the second half of the twentieth century, it was expanded considerably as capacity and new processes were added and as vacant buffer zone land was acquired.

The Rodeo Refinery comprises approximately 1,100 acres of land, but the Rodeo Site, where the main components of the Project would take place, is the 495-acre developed portion of the property northwest of Interstate 80 (I-80). The Rodeo Site is currently covered by a mixture of impervious surfaces associated with process equipment, parking areas, roads, and other pervious surfaces. The remaining portion of the Rodeo Refinery, southeast of I-80, consists of a tank farm, the Carbon Plant Site, and undeveloped land that serves as a buffer zone.



Imagery Source: Maxar 11/1/2019

Figure 3-1: Rodeo Refinery and Vicinity

Rodeo Renewed Project
Contra Costa County, CA

0 2,000 4,000 Feet

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Primary access to the Rodeo Refinery, used by refinery support trucks and workers, is provided by Cummings Skyway between I-80 and the Rodeo Site's north gate; secondary access is from San Pablo Avenue, which runs parallel to and a short distance inland from the waterfront and from which several roads and entry gates lead into various areas of the Rodeo Site. San Pablo Avenue is a four-lane arterial that connects numerous East Bay communities between Oakland, approximately 18 miles south of Rodeo, and the Carquinez Bridge in Crockett, approximately 2 miles northeast of Rodeo.

3.2.1 General Plan and Zoning

The Rodeo Refinery is located in an unincorporated area of Contra Costa County that is designated *Heavy Industry* in the Land Use Element of the Contra Costa County General Plan (Contra Costa County 2010) and is zoned for heavy industrial use in the Contra Costa County Zoning Ordinance.[6]

3.3 Surrounding Area Characteristics

The areas adjacent to the Rodeo Refinery are characterized by a mix of land uses including undeveloped land and industrial, commercial, office, and residential uses (Figure 3-1). Directly abutting the Rodeo Site on the north is San Pablo Bay and the Union Pacific/Amtrak railroad right-of-way. Abutting the eastern boundary is the NuStar Energy tank farm, and beyond that a small residential enclave of Tormey along Old County Road and undeveloped, hilly open space. I-80 runs through the Rodeo Refinery roughly from southwest to northeast and divides the refinery portion of the property (i.e., the Rodeo Site) from the undeveloped portion of the property, part of the tank farm, and the Carbon Plant Site. San Pablo Avenue runs through the Rodeo Site in roughly the same direction as I-80 but is approximately 0.75 mile to the northwest.

To the south and west of the Rodeo Refinery, beyond a buffer zone of vacant land, is the Community of Rodeo. The enclave of Tormey and the Bayo Vista residential neighborhood of Rodeo, with several schools, at least one daycare center, several churches, and a few commercial establishments, are the closest residential area to the Rodeo Refinery. Because of the buffer zone, no residential or commercial uses directly abut the Rodeo Site or the Rodeo Refinery as a whole. An apartment complex is located at the eastern edge of Bayo Vista. This complex comprises approximately 60 multi-unit buildings, the closest of which is approximately 400 feet from the Rodeo Site's border and is separated by the buffer zone space. All other residential uses are at least 0.25 mile (1,300 feet) from the Rodeo Refinery. No schools are within 0.5 mile (2,600 feet) of the Rodeo Refinery. The two closest schools are a Montessori academy on Parker Avenue (approximately 0.63 mile from the Rodeo Site) and the Rodeo Hills Elementary School on Rodeo Avenue (approximately 0.8 mile from the Rodeo Site). Most commercial uses in the vicinity are located in an area centered on San Pablo Avenue/Parker Avenue, approximately 0.5 mile southwest of the Rodeo Site.

3.3.1 Environmental Justice Communities

The analysis of environmental justice refers to the assessment of environmental impacts, primarily from the perspective of federal law, focused on the potential for projects to create adverse impacts that might be disproportionately borne by under-served or disadvantaged (minority and low-impact) communities.

The Office of Environmental Health Hazard Assessment's community health risk screening methodology, CalEnviroScreen, indicates that the Project is located within and adjacent to census tracts that have an overall population vulnerability to pollution ranking in the 80th to 90th percentile; this means that those tracts are in the upper 20 percent of overall impacted areas in the state of California (OEHHA 2021). The community of Rodeo is an *Impacted Community* that experiences exposure to TACs, including diesel

[6] Assessor Parcel Numbers for the Rodeo Refinery are 357-010-001,357-300-005, 357-320-002, 357-010-002, 357-210-009, 357-210-010, 357-300-300-001, 357-300-008, 357-310-001, 358-010-008, 358-020-004, and 358-030-034.

particulate matter, with sensitive populations affected by pulmonary and cardiovascular conditions. This high vulnerability ranking indicates a need to reduce overall emissions and exposures.

Contra Costa County will be developing a plan-level approach to reduce emissions and improve community health in the Project area. Concurrent with the Project and with assistance from the Bay Area Air Quality Management, Contra Costa County plans to develop a community risk-reduction plan as part of the *Stronger Communities Element* of the Envision Contra Costa 2040 General Plan (Contra Costa County 2021). For analysis of potential environmental justice impacts of the Project, refer to Section 4.17, *Environmental Justice*.

3.4 Project Sites

3.4.1 Terminology

The Project consists of activities at several sites owned and operated by Phillips 66 located throughout the state. These sites include the Rodeo Site (Figure 3-2), Carbon Plant Site in nearby Franklin Canyon (Figure 3-3), Santa Maria Site in San Luis Obispo County (Figure 3-4), and Pipeline Sites locations (Figure 3-5). The following terminology is used in this document:

- **Rodeo Refinery** is used to describe the approximately 1,100 acres composing the current Rodeo Refinery, including the Carbon Plant, located approximately 1.5 miles east of the Rodeo Site;
- **Rodeo Site** refers to the 495 developed acres within the Rodeo Refinery where the main Project activities would occur;
- **Carbon Plant Site** refers to the current location of the Carbon Plant in Franklin Canyon (within the 1,100-acre Rodeo Refinery);
- **Santa Maria Site** refers to the Santa Maria Refinery, including the applicant-owned buffer land, located near Nipomo, San Luis Obispo County; and
- **Pipeline Sites** refers to the four pipelines (i.e., Lines 100, 200, 300, and 400) that that transport crude oil and/or pressure petroleum distillate from the Santa Maria Site to the Rodeo Refinery.

3.4.2 Existing Rodeo Refinery

The Rodeo Refinery consists of process, storage, and support facilities (Figure 3-2) that produce a variety of petroleum-based products (mainly fuels) and byproducts from crude oil and other petroleum-based feedstocks (such as pressure distillate and gas oils). Under existing conditions, crude oil is brought into the Rodeo Refinery via pipeline from elsewhere in California and via tanker and barge vessels from domestic and foreign sources. Other feedstocks required in the refining process are transported by pipeline from the Santa Maria Site, by tanker vessel, and by truck (small quantities of transmix), while other feedstocks, such as hydrogen, are produced on the Rodeo Site or nearby. Crude oil and feedstocks are stored at tank farms within the Rodeo Refinery until needed for the refining process.

The Rodeo Refinery has the capacity to produce approximately 120,000 barrels of petroleum-based products per day (5.04 million gallons per day [mgd]) via the processes shown in Figure 3-6.

Imagery Source: Maxar 11/1/2019

Figure 3-2: Rodeo Site

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Contra Costa County, CA

0 750 1,500 Feet

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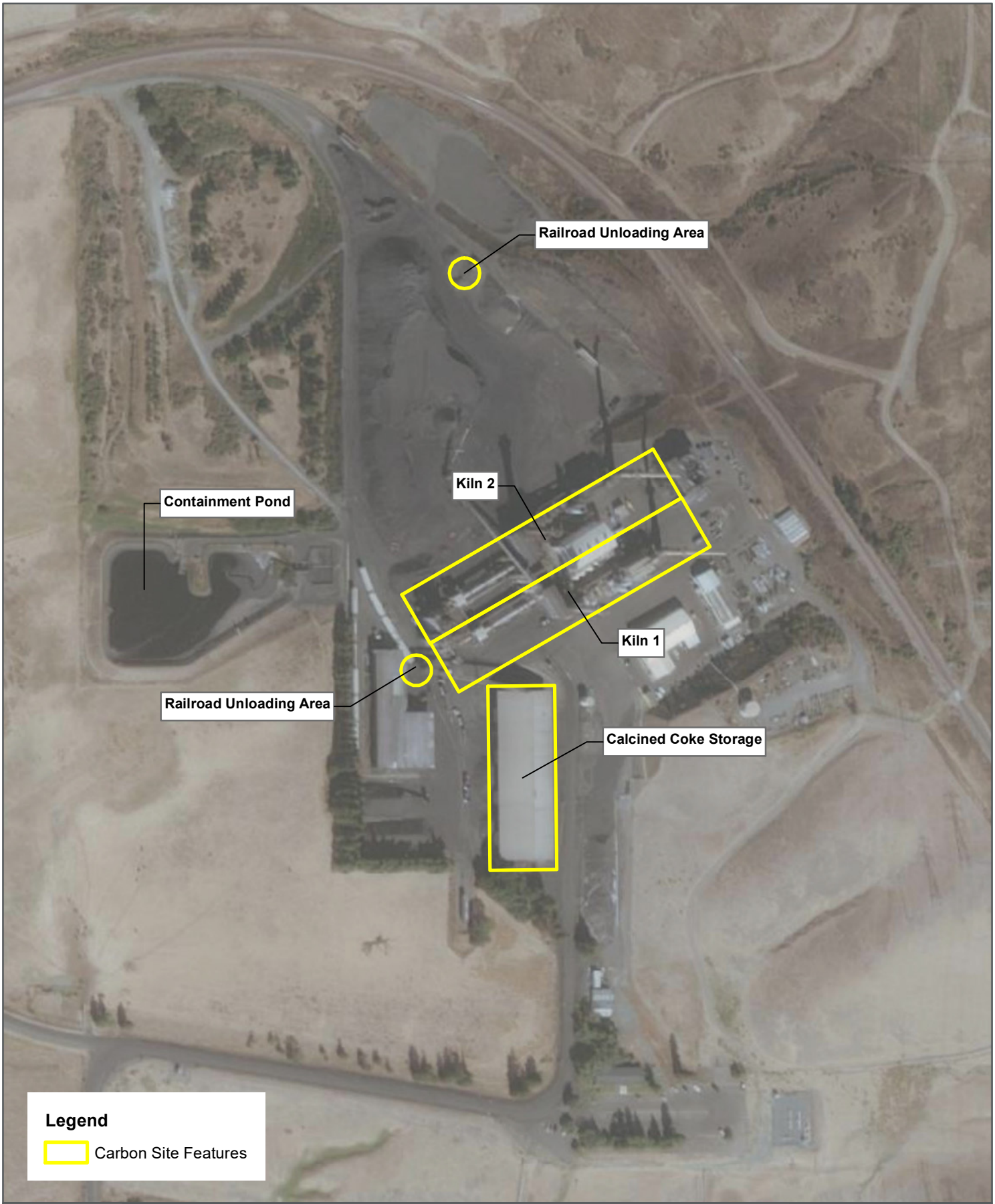

Imagery Source: Maxar 11/1/2019

Figure 3-3: Carbon Plant Site

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0 250 500 Feet

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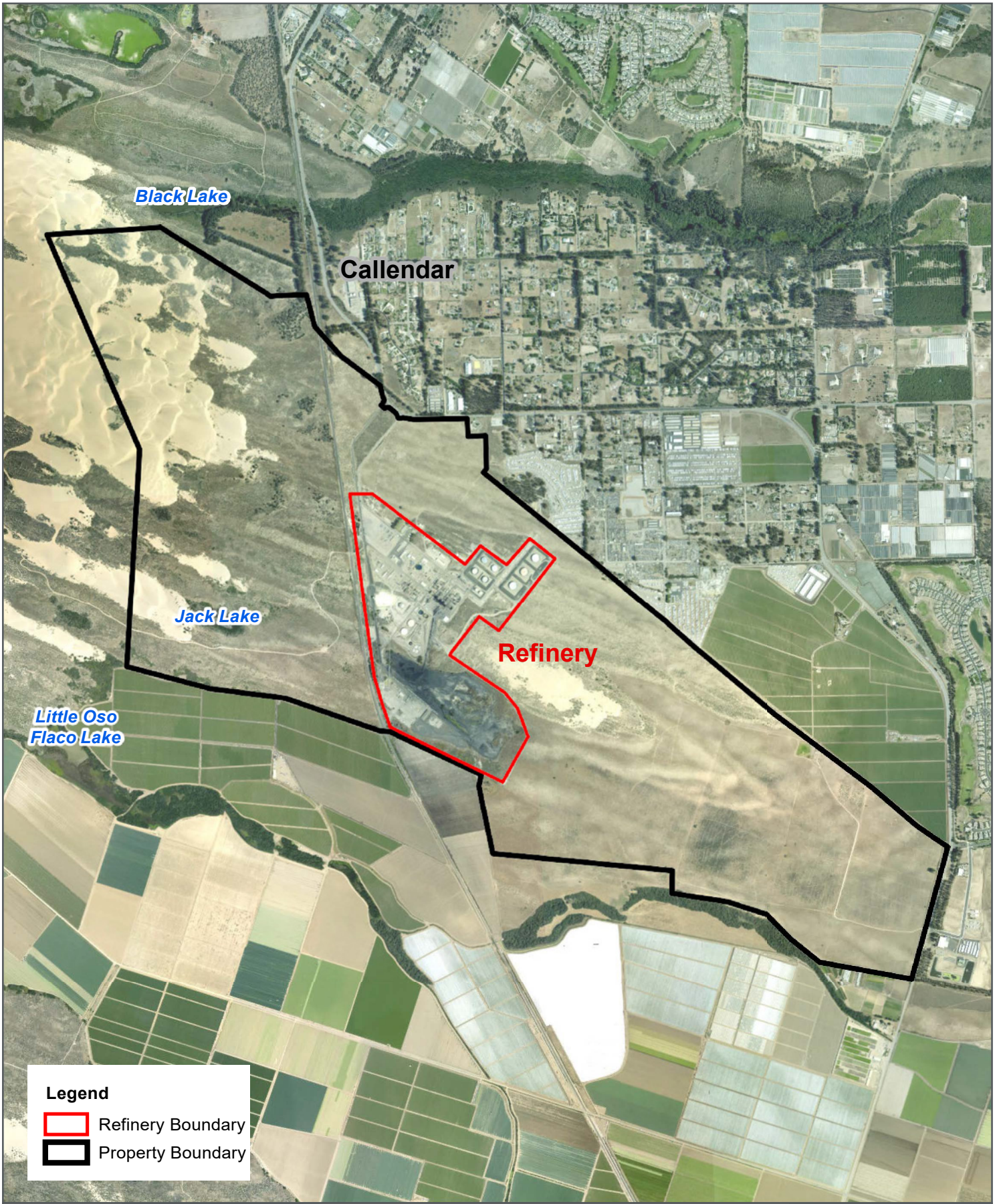

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Figure 3-4: Santa Maria Site

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0 2,000 4,000 Feet

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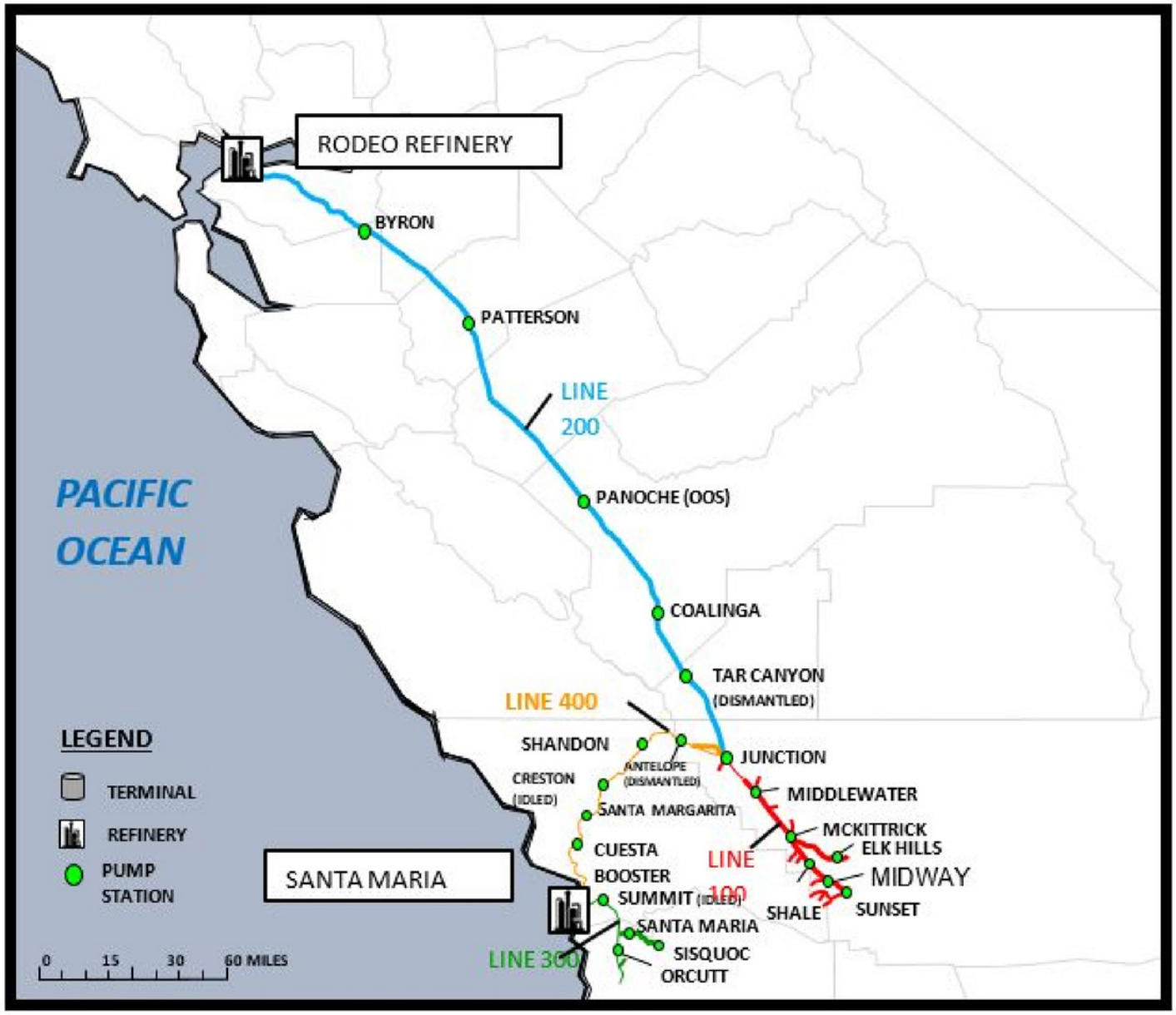

Figure 3-5: Pipeline Sites

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Rodeo Refinery
Pre-Project
Block Flow diagram

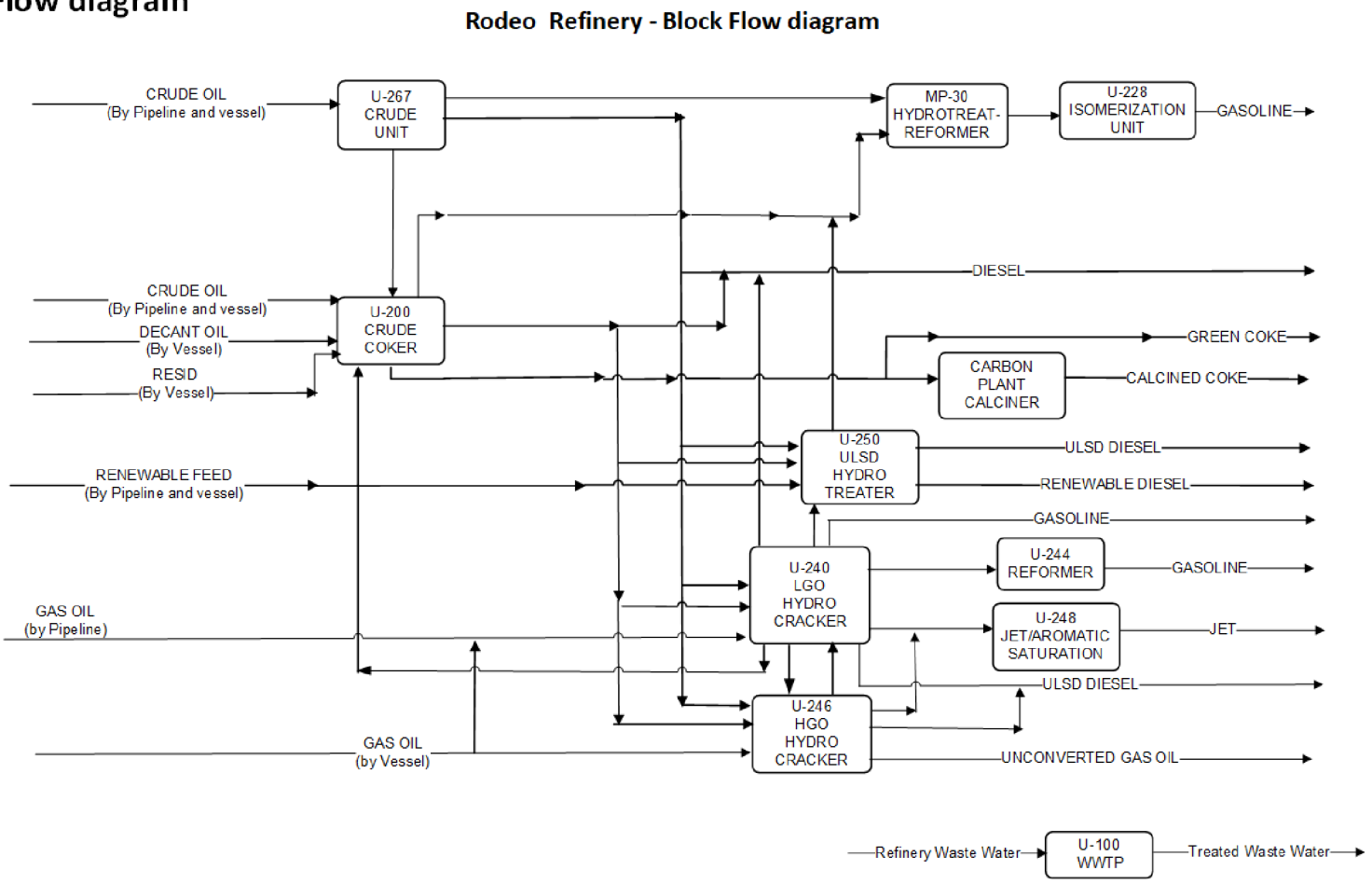

Figure 3-6: Existing Refinery Process Flow

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3.4.2.1 Existing Rodeo Refinery Process Units

Major equipment used at the Rodeo Refinery for manufacturing fuels include distillation columns, storage tanks, reactors, vessels, heaters, boilers, and other ancillary equipment. Table 3-1 provides a brief description of the major process units. Figure 3-6 presents a schematic diagram of the existing process flows. Existing processes are summarized in the following sections.

Table 3-1. Existing Major Process Units

Unit	Basic Purpose
Crude Distillation Unit (U267) and Crude/Coking Unit (U200)	Separate crude oil into petroleum coke (as a byproduct) and a variety of gases, heavy residuals, and intermediate-weight feedstocks.
Unicracker Complex (U240/244/246/248)	A complex of units that processes selected outputs of the Crude/Coker Unit into gasoline, diesel, and jet fuel distillate stocks as well as butane.
Ultra-Low Sulfur Diesel Hydrotreating Unit (U250)	Processes pre-treated renewable feedstock to produce renewable diesel and produces renewable and conventional ultra-low sulfur diesel blending stock.
Hydrotreating-Reformer Complex (MP-30)	A complex of process units that remove sulfur and nitrogen compounds from gasoline blendstocks.
Isomerization Unit (U228)	Produces a key gasoline blending stock.
Fractionation and Caustic Treatment Unit (U215)	Produces butane and gasoline blending stock and removes sulfur compounds from fuel gas and butane.
Product Blending Facility (U40/76/80)	Mixes blending stocks and additives to produce consumer-ready gasoline and diesel and delivers the products to storage tanks for transportation.
Sulfur Recovery/Amine Absorbers/Sour Water Strippers (U235, U236, and U238)	Remove sulfur compounds and ammonia from refinery process streams.
Main and MP-30 Flares	Safely control excess gas.
Fuel Gas Center (U233)	Removes sulfur compounds from raw fuel gas.

3.4.2.2 Additional Rodeo Refinery Facilities

The Rodeo Refinery also includes the Steam Power Plant, a butane storage and railcar loading facility, import/export facilities, a Wastewater Treatment Plant, a pressure-relief system/vapor-recovery system, a Hydrogen Plant, and the Carbon Plant.

Steam Power Plant

The Steam Power Plant is a cogeneration facility. The plant has three simple-cycle gas turbines to generate electricity and uses waste heat from the gas turbine exhaust to generate steam. The plant has an electricity production capacity of approximately 48 megawatts (MW). It is fueled by refinery fuel gas (RFG) (approximately 80 percent of the fuel), and when RFG is not available, it is fueled by purchased natural gas (approximately 20 percent of the fuel). The Cogeneration Plant produces enough electricity for the Rodeo Refinery's use; if excess electricity is available, it is exported to the regional grid. The Steam Power Plant operates approximately 95 percent of the time.

Butane Storage and Railcar Loading Facility

Refinery-produced butane can be used as a gasoline blend stock or as a refinery fuel, or it can be loaded into railcars for shipment to customers. CARB regulations control the volume of butane blended into gasoline. During the summer blending season (March through October), the volume of butane added to gasoline is low to keep the volatility of the blended gasoline within CARB specifications. During the winter blending season (November through February), a larger volume of butane may be blended into gasoline to increase its volatility, again within CARB specifications.

The butane storage system consists of four storage spheres—Tank-300, Tank-301, Tank-302, and Tank-833. Two butane loading racks are located at Rodeo Refinery's Marine Terminal Complex (Marine Terminal). During the summer blending season, isobutene (i-butane) and normal butane (n-butane) are loaded into railcars for delivery to customers. During the winter gasoline blending season, butane is used in the Rodeo Refinery. If insufficient butane is available, it can be purchased from the external market and off-loaded from railcars into the Rodeo Refinery for blending; however, this is an infrequent activity.

Currently, up to 16 railcars of butane can be loaded per day. Railcars are not used to store butane. During the winter, purchased butane can be brought into the facility from outside sources. The Rodeo Refinery has the capability to offload purchased butane; however, this activity is infrequent.

Import/Export Facilities

In addition to rail facilities, products are transported to and from the Rodeo Refinery by vessel, pipeline, and truck. Marine vessels include tugs, barges, articulated tug barges (ATBs),[7] and tankers that move crude oil, blending stocks, and feedstock to and from the Marine Terminal, located at the northern tip of the Rodeo Site (see Figure 3-2). Existing vessel traffic, based on the 3-year baseline average of 2017 through 2019, consisted of 80 tankers of various sizes and 91 barges (non-self-propelled and ATBs combined) per year. The Marine Terminal is equipped with pumps, piping, and heavy cargo hoses to transport liquids and a thermal oxidizer to control vapor emissions. A ship's cargo is unloaded via the pipelines, and the contents of the cargo holds are pumped to storage tanks on shore. Product ships and barges depart the Marine Terminal loaded with intermediate and refined products for other coastal cities and distribution terminals.

Pipelines are the predominant means to import crude oil and other feedstock over land. Product pipelines also distribute gasoline, diesel, and jet fuel to terminals; from these terminals, products are delivered by truck to gas stations and other Phillips 66 customers.

Some raw materials and products used at the Rodeo Refinery are imported by truck. These materials include liquid oxygen, sodium hydroxide, aqueous ammonia, amine, sulfuric acid, Stretford solution, and water-treating chemicals and additives. Molten sulfur, a byproduct from the Sulfur Recovery Plant, is loaded into trucks at a dedicated sulfur truck-loading facility. Petroleum coke is transported by conveyor from the Delayed Coker Unit to a dedicated coke truck-loading facility. Trucks also haul waste from the Rodeo Refinery, including sulfur/vanadium Stretford hazardous waste and spent catalyst.

Wastewater Treatment Plant

The Rodeo Refinery has a Wastewater Treatment Plant to treat its wastewater to reduce concentrations of pollutants to acceptable levels before discharging it to San Pablo Bay. Treatment processing consists of oil-water separation, dissolved air flotation enhanced with flocculants, powdered activated carbon treatment, clarification, and sand filtration. After filtering, the effluent is pumped through a deepwater diffuser located underneath the Marine Terminal into San Pablo Bay.

[7] Articulated tug barges consist of a tank vessel (barge) and a large, powerful tug that is positioned in a notch in the stern of the barge, which enables the tug to propel and maneuver the barge.

The Rodeo Refinery Wastewater Treatment Plant is designed for a maximum treatment capacity of about 10 mgd. The flow to the treatment system is collected by four main sewer lines that deliver collected wastewater to a splitter box where the streams are mixed and then directed to sumps from which wastewater is pumped to equalization tanks. Equalization tanks are designed to provide an even, steady flow to the Wastewater Treatment Plant for optimal system effectiveness.

Pressure-Relief Systems and Flares

Regulations and industry standards require that every pressure-containing vessel has a pressure-relief device installed to prevent vessel damage from excessive pressure. At the Rodeo Refinery, the discharges from these pressure-relief valves are collected into a piping system for recycling or safe disposal. The piping system is known as the Blowdown System.

The Blowdown System collects and separates liquid and gaseous discharges from various process units and equipment throughout the Rodeo Refinery. The Blowdown System also collects gases that (1) are the normal byproducts of a process unit or vessel depressurization, (2) may result from an upset in a process unit, or (3) come from refinery process units during startup and shutdown or when the balance between fuel gas generation and the combustion of that gas for process heat is disrupted. The Blowdown System provides a means to recover gases and liquids relieved by the process units to maintain safe operating pressures. If the capacity of the recovery system is exceeded, the excess material is sent to the flare.

Flares are devices meant to provide for the safe disposal of gaseous wastes; ensure safe operations, thereby minimizing impacts on the community; and serve as emission control mechanisms for the Blowdown System. The flares combust flammable hydrocarbon gases and odorous compounds (such as hydrogen sulfide [H_2S]), minimizing emissions of smog-forming chemicals. However, flaring events do result in emission of combusted gases. At the Rodeo Refinery, no routine flaring occurs during normal operation.

Hydrogen Plant

The Hydrogen Plant produces hydrogen and steam for use in hydrotreaters and other refinery processes within the Rodeo Refinery. The Hydrogen Plant includes a steam methane reformer furnace, associated stack, and other equipment, including a compressor, cooler, and associated piping. Hydrogen is generated by reacting a petroleum liquid or gas, such as butane or natural gas, with steam in the presence of a catalyst. The steam methane reformer furnace is a process furnace that is used to maintain the reactants at a temperature that favors the production of hydrogen. The exhaust gases from the steam methane reformer furnace are passed through a selective catalytic reduction gas treatment unit to reduce the emissions of oxides of nitrogen created from the combustion that takes place in the furnace. The hydrogen formed in this equipment is purified by a process called pressure swing adsorption and then is delivered to the units that use hydrogen gas in the Rodeo Refinery.

Carbon Plant

The Carbon Plant upgrades the petroleum coke byproduct. It is a two-kiln, petroleum coke–calcining[8] operation that is integrated with cogeneration of electricity using waste heat produced by the coke–calcining process. At the Carbon Plant, raw or “green” coke is fed into a natural gas–fired rotary kiln to thermally remove associated moisture and volatile combustible matter and to otherwise improve critical physical properties such as electrical conductivity, real density, and oxidation characteristics. Exhaust emissions from the kilns are controlled by a baghouse. Process heat is captured by steam boilers and transformed into electrical power by the facility’s turbine generator. The Carbon Plant currently produces 14.2 MW of electricity, of which 2.2 MW is used at the plant and the remaining 12 MW is exported to the electrical grid.

[8] Calcining is the process of heating a solid to a temperature below its melting point to bring about a state of thermal decomposition or a phase transition other than melting.

3.4.2.3 Existing Rodeo Refinery Processing

The Rodeo Refinery is designed and operated to refine a variety of domestic and foreign crude oils. The principal activity of the Rodeo Refinery is to manufacture transportation fuels; the facility converts crude oil and other feedstock into liquefied petroleum gas, gasoline, jet fuel, and diesel fuel. Byproducts of the Rodeo Refinery include sulfur and petroleum coke. Electrical power, fuel gas, and steam are also created during the refining process.

Crude oil is brought to the Rodeo Refinery via pipeline and the Marine Terminal. Tankers and barges dock at the Marine Terminal, located at the northwestern edge of the facility. Numerous chemicals, materials, and utilities are also required to produce useful products from the crude oil. Some chemicals, such as hydrogen, are produced at the Rodeo Refinery or supplied by Air Liquide's Hydrogen Production Plant, located adjacent to the refinery. Other feedstock, chemicals, and materials are purchased and transported to the facility.

Currently, the Bay Area Air Quality Management District (BAAQMD) permits the Rodeo Refinery to process a maximum crude oil throughput of 117,000 barrels per day. The BAAQMD permit also limits allowable emissions associated with the Rodeo Refinery, including the Marine Terminal.

Crude Oil Processing

The Rodeo Refinery processes crude oil into usable products, such as gasoline, diesel, jet fuel, fuel oil, liquefied petroleum gas, or other petroleum-based products. To produce these products, process units perform one of four basic functions:

- Separation
- Conversion
- Purification
- Blending

Separation

To carry out the process of separation, the Rodeo Refinery takes advantage of the fact that individual hydrocarbon molecules boil at different temperatures (at a specified pressure) according to the size of the molecules. As a result, a mixture of various compounds contained in a single-feed stream, such as crude oil, can be separated using a distillation column or fractionator in which the temperature decreases from the bottom to the top of the column. The smaller hydrocarbon molecules rise to the top of the column as gases. The heavier hydrocarbons fall to the bottom of the column as liquids.

In the distillation process, mixed feed stocks in crude oil are separated into distinct hydrocarbon streams or fractions. This process involves two steps. In the first step, inorganic salts are removed from the crude oil. In the second step, the crude oil is separated into several distinct hydrocarbon streams using atmospheric- and vacuum-distillation columns.

With distillation, mixed feed stocks in crude oil can be separated into distinct hydrocarbon streams or *fractions*. At petroleum refineries, the first main processing step is to remove inorganic impurities from the crude oil and then separate it into several distinct hydrocarbon streams using atmospheric and vacuum-distillation columns. The separation process is used in many other Rodeo Refinery units. The use of fractionators and splitter units to separate various products into distinct hydrocarbon streams is a common practice at other refineries.

Conversion

After the initial separation of the crude oil, fractions created from distillation are routed to process units that convert molecules into molecules more desirable for blending into finished products. Conversion of molecules is accomplished by two primary processes: cracking and reforming.

- **Cracking.** The process of cracking breaks large and cyclic molecules into smaller compounds that have chemical and physical properties better suited for the finished product. Cracking at most refineries is performed at catalytic cracking units and coking units. Catalytic cracking units use catalysts to induce chemical transformations to smaller molecules. Hydrocracking units are a class of cracking units that use hydrogen, high temperature and pressure, and catalysts to achieve the desired molecular conversions. Coking units use high temperature to induce thermal cracking.
- **Reforming.** The process of reforming transforms the shape of hydrocarbon molecules. Process units such as catalytic reformers, isomerization units, and alkylation units rearrange the chemical structures of hydrocarbon molecules without significant cracking or breaking of the molecules. These reforming process units create a high percentage of final blending components for gasoline.

Purification

It is necessary to remove impurities from fractions of gasoline and diesel before processing or blending them into finished products. Purification includes removing undesirable components such as hydrogen sulfide, sulfur, and nitrogen compounds. Purification is accomplished in units called hydrotreaters, where a mixture of hydrocarbons and hydrogen are heated together and then fed to a reaction chamber containing a catalyst. When the hydrocarbon and hydrogen molecules contact the catalyst, a chemical reaction occurs that converts sulfur and nitrogen molecules bound in hydrocarbon molecules to hydrogen sulfide and ammonia gases. These gases are separated from the hydrocarbon liquids and are sent to the Sulfur Recovery Plant where the sulfides are converted to elemental sulfur, which is sold as a product, and the ammonia is converted to nitrogen.

Blending

After separating, converting, and purifying, the final refinery process is blending. The blending process involves numerous streams from storage tanks and process vessels that are mixed (i.e., blended) into finished products. The final products contain the correct chemical and physical properties specified for each fuel.

3.4.2.4 Existing Rodeo Refinery Maintenance Activities

Operation of the Rodeo Refinery requires substantial ongoing maintenance activities so that:

- All Rodeo Refinery process units operate within their design parameters,
- Products meet quality and quantity goals,
- Emissions and discharge sources meet all regulatory limits, and
- Pressure-containing and other equipment meet rigorous safety requirements.

Regular maintenance is essential to the overall safe operation of the Rodeo Refinery. In addition to ongoing maintenance activities, scheduled, large-scale maintenance actions called turnarounds are also necessary. The term turnaround refers to the period of time when refinery equipment is down for maintenance and inspection and is not available to process feedstocks, compared to the typical 24-hour-a-day, 365-day-a-year operation. Equipment is regularly scheduled to be out of operation in order to:

- Inspect the internals of Rodeo Refinery vessels,
- Clean pipe and vessel internals,

- Upgrade existing Rodeo Refinery equipment and vessels,
- Replace catalysts in vessels that do not use continuous regeneration,
- Make connections for new equipment being installed at the Rodeo Refinery,
- Perform maintenance or inspection on critical equipment, and/or
- Repair and renew piping and equipment before they fail.

Turnarounds are termed *major* when significant portions of the Rodeo Refinery are shut down for extended periods. Minor turnarounds may affect only certain units, or parts of the total Rodeo Refinery, for short periods. Major turnarounds usually occur between 3 and 6 years apart. Minor turnarounds may occur once every 3 years, up to once per year. Rodeo Refinery turnarounds significantly affect production. Therefore, refinery staff plan turnarounds carefully so that work is accomplished quickly and process units can resume operation as soon as possible. As part of this planning, provisions are made so that necessary supplies and equipment are onsite and available when needed. Refinery maintenance and technical staff, as well as additional contract maintenance staff, work in shifts around the clock to minimize the duration of a turnaround. Refinery staff usually plan major unit turnarounds several years apart to maximize overall production. Also, the turnaround schedule becomes the controlling factor when planning and scheduling upgrades or other major changes to the process equipment at the Rodeo Refinery.

3.4.2.5 Marine Oil Terminal Engineering and Maintenance Standards

The California State Lands Commission (CSLC) developed Marine Oil Terminal Engineering and Maintenance Standards (MOTEMS) to establish standards for the design, construction, and maintenance of marine oil terminal berthing and cargo loading/unloading facilities. MOTEMS is intended to minimize the possibility of accidents at marine oil terminals during extreme weather events and seismic activity that would lead to releases of petroleum substances to the environment. Existing facilities are required to retrofit or rebuild as necessary to meet MOTEMS, which has been completed at the Rodeo Refinery's Marine Terminal, and Phillips 66 will continue to comply with MOTEMS requirements.

3.4.2.6 Existing Risk Management and Response Plans

Risk Management Plan

Phillips 66 operates under the US Environmental Protection Agency (USEPA) Risk Management Plan (RMP) rule, California Accidental Release Prevention (CalARP) Program, and the Contra Costa County Industrial Safety Ordinance (ISO). The Rodeo and Santa Maria Refineries maintain RMPs that include three main components: (1) hazard assessment; (2) release prevention planning; and (3) emergency response planning. The RMPs are updated when there are changes that would affect the use or storage of acutely hazardous substances. A detailed hazards and operability study of the changed components is conducted prior to startup of new equipment or processes such as would be part of the Project. Upon completion of the Project, the Hazardous Materials Business Plan (HMBP) that provides input to the RMP would be updated and the RMP scenarios reviewed for potential change as a result of the Project.

Emergency Response Plan

An emergency response plan is in place at the Rodeo Refinery to ensure that, in the event of a fire, hazardous material release, medical emergency, or rescue situation, refinery personnel would be able to respond to the emergency quickly and effectively so that personal injuries, environmental damage, and/or property damage can be minimized. The emergency response plan describes the responsibilities of all facility personnel in the event of an emergency. Additionally, the plan defines the types of actions that personnel with different levels of training may take in response to an emergency. Furthermore, the plan

describes and defines the chain of command to be followed by personnel in an emergency. The primary responsibility for implementing the plan rests with Phillips 66, not with an outside agency.

3.4.3 Existing Santa Maria Site

The Santa Maria Site is located just west of California Route 1 and south of the town of Arroyo Grande in southern San Luis Obispo County (Figure 3-4). The facility, which was built in 1955, occupies approximately 1,600 acres, much of which is vacant land surrounded by undeveloped land and by commercial, industrial, recreational, agricultural, and residential uses. The Santa Maria Site includes petroleum storage and processing facilities and serves as a collection and pre-processing facility for high-sulfur heavy crude oil. The crude oil comes primarily from offshore platforms along the California coast and oil fields in the Santa Maria Valley. The majority of crude oil is delivered to the facility by pipeline (the remainder, which is approximately 2,000 barrels per day (bpd) of petroleum-based products, is delivered by truck).

The Santa Maria Site processed 26,700 bpd of crude oil in 2019 and 25,700 bbl/d of crude oil in 2020. Semi-refined liquid products from the Santa Maria Site are sent by pipeline as feedstocks to the Rodeo Refinery for upgrading into finished petroleum products. Other Santa Maria Site products include petroleum coke (a byproduct of oil refining), which is shipped by rail and truck, and granular sulfur (recovered from the crude oil), which is shipped by truck.

3.4.4 Existing Pipeline Sites

The Project includes the Pipeline Sites—four regional pipelines serving the Santa Maria Site and the Rodeo Refinery. The Santa Maria Site is connected to the Rodeo Refinery by approximately 200 miles of subterranean pipeline (Figure 3-5), designated Line 400 and Line 200. Line 400 runs north and east from the Santa Maria Site through the Coastal Range of central California in San Luis Obispo and Kern Counties, a region of dry grassland, pasture, and open live oak woodland, to connect with Line 200 north of McKittrick. Line 200 runs northwest up the west side of the San Joaquin Valley, through a mixture of Coastal Range grasslands and pasture and San Joaquin Valley agricultural land, and then west to the Rodeo Refinery. Line 200 runs through Kern, Kings, Fresno, Merced, Stanislaus, San Joaquin, Alameda, and Contra Costa Counties. Two other pipelines—Line 100 and Line 300—connect the Santa Maria Site to crude oil collection facilities elsewhere in California (Figure 3-5). Line 100 runs underneath San Joaquin Valley agricultural land and Coastal Range grasslands and pasture lands in Kern County, and Line 300 runs beneath agricultural land and grasslands in the Santa Maria Valley area in San Luis Obispo and Santa Barbara Counties.

3.5 Project Overview

Phillips 66 proposes to modify the existing Rodeo Refinery into a repurposed facility that would process renewable feedstocks into renewable diesel fuel, renewable components for blending with other transportation fuels, and renewable fuel gas. An application for an LUP was submitted to Contra Costa County in 2020. Approval of the LUP requires compliance with CEQA, including preparation of an EIR. Refer to Chapter 1, *Introduction*, for a detailed discussion of the CEQA process for the Project.

The repurposing of the Rodeo Refinery would assist California in meeting its stated goals of reducing GHG emissions and ultimately transitioning to carbon neutrality.[9] It would also provide a mechanism for compliance with California's LCFS and Cap-and-Trade programs and the federal Renewable Fuels Standard (RFS), while continuing to meet regional market demand for transportation fuels. The Project would produce up to 55,000 bpd of a variety of renewable transportation fuels from renewable feedstocks. The Rodeo Refinery as a whole post-Project would produce up to 67,000 bpd. To maintain current facility capacity to supply regional market demand for transportation fuels, including renewable and conventional fuels, the post-Project facility configuration could receive, blend, and ship up to 40,000 bpd of gasoline and gasoline blendstocks.

Because the Project would discontinue the processing of crude oil at the Rodeo Refinery, the Santa Maria Site would no longer be necessary to provide feedstock to the Rodeo Refinery, so it would be demolished. The Pipeline Sites that collect crude oil for the Santa Maria Site and deliver semi-refined feedstock to the Rodeo Refinery would not be necessary to transport crude oil-based feedstocks and would be taken out of service (decommissioned) or sold (Section 3.9, *Project Components*). In addition, the Carbon Plant would no longer be necessary and would be demolished. The existing Rodeo Refinery, Carbon Plant Site, Santa Maria Site, and Pipeline Sites are described above (Section 3.4, *Project Sites*). Sections 3.6 through 3.12 describe the proposed Project objectives, operational changes, modification of existing facilities, and construction and demolition.

3.6 Project Objectives

The Project has the following objectives:

- Convert the Rodeo Refinery to a renewable transportation fuels production facility;
- Provide/maximize production of renewable fuels to assist California in meeting its goals for renewable energy, GHG emission reductions, and reduced CI for transportation fuels;
- Convert existing equipment and infrastructure to produce transportation fuels from non-hazardous renewable feedstocks and discontinue the processing of crude oil at the Rodeo Refinery;
- Preserve and protect existing family-wage jobs in Contra Costa County during and after the transition to a renewable transportation fuels production facility;
- Repurpose and reuse the facility's existing equipment capacity, including the Marine Terminal and Rail Butane Loading Rack;
- Preserve marine, rail, and truck offloading facilities to access national/international renewable feedstocks to provide renewable transportation fuels and conventional fuels and conventional fuel components;
- Provide the ability to process a comprehensive range of renewable feedstocks, including treated and untreated feedstocks;
- Maintain the facility's current capacity to supply regional market demand for transportation fuels, including renewable and conventional fuels;

[9] Governor Newsom's Executive Order N-79-20 states: "clean renewable fuels play a role as California transitions to a decarbonized transportation sector" and "to support the transition away from fossil fuels consistent with the goals established in this Order and California's goal to achieve carbon neutrality by no later than 2045, the California Environmental Protection Agency and the California Natural Resources Agency, in consultation with other state, local and federal agencies, shall expedite regulatory processes to repurpose and transition upstream and downstream oil production facilities..." The Governor's Order also directs CARB to "develop and propose strategies to continue the State's current efforts to reduce the carbon intensity of fuels beyond 2030 with consideration of the full life cycle of carbon. Additionally, the California Air Resources Board's November 19, 2020, "California's Greenhouse Gas Goals and Deep Decarbonization" presentation anticipates that biofuels will comprise 19 percent of the transportation "fuel" sector by 2045."

- Ensure California transportation fuel supply needs are met during the transition to a renewable fuels facility by temporarily (approximately 7 months) increasing gas oil and crude deliveries at the Marine Terminal to maintain current transportation fuel production at the Rodeo Refinery;
- Provide a beneficial use for recyclable fats, oils, and grease (FOG) within the state of California; and
- Provide a mechanism for compliance with the federal RFS and the state LCFS through processing facilities in California.

3.7 Project Operation

3.7.1 Product Received

Once the Project is operational, no crude oil would be processed at the Rodeo Refinery. As shown in Table 3-2, the Rodeo Refinery would no longer receive crude oil and gas oil at its Marine Terminal (35,000 bpd on a 12-month rolling average[10]) or from the pipelines connecting the Rodeo Refinery to the Santa Maria Site (70,000 bpd). The Rodeo Refinery would receive 38,000 bpd gasoline and gasoline blendstocks, which is an increase over baseline of 28,000 bpd.

Up to 80,000 bpd of renewable feedstocks would be received at the Rodeo Refinery and processed in the proposed PTU. The majority of the time, the feedstocks treated by the PTU would be processed onsite to produce renewable fuels. In situations where excess treated feedstock produced by the PTU is not processed onsite, this material could be exported from the Rodeo Refinery via the Marine Terminal. Project emissions associated with processing at the PTU would be correlated with how much material is being processed and handled, rather than the specific type of material.

3.7.2 Product Shipped

As shown on Table 3-2, Once operational, the Rodeo Refinery would supply up to 107,000 bpd of renewable fuels (67,000 bbrl/d) and petroleum-based transportation fuels or gasoline (40,000 bbrl/d). Of the 67,000 bpd of renewable fuels that would be produced, 55,000 bpd would occur as a result of the Project. This amount would be in addition to the Rodeo Refinery's existing capability (as of 2021) of producing 12,000 bpd from pretreated feedstocks using Unit 250 (previously used to process petroleum-based feedstocks). However, renewable feedstocks and renewable fuels were not produced from Unit 250 during the CEQA baseline period in 2019 (refer to Section 3.13, *CEQA Baseline*); therefore, Table 3-2 indicates "0" for "Renewable Fuels Shipped."

To maintain the current facility capability to supply regional market demand for transportation fuels, including renewable and conventional fuels, the Rodeo Refinery could receive, blend, and ship up to 40,000 bpd of gasoline and gasoline blendstocks. Table 3-2 summarizes activities associated with the future operations of the Project.

[10] All bpd amounts are based on a 12-month rolling average, unless otherwise noted.

Table 3-2. Rodeo Refinery Pre- and Post-Project Operational Activity

	Baseline	Post-Project
Product Received		
Marine Terminal Crude and Gas Oil Received (1,000 bpd 12-month average)	35	0
Pipeline Crude Received (1,000 bpd 12-month average)	70	0
Renewable Feedstocks Received (1,000 bpd 12-month average)[a]	0	80
Gasoline and Blendstocks Received (1,000 bpd 12-month average)	10	38
Product Shipped		
Petroleum Products Shipped (1,000 bpd 12-month average)	121	40
Renewable Fuels Shipped (1,000 bpd 12-month average)	0	67
Treated Renewable Feedstock Shipped (1,000 bpd 12-month average)	0	25
Mode of Transportation		
Tanker Vessels (calls/year)	80	201
Barges (calls/year)	90	161
Carbon Plant Site Rail (average railcars per week)	6.96	0
Refinery Railcar Loading/Unloading Rack (average railcars per day)	4.7	16
Santa Maria Site Rail (railcars per year)	409	0
Refinery and Carbon Plant Truck Trips (roundtrips per year)	40,213	16,026
Santa Maria Site Truck Trips (roundtrips per year)	13,008	0
Rodeo Refinery Approximate Number of Employees and Contractors	650	650

Note:

[a] The facility currently has the capacity to produce approximately 12,000 bpd of renewable fuels from pretreated feedstocks using Unit 250, which was previously used to process petroleum-based feedstocks. However, renewable feedstocks and renewable fuels were not produced from U250 during the baseline period in 2019 and are not included in this table.

3.7.3 Project Modes of Transportation

Renewable feedstocks for the Project would arrive at the facility primarily by tanker, barge, and railcar but possibly also by truck for small amounts from local sources. Future vessel call numbers would be greater than under baseline conditions (Table 3-2), and the mixture of vessel sizes and types would likely be different than under baseline conditions.

3.7.3.1 Marine Traffic

Marine traffic would increase relative to the baseline period, as shown in Table 3-2. Marine traffic would include tanker vessels and barges used to import renewable feedstocks and gasoline blendstocks and export renewable fuels and feeds. Baseline vessel traffic consists of 80 tankers of various sizes and 90 barges (non-self-propelled and ATBs combined) and is estimated to increase to a total of 201 Handymax tankers and 161 ATB at full Project operation. No physical changes are needed at the Marine Terminal as part of the Project.

3.7.3.2 Rail Traffic

Rail traffic at the Rodeo Refinery during 2019 consisted of one linehaul locomotive visit per day moving 4.7 cars, on average, at the railcar facility. Under the Project, rail traffic would consist of one linehaul locomotive per day moving a maximum of 16 railcars at the railcar facility. This volume of traffic is within the existing railcar loading/unloading capacity of the facility. Rail traffic at the Carbon Plant Site in 2019

consisted of approximately three linehaul visits per week, on average, and 362 railcars per year total. Under the Project, rail traffic at the Carbon Plant Site would be discontinued.

3.7.3.3 Truck Traffic

Truck traffic related to feedstock transport to the Rodeo Refinery would vary depending on local conditions and refinery demand. Truck traffic related to the refinery deliveries and waste byproducts in 2019 was 7,540 roundtrips per year. Truck traffic related to the transport of petroleum coke to and from the Carbon Plant Site, which totaled 32,673 round trips in 2019, would no longer occur. As a result, annual truck round trips under the Project would total approximately 16,026 truck roundtrips per year. The Project would result in a decrease from approximately 110 roundtrips per day to and from the Rodeo Refinery as a whole to approximately 44 roundtrips per day to and from the Rodeo Refinery. The Rodeo Refinery's renewable products would be shipped from the facility by tanker vessel and pipeline.

3.8 Project Renewable Feedstocks

3.8.1 Background

The renewable feedstocks market for the production of renewable fuels has been evolving, and will continue to evolve in the next decade and beyond. Renewable feedstocks are produced with a broad range of materials, including soybean oil, corn oil, rapeseed oil, and other vegetable oils; tallow and other animal fats; used cooking oil (UCO); FOG; and other waste oil products. The global production of renewable feedstocks has been generally sustained by the use of crop-based vegetable oils (e.g., soybean oil), which has raised concerns regarding the use of food-based agricultural products for the production of fuels. Accordingly, while food-based vegetable oils will continue to support the production of renewable feedstocks, the next generation of renewable feedstocks focuses on the use of non-food materials or waste raw materials, such as UCO, tallow, or FOG (Organisation for Economic Cooperation and Development and Food and Agriculture Organization 2019[11]).

3.8.2 Anticipated Project Feedstocks

For the Project, renewable feedstocks would be processed into renewable products as indicated in Figure 3-7 and would include both treated and untreated feedstocks. Renewable feedstock generally requires pre-treatment to remove contaminants, such as polyethylene, and purification of feedstock prior to conversion to renewable fuels. These treatments would occur in the proposed PTU, which would also include FOG recovery equipment (see Section 3.7, *Project Operation*). The PTU has three processing trains designed to treat a broad range of renewable feedstocks, including the feedstocks listed below and others. The anticipated renewable feedstocks processed at the facility would include, but not limited to, the following:

- UCO,
- FOG,
- Tallow (animal fat),
- Inedible corn oil,
- Canola oil,
- Soybean oil,
- Other vegetable-based oils, and/or
- Emerging and other next-generation feedstocks.

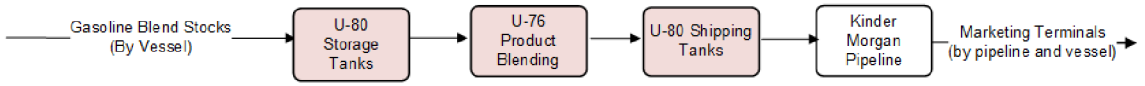
[11] The Agricultural Outlook 2019–2028 is a collaborative effort of Organization for Economic Co-operation and Development and Food and Agriculture Organization of the United Nations.

Rodeo Facility
Post Project
Block Flow diagram

Drawing Symbol Legend

Renewable Fuels

Gasoline Storage and Distribution



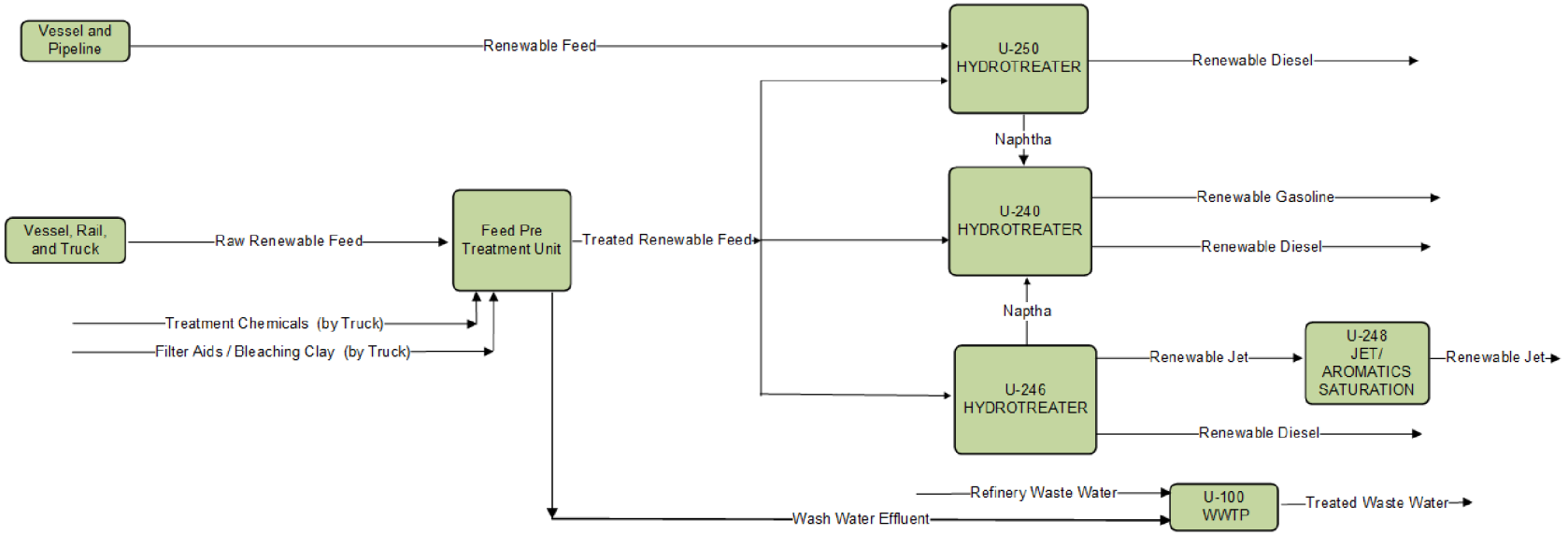


Figure 3-7: Rodeo Renewed Project Flows

Rodeo Renewed Project
Contra Costa County, CA

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Date Created: 7/19/2021 Date Revised: 7/19/2021 File Path: R:\Cardno\Rodeo\map\Rodeo_Fig3-7_RodeoRenewed_ProjectFlows.mxd
GIS Analyst: anna.clare

3.8.3 Speculative to Identify Specific Types or Sources of Project Renewable Feedstocks

Although the Project would process multiple renewable plant, animal, and/or waste-based feedstocks, as listed above, it is not feasible to predict with any degree of certainty the source locations and the specific types of renewable feedstocks or combinations of feedstocks that would be processed in any particular year. The renewable feedstocks that will be processed in any particular year will generally be influenced by business considerations and market conditions, as described below.

3.8.3.1 Agricultural Factors

As with all agricultural commodities, oil crops and vegetable oils are subject to risk from weather and other calamities, affecting yields and price, and ultimately, supply and demand for the commodity or for inputs[12] (USDA, ERS 2020). The CME Group explains the factors that agricultural futures analysts consider in helping to determine the price of commodities.[13] For example, Brazil's soybean crop was off to a slow start in 2021 due to harvest delays and excessive rain (Wilson et al. 2021). China's hog farms were affected by African Swine Fever in 2018, temporarily reducing soybean meal demand (Wilson et al. 2021). These factors are often unpredictable, yet affect availability and price.

3.8.3.2 Commodity Uses and Substitutions

The different uses of the commodity and whether or not there are substitutes for those commodities also affect the renewable feedstocks market. For example, soy and corn can both be used for livestock feed or human food production. If one commodity increases in price, farmers may be able to switch to the other commodity to feed their livestock for a cheaper cost (CME Group). This is particularly important for renewable feedstocks given the different uses for oilseeds, including food production and animal feedstocks, and the different vegetable oils that may be used as substitutes (e.g., canola oil may be a substitute for soybean oil).

3.8.3.3 Incentives and Government Regulations

Many countries, including the United States, have various mandates and subsidies, all of which affect the global market for renewable feedstocks. The United States regulatory programs affecting renewable fuels and feedstocks include the Renewable Fuel Standard (RFS) and the Biodiesel Tax Credit. The RFS set forth blending mandates for biodiesel fuels. The Biodiesel Tax Credit provides blenders with a tax credit equal to $1.00 for every gallon of renewable fuel blended with conventional diesel.

California has an LCFS, the primary goal of which is to reduce the CI of transportation fuels by at least 20 percent by 2030. Under the LCFS, the CARB sets on an annual basis the CI standards or benchmarks to be achieved and the CI for each type of fuel is based on GHG emissions associated with producing, transporting, and consuming that particular type of fuel—the life cycle of the fuel. Fuels with CI below the benchmark generate credits.

3.8.3.4 Transportation Costs

Another critical component of the renewable feedstock selection process for Phillips 66 will be transportation costs. Sourcing renewable feedstocks in the global market could involve substantial transportation costs for marine shipping, which must be compared to train/rail transportation costs for United States production or trucks for local production. Or, new supplies of UCO closer to California may become available in the future, making the overall cost of UCO feedstocks lower due to lower transportation costs (the transportation costs in 2024 as compared to 2021, of course, may be up or down

[12] USDA, Risk in Agriculture, https://www.ers.usda.gov/topics/farm-practices-management/risk-management/risk-in-agriculture

[13] The CME Group is one of the largest derivatives marketplace; it comprises four exchanges—CME, CBOT, NYMEX, and COMEX.

due to the change in price of crude oil and the change in price of finished transportation fuel for marine vessels, trains, or trucks).

3.8.3.5 Project Feedstock Flexibility

To address these and other inherent risk factors in the market, Phillips 66 secures contracts in excess of the crude oil feedstocks supply needed to process more than 2 million barrels of crude oil per day. Phillips 66's position in the market is then adjusted as needed over time, depending on the market conditions for that year or month (or appropriate time interval).

Phillips 66 could secure market positions in oilseeds, vegetable oils, and waste oils, and by having an excess of the amounts needed for processing, Phillips 66 has the flexibility to adapt to market conditions and process the optimal mix of renewable feedstocks to achieve its business objectives. Thus, it is difficult to predict which specific types or sources of renewable feedstocks would be used in any one particular year, much less over several years.

The Project is uniquely situated to secure renewable feedstocks available through marine shipping by having direct marine access through the Marine Terminal in addition to rail and truck transportation. By having these transportation options, Phillips 66 has greater flexibility in selecting renewable feedstocks from a broad variety of sources, including international sources.

Because the Project will have the ability to process a broad range of untreated renewable feedstocks in its PTU, market conditions, such as those discussed above, for each of the types of renewable feedstocks will be considered in the selection process. Whether Phillips 66 looks more or less favorably on selecting any particular renewable feedstock to process at the Rodeo Refinery in 2024 and beyond will depend on all of the factors that comprise the costs, transportation logistics, and CI associated with that particular feedstock.

3.9 Project Components

The Project would require physical and/or operational changes at the Rodeo Refinery, Carbon Plant Site, Santa Maria Site, and Pipeline Sites. These proposed changes are described below.

3.9.1 Rodeo Refinery

The Project would repurpose existing refinery equipment and add new equipment to convert the refinery into a facility that manufactures liquid transportation fuels from renewable feedstocks (Table 3-3, Figure 3-2).

Table 3-3. Process Unit Changes for the Rodeo Renewed Project

Process Units	Existing Rodeo Refinery	Rodeo Renewed Project[a]
Unit 267 – Crude	Operational	Not Operational – Relinquish Permit
Unit 200 – Crude/Coker	Operational	Not Operational / Maintain Permit – Coker to be idled
Carbon Plant – Coke Calciner	Operational	Not Operational – Relinquish Permit
Units 236– Sulfur Recovery Unit	Operational	Not Operational – Relinquish Permit
Units 238 – Sulfur Recovery Unit	Operational	Not Operational – Relinquish Permit
Unit 244 – Reformer	Operational	Not Operational / Maintain Permit
MP-30 – Naphtha HT/Reformer	Operational	Not Operational / Maintain Permit
Unit 228 – Isomerization	Operational	Not Operational / Maintain Permit
Unit 233 – Fuel Gas Center	Operational	Operational
Unit 215 – Fractionation and Caustic Treatment	Operational	Not Operational / Maintain Permit

Process Units	Existing Rodeo Refinery	Rodeo Renewed Project[a]
Unit 250 – DHT/Renewable Diesel	Operational	Operational
Unit 240 – Light Hydrocracker	Operational	Operational
Unit 246 – Heavy Hydrocracker	Operational	Operational
Unit 248 – Jet/Aromatics Saturation	Operational	Operational
Unit 235 – Sulfur Recovery	Operational	Operational
Unit 100 – Wastewater Treatment	Operational	Operational
Unit 110 – Hydrogen Plant	Operational	Operational
Unit 40/76/80 – Blending and Shipping	Operational	Operational
Marine Terminal	Operational	Operational
Railcar Loading/Unloading	Operational	Operational
Steam Power Plant – Cogen	Operational	Operational
Main and MP-30 Flares	Operational	Operational
Sulfur Treatment Unit	Not Present	New Construction
Feed Pre-Treatment Unit	Not Present	New Construction

Notes:

[a] The permits for Unit 267, the Carbon Plant, and Units 236/238 will be relinquished upon startup of the Project. The permits for Unit 244, Unit 200, MP-30, Unit 215, and Unit 228 are being maintained for the possibility of future use, depending on economic and regulatory conditions. Therefore, the potential use of these units has been included as a part of the environmental analysis, and no reductions in emissions have been taken to account for the non-operational status of the units. Any future use of the units would be evaluated in accordance with CEQA and all applicable laws and regulations.

The permits for Unit 244, Unit 200, MP-30, Unit 215, and Unit 228 are being maintained for the possibility of future use, depending on economic and regulatory conditions. At this point, demolition of those units has not been scheduled. All other equipment and piping in the Rodeo Refinery that would be shut down or idled as part of the Project would be cleaned and evacuated of hazardous materials.

3.9.1.1 Reconfiguration of Process Units for Renewable Feedstock Processing

To accommodate the transition from processing crude oil to renewable fuels, Phillips 66 proposes to implement the following physical and operational changes to the processing units listed below:

- **U240 Hydrocracker:** Replace two existing reactor vessels at end of life. Replace and modify existing heat exchangers. Add new process surge vessel, minor chemical storage tanks, and feed filters. Retray four distillation towers.
- **U246 Hydrocracker:** Replace and modify existing heat exchangers. Add new exchangers, new minor chemical storage tanks, process pump, and feed filters. Retray two distillation towers.
- **U110 Hydrogen Plant:** Install new piping, fuel gas cooler, and control valve station to process renewable fuel gas at Unit 110 to produce renewable hydrogen.
- **Rail Butane Loading Rack:** Convert the existing butane rail loading stations to receive renewable feedstock by rail. Install new steam piping connections to warm up and liquefy renewable feed in railcars prior to unloading. For analysis purposes, impacts will be assessed based on utilizing existing rail capacity to unload up to 16 railcars per day.

Other Modifications to Existing Equipment

The remaining existing equipment and storage tanks at the Rodeo Refinery would be either repurposed for renewable feedstocks or idled for the new processes. Repurposing of equipment would include upgrading and/or re-routing existing piping and reaction chambers; adding minor ancillary components, such as catalyst or feedstock injectors; using existing facilities to allow receipt of feedstocks by tanker truck and the Marine Terminal; and storing renewable feedstocks and renewable products.

3.9.1.2 Proposed New Process Units

Feed Pre-treatment Unit

The proposed PTU would be constructed on the site of three existing storage tanks (Figure 3-2), which would be demolished. New equipment (three processing trains) would be added to decontaminate and condition the renewable feedstocks prior to processing. The decontamination process removes metals and other solids that would harm the ability of the hydroprocessing units to produce renewable transportation fuel. The process includes a combination of vacuum drying, adsorption, filtration, centrifugal separation, and FOG recovery.

Once fully implemented, the Project could receive up to 80,000 bpd (12-month rolling average) of renewable feedstocks, which would be processed in the proposed PTU. Initially, however, the PTU would consist of two processing trains[14] that could process approximately 53,000 bpd (12-month rolling average) of renewable feedstock. A third processing train would be added to the PTU at a later date resulting in a total processing capacity of up to 80,000 bpd. In addition, new piping would be installed to connect the new PTU to storage tanks and process units and interconnect process units.

Odor Management

To control Project-related odors, engineer control measures have been incorporated into the facility design. Engineered odor control strategies include covering potential odor-generating equipment with sealed covers, using fixed roof or floating roof tanks, reducing fugitive emissions, using scrubbing and incineration systems, and minimizing system upsets.

Odor control at the railcar unloading racks includes a sealed header system tied to activated carbon canisters. Prior to treatment all tallow feedstocks would be routed to Tank 100, which would be repurposed with a new fixed roof and nitrogen gas blanket in the vapor space. The nitrogen blanket gas would be discharged through activated carbon canisters for odor control prior to release to atmosphere. Other renewable feedstock with the potential to generate odors would be stored in the existing facility tankage that currently include odor treatment and abatement facilities.

The PTU includes a vapor collection system and vapor treatment consisting of a biofilter followed by an activated carbon adsorption bed. The biofilter would reduce most odor constituents from the collected vapor, and any residual components discharged from the biofilter would be further removed by the activated carbon bed.

Sulfur Treatment Unit

The new Sulfur Treatment Unit (STU) would include a thermal oxidizer, waste heat boiler, caustic scrubber tower, and fresh and spent caustic tanks to control ammonia and hydrogen sulfide off-gases. The STU would be located immediately adjacent to the existing Sulfur Recovery Unit (U235).

[14] Processing trains are separate parallel sets of processing equipment doing the same function (in this case, pre-treating feed). Having two different sets, or trains, for instance, allows for one to be down for maintenance while the other continues to operate.

3.9.2 Discontinue Use of Carbon Plant

Following Project completion, the Rodeo Refinery would no longer produce petroleum coke feed that is suitable for the Carbon Plant Site; consequently, the Carbon Plant Site would be shut down and demolished. At this point, demolition activities have not been scheduled.

As the date of the Carbon Plant shutdown nears, Phillips 66 would begin to reduce onsite inventory of these chemicals. Any chemicals remaining onsite after the shutdown would be used elsewhere in the Rodeo Refinery or returned to the chemical supplier.

3.9.3 Discontinue Use of Santa Maria Facility

The Santa Maria Site processes petroleum crude oil using processes similar to those of the Rodeo Refinery. The facility receives crude oil by pipeline and truck and ships partially refined feedstock by pipeline and petroleum coke byproduct by rail. Crude oil and products are stored in tanks onsite. Because the Project would discontinue the processing of crude oil at the Rodeo Refinery, the Santa Maria Site would no longer be necessary to provide feedstock, so it would be demolished. Most existing process equipment and support infrastructure (storage tanks, buildings, onsite piping and pumps) at the Santa Maria Refinery would be demolished. At this point, Phillips 66 has no plans to reuse the Santa Maria Site, and any further reuse and remediation would be subject to subsequent environmental analysis, as applicable.

3.9.4 Pipeline Sites

The Pipeline Sites are located throughout the state in San Luis Obispo, Santa Barbara, Kern, Kings, Fresno, Merced, Stanislaus, San Joaquin, Alameda, and Contra Costa Counties. The Project would not involve construction or modifications at the Pipeline Sites (i.e., Lines 100, 200, 300, and 400). Upon completion of the Project, the Pipeline Sites (Figure 3-5) would be unnecessary to transport crude-based feedstocks to the Rodeo Refinery. However, the Pipeline Sites are currently being marketed for sale. If a sale is completed, the pipelines could continue to operate at the discretion of the new owner.

For purposes of analysis, it is assumed that Phillips 66 would decommission the Pipeline Sites. The pipelines would be cleaned and taken out of service, or sold; they would not be excavated as part of this Project. Phillips 66 would empty and clean the collection points with pipeline inspection gages (PIGs). The PIGs are inserted into the line via PIG traps. The PIG is then forced through the pipelines sweeping the inside walls along the way by scraping the sides and pushing along any debris with it. PIGs are also used to inspect the interior condition of the pipeline to detect and prevent problems such as corrosion, deformations and metal loss.

Material removed from the pipelines would be handled in accordance with applicable regulations and standard practices, which include processing as much as possible in Phillips 66 refining facilities and disposing of the remainder in approved facilities, including hazardous waste facilities, as appropriate.

3.10 Overall Project Construction/Demolition Phase

The Project would involve construction and demolition activities at the Rodeo Site and demolition activities at the Santa Maria Site and Carbon Plant Site. Construction at the Rodeo Site would take approximately 21 months and is assumed to begin as early as the first quarter of 2022 (Figure 3-8). Demolition of the Santa Maria Site would begin once the necessary demolition permits are obtained from San Luis Obispo County and other regulatory agencies, which Phillips 66 expects will occur in 2022.

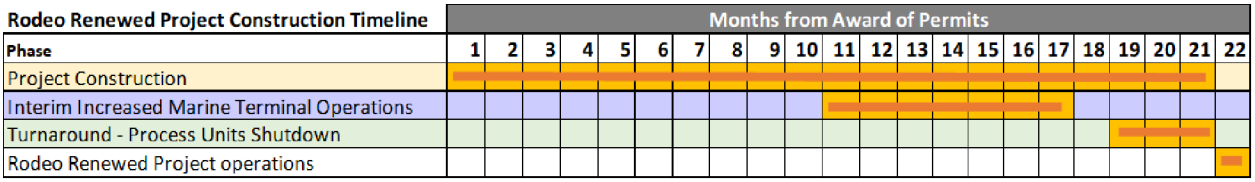

Figure 3-8. Rodeo Renewed Project Construction Timeline

Other construction activities including, but not limited to, soil boring equipment, heavy lift construction cranes, and metallic welding would be used to support the construction/demolition phase at each site. All related construction activities would occur within boundaries of each site (except for one laydown area as described below for the Rodeo Site). Construction cranes would be used to lift and maneuver equipment and piping into place. Soil boring equipment would be used to install pier foundations for equipment support structures. Field welding would be required to complete the installation of pre-fabricated structural steel and piping sub-assemblies.

3.10.1 Construction/Demolition Safety Plan at Each Site

Phillips 66 would prepare a Project Construction Safety Plan for each site that would address site safety during the construction and demolition phases. The Construction Safety Plan would address excavation practices, confined space work, heavy equipment and vehicle operations, hot work, lifting and hoisting, working at heights, scaffolding and other forms of access, safe isolation of energy, and simultaneous operations (construction during non-turnaround period when units are operating).

3.10.2 Fire Protection

As required by the Contra Costa County Fire Protection District, Phillips 66 will prepare a Management of Change (MOC) for the refinery process unit modifications that would enable it to shift to processing renewable feedstocks. The MOC would include an assessment of the refinery process changes on process piping corrosion, including the frequency of piping inspections. The Project would likely have multiple MOCs for the different phases of the Project.

Prior to construction, Phillips 66 would submit design documents and specifications to the Fire Protection District for its review and approval of the installation, repair, or modification of process piping and equipment containing flammable and combustible liquids to ensure compliance with the minimum fire and safety requirements. The MOC and the design documents and specifications would be prepared after design review has been completed and all discretionary agency permits have been issued.

3.11 Transitional Phase

The transitional phase represents a temporary 7-month increase in Marine Terminal vessel traffic at the Rodeo Refinery that occurs at the same time as Project construction at the Rodeo Refinery. During the transitional phase, the Rodeo Refinery would continue to refine crude oil into petroleum products. However, because Phillips 66 would idle its Santa Maria Site and discontinue use of the Pipeline Sites to transport petroleum-based feedstocks to the Rodeo Refinery, delivery of petroleum-based feedstocks to the Rodeo Refinery via the Pipeline Sites would decrease and eventually cease during the transition to renewable feedstocks. It is possible that all or a portion of the Pipeline Sites would be transferred to a third-party and/or used in a different service. However, for purposes of analysis it is assumed the pipelines would be decommissioned.

To procure alternative crude oil feedstock during construction, the Rodeo Refinery may temporarily increase deliveries of crude oil and gas oil feedstocks by tanker vessel, resulting in increased annual vessel calls to the Marine Terminal compared to baseline conditions. The estimated vessel traffic during this period is shown in Table 3-4. This temporary increase of crude and gas oil feedstocks at the Marine Terminal would not increase the amount of crude and gas oil that can be processed at the Rodeo

Refinery, but it would shift the source of these materials from the Pipeline Sites to the Marine Terminal. The temporary increase in vessel traffic is estimated to last a maximum of 7 months in the year prior to Project startup and would occur parallel to the end of the construction period (see Figure 3-8). No modifications to the Marine Terminal or MOTEMS are proposed.

Table 3-4. Marine Terminal Traffic and Crude/Gas Oil Deliveries during Transitional Phase

Activity	Baseline	Transitional Phase
Crude and Gas Oil Received through Marine Terminal (1,000 barrels/day 12-month average)	35	85
Pipeline Crude Received (1,000 barrels/day 12-month average)	70	0
Tanker Vessels (calls/year)	80	96
Barges (calls/year)	90	92

In 2019, the Rodeo Refinery processed approximately 105,000 bpd of crude oil and gas oil (approximately 70,000 of which arrived via Line 200 and 35,000 of which arrived via the Marine Terminal). Crude oil and gas oil deliveries via the Marine Terminal during the transitional period would peak at up to 85,000 bpd (12-month rolling average), which would temporarily exceed the current BAAQMD Title V permit limit of 51,182 bpd (12-month rolling average), for which a permit will be acquired.[15] This short-term increase would not require any changes to the Marine Terminal facilities. Once the Project is completed (estimated to be in early 2024), all deliveries of crude oil and gas oil would cease, and the deliveries of renewable feedstock by vessel would commence.

Phillips 66 commits to forgo the processing of heavy Canadian crude oil in the event the current Title-V permit limit of 51,182 bbrl/d (12-month rolling average) is exceeded, in alignment with previous commitments associated with the Marine Terminal throughput increase permit.

3.12 Site-Specific Construction and Demolition

The following sections describe the general construction/demolition activities, shut down and decontamination procedures, excavation and grading, amount of debris generated, and construction-related traffic associated with each of the Project sites.

3.12.1 Demolition and Construction Overview

All demolition and construction associated with the Project would be conducted in accordance with established procedures and BMPs and in compliance with applicable regulations and permits. Soil and construction debris generated by construction activities would be either re-used onsite or transported offsite for recycling or disposal as appropriate.

3.12.1.1 Rodeo Refinery Demolition and Construction

At the Rodeo Refinery, including the Rodeo Site and the Carbon Plant Site, construction would employ up to 500 workers at a time; the construction workforce is expected to be drawn from the greater East Bay region within a 1-hour commute distance. Construction would involve heavy equipment, such as loaders, earthmovers, cranes, and concrete trucks, and lighter-duty equipment, such as welders and compressors. Construction daily traffic may peak at 500 worker vehicle roundtrips, 165 heavy-duty hauling truck

[15] Title V permit limits also apply to gasoline range material that can be shipped from the Marine Terminal (25,000 bpd on a 12-month rolling average).

roundtrips, and 30 delivery/vendor vehicle round trips per day would access the construction site via the Cummings Skyway route.

As described in Section 3.9, *Project Components*, equipment and piping to be removed would be drained and cleaned prior to demolition. The following wastes could be generated during construction and demolition:

- Steel equipment and piping,
- Spent welding rods,
- Concrete,
- Wood trash,
- Asbestos and other insulation,
- Debris, and
- Cardboard and refractory.

3.12.1.2 Santa Maria Site

Santa Maria demolition construction would employ approximately 18 workers per day; the construction workforce peak traffic is assumed to be 36 worker trips per day commuting for a distance of 13 miles, each way. Demolition would involve heavy equipment, such as loaders, excavators, cranes, and rough terrain forklifts, and lighter-duty equipment, such as welders and generators. Total truck hauling trips are estimated to be 731 one-way trips over the duration of the demolition period (262 days), based on 5,800 cubic yards demolition material to be moved. As described in Section 3.9, *Project Components*, equipment and piping to be removed would be drained and cleaned prior to demolition. Wastes associated with demolition of the Santa Maria Site would be the same as that for the Rodeo Refinery.

3.12.2 Excavation and Grading—Rodeo Site, Carbon Plant Site and Santa Maria Site

Excavation would be required to install new foundations for process equipment and other equipment at the Rodeo Site. Clean, excavated soil would be combined with soil from clean stockpiles located on the Rodeo Site. Grading would be performed as necessary.

Excavated soil during construction or demolition would be tested in accordance with state and federal regulations for waste characterization. Any excavated soil exceeding applicable waste characterization thresholds would be disposed at an offsite licensed waste disposal facilities based on its characteristics. Non-hazardous soil would be extracted from onsite locations and used as fill, as appropriate.

3.12.3 Construction and Demolition and Parking and Laydown Areas—Rodeo Site, Carbon Plant Site and Santa Maria Site

During construction and demolition, parking and onsite services would be provided within the boundary of the individual sites, except for one laydown area, an asphalt area at the Selby site associated with the Rodeo Site (Figure 3-2).

Parking would be provided for workers, equipment, or delivery drivers primarily onsite, or at adjacent properties owned by Phillips 66. Temporary administrative, sanitary, and comfort services would be provided in areas designated for these purposes within each site. In addition to the laydown areas, small areas throughout the sites would be used for temporary storage and staging of materials and equipment.

3.12.4 Debris and Waste—Rodeo Site, Carbon Plant Site and Santa Maria Site

Any demolished equipment would be cut up, salvaged, and recycled. Phillips 66 would remove and dispose of recycled equipment in compliance with all applicable regulations. An asbestos and lead survey would be performed prior to the initiation of demolition, and required permits would be obtained, as needed, from the appropriate agencies. For construction impact estimation purposes, approximately 19,400 tons of waste would be generated from the Santa Maria and Carbon Plant Sites.

3.12.5 Construction/Demolition Traffic

Project demolition and construction would generate additional construction and personal vehicle trips. Vehicular traffic would include construction workers, management employees, administrative personnel, and delivery truck drivers.

At the Rodeo Refinery, the number of workers in the anticipated peak day is approximately 500 workers. At the Santa Maria Site, the number of workers in the anticipated peak day is approximately 18 workers.

3.12.6 Shutdown Process and Decontamination Procedures

For all sites, the process unit and equipment shutdown and decontamination process would follow all applicable health, safety and environmental requirements.

3.12.6.1 Rodeo Refinery and Santa Maria Site

For process units at the Rodeo Refinery, labeled as *Not Operational* as part of the Rodeo Renewed Project in Table 3-3, the shutdown process would generally include the actions noted below. The first four actions would occur within 6 months of ceasing processing of hydrocarbons pending regulatory approvals. The shut-down and demolition process for the Santa Maria Site would also include all of the actions below:

- Complete final process runs. Shut down all equipment.
- Drain and remove process hydrocarbon contents of equipment. Depending on equipment's former process (i.e., materials used and stored), a combination of some or all of the following would be used: steam purges, water flushes, hydrocarbon flushes, and vapor phase (soap) flushes. Specific protocols for would depend on the types of material and residuals present in the equipment and its structural design.
- Blind and air gap equipment and open the equipment to the atmosphere. Disconnect all equipment from any operating process.
- De-energize electrical equipment from any live electricity sources.
- Applies to units prior to any demolition, if applicable. Develop inspection schedules for out-of-service pressure equipment, piping, and other structures and use qualified personnel to complete these inspections.
- In addition to actions above, develop and complete demolition plans for process units labeled as *Relinquish Permit* in Table 3-3.

3.12.6.2 Pipeline Sites

The process of decommissioning the Pipeline Sites would include the following actions, which are anticipated to be completed within 6 months of final process runs.

- Complete final process runs. Shut down all equipment.

- Drain and remove process hydrocarbon contents of equipment. Purge product using nitrogen and a combination of some or all of the following: disc, cup, brush or foam pigging (pigging is the use of a mechanical device, or *PIG*, to clean and perform other maintenance on pipelines). Specific protocols would depend on the types of material and residuals present in the equipment and its structural design.

3.13 CEQA Baseline

This EIR is a factual document, prepared in conformance with CEQA, and written to make the public and decision-makers aware of any potential environmental consequences of the proposed Project. The EIR evaluates the Project within its environmental context, and analyzes the potential environmental impacts compared to an existing condition or baseline. The CEQA baseline is the point or span in time or the set of conditions against which expected future environmental conditions associated with a proposed Project are compared. Changes relative to the baseline environmental conditions resulting from the Project represent the environmental impacts that must be disclosed under CEQA. Therefore, definition of an appropriate baseline is an integral part of the CEQA process.

Section 15125 of CEQA provides the following guidance for establishing the baseline:

> *(a) An EIR must include a description of the physical environmental conditions in the vicinity of the project. This environmental setting will normally constitute the baseline physical conditions by which a lead agency determines whether an impact is significant. The description of the environmental setting shall be no longer than is necessary to provide an understanding of the significant effects of the proposed project and its alternatives. The purpose of this requirement is to give the public and decision makers the most accurate and understandable picture practically possible of the project's likely near-term and long-term impacts.*
>
> *(1) Generally, the lead agency should describe physical environmental conditions as they exist at the time the notice of preparation is published, or if no notice of preparation is published, at the time environmental analysis is commenced, from both a local and regional perspective. Where existing conditions change or fluctuate over time, and where necessary to provide the most accurate picture practically possible of the project's impacts, a lead agency may define existing conditions by referencing historic conditions, or conditions expected when the project becomes operational, or both, that are supported with substantial evidence. In addition, a lead agency may also use baselines consisting of both existing conditions and projected future conditions that are supported by reliable projections based on substantial evidence in the record.*

The baseline year is typically selected as the year in which the NOP is released for a proposed Project. However, the lead agency has the discretion to select a more appropriate baseline year for purposes of the environmental analysis conducted in the EIR if conditions warrant such a selection and is supported by substantial evidence (*Neighbors for Smart Rail v. Exposition Metro. Line Constr. Auth.*, 57 Cal. 4th 439, 449 [2013] [agency has discretion to decide how existing physical conditions are to be realistically measured, subject to support by substantial evidence]).

The COVID-19 pandemic and its effects on the economy of the San Francisco Bay Area and the northern California region, warrants consideration of a baseline year other than 2020, the year that the NOP was released (December 21, 2020). Contra Costa County determined that for most resource areas 2019 is the appropriate baseline year, which is the same as the physical environmental conditions in the vicinity of the Project as they existed prior to the COVID-19 pandemic.

The pandemic specifically affected consumer demand for refined petroleum fuels and on refinery production. Contra Costa County considered different baseline scenarios with technical input from the BAAQMD and Phillips 66. In addition, Contra Costa County determined that the baseline for analysis of facility emissions should be different than the baseline for marine vessel emissions. The following discussion explains in detail why 2020 is not an appropriate baseline for the Project and identifies more historically representative baseline periods for facility emissions and marine vessel emissions.

3.13.1 2020 Is Not Appropriate Baseline Year due to the COVID-19 Pandemic

As a result of the COVID-19 pandemic, which caused a decrease in demand for petroleum fuels, throughput at the Rodeo Refinery facilities (Refinery and Carbon Plant) in 2020 was approximately 15 percent lower than the more typical throughout of previous years (2016–2019), as shown in Table 3-5.
As a result of the COVID-19 pandemic, which caused a decrease in demand for petroleum fuels, throughput at the Rodeo Refinery facilities (Refinery and Carbon Plant) in 2020 was approximately 15 percent lower than the more typical throughout of previous years (2016–2019), as shown in Table 3-5.
This irregularity indicates that 2020 was not a representative year for refinery and carbon plant operations compared to prior years.

Table 3-5. Historical Throughput for Rodeo Refinery Facilities (Refinery and Carbon Plant Combined)

Type	Units	2016	2017	2018	2019	2020
Feedstocks	MBPD	117	124	125	120	104
Products	MBPD	118	126	127	121	105

Note: MBPD = thousand barrels per day

3.13.2 Baseline for Rodeo Refinery Facility Emissions

Annual facility emissions for the Rodeo Refinery[16] and neighboring Carbon Plant[17] during recent years are summarized in Table 3-6.[18] After review of throughput trends and facility emissions at the Rodeo Refinery, Contra Costa County determined that the most representative and reasonably conservative[19] CEQA baseline for analysis of facility emissions is calendar year 2019. This determination is based on the following:

- The year 2019 is the most recent full calendar year prior to the NOP release date (December 21, 2020).
- Market conditions during 2020 were unusual as a result of the COVID-19 pandemic.
- As shown in Table 3-6, emissions of the criteria pollutants nitrogen oxides (NO_X), sulfur dioxide (SO_2), carbon monoxide (CO), precursor organic compounds[20] (POC), and GHGs were lower in 2019 than in 2018 and therefore more conservative for the EIR analysis due, in part, to lower annual throughput (Table 3-5).

[16] BAAQMD Permit to Operate Emission Invoices (plant 21359).

[17] BAAQMD Permit to Operate Emission Invoices (plant 22).

[18] Although the Carbon Plant is proposed to be shut down as part of the Project, the Carbon Plant is included in the baseline as it reflects relevant physical conditions.

[19] Under CEQA, conservative assumptions are purposely used to avoid understatement or underestimating of a project's impact on the environment, or to "err on the side of caution."

[20] An alternative term for ozone-forming VOC.

- The further reduction in SO_2 from 2018 to 2019 reflects the installation of sulfur oxides control equipment at the Carbon Plant to comply with lower SO_2 emission limits in BAAQMD Regulation 9 Rule 14 that went into effect January 1, 2019.
- The most recent 3-year (2018–2020) average for facility emissions is higher or similar to the baseline of 2019. Although they are similar, 2019 was chosen as the baseline year for the facility emissions due to the modifications implemented at the Carbon Plant as a result of BAAQMD Regulation 9 Rule 14. A 5-year or 3-year average baseline was not selected because they would not be representative of the emissions under this regulation. Furthermore, a 2019 baseline year requires analysis of greater project emissions impacts relative to the baseline period and also reduces the amount of emissions reduction credits that can be claimed when the Carbon Plant is shut down. Thus, 2019 is a more conservative[21] baseline than a 3-year or 5-year average.

Table 3-6. Annual Stationary Source Emissions for San Francisco Rodeo Refinery Facilities (Refinery and Carbon Plant Combined)

Pollutant	Units	2016	2017	2018	2019	2020	3-Year Average (2018–2020)	5-Year Average (2016–2020)
Nitrogen Oxides (NO_X)	Tons/Year	590	547	626	535	523	561	564
Sulfur Dioxide (SO_2)	Tons/Year	1,829	1,677	2,004	1,421	1,255	1,560	1,637
Carbon Monoxide (CO)	Tons/Year	213	85	125	103	285	171	160
Precursor Organic Compounds (POC) / Hydrocarbons	Tons/Year	166	287	122	119	118	120	162
Particulate Matter with a Diameter of 10 Microns or Less (PM_{10})	Tons/Year	94	93	102	95	89	95	95
Particulate Matter with a Diameter of 2.5 Microns or Less ($PM_{2.5}$)	Tons/Year	92	91	97	90	81	89	90
Greenhouse Gas Carbon Dioxide Equivalent (CO_2e)	Metric Tons/Year	1,380,677	1,435,813	1,450,566	1,338,496	1,290,629	1,359,897	1,379,236

3.13.3 Baseline for Marine Vessel Emissions

Contra Costa County determined that marine vessel activity warrants a different baseline compared to that described above for facility emissions. Vessel activity has a different operational cycle than facility operations, with vessel activity varying by as much as 50 percent from year-to-year. Table 3-7 summarizes vessel activity from 2016 through 2020.

[21] Under CEQA, conservative assumptions are purposely used to avoid understatement or underestimating of a project's impact on the environment, or to "err on the side of caution."

Table 3-7. Annual Vessel Traffic at Rodeo Refinery Marine Terminal

Vessel Class	2016	2017	2018	2019	2020	3 Year Average (2017–2019)	5 Year Average (2018–2020)
Barge Visits	83	63	73	135	86	90	98
Tanker Visits	81	82	76	84	63	81	74
Total	**164**	**145**	**149**	**219**	**149**	**170**	**172**

*Note: 3-year average numbers used in the analysis were averaged and rounded by vessel category and tier level group, which results in a lower baseline and larger tanker increase being evaluated.

As shown in Table 3-7, vessel activity was substantially higher during 2016 and 2019 than during 2017, 2018 and 2020, with 2019 having the highest vessel activity; i.e., 219 visits, compared to other years. Unlike facility operations as discussed above, where the change in emissions in 2019 reflected regulatory changes that would continue in the future, vessel activity could be lower in the future. Therefore, use of 2019 as the baseline year for vessel activity may be characterized as over-stating baseline conditions, thus underestimating Project impacts. In contrast, using either 2017 or 2018 as the baseline year would understate physical conditions, thus overestimating Project impacts. For comparison purposes, the 3-year average from 2018 through 2020 is also provided in Table 3-7, showing a total number of vessels at 172, similar to the 2017–2019 baseline of 170 vessels.

Therefore, to provide for a characterizing environmental analysis for marine vessel emissions, the baseline is a 3-year average, from 2017 through 2019, i.e., 170 visits comprising 53 percent barges and 47 percent tankers, which is a reasonably balanced mid-range value that would avoid underestimation or overestimation of Project impacts.

3.13.4 Baseline Comparison to Martinez Refinery Renewable Fuels Project EIR

The Marathon Petroleum Corporation has also submitted a land use application with Contra Costa County for a renewable fuels project, the Martinez Refinery Renewable Fuels Project. As with the Rodeo Renewed Project, Marathon proposes to modify and repurpose their existing refinery to discontinue production of fossil fuels and produce renewable fuels from sources including, rendered fats, soybean and corn oils, and other cooking or vegetable oils. Both projects essentially have the same objectives, which include eliminating refining of crude oil while preserving jobs, assisting California to achieve its renewable energy goals, and produce fuels that reduce GHG emissions, particulate matter, and other pollutants by providing cleaner burning fuels.

Although the two projects are very similar, two different CEQA baseline approaches are used. As described above, for the Rodeo Renewed Project Contra Costa County determined that two baselines are appropriate for CEQA analysis; one for facility emissions (2019) and one for marine vessel emissions (3-year average of 2016 through 2019).

However, for the Martinez Refinery Renewable Fuels Project Contra Costa County determined the most appropriate baseline is a 5-year average between October 1, 2015 and September 30, 2020, for both facility and marine vessel emissions. This 5-year baseline captures a high throughput year (Year 3), as well as two comparably lower throughput years (Year 1 and Year 5), reflecting the variation in production at the Refinery. Likewise, the 5-year baseline captures the Refinery's turnaround cycle[22], including two years in 2016 and 2020 when no equipment turnarounds occurred and air emissions would have been higher because all equipment was in operation.

[22] The term turnaround refers to the period of time when refinery equipment is down for maintenance and inspection and is not available to process feedstocks, compared to the typical 24-hour-a-day, 365-day-a-year operation.

Although different, both baseline approaches were determined to be representative and reasonably conservative for purposes of the CEQA analysis. Both baselines reflect actual operating conditions, given the fluctuations in the market as a result the COVID-19 pandemic that affected production in 2020, and differing assumptions related to active versus inactive refinery equipment as a result of turnarounds, which increase overall facility emissions. Comparing baseline averages (5 years for Martinez Refinery, both facility and vessel emissions, versus 1 year facility emissions and 3 years vessel emissions for Rodeo Refinery), the Rodeo Renewed Project baseline does not use a 5-year average for facility emissions because it would not be representative of actual emissions due to the modifications at the Carbon Plant that were made as a result of BAAQMD Regulation 9 Rule 14, which requires reduced SO_2 emissions. Therefore, for the Rodeo Renewed Project assumes the 1-year 2019 average, which is more conservative.

3.14 References

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4 Environmental Setting, Impacts, and Mitigation Measures

4.1 Resources Areas Eliminated from Further Analysis

Analysis shows that there is no possibility of impacts for several resource areas, and, accordingly, these resource areas can be eliminated from more detailed analysis. Baseline conditions generally reflect the 2019 operation and maintenance of the Project sites as a petroleum refinery (2017–2019 for marine vessels), including operation and maintenance activities. The remaining resource areas are addressed in detail throughout this chapter.

The following discussion addresses environmental resource topics that would not be affected by the proposed Project, resulting in a *No Impact* level of significance under CEQA.

4.1.1 Agriculture and Forest Resources

Based on CEQA Guidelines Appendix G, a project would cause adverse impacts to agriculture and forest resources if it would:

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

The Project would be located entirely within the developed areas of the Rodeo Site, Carbon Plant, and the Santa Maria Site. The Rodeo Site, which is a heavy industrial use site, has operated on this site for more than 100 years. Both the Contra Costa County Zoning Map and the Land Use Element map of the Contra Costa County General Plan designate the site for heavy industrial use. The Rodeo Site is not identified as Prime Farmland, Unique Farmland, or Farmland of Statewide or Local Importance on the Contra Costa County Important Farmland Map (California Department of Conservation, Division of Land Resource Protection 2020); it is designated as Urban and Built-Up Land.

Demolition activities at the Santa Maria Site would take place entirely on Urban and Built-Up land and, thus, would not convert farmland to non-agricultural use. The proposed Project also includes the Pipeline Sites that are located in a number of counties in California. The proposed changes include either the sale of the pipelines or the cleaning and decommissioning of the pipelines, neither of which would affect current land uses. No expansion or physical alteration would occur that could affect important farmland; therefore, no impact would occur.

b. Potential of the proposed Project to conflict with existing agricultural zoning, or a Williamson Act contract?

The Rodeo Site is zoned for heavy industrial uses and is not covered by a Williamson Act contract. Thus, implementation of the Project would not interact with or conflict with existing agricultural zoning or a Williamson Act contract. Activities at the Santa Maria Site would not take place on agricultural lands and, thus, would not conflict with any Williamson Act contracted lands.

The sale of the pipelines or the cleaning and decommissioning of the pipelines would not affect current land uses. No expansion or physical alteration would occur that could affect agricultural zoning or Williamson Act contracts; therefore, no impact would occur.

c. *Potential of the proposed Project to conflict with existing zoning for, or cause rezoning of, forest land, timberland, or timberland zoned Timberland Production?*

The Rodeo Site is not zoned as forest land or timberland, and no forests are located on the site. No forest or timberland is located on or near the Santa Maria Site. The proposed Project also includes the Pipeline Sites that are located in a number of counties in California, including portions of the Los Padres National Forest. The sale of the pipelines or the cleaning and decommissioning of the pipelines would not affect current land uses. No expansion or physical alteration would occur that could affect forest resources. Therefore, no conflict with existing zoning for, or cause rezoning of, forest land, timberland, or timberland zoned Timberland Production would occur.

d. *Potential of the proposed Project to result in the loss of forest land or conversion of forest land to non-forest use?*

As stated above, the Project sites are not zoned as forest land, and no forests are located on the site. The sale of the pipelines or the cleaning and decommissioning of the pipelines would not affect current land uses. No expansion or physical alteration would occur that could affect forest resources; therefore, the Project would not result in the loss of forest land or conversion of forest land to non-forest uses, and no impact would occur.

e. *Potential of the proposed Project to involve other changes in the existing environment, which due to their location or nature, could result in conversion of farmland to non-agricultural use or conversion of forest land to non-forest use.*

The Project would be constructed and operated entirely within the developed area of the Rodeo Site, and demolition at the Santa Maria Site would likewise occur on developed land. The Rodeo and Santa Maria Sites do not contain farmland, and no aspects of the Project would affect any identified agricultural land off site. The Rodeo and Santa Maria Sites do not contain forest land, and no aspects of the Project would affect any identified forest land off site. The sale of the pipelines or the cleaning and decommissioning of the pipelines would not affect current land uses. No expansion or physical alteration would occur that could involve other changes in the existing environment.

Therefore, the Project would have not involved 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.

4.1.2 Mineral Resources

Based on CEQA Guidelines Appendix G, a project would cause adverse impacts to mineral resources if it would:

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

The Rodeo Refinery, including the Carbon Plant, is considered a heavy industrial use and has operated on its present site for more than 100 years. Despite the potential for unknown mineral resources to be present beneath the site, the Rodeo Refinery is not delineated by the Contra Costa County General Plan as a significant mineral resource area (Contra Costa County 2010). All construction/demolition and operation and maintenance would be located entirely within the developed area of the Rodeo Refinery on land where access to mineral resources is already precluded.

The Santa Maria Site is not located in an area designated as a mineral resource by the state or the county. Accordingly, demolition activities would not preclude access to any mineral resource.

The nearest MRZ-2 zone, which is 0.6 mile from the Santa Maria Site, would likewise not be affected because all activities would take place within the existing Santa Maria Site.

The proposed Project also includes the Pipeline Sites that are located in a number of counties in California. The proposed changes include either the sale of the pipelines or the cleaning and decommissioning of the pipelines, neither of which would affect current land uses. No expansion or physical alteration would occur that could affect mineral resources.

Therefore, no potential exists for the Project to result in the loss of availability of known mineral resources. No impact would occur.

b. *Potential of the proposed Project to result in the loss of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan.*

The Rodeo Refinery is not delineated by the Contra Costa County General Plan as a significant mineral resource area (Contra Costa County 2010). In addition, the locations of construction and demolition activities of the Project are already developed and dedicated to refinery operations. The Santa Maria Site is not delineated by the state or the county as a significant mineral resource area. The sale of the pipelines or the cleaning and decommissioning of the pipelines would not affect current land uses. No expansion or physical alteration would occur; therefore, the Project would not result in the loss of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan. No impact would occur.

4.1.3 Population and Housing

Based on CEQA Guidelines Appendix G, a project would cause adverse impacts to population and housing if it would:

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)*

Operation and Maintenance

The Project does not include new offsite infrastructure or other improvements that could lead indirectly to population growth. No new long-term employees would be added to the Rodeo Refinery workforce, and because the Santa Maria Refinery would be demolished, workers would no longer be necessary, reducing the need for housing. Therefore, operation and maintenance of the proposed Project would not create new demand for long-term housing, and no impact would occur.

The proposed Project also includes the Pipeline Sites that are located in a number of counties in California. The proposed changes include either the sale of the pipelines or the cleaning and decommissioning of the pipelines. Placement of the “pigs” (pipe inspection gages) would be done at existing maintenance points along the pipeline routes by existing maintenance personnel. Neither of these potential scenarios would induce substantial population growth in the area that could affect housing.

Construction and Demolition

Potential impacts associated with the Project would be direct impacts caused by temporary, new employment opportunities (i.e., construction workers). Construction and demolition related to the proposed Project, including the transitional phase, would lead to temporary increases in population. At the Rodeo Refinery, approximately 500 construction workers would be required at its peak over the approximate 21-month construction period, and a smaller number to accomplish demolition at the Santa Maria Site. It is estimated that approximately 80 construction workers would be expected to relocate temporarily to the area, with fewer to the Santa Maria Refinery area.

Many of the construction jobs would be specific to certain construction skills or activities. Most of the construction workforce for both sites would be drawn from the construction labor pool available in the respective regions. These workers would commute to the work site rather than move closer to the site. Therefore, the portion of the new construction jobs that would be filled by current residents would have no impact on population or housing.

The estimated 80 construction workers that would be drawn to the sites on a temporary basis would need to locate suitable housing (assumed to be rental housing based on the temporary nature of Project construction). The Bay Area's housing vacancy rate as measured by the 2010 Census was 6.4 percent, totaling approximately 178,000 units (Association of Bay Area Governments/Metropolitan Transportation Commission [ABAG/MTC] 2020). In 2019, San Luis Obispo County had nearly 124,000 housing units, 61 percent of them owner-occupied. Vacancy rates are generally in the neighborhood of 10 percent, but this high rate can be attributed to the large number of vacation and seasonal rental units (San Luis Obispo County 2015). Because of the relatively low number of temporary workers and the number of vacant housing units, it is expected that adequate housing would be available to meet the temporary increase in demand. Therefore, no impact on housing resulting from the temporary population increase would occur.

b. Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere

Construction, demolition, and operation and maintenance of the Project would occur entirely within the boundaries of the Rodeo Refinery and Santa Maria Site. No proposed uses would have the potential to remove housing or displace people, and no housing exists on these sites. Therefore, implementation of the Project would not displace substantial numbers of existing people or housing. No impact would occur.

Environmental Justice

Although not required by CEQA, Contra Costa County is addressing Environmental Justice in this EIR to provide the public and decision-makers a better understanding of the Environmental Justice communities in or adjacent to the Project and the implications of the proposed Project on those communities. The analysis of the Project's effect on Environmental Justice communities is provided in Section 4.17, *Environmental Justice*.

4.1.4 Public Services

Based on CEQA Guidelines Appendix G, a project would cause adverse impacts to public services if it would:

a. Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:

Fire Protection?

Police Protection?

Schools?

Parks?

Other public facilities?

Operation and Maintenance

The Project does not include new offsite infrastructure or other improvements that lead indirectly to population growth and the need for additional public services. No new long-term employees would be added to the Rodeo Refinery workforce, and because the Santa Maria Refinery would be demolished, workers would no longer be necessary, reducing the need for public services. Therefore, operation and maintenance of the proposed Project would not create new demand for public services and no impact would occur.

The proposed Project also includes the Pipeline Sites that are located in a number of counties in California. The proposed changes include either the sale of the pipelines or the cleaning and decommissioning of the pipelines. Placement of the "pigs" (pipe inspection gages) would be done at existing maintenance points along the pipeline routes by existing maintenance personnel. Both of these potential scenarios would not induce substantial population growth in the area that could affect public services.

Construction and Demolition

Construction and demolition related to the proposed Project, including the transitional phase, would lead to temporary increases in population. At the Rodeo Refinery, approximately 500 construction workers would be required at its peak over the approximate 21-month construction period, and a smaller number to accomplish demolition at the Santa Maria Site. It is estimated that approximately 80 construction workers would be expected to relocate temporarily to the area, with fewer to the Santa Maria Refinery area.

Fire Protection

At both the Rodeo Refinery and Santa Maria Site, Phillips 66 currently provides internal fire protection and emergency services with adequate emergency personnel, equipment, and response times. The proposed Project would require a similar level of protection as under baseline conditions at the Rodeo Refinery and would not increase the demand for fire protection services. Therefore, it is not expected that the proposed Project would affect service ratios or response times or increase the use of existing fire protection or emergency facilities such that substantial physical deterioration, alteration, or expansion of these facilities would occur. No impacts related to fire protection would occur.

Police Protection

At both the Rodeo Refinery and Santa Maria Site, Phillips 66 currently provides internal police protection with adequate emergency personnel, equipment, and response times. The proposed Project would not increase the demand for police protection services compared to baseline conditions. Therefore, it is not expected that the proposed Project would affect service ratios or response times or increase the use of existing police protection or facilities such that substantial physical deterioration, alteration, or expansion of these facilities would occur. No impacts related to police protection would occur.

Schools

Any short-term increase in population due to construction activities at the Rodeo Refinery and Santa Maria Site would be considered minimal because the majority of required construction workers currently reside within commuting distance of the Project sites. Thus, the number of potential school-age children of these construction workers would similarly be minimal. No new school facilities would be necessary to serve the proposed Project, so no adverse environmental

impacts from facility construction and operation would occur. Therefore, no impacts would occur related to schools.

Parks

Any short-term increase in population due to construction activities at the Rodeo Refinery and Santa Maria Site would be considered minimal because the majority of required construction workers currently reside within commuting distance of the Project sites. Therefore, it is unlikely that the Project would contribute to any notable increase in use of local recreational facilities, including parks. Therefore, no impacts related to parks would occur.

Other Public Facilities

Any short-term increase in population due to construction activities would be considered minimal because the majority of required construction workers currently reside within commuting distance. Therefore, it is unlikely that the Project would contribute to any notable increase in need for other public services. In addition, the proposed Project would be constructed entirely within Rodeo Refinery boundaries and therefore would not require physical alteration of other public facilities. No impacts to public services would occur.

4.1.5 Recreation

CEQA Guidelines Appendix G states that a project would have adverse impacts to recreation resources if it would:

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

Operation and Maintenance

The Project does not include new offsite infrastructure or other improvements that could lead indirectly to population growth. No new long-term employees would be added to the Rodeo Refinery workforce, and because the Santa Maria Refinery would be demolished, workers would no longer be necessary, reducing the need for recreational facilities. Therefore, operation and maintenance of the proposed Project would not create new demand for long-term recreational facilities, and no impact would occur.

The proposed Project also includes the Pipeline Sites that are located in a number of counties in California. The proposed changes include either the sale of the pipelines or the cleaning and decommissioning of the pipelines. Placement of the “pigs” (pipe inspection gages) would be done at existing maintenance points along the pipeline routes by existing maintenance personnel. Both of these potential scenarios would not induce substantial population growth in the area that could affect recreational facilities.

Construction and Demolition

Construction and demolition related to the proposed Project, including the transitional phase, would lead to temporary increases in population. At the Rodeo Refinery, approximately 500 construction workers would be required at its peak over the approximate 21-month construction period, and a smaller number to accomplish demolition at the Santa Maria Site. It is estimated that approximately 80 construction workers would be expected to relocate temporarily to the area, with fewer to the Santa Maria Refinery area.

Major infrastructure improvements such as parks and recreational facilities are generally planned and constructed to serve hundreds or thousands of people. The temporary population increase

resulting from the proposed Project would be minor in relation to the overall population of the area. It is expected that the new temporary residents would be dispersed throughout multiple communities. Thus, the actual increase in users at each park or recreational facility would be insignificant in relation to the design capacity.

Therefore, minor increases in usage those associated with the proposed Project would not result in substantial or accelerated physical deterioration of parks and recreational facilities. No impact would occur.

b. *Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment.*

The proposed Project does not include parks or recreational facilities. Additional parks and recreational facilities would not be necessary as a result of the proposed Project. As explained previously, the temporary population increase associated with the proposed Project would not be large enough to require the construction of parks and recreational facilities. Therefore, no impact would occur related to construction or expansion of recreation facilities.

4.1.6 Utilities and Service Systems

CEQA Guidelines Appendix G states that a project would have adverse impacts to utilities and service systems if it would:

a. *Would the project require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunication facilities, the construction or relocation of which could cause significant environmental effects?*

The proposed Project does not involve any uses that would require new or expanded utilities and service systems, including water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunication facilities, or the relocation of these facilities. The Project would not generate new long-term populations that could result in the need for new or expanded services.

Because the Santa Maria Refinery and Carbon Plant would be demolished, utilities would no longer be required. It is speculative to assume a future land use at the Santa Maria Site; therefore, it is unknown whether any onsite utilities would be maintained or relocated at this time. Any proposed reuse of the site would be subject to separate permitting and approval processes. The proposed Project also includes the Pipeline Sites that are located in a number of counties in California. The proposed changes include either the sale of the pipelines or the cleaning and decommissioning of the pipelines, which would not relocate or require expanded utilities services.

Therefore, operation and maintenance of the proposed Project at the Rodeo Refinery and Santa Maria Site would not result in an increase in demand for new or expanded water or wastewater treatment facilities, the construction or relocation of which could cause significant environmental effects. No impact would occur.

b. *Would the project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?*

c. *Would the project result in a determination by the wastewater treatment provider that 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?*

Construction and Demolition

Water use during construction of the Project would be temporary and would be primarily related to dust suppression and concrete production. This short-term and temporary use of water would not affect available water supplies. No impact would occur.

All wastewater generated during construction and demolition at the Rodeo Site and the Carbon Plant would be routed to the refinery's Wastewater Treatment Plant. That facility has a maximum treatment capacity of approximately 10 mgd but under baseline conditions treats approximately 2.8 mgd. Therefore, wastewater generated by construction and demolition activities would be accommodated by the existing Wastewater Treatment Plant. Wastewater generated during demolition of the Santa Maria Site would be handled by that facility's treatment plant until it is demolished, after which any wastewater requiring treatment (which would be small amounts associated with demolition activities) would be contained and transported offsite for treatment in municipal facilities. No impact would occur.

d. Would the project generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

e. Would the project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

Refer to Section 4.16, *Solid Waste,* for discussion of solid waste impacts related to operation, maintenance, construction, and demolition of the Project.

4.1.7 References

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4.2 Aesthetics

4.2.1 Introduction

This section presents analysis of the Project's relationship to aesthetic resources, also referred to as visual resources. Discussed are the physical and regulatory settings, the baseline for determining environmental impacts, the significance criteria used for determining environmental impacts, and potential impacts associated with Project construction and demolition, the transitional phase, and operation and maintenance at the Rodeo Refinery. The Santa Maria Site is addressed to the extent information is available and at a qualitative level of discussion.

The Project also includes the Pipeline Sites—four regional pipelines serving the Santa Maria Site and the Rodeo Refinery. The Santa Maria Site is connected to the Rodeo Refinery by approximately 200 miles of subterranean pipeline, crossing San Luis Obispo, Santa Barbara, Kern, Kings, Fresno, Merced, Stanislaus, San Joaquin, Alameda, and Contra Costa Counties. Phillips 66 proposes to empty and clean the pipelines at existing maintenance access points and to decommission or sell them; they would not be excavated as part of this Project. No physical changes would occur.

Visual/aesthetic resources consist of the landforms, vegetation, rock and water features, and cultural modifications that create the visual character and sensitivity of a landscape. The primary existing visual/aesthetic factors considered in this EIR are: Visual Quality, Viewer Exposure, and Visual Sensitivity, as introduced below.

4.2.1.1 Visual Quality

Visual Quality is defined as the overall visual impression or attractiveness of an area as determined by the arrangement of all landscape features or characteristics, including landforms, roads, houses, rocks, water features, and vegetation patterns. The attributes of line, form, and color combine in various ways to create visual characteristics such as variety, vividness, coherence, uniqueness, harmony, and pattern, which all contribute to the overall visual quality of an area.

4.2.1.2 Viewer Exposure

Viewer Exposure addresses the variables that affect viewing conditions from potentially sensitive areas. Viewer exposure considers the following factors:

- **Landscape visibility:** Ability to see Project elements within the landscape;
- **Viewing distance:** Proximity of sensitive viewers to the Project;
- **Viewing angle:** Whether Project would be viewed from above (superior), below (inferior), or from a level (normal) line of sight;
- **Extent of visibility:** Whether line of sight is open and panoramic to the Project site or restricted by terrain, vegetation, and/or structures; and
- **Duration of view:** The length of time the landscape elements are visible.

4.2.1.3 Visual Sensitivity

Visual sensitivity is the overall measure of an existing landscape's susceptibility to adverse visual changes. People in different visual settings, typically characterized by different land uses surrounding a project, have varying degrees of sensitivity to changes in visual conditions depending on the overall visual quality of the place. In areas of more distinctive visual quality, such as designated scenic highways, designated scenic roads, parks, and natural areas, visual sensitivity is characteristically more pronounced.

4.2.2 Environmental Setting

This section describes the existing visual character of the region and local area, followed by a discussion of the visual character and sensitivity of the public viewpoints, including locations from which the Project would be visible to the public.

4.2.2.1 Contra Costa County

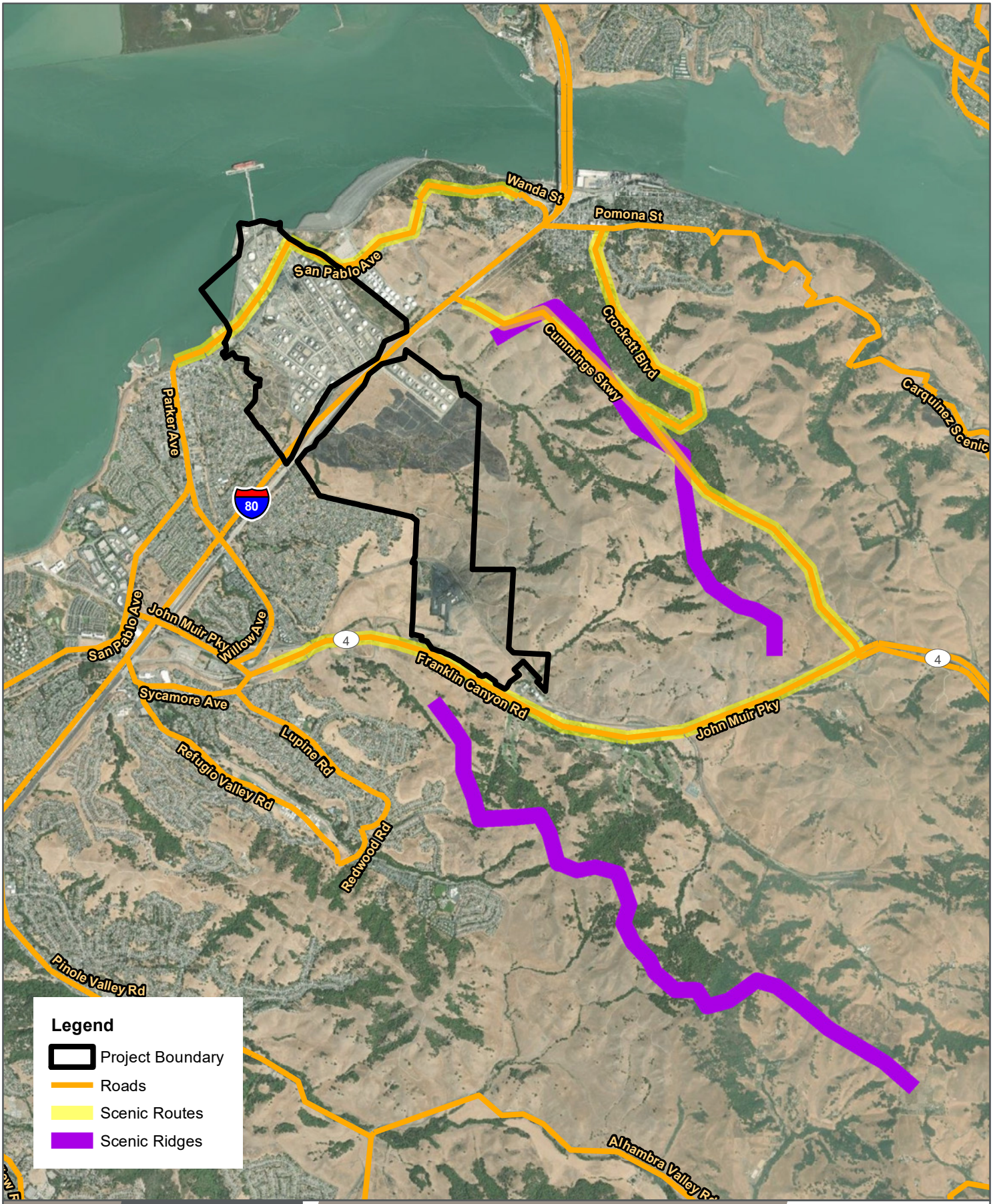
Visual Characteristics

The visual character of the area surrounding the Rodeo Refinery is fairly diverse as it includes inland ridgelines and undulating terrain around the Carbon Plant, and flat shoreline terrain adjacent to the San Pablo Bay where the Rodeo Site is located. The inland vegetation community consists of native grasslands interspersed with trees while the coastal area consists of salt marsh vegetation. The inland area is dominantly open space with the Crockett Hills Regional Park east of the Carbon Plant. Ridgelines and higher inland elevations provide views of surrounding hillsides and the San Pablo Bay and shoreline. Land use on the San Pablo Bay shoreline is varied and includes residential, urban, industrial, and open space and recreation areas. The Carquinez Strait connects San Pablo Bay on the west to Suisun Bay on the east, and serves as a shipping channel for commercial and military vessels. The Strait is traversed by the Carquinez Bridge, and its shorelines are home to industrial areas, parks, and urban development. Approximately half of San Pablo Bay shorelines are wildlife refuge areas, a classification that includes national wildlife refuges, state wildlife areas and ecological reserves, as well as other shoreline recreational areas, limited residential uses, and remnants of former railroad tracks and ferry transportation networks. These shoreline areas provide views of the San Pablo Bay, the surrounding shoreline, and the communities of Vallejo and Benicia on the north side of the Bay.

The Rodeo Site lies on the eastern edge of the San Pablo Bay at the southern bank of the western edge of the Carquinez Strait (Figure 4.2-1). Immediately northeast of the Rodeo Site is the NuStar Shore Terminal and tank structures. Residential areas are located south of the site in the town of Rodeo, as well as dispersed residences northeast in the town of Crockett. I-80 runs southwest to northeast with, the Rodeo Site directly to the west and the Carbon Plant over a mile to the east. State Route 4 runs west to east, 1.5 mile south of the Rodeo Site and directly south of the Carbon Plant. San Pablo Avenue runs through the Rodeo Site parallel to I-80 and adjacent to the shoreline at some points. Cummings Skyway runs perpendicular to I-80 northwest to southeast north of both the Rodeo Site and the Carbon Plant.

Scenic Waterways and Ridges

The Open Space Element of the Contra Costa County General Plan highlights two specific types of scenic resources specific to the county: ridges, hillsides, and rock outcroppings and the San Francisco Bay/Delta estuary system. As shown in Figure 4.2-1, there are two county-designated scenic ridges in the area surrounding the Project; one scenic ridge runs northwest to southeast along a portion of Cummings Skyway and to the south of Cummings Skyway as it approaches the intersection with State Route 4, and the second scenic ridge begins south of State Route 4 near the Carbon Plant and runs southeast. Both of these scenic ridges have views of surrounding undeveloped hillsides and areas surrounding the San Pablo Bay. The San Pablo Bay is designated as a scenic waterway.



Imagery Source: Maxar 11/1/2019

Figure 4.2-1: Contra Costa County Scenic Routes and Scenic Ridges

Rodeo Renewed Project
Contra Costa County, CA

0 2,000 4,000 Feet

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GIS Analyst: anna.clare

Scenic Routes

The Transportation Element of the Contra Costa County General Plan designates specific roads, street, and freeways as scenic routes, which are defined as a route that "traverse a scenic corridor of relatively high visual or cultural value." The scenic routes surrounding the Project area are:

- **State Route 4:** Highway located south of the Carbon Plant. Designation begins in Hercules and ends in Bay Point at the intersection with Railroad Ave.
- **Cummings Skyway:** Located approximately 0.5 mile northeast of the refinery. The designation starts at the San Pablo Avenue and Cummings Skyway intersection, and ends where Cummings Skyway crosses State Route 4/John Muir Parkway to the east.
- **San Pablo Avenue:** Designation begins at San Pablo Avenue and First Street in the western portion of Rodeo and ends where San Pablo Avenue crosses I-80 in Crockett.
- **Crockett Boulevard:** Intersects Cummings Skyway, and the designation starts in the town of Crockett and ends where the route intersects Cummings Skyway

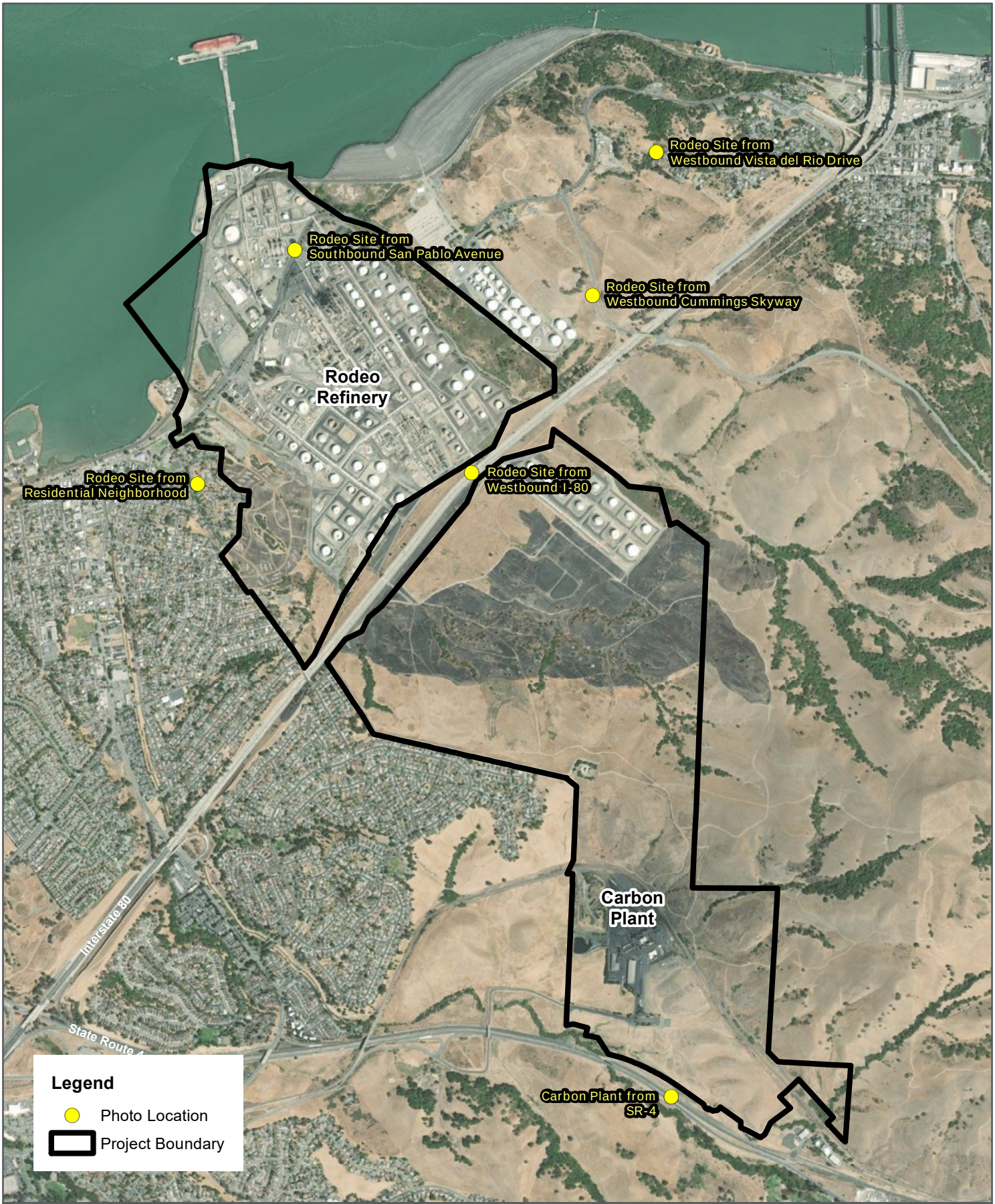
The purpose of these designated scenic routes is to control and protect scenic visual resources, such as natural topographic features such as hills, prominent ridgelines and scenic vistas, along these roadways. Additionally, views of the San Francisco Bay/Delta estuary system including the San Pablo Bay and Carquinez Strait are prevalent in the Project vicinity, and are considered an important scenic visual resource (Contra Costa County 2010). These locally defined scenic routes could potentially be eligible for State Scenic Route designations (Contra Costa County 2021); however, at this time none of these routes are designated by Caltrans as eligible State Scenic Routes (Caltrans 2021).

Public View Corridors

The Rodeo Refinery is visible from various locations within several public view corridors, including I-80, Cummings Skyway, Vista Del Rio, San Pablo Avenue, and several residential neighborhoods north and south of the Rodeo Refinery. The locations of representative viewpoints are shown on Figure 4.2-2. Each of the corridors' viewpoints is described and illustrated below in Figures 4.2-3 through 4.2-7. The Rodeo Refinery is the dominant visual feature in the immediate vicinity of the Rodeo Site, which is completely developed with industrial elements including tall stacks, large storage tanks, large swaths of pipelines, roadways, and other mechanical equipment that exhibit an industrial character. The visual character surrounding the Rodeo Site is defined by land uses that include open space, residential and other urban development, and the San Pablo Bay.

Views from I-80

Figure 4.2-3 shows the visual character of the Rodeo Site from the westbound lanes of I-80, where a large portion of the facility is visible because I-80 is at a higher elevation. Views are limited from the eastbound lanes to only higher elevations of the Rodeo Site. The westbound view shows the highway and the Rodeo Site in the foreground, urban/suburban development in the middle ground, and background views of San Pablo Bay and coastal mountains, including Mount Tamalpais. The visual setting includes a mixture of natural and manmade visual elements, including the highway and existing roadways, Rodeo Refinery, residential neighborhoods, and open space. Background views of the bay provide a scenic quality to the setting along this corridor.



Imagery Source: Maxar 11/1/2019

Figure 4.2-2: Rodeo Refinery Viewpoints

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Views from Cummings Skyway

There are limited views of the Rodeo Refinery from several locations along Cummings Skyway, between I-80 and San Pablo Avenue. Existing topography and vegetation block and limit views from this roadway to storage tanks at the far north end of the Rodeo Site, and the areas that would be affected by the Project are not visible. Figure 4.2-4 illustrates views from westbound Cummings Skyway, with the roadway and hill slopes in the foreground, rolling hills in the middle ground, and background views of the Rodeo Refinery along the ridgeline. The visual setting includes a mixture of natural and manmade visual elements, including the roadway, undeveloped hillsides, and glimpses of the Rodeo Refinery. Views of rolling hillsides and vegetation provide a scenic quality to the setting along this corridor.

Views from Vista Del Rio Drive

There are limited views of the Rodeo Site from several locations along Vista Del Rio Drive. Existing topography and vegetation block or limit views from this roadway to storage tanks at the far north end of the Rodeo Refinery, and the areas that would be affected by the Project are not visible. Figure 4.2-5 illustrates views from westbound Vista Del Rio Drive, with the roadway, fencing, and vegetation in the foreground, rolling hills and open space in the middle ground, background views of the Rodeo Site along the ridgeline, and distant views of San Pablo Bay and mountains beyond, including Mount Tamalpais. Views of rolling hillsides and vegetation provide a scenic quality to the setting along this corridor.

Views from San Pablo Avenue

There are views of the Rodeo Site from several locations along San Pablo Avenue. Existing topography and vegetation limit southbound views from this roadway while approaching the facility, and the areas that would be affected by the Project are not visible. Because of existing roadway curvature, vegetation, and structures, northbound views vary, from clear background views to fragmented and obscured views. San Pablo Avenue passes directly through the Rodeo Site; therefore, there are views of portions of the facility adjacent to the roadway, although fencing and other barriers obscure these views. Figure 4.2-6 illustrates the view from southbound San Pablo Avenue, with portions of the Rodeo Refinery in the foreground and middle ground and background views of urban development. The visual setting includes primarily manmade visual elements, including the roadway, refinery facilities, and residential neighborhoods in the background. From some points along the roadway there are glimpses of San Pablo Bay and the coastal mountains, but these are fragmented and do not contribute the scenic quality of the setting.

Views from Surrounding Residential Areas

There are limited views of the Rodeo Site from locations within adjacent residential neighborhoods south of the Rodeo Refinery. Because of varying density and heights of existing vegetation, elevation changes, and differing structure heights, views of the Rodeo Site vary and are mostly of the towers, stacks, and storage tanks at the north end of the site, where the elevations are higher. Figure 4.2-7 illustrates views from one of the adjacent residential neighborhoods, showing residential structures in the foreground and middle ground, and background views of the Rodeo Site. The visual setting is primarily of manmade visual elements, including the roadway, residential structures, and the refinery in the background. There is some vegetation in the buffer between the neighborhood and Project site, but these areas significantly contribute to scenic quality of the setting.

Source: Google Earth 2021a

Figure 4.2-3 View of Rodeo Site from Westbound I-80

Figure 4.2-4 View of Rodeo Site from Westbound Cummings Skyway

Source: Google Earth 2021b

Figure 4.2-5 View of Rodeo Site from Westbound Vista del Rio Drive

Figure 4.2-6 View of Rodeo Site from Southbound San Pablo Avenue

Figure 4.2-7 View of Rodeo Site from Residential Neighborhood

Figure 4.2-8 View of the Carbon Plant from State Route 4

Views from State Route 4

In general, views from State Route 4 are of rolling hillsides that provide a scenic quality to the setting along this corridor. There are limited views of the Carbon Plant from a segment of State Route 4. Because of existing topography, distance from the highway, and dense vegetation in front of the Carbon Plant, views of the facility from this roadway are intermittent and largely obscured. Main views are of the taller stacks extending above the existing vegetation and of some of the facility's other structures. The clearest view of the Carbon Plant, from westbound State Route 4 (see Figure 4.2-8), shows open grasslands in the foreground, screening trees and the Carbon Plant in the middle ground, and rolling hills in the background.

4.2.2.2 San Luis Obispo County

Visual Characteristics

Given the large area of San Luis Obispo County, the proximity to the coast, and the natural topography, scenic resources are diverse and unique. The area is characterized by expansive dunes along the coastline that transition to mesas. The coastline and dune area is home to unique specialized vegetation. Going inland the native landscape is comprised of grasslands, chaparral, coast live oak woodland communities, and introduced eucalyptus trees that form groves. Fresh water resources, such as creeks and streams, generally run east to west to join with the ocean. Land use in the southwest portion of the County is predominantly open space and agricultural with a number of small residential communities.

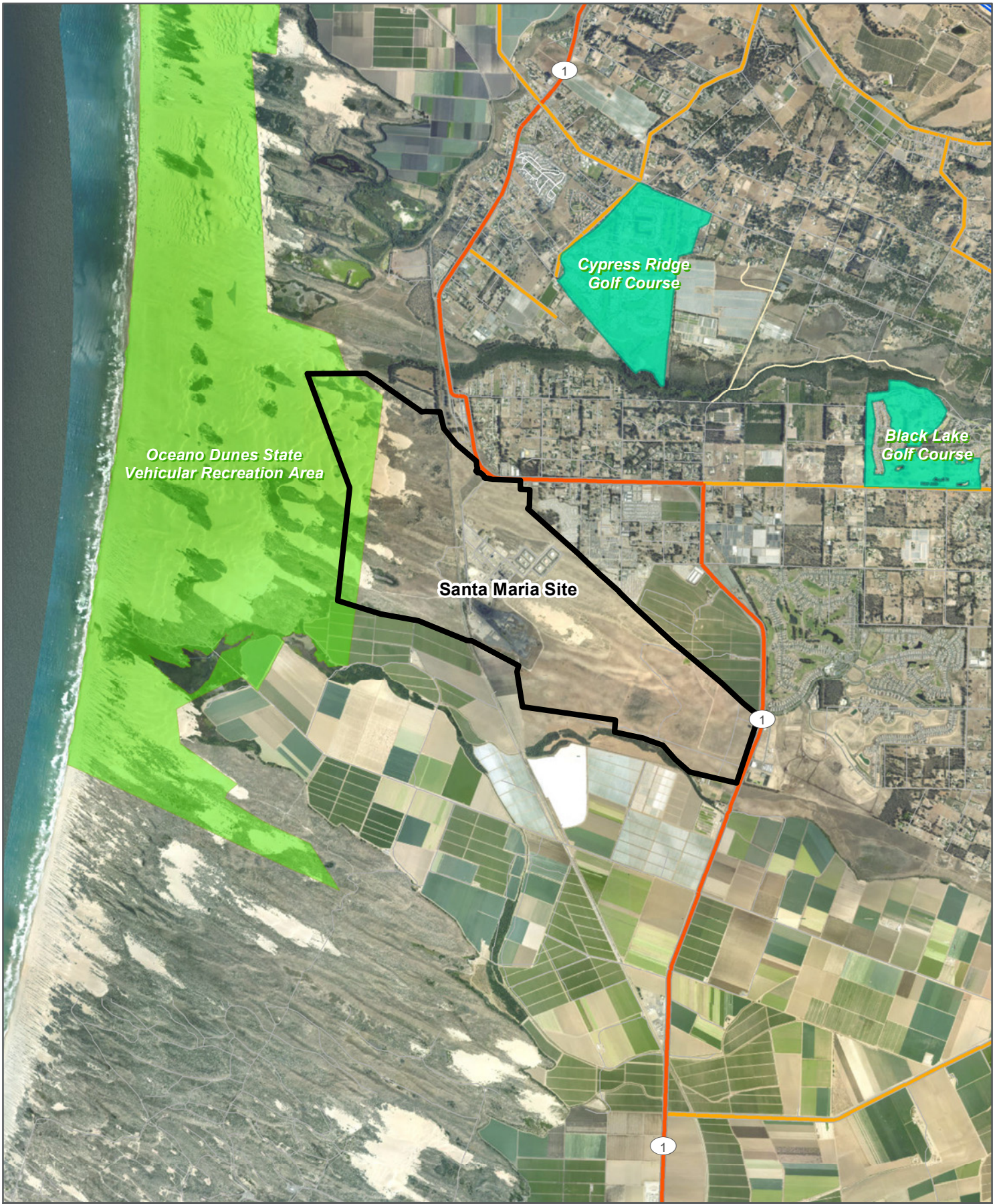
The Santa Maria Site is surrounded by a buffer area of open space grassland on most sides. To the north and east are residential communities mixed with some heavier commercial uses, such as stockyards and truck storage areas. To the south are agricultural fields and to the west is an open space area that transitions into dunes toward the Pacific Ocean. While there is development in the area, it remains largely dominated by open space with mesa and dune habitats and agricultural fields. Characteristic scenic views of the area capture the mesa and dune habitat that leads into the Pacific Ocean. Highway 1 skirts around the Santa Maria Site to the north, and moves slightly inland, perpendicular to the coast, and then to the east as it turns back and runs parallel to the coast (Figure 4.2-9).

Scenic Roads and Highways

The San Luis Obispo County General Plan Coastal Zone Framework includes the Circulation Element, which defines scenic roads and highways. North of the Santa Maria Site, from the City of San Luis Obispo to the Monterey County line, Highway 1 is designated as a State Scenic Highway and National Scenic Byway. No scenic roads or highways are located in the vicinity of the Santa Maria Site (San Luis Obispo County 2018).

Public View Corridors

The area north and east of the Santa Maria Site has been developed into residential areas and golf resorts. Although the region is becoming more suburbanized, the area south and east of the Santa Maria Site still maintains much of its rural character, due in large part to the existing cropland, open space, and dunes (see Figure 4.2-9). These attributes contribute to a moderately high visual quality for the region, as shown on Figure 4.2-10 (the Santa Maria Site is visible in the distance at the right edge of the figure).



Imagery Source:
Maxar
11/1/2019

Figure 4.2-9: Aerial of Santa Maria Site and Surrounding Land Uses

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Source: San Luis Obispo County 2014

Figure 4.2-10 View of Santa Maria Site Looking West from State Route 1 on the Nipomo Mesa

The landscape of the Santa Maria Site is defined by undulating topography covered predominately by coastal scrub and sparse grasses. A few low ridgelines cross the immediate area in an east-west orientation, and the area gradually decreases in elevation to the south, toward Little Oso Flaco Creek. The undulating topography often limits views through and across the landscape.

The visual character of the Santa Maria Site, including the existing coke processing facility, is one of heavy-industry. Onsite elements include large stacks, storage tanks, the existing processing plant, above-ground pipes, material storage, large-scale equipment and trucks, railroad tracks and railcars. Because of the tall stacks and towers, portions of the Santa Maria Site can be seen from much of the surrounding area. Topography and intervening vegetation largely block the refinery's buildings and ground-level activities from viewing locations to the north and east. Because the topography generally flattens-out southwest of the site, viewpoints in that area have the greatest visual exposure to the Santa Maria Site itself (Figure 4.2-11). The western edge of the Santa Maria Site accommodates Amtrak passenger trains. Due to the speed of the travelling passenger trains, and views from either side of the passenger cars, and other passenger distractions, passengers only have fleeting views of the site.

Source: San Luis Obispo County 2014

Figure 4.2-11 View of Santa Maria Site Looking North from Oso Flaco Road

4.2.3 Regulatory Setting

4.2.3.1 State Authority

California Coastal Act Section 30251 Scenic and Visual Qualities

This section of the Coastal Act protects scenic and visual qualities of coastal areas and recognizes these qualities as a resource of public importance. As a result, the Coastal Act identifies that permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural land forms, to be visually compatible with the character of surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas. It is expected that conformance with the BCDC and County of San Luis Obispo visual resource policies will ensure consistency with applicable Coastal Act policies.

State of California Scenic Highway Program

In 1963 the Caltrans Scenic Highway Program was established to protect scenic highway corridors from changes that would diminish the aesthetic value of lands adjacent to highways. The state statutes governing the Scenic Highway Program are found in the Streets and Highways Code, Section 260 et seq. A highway may be designated as “scenic” depending on how much of the natural landscape can be seen by travelers, the scenic quality of the landscape, and the extent to which development intrudes upon the travelers’ enjoyment of the view. No state-designated scenic routes or highways are in the Rodeo Refinery area, although I-680 is a designated scenic highway just to the south. A portion of State Route 4 in Contra Costa County, east of the Carbon Plant, is an eligible State Scenic Highway (Caltrans 2021).

4.2.3.2 Local and Regional Authority

San Francisco Bay Conservation and Development Commission's San Francisco Bay Plan

The San Francisco Bay Conservation and Development Commission (BCDC) comprises 27 appointees from local governments and state/federal agencies and administers the California Coastal Act (which implements the federal Coastal Zone Management Act) in the San Francisco Bay Area. The BCDC has jurisdiction within the defined boundaries of the San Francisco Bay, including the Bay itself, wetlands, and shorelines.

Among the four kinds of scenic locations described in the Contra Costa County General Plan, the San Francisco Bay/Delta estuary system is relevant to the Project regional setting (Contra Costa County 2010). The BCDC enforces the San Francisco Bay Plan, which it developed to help protect and preserve the San Francisco Bay. The San Francisco Bay Plan protects Bay resources through a number of policies that ensure visual, recreational, and biological preservation. Additionally, the plan recognizes the Bay's value in the shipping and transport industry (BCDC 2020). Specifically, the BCDC is charged with, among other tasks:

- Regulating all filling and dredging in San Francisco Bay (which includes San Pablo Bay);
- Regulating new development within the first 100 feet inland from the Bay to ensure that maximum feasible public access to the Bay is provided;
- Minimizing pressures to fill the Bay by ensuring that the limited amount of shoreline area suitable for high-priority water-oriented uses is reserved for ports, water-related industries, water-oriented recreation, airports, and wildlife areas;
- Pursuing an active planning program to study Bay issues so that BCDC plans and policies are based upon the best available current information; and
- Participating in California's oil spill prevention and response planning program.

BCDC's San Francisco Bay Plan Policies Applicable to Visual Resources

- **Policy 1.** To enhance the visual quality of development around the Bay and to take maximum advantage of the attractive setting it provides, the shores of the Bay should be developed in accordance with the Public Access Design Guidelines.
- **Policy 2.** All Bayfront development should be designed to enhance the pleasure of the user or viewer of the Bay. Maximum efforts should be made to provide, enhance, or preserve views of the Bay and shoreline, especially from public areas, from the Bay itself, and from the opposite shore.
- **Policy 11.** In areas of the Bay where oil and gas production is permitted, they should be treated or screened, so they will be compatible with the surrounding open water, mudflat, marsh or shore area.

Contra Costa County General Plan

The Scenic Resources section of the Contra Costa County General Plan identifies goals related to the preservation and protection of areas of high scenic value, scenic ridges, and the scenic qualities of the San Francisco Bay/Delta estuary system and the Sacramento-San Joaquin River/Delta shoreline. It identifies development features such as roads, power lines and storage tanks as having the potential to

degrade the scenic quality of an area if they are not carefully designed, located, and landscaped. General Plan policy states:

- **Policy 9-24:** The appearance of the county shall be improved by eliminating negative features such as non-conforming signs and overhead utility lines, and by encouraging aesthetically-designed facilities with adequate setbacks and landscaping.

The General Plan identifies numerous scenic vistas as a major component of the perception of Contra Costa County as a desirable place to live and work. The General Plan identifies four kinds of scenic locations in the county: (1) scenic ridges, hillsides, and rock outcroppings; (2) the San Francisco Bay/Delta estuary system; (3) Scenic Highways and Expressways; and (4) Scenic Routes. The unincorporated city of Rodeo is included in the Contra Costa County General Plan.

The Carquinez Strait is considered a scenic waterway in the Open Space Element of the Contra Costa County General Plan. The Scenic Routes section of the Transportation and Circulation Element identifies state- and locally-designated scenic routes in the County and defines a scenic route as a road, street, or freeway that traverses a scenic corridor of relatively high visual or cultural value. It consists of both the scenic corridor and the public right-of-way (Contra Costa County 2010).

San Luis Obispo County

San Luis Obispo County General Plan

The Conservation and Open Space Element defines the unique visual resources of the region and the goals and policies that protect these resources. Specific Sensitive Resource Areas are identified for which Scenic Protection Standards apply; however, the Santa Maria Site does not fall within or near a defined Sensitive Resource Area (San Luis Obispo County 2010).

The Conservation and Open Space Element highlights visual resources as open areas, scenic corridors, and the built environment or urban areas. Natural scenic features include unique geological forms, mountains and ridges, the coastal area with shorelines, wetlands, and bays, and riparian corridors. Views of these visual resources from highways and publicly accessible areas are protected and preserved by goals and policies in the General Plan. New development should not diminish these scenic views but rather maintain or even enhance visual resources.

The Circulation Element highlights specific scenic roadways that have views of scenic corridors or other unique visual resources of the area. Scenic views of the region include views of the coastal landscape, the Pacific Ocean, and mountains. Highway 1 from the Monterey County line to the City of San Luis Obispo is a State Scenic Highway and National Scenic Byway. Similar to the Conservation and Open Space Element, the Circulation Element contains goals and policies to protect these scenic views from development that would disturb visual quality (San Luis Obispo County 2018).

Coastal Zone Land Use Ordinance

The Coastal Zone Land Use Ordinance (CZLUO) is part of the San Luis Obispo County Code, and many goals and policies of the General Plan are implemented through sections and guidelines of the Code. There are more stringent visual resource regulations for those areas that fall under a designated critical viewshed, scenic corridor, or Sensitive Resource Area (San Luis Obispo County 2019).

4.2.4 Significance Criteria

Based on CEQA Guidelines Appendix G, except as provided in Public Resources Code section 21099 (where aesthetic impacts shall not be considered significant for qualifying residential, mixed-use residential, and employment centers):

a. Would the project have a substantial adverse effect on a scenic vista?

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

c. Would the Proposed Project, 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. Would the project create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?

4.2.5 CEQA Baseline

Baseline conditions reflect the 2019 operation and maintenance of the Rodeo Refinery and Santa Maria Site as petroleum refineries, including operation and maintenance activities. The baseline setting also includes the applicable regulatory framework to protect environmental resources, which are described above.

4.2.6 Approach to Analysis

The determination of impact significance is based on combined factors of Visual Sensitivity and the degree of Visual Change that the Project would cause. An adverse impact to visual/aesthetic resources may occur when a project: (1) perceptibly changes the existing physical features of the landscape that are characteristic of the region or locale; (2) introduces new features to the physical landscape that are perceptibly uncharacteristic of the region or locale, or become visually dominant in the viewshed; or (3) blocks or totally obscures aesthetic features of the landscape. Determining the significance of visual changes in the landscape depends on how noticeable the Project features would be from different public views, and the varying viewing conditions from which the Project can be seen.

4.2.7 Discussion of No Aesthetic Impacts

Review and comparison of the setting and Project characteristics show that no impacts would occur for some of the CEQA Guidelines criteria related to aesthetics impacts. The following discusses the reasoning supporting this conclusion:

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

The Rodeo Refinery and the Santa Maria Site are not within or near a designated State Scenic Highway. Additionally, Project construction and demolition would occur within the existing boundaries of these sites, which do not contain scenic resources such as trees, rock outcroppings, or historic buildings.[23] Therefore, the Project would not impact scenic resources within a state scenic highway. No impact would occur.

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

The Rodeo Refinery and Santa Maria Site are located in urbanized areas, and are designated and zoned for heavy industrial uses. All Project phases would be consistent with the land uses allowed under these designations. Therefore, no impact would occur related to conflicts with zoning and other regulations related to scenic quality.

[23] Historical resources reports conducted in 2015 at the Santa Maria Site concluded that the site is not eligible for California Record of Historical Resources listing. Refer to EIR Section 4.5, *Cultural Resources*.

d. Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.

Project construction at the Rodeo Site and demolition activities at the Carbon Plant and the Santa Maria Site would occur during daytime hours and would not require additional nighttime light. The proposed STU and PTU would replace existing structures within the heavily developed portion of the Rodeo Refinery. The addition of these units would not require additional illumination that would substantially and adversely affect existing day or nighttime views in the area. The Marine Terminal tanker and barge traffic associated with the operation and transitional phases of the Project would occur during the same hours as the baseline condition. In addition, after demolition of the Carbon Plant and the Santa Maria Site, artificial lighting and glare would be eliminated or substantially reduced below baseline conditions. Therefore, there would be no new sources of substantial light or glare that would adversely affect day or nighttime views in the area. No impact would occur.

4.2.8 Direct and Indirect Impacts of the Proposed Project

Table 4.2-1 presents a summary of potential aesthetic resource impacts and the significance determinations for each impact.

Table 4.2-1. Summary of Impacts

Impact	Significance Determination		
	LTS	LTSM	SU
Impact 4.2-1. Have a substantial adverse effect on a scenic vista?			
Rodeo Refinery and Santa Maria Site			
All Phases[a]	✓		

Notes: LTS = Less than significant, no mitigation proposed
LTSM = Less-than-significant impact with mitigation
SU = Significant and unavoidable

[a] Transitional phase applies only to Rodeo Refinery

IMPACT 4.2-1

a. Would the Proposed Project have a substantial adverse effect on a scenic vista?

Construction/Demolition: Less Than Significant, No Mitigation Proposed

Rodeo Refinery

Scenic resources and scenic views in this area, as defined by the Open Space Element of the Contra Costa County General Plan, consist of ridges and hillsides and the San Pablo Bay. The Transportation Element of the General Plan identifies specific roadways near the refinery as having scenic views of these features are prominent (Contra Costa County 2010). Roadways include State Route 4, San Pablo Avenue, Cummings Skyway, and Crockett Boulevard.

Construction and demolition at the Rodeo Site and Carbon Plant would result in temporary short-term visual impacts. Construction traffic would increase on San Pablo Avenue and State Route 4. Equipment would be visible from sections of San Pablo Avenue as it runs through the Rodeo Site. Construction activity may also be visible at points along the San Pablo Bay. Modifications to the Rail Butane Loading Rack may be visible from the south at adjacent waterfront areas. The Carbon Plant is visible from State Route 4; however, a line of trees partially blocks view of the site.

The visual changes associated with construction and demolition would not be highly noticeable since the activity would take place within the existing refinery boundaries. Construction and demolition activity and equipment would not be out of context with the existing industrial visual character of the area. Views from San Pablo Avenue, San Pablo Bay, and State Route 4 of the Carbon Plant and Rodeo Site would not substantially change. In addition, construction and demolition activity would be short term and temporary. Therefore, impacts related to creating a substantial adverse effect on a scenic vista would be considered less than significant.

Transitional Phase

Part of the Rodeo Site construction and demolition phase involves a 7-month transitional phase during which there would be an increase in vessel traffic at the Marine Terminal. An approximate 20 percent increase in tanker vessel calls (80 calls/year to 96 calls/year) and a 2 percent increase in barge calls (90 calls/year to 92 calls/year) would occur during this phase. However, vessel traffic is part of the existing visual character of the Rodeo Refinery, and this relatively slight increase would not be highly noticeable since the traffic would occur during the same hours as the existing refinery. Therefore, the transitional phase of the Project would not create a substantial adverse effect on a scenic vista scenic, including views of and from San Pablo Bay. The impact would be considered less than significant.

Santa Maria Site

As shown in Figure 4.2-9, the existing Santa Maria Site is not highly visible from the Highway 1. The addition of demolition equipment and activities would not be noticeable since views of the site from Highway 1 are distant. While there would be a minimal increase in truck traffic on and off site, this change in traffic would be consistent with existing uses, and would be short-term in duration. Therefore, demolition activities would not create a substantial adverse effect on scenic views of the surrounding open space, agricultural, and sand dune landscapes. The impact would be less than significant.

Operation and Maintenance: Less Than Significant, No Mitigation Proposed

Rodeo Site

New Units

The proposed Project includes the installation of an STU and PTU on the southern side of the Rodeo Site. The STU and PTU would likely not be visible from San Pablo Ave as there are a number intervening existing units and structures between the roadway and the new units. The new units would not be visible from Cummings Skyway or the scenic ridge that runs partially parallel to it as there are intervening topography largely obstructing views of the Rodeo Site.

The STU would be located within the existing refinery boundary, directly adjacent to the existing Sulfur Recovery Unit as shown on Figure 4.2-12. This part of the refinery can be viewed from I-80 (see Figure 4.2-3) and the residential area south of the Rodeo Site (see Figure 4.2-7). The view of the STU is fairly open with minimal obstruction; however, the duration of views would be brief since viewers are traveling at high speeds on I-80 and viewer sensitivity would be low. Unlike the view from I-80, public views of the STU from residential areas would be limited and potentially not visible as these views are buffered by slightly higher elevations, and existing intervening storage tanks between the residential area and the STU. The addition of new equipment may be noticeable from San Pablo Bay but would be consistent with the existing industrial views.

Figure 4.2-12 Rodeo Site Location of Existing Equipment and Proposed New Equipment

The PTU would replace three existing storage tanks. Figures 4.2-13 and 4.2-14 show the comparison between the existing site appearance and the proposed addition of the PTU, in terms of scale and form (the colors of the PTU are used to show the different unit process element only, new facilities would be painted to match other existing components). The PTU could be noticeable from I-80; however the duration of views would be brief since viewers are traveling at high speeds and viewer sensitivity would be low. Public views of the PTU from the residential area to the south is partially obstructed by the intervening buffer area and existing storage tanks.

Therefore, the addition of the STU and the PTU components would result in minimal visual changes, and potential impacts on scenic views would be less than significant. No mitigation is required.

Marine Vessel and Rail Traffic

Operation of the proposed changes at the Rodeo Site would involve an increase in marine and rail traffic from the baseline conditions as renewable feedstock would arrive primarily by tanker, barge and railcar. Tanker calls per year would increase from 80 to 201 and barges would increase from 90 to 161 calls.

Marine traffic in San Pablo Bay is part of the existing visual character. The San Pablo Bay has other industrial shipping facilities and marine terminals in proximity to the Rodeo Site that contribute to vessel traffic in the Bay. The proposed increase in marine traffic may result in a slight degradation of the natural views of the Bay and from the Bay of the surrounding natural landscape and hillsides. However, given the existing industrial visual character of the Rodeo Refinery and current Marine Terminal activity, the increase in marine traffic would not be highly noticeable. Impacts on scenic views would be less than significant. No mitigation is required.

Figure 4.2-13 Existing Use and Future Location of Pre-Treatment Unit at Rodeo Site

Figure 4.2-14 Rendering of Proposed Pre-treatment Unit

Daily railcar trips would increase at the Rodeo Site from 4.7 to 16 trips; however, the reduction in 7 daily trips to the Carbon Plant would result in only a limited increase (4 daily trips) in overall railcar traffic. At times public views of the Bay from San Pablo Avenue may be blocked by a moving railcar since the railroad skirts around the perimeter of the Bay. However, both vehicle traffic on San Pablo Avenue and railcars would be in motion and of short duration. Viewer sensitivity would therefore be low and any noticeable changes would not be highly noticeable compared to the baseline condition. In addition, a significant decrease in truck traffic to and from the Rodeo Refinery Site would occur (40,213 roundtrips per year to 16,026), which would somewhat improve the existing visual character of the area. Therefore, visual impacts related to rail and truck traffic would be less than significant.

In summary, sensitive viewers from scenic views of the San Pablo Bay and views from San Pablo Avenue would experience minimal visual change at the Rodeo Refinery. Construction and operation would be consistent with existing industrial activities and the visual character of the area, and therefore would not degrade identified scenic views in Contra Costa County or San Luis Obispo County. With new equipment located within the refinery boundaries, no scenic views would be blocked. In addition, removal of the Carbon Plant and Santa Maria Refinery would result in improvements of scenic views as compared to baseline conditions. Therefore, the Project would have a less than significant impact on the scenic views and no mitigation is required.

Santa Maria and Pipeline Sites

The existing Santa Maria Site would be demolished and the area cleared out as part of the Project. Therefore, it would not create a substantial adverse effect on scenic views of the surrounding open space, agricultural, and sand dune landscapes. It is speculative to assume a future land use at the Santa Maria Site; therefore, it is unknown whether any visual impacts would occur at this time. Any proposed reuse of the site would be subject to separate permitting and approval processes. The Pipeline Sites are mainly underground and above-ground components would not visually change as a result of the Project. Therefore, the impact for these sites would be less than significant.

Mitigation Measure: **None Required**

4.2.9 References

BCDC (San Francisco Bay Conservation and Development Commission). 2020. San Francisco Bay Plan. May. Available at: https://bcdc.ca.gov/pdf/bayplan/bayplan.pdf. Accessed June 30, 2021.

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4.3 Air Quality

4.3.1 Introduction

This section analyzes and evaluates the potential impacts of the Project on regional and local air quality from both stationary and mobile sources of air pollutants at the Rodeo Refinery, Santa Maria Site and Pipeline Sites. Discussed are the physical and regulatory settings, the baseline for determining environmental impacts, the significance criteria used for determining environmental impacts, and potential impacts associated with Project construction and demolition, the transitional phase, and operation and maintenance.

Analysis of potential impacts related to emissions of GHGs, and climate change are provided in Section 4.8, *Greenhouse Gas Emissions*.

4.3.2 Environmental Setting

This setting description provides an overview of local and regional information related to climate and meteorology, existing air quality conditions, sensitive receptors, and the air quality attainment status pertaining to the Project sites. As described in Chapter 1, *Project Description*, the Project sites include the Rodeo Refinery in northwestern Contra Costa County, consisting of the Rodeo Site and Carbon Plant Site, the Santa Maria Site in San Luis Obispo County, and four pipeline systems that collect crude oil for the Santa Maria Site and deliver semi-refined feedstock to the Rodeo Refinery (referred to hereafter as the Pipeline Sites).

4.3.2.1 Climate and Meteorology

The potential for pollutants to concentrate at a given location depends upon the quantity of pollutants emitted into the atmosphere in the surrounding area or upwind, and the ability of the atmosphere to disperse the contaminated air. The atmospheric dispersion is a function of factors such as topography and meteorology.

Rodeo Refinery

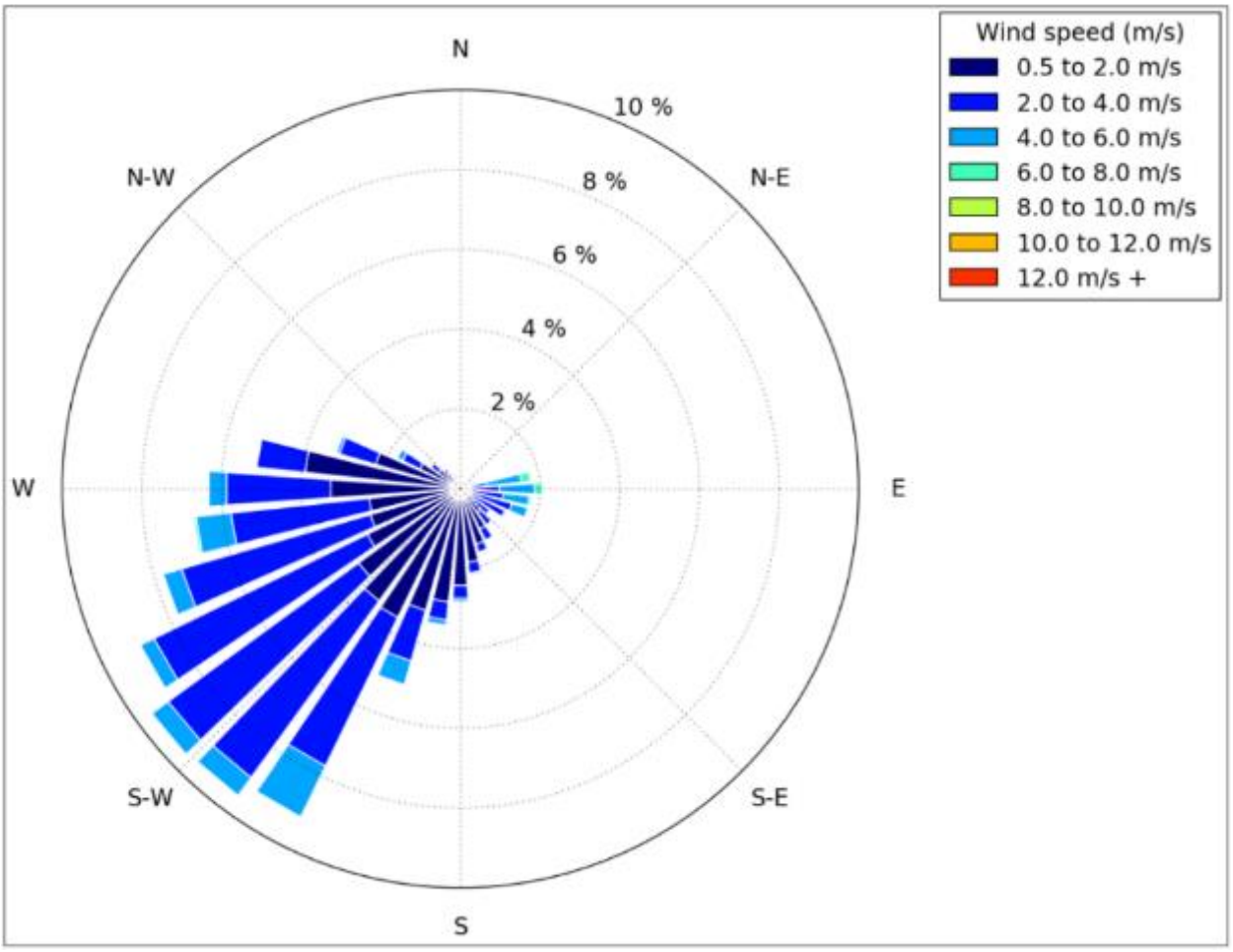
The climate of the greater San Francisco Bay Area, including Rodeo, is a Mediterranean-type climate characterized by warm, dry summers and mild, wet winters. The dominant feature of this climatic regime is a large, semi-permanent high-pressure system generally located over the eastern Pacific Ocean off the West Coast of North America. In winter, the Pacific high-pressure system generally weakens and shifts southward, allowing storms originating over the North Pacific to pass through the region. During summer and fall, air pollutant emissions generated within the Bay Area are often trapped near the ground due to the restraining influences of topography and atmospheric temperature inversions, which can lead to elevated pollutant concentrations. As these pollutants—the most significant of which are nitrogen oxides (NOx), reactive organic gases (ROG),[24] sulfur dioxide (SO_2), and particulate matter (PM)—are transported further inland by the prevailing sea breeze and exposed to sunlight, they can undergo chemical reactions that lead to formation of so-called secondary photochemical pollutants, primarily ozone (O_3) and secondary particulates consisting of sulfates, nitrates and condensed organic material.

Within the greater Bay Area, air pollution is typically lowest at locations close to the Bay, due largely to good ventilation and less influx of pollutants from upwind sources. The occurrence of light winds in the evenings and early mornings occasionally results in elevated pollutant levels. Wind flow patterns are controlled by air circulation in the atmosphere, which is affected by air pressure and the variable topography of the coastal areas adjacent to the Carquinez Strait, the only sea-level gap between San Francisco Bay and the Central Valley. Prevailing winds in the Rodeo area are from the southwest passing through the entrance to the

[24] Also referred to as VOC or precursor organic compounds (POC)

Carquinez Strait. During the summer and fall months, high pressure offshore coupled with low pressure in the Central Valley causes marine air to flow northeastward through the Carquinez Strait toward Suisun Bay and the Delta. The wind is strongest in the afternoon, with speeds of 15 to 20 miles per hour (mph) or approximately 7 to 9 meters per second (m/s) commonly occurring throughout the region of the Carquinez Strait. Annual average wind speeds are 8 mph (3.6 m/s) in Rodeo, and 9 to 10 mph (4 to 4.5 m/s) farther east. Wind speeds may be strong locally in areas where air is channeled through a narrow opening, such as the Carquinez Strait. Figure 4.3-1 displays the windrose, which is a graphical summary of wind speed and direction information, for the Rodeo Refinery. The windrose shows the heavy influence of coastline orientation and the predominance of wind from the southwest.

The air flowing in from the coast to the Central Valley, called the sea breeze, begins developing at or near ground level along the coast in late morning or early afternoon. As the day progresses, the sea breeze layer deepens and increases in velocity while spreading inland. The depth of the sea breeze depends in large part upon the height and strength of the inversion. If the inversion is low and strong, and hence stable, the flow of the sea breeze would be inhibited, and stagnant conditions are likely to result. Low wind speed contributes to the buildup of air pollution. Light winds occur most frequently during periods of low sun (fall and winter, and early morning) and at night.

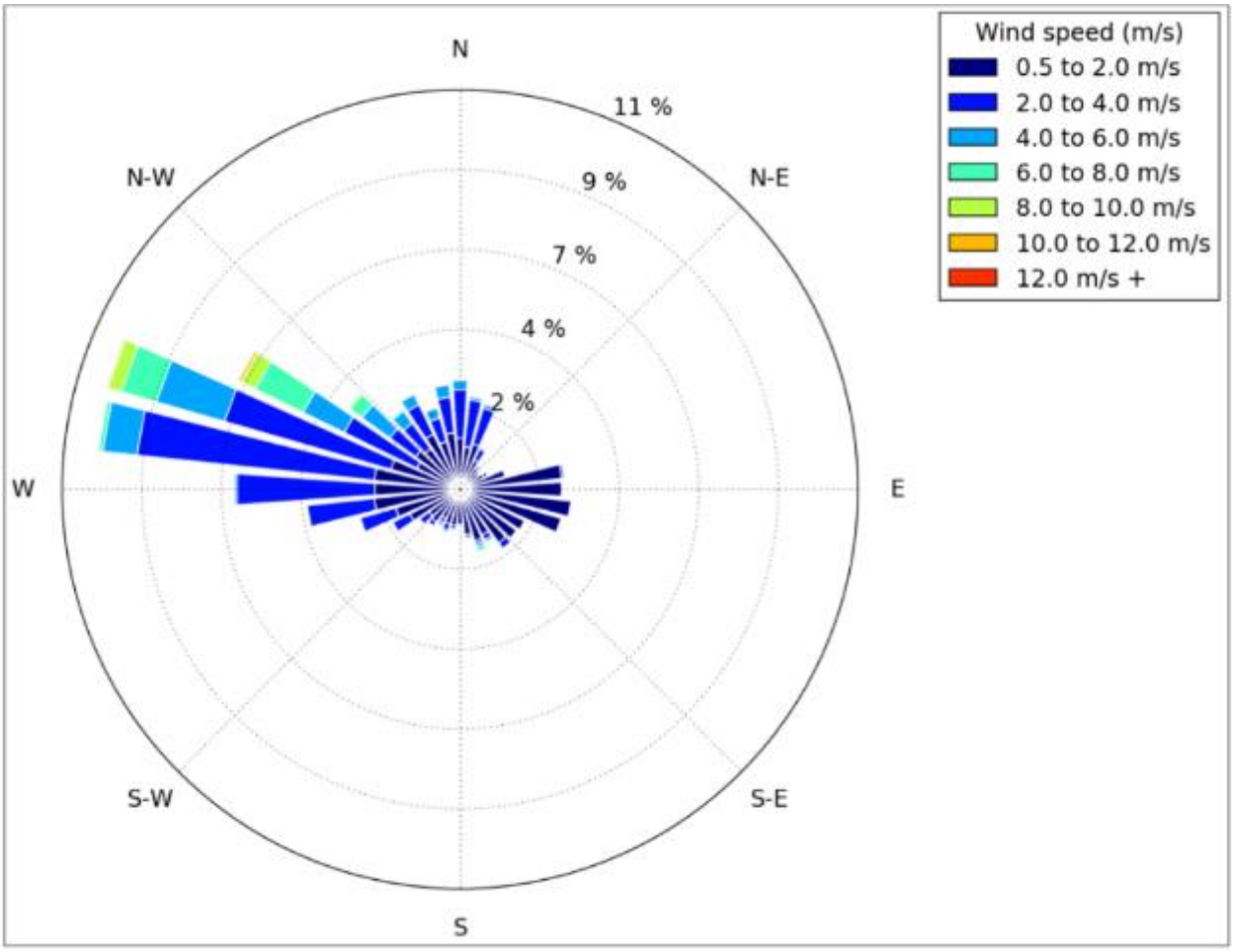


Sources: BAAQMD 2021; BAAQMD 2013–2017 (CP Rodeo Met Station)

Figure 4.3-1. Windrose for the Phillips 66 Rodeo Refinery

Santa Maria Site

The Santa Maria Site is located on a coastal plateau in California's Central Coast region in San Luis Obispo County. Similar to the San Francisco Bay Area, the Central Coast has a Mediterranean climate with warm dry summers and cool wet winters although with higher average temperatures and less precipitation due to its more southerly location. Weather at the Santa Maria Site is strongly influenced by its close proximity to the Pacific Ocean. As at Rodeo, the speed and direction of local winds are controlled by the location and strength of the Pacific high pressure, temperature differences between the coast and inland areas, and topographical factors. Winds within the vicinity of the Santa Maria Site are summarized by the wind rose in Figure 4.3-2. Prevailing winds are onshore from the west-northwest with less frequent episodes of offshore winds from the east-southeast.



Sources: San Luis Obispo County APCD meteorological data; CARB 2021a (Nipomo Guadalupe Road (Mesa2) monitoring station 2020); CARB 2021b

Figure 4.3-2. Nipomo Meteorological Station Wind Rose

Pipeline Sites

The Pipeline Sites generally run inland northeast from in and around the Santa Maria Site over the Coast Range and then northwest along the eastern edge of the San Joaquin Valley to the Delta where it turns west toward Rodeo (see Figure 3-5 in Chapter 3, *Project Description*). The inland portions of the pipelines mostly lie east of the Coast Range in or near the San Joaquin Valley where the ocean influence is greatly reduced resulting in a more continental climate with hotter summers and cooler winters. Inversions frequently form over the San Joaquin valley, which tend to trap pollutants near the surface, particularly during the winter.

4.3.2.2 Criteria Air Pollutants

The USEPA has identified criteria air pollutants that are a threat to public health and welfare. These pollutants are called "criteria" air pollutants because standards have been established for each of them to meet specific public health and welfare criteria (see Section 4.3.2.6, *Regulatory Setting*). Below are descriptions of criteria pollutants that are a concern in the Project area.

Ozone

Ozone is an oxidant and a respiratory irritant and that increases susceptibility to respiratory infections. Exposure to ozone can also cause substantial damage to vegetation and other materials. Ozone is not emitted directly into the atmosphere but is a secondary air pollutant formed in the atmosphere through a complex series of photochemical reactions primarily involving precursor organic compounds (POC) and NO_x in the presence of sunlight (ultraviolet radiation). Significant ozone production generally requires ozone precursors to be present at concentrations above background levels in strong sunlight with light winds hours. Ozone concentrations tend to be higher in the late spring, summer, and fall, when the long sunny days combine with regional inversions that limit the amount of mixing in the atmosphere.

Nitrogen Dioxide

Nitrogen dioxide (NO_2) is an air quality pollutant of concern because it acts as a respiratory irritant. NO_2 is a major component of the group of gaseous nitrogen compounds commonly referred to as NO_x. A precursor to ozone formation, NO_x is produced by fuel combustion at high temperatures such as in internal combustion engines in motor vehicles, off-road equipment including ships, locomotives, and aircraft, and stationary engines and boilers such as those located at industrial and commercial facilities. Typically, NO_x emitted from fuel combustion is in the form of nitric oxide (NO) and NO_2. Upon release into the atmosphere, NO is rapidly converted to NO_2 through reaction with ozone or other oxidants.

Carbon Monoxide

Carbon monoxide (CO) is a non-photochemically reactive pollutant that is a product of incomplete fuel combustion where CO is formed instead of carbon dioxide (CO_2) due to deficient oxygen. Higher CO concentrations develop primarily during winter when periods of light winds combine with the formation of ground level temperature inversions (typically from the evening through early morning). These conditions can result in reduced dispersion of emissions which can result in localized high concentration "hotspots" if mass emissions of CO are high enough. When inhaled at high concentrations, CO combines with hemoglobin in the blood and reduces the oxygen-carrying capacity of the blood. This results in reduced oxygen reaching the brain, heart, and other body tissues. This condition is especially critical for people with cardiovascular diseases, chronic lung disease, or anemia. However, while once problematic in urban settings, CO "hotspots" are now rare due to the use of modern catalytic exhaust controls on motor vehicles that further oxidize nearly all CO to CO_2.

Particulate Matter

Particulate matter less than 10 microns in diameter (PM_{10}) is roughly one-twentieth the diameter of a human hair. It is small enough to remain suspended in the air for long periods and be easily inhaled into the air passages where it can cause adverse health effects. Particulate matter less than 2.5 microns in diameter ($PM_{2.5}$, which is roughly 3 percent of the diameter of a human hair) is so small that it can be inhaled deep into the lungs where it can cause more severe health effects. Particulate matter in the atmosphere results from many kinds of dust- and fume-producing industrial and agricultural operations, fuel combustion, and atmospheric photochemical reactions. Some sources of particulate matter, such as demolition and construction activities, are more local in nature, while others, such as vehicular traffic, have a more regional effect. Very small particles of certain substances (e.g., sulfates and nitrates) can cause lung damage directly, or can contain adsorbed gases (e.g., chlorides or ammonium) that may be injurious to health. According to a study by the CARB, exposure to ambient $PM_{2.5}$ can be associated with approximately 14,000 to 24,000 premature annual deaths statewide (CARB 2009). Particulates can also damage materials and reduce visibility.

Other Criteria Pollutants

Sulfur dioxide (SO_2) is a combustion product of sulfur or sulfur-containing fuels such as coal. SO_2 is also a precursor to the formation of atmospheric sulfate and particulate matter (both PM_{10} and $PM_{2.5}$) and contributes to potential atmospheric sulfuric acid formation that could precipitate downwind as acid rain. Lead (Pb) has a range of adverse neurotoxic health effects and was formerly released into the atmosphere primarily via the combustion of leaded gasoline. The phase-out of leaded motor gasoline has resulted in greatly reduced levels of atmospheric lead. However, lead is still used in aviation gasoline as an octane booster and valve lubricant for piston engine aircraft.

4.3.2.3 Toxic Air Contaminants

Toxic air contaminants (TACs) are chemicals known to cause adverse health effects in sensitive populations when exposed over short or long periods of time. Exposure may occur via various pathways including inhalation, dermal contact, or ingestion, and health effects may be acute (short-term), chronic (long-term), or carcinogenic (cumulative).

Local TAC sources include industrial activity in the vicinity of the Project site, shipping and other maritime activities through the San Pablo Bay and Carquinez Straits, and emissions from motor vehicles and trains using the area's highway, roadway, and rail transportation network. Like criteria pollutant emissions, TAC emissions result from the operation of stationary source facilities, and from mobile sources such as passenger automobiles and light-duty trucks, other mobile equipment such as portable diesel generators, ships, and harbor craft such as tugboats, cargo handling equipment, heavy duty trucks and construction equipment, and rail locomotives.

Different TACs are emitted from different types of sources. For example, a major TAC emitted by mobile sources is diesel particulate matter (DPM), including very small 10-micron particles (referred to as PM_{10}) and even smaller 2.5-micron particles (referred to as $PM_{2.5}$). DPM is a composite TAC containing a variety of hazardous substances, including carcinogens.

4.3.2.4 Existing Air Quality

Rodeo Refinery (San Francisco Bay Area)

The BAAQMD operates a regional air monitoring network that measures ambient concentrations of the six criteria pollutants, although not at all monitoring sites. Existing and probable future levels of air quality in the region can generally be inferred from these ambient air quality measurements. In aggregate, the major criteria pollutants of concern in the San Francisco Bay Area (i.e., ozone, PM_{10}, $PM_{2.5}$, CO, NO_2, and SO_2) are monitored at several locations, while some monitoring sites measure ozone, CO, NO_2, and $PM_{2.5}$ only. Background ambient concentrations of pollutants are determined by emissions in a given area, and wind patterns and meteorological conditions for that area. As a result, background concentrations can vary among different locations within Contra Costa County. However, areas located close together and exposed to similar wind conditions can be expected to have similar background pollutant concentrations. The nearest monitoring station to the Rodeo Refinery that measures concentrations of all of the major pollutants of concern is in Vallejo. The Rodeo Refinery operates a fenceline monitoring system as required by BAAQMD Regulation and AB1647. Table 4.3-1 shows a summary of air quality for 2017–2019 at the Vallejo air monitoring station, including peak values, averages, and number of days on which concentrations exceeded the National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS).

The San Francisco Bay Area Air Basin (SFBAAB) is in nonattainment with state and federal ozone and $PM_{2.5}$ standards, and state PM_{10} standards. As shown in Table 4.3-1, there were no exceedances of the state 1-hour ozone standard at the Vallejo monitoring site in 2018 and 2019. Both the state and federal 8-hour ozone standards were exceeded one day in 2019 at the Vallejo station, and two days in 2017. There were no exceedances of the 24-hour federal $PM_{2.5}$ standard at the Vallejo monitoring site in 2019. Exceedances in 2017 and 2018 may be attributable to wildfire smoke. From 2017 through 2019, there were no exceedances of the state or federal $PM_{2.5}$ annual average standards during the summary period. As indicated in the table, no violations of the applicable CO, NO_2, or SO_2 standards were recorded at the Vallejo station during 2017, 2018, or 2019. PM_{10} information was not reported from the Vallejo site. As shown in Table 4.3-2, In 2019, there were no exceedances of the 24-hour federal and state PM_{10} standards at the San Francisco and San Pablo sites. Table 4.3-1 summarizes the data from the Vallejo monitoring site for 2017, 2018, and 2019, the range of baseline years for the proposed Project.

For reference, Table 4.3-2 summarizes these data for other BAAQMD monitoring sites that include the Vallejo, Berkeley Aquatic Park, Laney College Freeway, Oakland, Oakland West, Richmond, San Francisco, and San Pablo for the year 2019 and for 2017 through 2019 in instances where 3-year average is noted.

Table 4.3-1. Baseline Air Quality Data Summary (2017–2019) for the Vallejo Monitoring Site

Pollutant/Statistic	2017	2018	2019
Ozone			
Maximum 1-hour (ppb)	105	70	92
State 1-hour Days Exceedance	1	0	0
Maximum 8-hour (ppb)	88	55	76
NAAQS Exceedance Days	2	0	1
CAAQS Exceedance Days	2	0	1
3-year Average (ppb)	56		
Carbon Monoxide			
Maximum 1-hour (ppm)	3.1	2.8	2.0
Maximum 8-hour (ppm)	2.1	2.4	1.5
Exceedance Days	0	0	0
Nitrogen Dioxide			
Maximum 1-hour (ppb)	49	57	53
Annual Average	8	8	7
NAAQS 1-hour Exceedance Days	0	0	0
CAAQS 1-hour Exceedance Days	0	0	0
Sulfur Dioxide			
Maximum 1-hour	5.9	6.7	10.9
Maximum 24-hour	2.1	1.8	1.9
NAAQS Exceedance Days	0	0	0
CAAQS Exceedance Days	0	0	0
PM_{10}			
Annual Average	--	--	--
Maximum 24-hour Average	--	--	--
NAAQS 24-hour Exceedance Days	--	--	--
CAAQS 24-hour Exceedance Days	--	--	--
$PM_{2.5}$			
Maximum 24-hour ($\mu g/m^3$)	101.9	197.2	30.5
NAAQS 24-hour Exceedance Days	9	13	0
3-year Average of Annual 98th Percentile 24-hour Average ($\mu g/m^3$)	48		
Annual Average ($\mu g/m^3$)	11.6	13.3	8.6
3-year Average of Annual Average ($\mu g/m^3$)	11.2		

Sources: BAAQMD 2018, 2019, 2020

Notes: -- = Indicates air pollutant is not monitored for this site.
$\mu g/m^3$ = microgram per cubic meter
CAAQS = California Ambient Air Quality Standards
Maximum 1-hour / Maximum 8-hour / Maximum 24-hour = The highest average pollutant concentration over a 1-hour period, an 8-hour period (on any given day), or a 24-hour period (from midnight to midnight)
NAAQS = National Ambient Air Quality Standards
ppb = parts per billion
ppm = parts per million
State 1-hour Days Exceedance = The number of days during the year for which the station recorded pollutant concentrations exceeding the California standard

Table 4.3-2. Air Quality Data Summary (2019 and 2017–2019 Average) for BAAQMD Monitoring Sites in Vallejo and the Coastal and Central Bay Region

Pollutant/Statistic	Vallejo	Berkeley Aquatic Park	Laney College Fwy	Oakland	Oakland-West	Richmond	San Francisco	San Pablo
Ozone								
Max 1-hour (ppb)	92	50	--	98	101	--	91	103
State 1-hour Days Exc.	0	0	--	1	1	--	0	1
Max 8-hour (ppb)	76	42	--	73	72	--	73	79
NAAQS Exc. Days	1	0	--	2	1	--	1	2
CAAQS Exc. Days	1	0	-	2	1	--	1	2
3-Year Avg (ppb)	56	40	-	49	48	--	49	52
Carbon Monoxide								
Max 1-hr (ppm)	2.0	5.6	1.5	3.3	2.4	--	1.2	1.8
Max 8-hr (ppm)	1.5	1.3	1.0	1.1	1.7	--	1.0	0.9
Exc. Days	0	0	0	0	0	--	0	0
Nitrogen Dioxide								
Max 1-hr (ppb)	53	50	58	62	50	--	61	42
Annual Avg	7	13	15	9	12	--	10	7
NAAQS 1-hr Exc. Days	0	0	0	0	0	--	0	0
CAAQS 1-hr Exc. Days	0	0	0	0	0	--	0	0
Sulfur Dioxide								
Max 1-hr	10.9	--	--	--	19.2	16	-	17.6
Max 24-hr	1.9	--	--	--	2.7	3.7	-	1.9
NAAQS Exc. Days	0	--	--	--	0	0	-	0
CAAQS Exc. Days	0	--	--	--	0	0	-	0
PM_{10}								
Annual Avg.	--	--	--	--	--	--	14.7	16.5
Max 24-hr Avg.	--	--	--	--	--	--	42	36
NAAQS 24-hr Exc. Days	--	--	--	--	--	--	0	0
CAAQS 24-hr Exc. Days	--	--	--	--	--	--	0	0
$PM_{2.5}$								
Max. 24-hr ($\mu g/m^3$)	30.5	28.8	28.5	24.7	29.3	--	25.4	35.9
NAAQS 24-hr Exc. Days	0	0	0	0	0	--	0	1
3-Yr Avg of Annual 98^{th} Percentile 24-hr Avg ($\mu g/m^3$)	48	42	45	44	45	--	44	44
Annual Avg ($\mu g/m^3$)	8.6	9.4	7.4	6.7	7.8	--	7.7	7.8
3-Yr Avg of Annual Avg ($\mu g/m^3$)	11.2	10.1	11.1	9.3	11.7	--	9.7	10.4

Source: BAAQMD 2020a

Notes: -- = Indicates air pollutant is not monitored for this site.
$\mu g/m^3$ = microgram per cubic meter
CAAQS = California Ambient Air Quality Standards
Exc. = Exceedance
Max 1-hr/Max 8-hr/Max 24-hr = The highest average pollutant concentration over a 1-hour period, an 8-hour period (on any given day), or a 24-hour period (from midnight to midnight)
NAAQS = National Ambient Air Quality Standards
ppb = parts per billion
ppm = parts per million
State 1-hr Days Exc. = The number of days during the year for which the station recorded pollutant concentrations exceeding the California standard

Santa Maria Site and Pipeline Sites

The San Luis Obispo County Air Pollution Control District (APCD) is located within the South Central Coast Air Basin (SCCAB), which also includes Santa Barbara and Ventura counties. San Luis Obispo County has nine air quality monitoring stations (the Grover Beach meteorological monitoring site was closed in 2019). The CARB operates the stations in Paso Robles and in San Luis Obispo as part of their network, while the other seven sites (Atascadero, Carrizo Plain, CDF, Mesa2, Morro Bay, Nipomo Regional Park, and Red Hills) are operated by the San Luis Obispo County APCD. The monitors closest to the Santa Maria site are the Mesa2 and CDF sites (both within 1 mile). The Mesa2 site monitors PM_{10} and $PM_{2.5}$ and the CDF (Arroyo Grande) site monitors PM_{10}, $PM_{2.5}$, and SO_2. The Nipomo Regional Park monitor measures ozone and PM_{10} and is located at West Tefft Street and Pomeroy Road, approximately 5 miles east of the Santa Maria facility. The Santa Maria facility has established a fenceline monitoring system as required by AB 1647.

Currently, San Luis Obispo County is classified as nonattainment for the state and federal ozone standards and of the state PM_{10} standard (Table 4.3-3). Only the eastern portion of the county is classified by the USEPA as nonattainment with respect to the federal ozone standard. Violations of the state PM_{10} standard have been associated with windblown dust from the Oceano Dunes State Vehicular Recreation Area (ODSVRA) and occasional episodes of windblown dust from the San Joaquin Valley (San Luis Obispo County APCD 2020). A study performed by the San Luis Obispo County APCD evaluated the relative contributions of off-road vehicle use at the ODSVRA, adjacent agricultural fields, and coke piles at the Santa Maria Site to episodes of elevated PM_{10} concentrations on the Nipomo Mesa (San Luis Obispo County APCD 2010). This study concluded that off-road vehicle activity in the ODSVRA and its effects on dune surfaces is a major contributing factor to the high PM_{10} concentrations and that neither the outdoor storage of petroleum coke at the Santa Maria Site nor agricultural fields or activities in and around the area are a significant source of ambient particulate matter on the Nipomo Mesa.

Table 4.3-3. Summary of Air Quality Data from Monitoring Sites Near the Santa Maria Site

Monitor Name[a]	Pollutant	Standard	2017	2018	2019
Ozone					
NRP	Max. 1-hour conc. (ppm)		0.076	0.063	0.064
NRP	Expected Number of Days Exc. State 1-Hour Std.	0.09 ppm	0	0	0
NRP	Max 8-hour conc. (ppm)	0.070 ppm	0.071	0.055	0.054
NRP	No. Days Exc. 8-Hour Std.	0.070 ppm	1	0	0
NRP	8-Hour NAAQS D.V.	0.070 ppm	0.06	0.058	0.056
PM_{10}					
NRP	Max 24-Hour Conc. (µg/m^3)	50 µg/m^3	103.1	87.6	142.7
NRP	No. Days Exc. State Standard	50 µg/m^3	20.1	20.4	na
NRP	No. Days Exc. Federal Standard	150 µg/m^3	0	0	0
NRP	Annual Average (State)	20 µg/m^3	25.9	25.2	na
Mesa2	Max 24-Hour Conc. (State) (µg/m^3)	50 µg/m^3	113.3	126.8	141.2
Mesa2	No. Days Exc. State Standard	50 µg/m^3	na	40.4	40.6
Mesa2	No. Days Exc. Federal Standard	150 µg/m^3	0	0	0
Mesa2	Annual Average (State)	20 µg/m^3	na	28.5	25.6
CDF	Max 24-Hour Conc. (State) (µg/m^3)	50 µg/m^3	149.1	119.2	138.1

Monitor Name[a]	Pollutant	Standard	2017	2018	2019
CDF	No. Days Exc. State Standard	50 µg/m^3	na	55.6	56.5
CDF	No. Days Exc. Federal Standard	150 µg/m^3	0	0	0
CDF	Annual Avg. (State)	20 µg/m^3	na	30.2	26.7
$PM_{2.5}$					
CDF	Daily Max (National)	35 µg/m^3	32.1	46.8	26.2
CDF	Annual Avg. (National)	12 µg/m^3	9.6	8.8	6.1
Mesa2	Daily Max (National)	35 µg/m^3	26.3	38.3	23.6
Mesa2	Annual Avg. (National)	12 µg/m^3	9.1	7.6	7

Source: CARB iADAM database

Notes: µg/m^3 = microgram per cubic meter
na = not available
PM_{10} = particulate matter with a diameter of 10 microns or less
$PM_{2.5}$ = particulate matter with a diameter of 2.5 microns or less
ppm = parts per million

[a] Monitors in Nipomo Regional Park

Recent air quality conditions recorded by monitoring sites near the Santa Maria Site are summarized in Table 4.3-3. The federal 8-hour maximum ozone concentration standard was exceeded one day across the 3-year period from 2017 through 2019 in 2017 at the Nipomo-Regional Park (NRP) monitoring site. The state 24-hour maximum concentration PM_{10} standard was exceeded 20.1 days in 2017 and 20.4 days in 2018 at the NRP site, 40.4 days in 2018 and 40.6 days in 2019 at the Mesa2 site, and 55.6 days in 2018 and 56.5 days in 2019 at the CDF site. No exceedances of the federal 24-hour maximum concentration PM_{10} standard occurred at the NRP, Mesa2, and CDF sites from 2017 through 2019. The federal daily maximum $PM_{2.5}$ concentration standards were exceeded in 2018 at the CDF and Mesa2 sites.

4.3.2.5 Sensitive Receptors

For the purposes of this air quality analysis, as well as the analysis in Section 4.9, *Hazards and Hazardous Materials*, sensitive receptors are places with people who are considered more sensitive than others to air pollutants. The reasons for greater-than-average sensitivity include pre-existing health problems, proximity to emissions sources, or duration of exposure to air pollutants. Schools, hospitals, and convalescent homes are considered sensitive to poor air quality because children, elderly people, and the infirm are more susceptible to respiratory distress and other air quality-related health problems than the general public. Residential areas are considered sensitive to poor air quality because people usually stay home for extended periods of time and because of the potential presence of pregnant women, infants, and children, with associated greater exposure to ambient air quality. Recreational uses are also considered sensitive due to the greater exposure to ambient air quality conditions because vigorous exercise, particularly by children, associated with some forms of recreation places a high demand on the human respiratory system.

Rodeo Refinery

The Bayo Vista residential neighborhood contains the nearest non-residential sensitive receptors to the active area of the Rodeo Refinery (e.g., schools, day care centers, libraries). The closest such sensitive receptor is a day care center, located approximately 1,200 feet (365 meters) southwest of the refinery. The closest residences in the Bayo Vista residential neighborhood to the southwest are approximately 700 feet (213 meters) away from the Rodeo Refinery fenceline and approximately 1,475 feet (450 meters) from the proposed PTU area, the closest Project component. To the north, the Tormey residential

community is located approximately 1,200 feet (365 meters) from the refinery fence line and approximately 3,700 feet (1,130 meters) from the closest Project component.

Santa Maria Site

The nearest residential receptors to the Santa Maria Refinery are located approximately 2,000 feet (610 meters) to the northeast of the nearest Santa Maria Refinery source. Other residential areas are 2,800 feet (853 meters) to the north and 2,900 feet (884 meters) to the east of the refinery. No non-residential sensitive receptors are located within 1 mile (1,600 meters) of the Santa Maria Refinery.

4.3.3 Regulatory Setting

4.3.3.1 Criteria Air Pollutants

Regulation of air pollution is achieved at the federal and state levels through both NAAQS and CAAQS and emission limits for individual sources of air pollutants. As required by the federal Clean Air Act (CAA), the USEPA has identified criteria pollutants and has established NAAQS to protect public health and welfare. NAAQS have been established for ozone, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and lead. To protect human health and the environment, the USEPA has set "primary" and "secondary" maximum ambient concentration thresholds for each of the criteria pollutants. Primary standards were set to protect human health, particularly sensitive receptors such as children, the elderly, and individuals suffering from chronic lung conditions such as asthma and emphysema. Secondary standards were set to protect the natural environment and prevent further deterioration of animals, crops, vegetation, and buildings. In urban settings, the primary standards are the most applicable.

California has adopted state ambient air quality standards for most of the criteria air pollutants and a few others. Table 4.3-4 lists both sets of ambient air quality standards (i.e., national and state) and the Bay Area Air Basin's attainment status for each standard. In addition to the federal criteria pollutants, California has also established state ambient air quality standards for sulfates (SO_4), hydrogen sulfide (H_2S), vinyl chloride (C_2H_3Cl) and visibility reducing particles, although only hydrogen sulfide is included in Table 4.3-4 as the others overlap to some extent with the other standards and ambient data for vinyl chloride and sulfates are limited.

As shown in Table 4.3-4, the Bay Area is currently classified as nonattainment for the 1-hour state ozone standard as well as for the federal and state 8-hour standards. Additionally, the Bay Area is classified as nonattainment for the state 24-hour and annual arithmetic mean PM_{10} standards as well as the state annual arithmetic mean and the national 24-hour $PM_{2.5}$ standards. The Bay Area is unclassified or classified as attainment for all other pollutants standards (USEPA 2021).

Attainment status for San Luis Obispo County against state and federal standards is summarized in Table 4.3-5. San Luis Obispo County is classified as nonattainment for ozone 1-hour state standards, 8-hour state and federal standards, and PM_{10} 24-hour and annual state standards (USEPA 2021).

Table 4.3-4. State and Federal Ambient Air Quality Standards and Bay Area Air Basin Attainment Status

Pollutant	Averaging Time	State (CAAQS[a])		Federal (NAAQS[b])	
		Standard	Attainment Status	Standard	Attainment Status
Ozone	1-hour	0.09 ppm	N	NA	see note[c]
	8-hour	0.070 ppm	N	0.070 ppm[d]	N[e]
Carbon Monoxide (CO)	1-hour	20 ppm	A	35 ppm	A
	8-hour	9 ppm	A	9 ppm	A
Nitrogen Dioxide (NO_2)	1-hour	0.18 ppm	A	0.100 ppm	A[f]
	Annual	0.030 ppm	U	0.053 ppm	A
Sulfur Dioxide (SO_2)	1-hour	0.25 ppm	A	0.075 ppm	U/A[g]
	24-hour	0.04 ppm	A	0.14 ppm	U/A[g]
	Annual	NA	NA	0.03 ppm	U/A[g]
Particulate Matter (PM_{10})	24-hour	50 µg/m^3	N	150 µg/m^3	U
	Annual [H]	20 µg/m^3	N[i]	NA	NA
Fine Particulate Matter ($PM_{2.5}$)	24-hour	NA	NA	35 µg/m^3	N
	Annual	12 µg/m^3	N[i]	12 µg/m^3	U/A
Sulfates	24-hour	25 µg/m^3	A	NA	NA
Lead (Pb)	30-day	1.5 µg/m^3	A	NA	A
	Cal. Quarter	NA	NA	1.5 µg/m^3	A
	Rolling 3-month average	NA	NA	0.15	U[j]
Hydrogen Sulfide	1-hour	0.03 ppm	U	NA	NA
Visibility-Reducing Particles	8-hour	see note[k]	U	NA	NA

Source: BAAQMD 2017a; USEPA 2021

Notes: µg/m^3 = micrograms per cubic meter
A = Attainment
CAAQS = California Ambient Air Quality Standards
N = Non-attainment
NA = Not Applicable, no applicable standard
NAAQS = National Ambient Air Quality Standards
ppm = parts per million
U = Unclassified

a. CAAQS = California ambient air quality standards. CAAQS for ozone, CO (except Lake Tahoe), SO2 (1-hour and 24-hour), NO2, PM, and visibility reducing particles are values that are not to be exceeded. All other state standards shown are values not to be equaled or exceeded.

b. NAAQS = national ambient air quality standards. NAAQS, other than ozone and particulates, and those based on annual averages or annual arithmetic means, are not to be exceeded more than once a year. The 8-hour ozone standard is attained when the 3-year average of the fourth highest daily concentration is 0.070 ppm or less. The 24-hour PM_{10} standard is attained when the 3-year average of the 99th percentile of monitored concentrations is less than the standard. The 24-hour $PM_{2.5}$ standard is attained when the 3-year average of the 98th percentile is less than the standard.

c. The USEPA revoked the national 1-hour ozone standard on June 15, 2005.

d. This federal 8-hour ozone standard was approved by the USEPA in October 2015 and became effective on December 28, 2015.

e. On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm. An area would meet the standard if the fourth highest maximum daily 8-hour ozone concentration per year, averaged over 3 years, is equal to or less than 0.070 ppm. The USEPA made recommendations on attainment designations for California by October 1, 2016, and issued final designations on June 4, 2018, classifying the San Francisco Bay Area Air Basin as being in Nonattainment (*Federal Register* 2018a). Nonattainment areas would have until 2020 to 2037 to meet the health standard, with attainment dates varying based on ozone level in the area.

f. To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 0.100 ppm (effective January 22, 2010).

g. On June 2, 2010, the USEPA established a new 1-hour SO_2 standard, effective August 23, 2010, which is based on the 3-year average of the annual 99th percentile of 1-hour daily maximum concentrations. The existing 0.030 ppm annual and 0.14 ppm 24-hour SO_2 NAAQS, however, must continue to be used until 1 year following the USEPA's initial designations of the new 1-hour SO_2 NAAQS. The USEPA classified the San Francisco Bay Area Air Basin as being in Attainment/Unclassifiable in January 2018 (*Federal Register* 2018b).

h. State standard = annual geometric mean

i. In June 2002, the CARB established new annual standards for $PM_{2.5}$ and PM_{10}.

j. National lead standard, rolling 3-month average: final rule signed October 15, 2008. Final designations effective December 31, 2011.

k. Statewide visibility reducing particle standard (except Lake Tahoe Air Basin): Particles in sufficient amount to produce an extinction coefficient of 0.23 per kilometer when the relative humidity is less than 70 percent. This standard is intended to limit the frequency and severity of visibility impairment due to regional haze and is equivalent to a 10-mile nominal visual range.

Table 4.3-5. San Luis Obispo County Ambient Air Quality Standards Attainment Status

Pollutant (Averaging Time)	Attainment Status	
	State	**Federal**
O_3 (1-hour)	Nonattainment	--
O_3 (8-hour)	Nonattainment	Nonattainment (marginal) (eastern portion of County)
$PM_{2.5}$ (24-hour)	N/A	Attainment/Unclassifiable
$PM_{2.5}$ (annual)	Attainment	Attainment/Unclassifiable
PM_{10} (24-hour)	Nonattainment	Attainment/Unclassifiable
PM_{10} (annual)	Nonattainment	--
NO_2 (1-hour)	Attainment	Attainment/Unclassifiable
NO_2 (annual)	Attainment	--
SO_2 (1-hour)	Attainment	Attainment/Unclassifiable
SO_2 (24-hour)	Attainment	--
CO (1-hour)	Attainment	Attainment/Unclassifiable
CO (8-hour)	Attainment	Attainment/Unclassifiable
Lead (30-days)	Attainment	--
Lead (quarterly)	--	--
Lead (3-month rolling)	--	Attainment/Unclassifiable
H_2S (1-hour)	Attainment	--
Sulfates (24-hour)	Attainment	--

Source: USEPA 2021

4.3.3.2 Toxic Air Contaminants

The Air Toxics “Hot Spots” Information and Assessment Act of 1987 (AB 2588) seeks to identify and evaluate risk from TAC sources but does not directly regulate TAC emissions. Under this act, actual (historic) TAC emissions from individual facilities are quantified and prioritized using a scoring system. “High priority” facilities that could pose a risk to the public are required to perform a health risk assessment (HRA) and, if District-specific risk thresholds are exceeded, are required to communicate the results to the public in the form of notices and public meetings. Depending on the risk levels, TAC-emitting facilities are required to implement varying levels of risk reduction measures (e.g., emissions controls). The BAAQMD implements AB 2588 in its jurisdiction, and is responsible for prioritizing facilities that emit TACs, reviewing HRAs, and implementing risk reduction measures. Pursuant to the requirements of AB 2588, the BAAQMD publishes an air toxics emissions inventory that details the TAC emissions of affected facilities throughout the District. Under the regulation, facilities must update their TAC inventories on a quadrennial basis.

4.3.3.3 Federal

The USEPA is responsible for implementing the programs established under the federal CAA, such as establishing and reviewing the NAAQS, determining regions’ attainment status based on monitoring data, and assessing the adequacy of State Implementation Plans. However, the USEPA has delegated the authority to implement many of the federal programs to the states while retaining an oversight role to ensure that the programs continue to be implemented.

One of those permit programs is the Prevention of Significant Deterioration (PSD). The Project does not qualify as a "PSD project," which is defined in BAAQMD Rule 2-2-224 as a combination of new and modified sources that qualify as a new Major PSD Facility, or that result in a "significant" emissions increase at an existing facility. This analysis is limited to federal attainment pollutants. Additionally, in accordance with BAAQMD Regulation 2-2-610, "cargo carriers" are not subject to PSD to offset or best available control technology (BACT) requirements. This includes emissions from Ocean Going Vessels (OGVs) loading or unloading cargo and rail unloading cargo associated with a project. As a result, cargo carrier sources are not required to be included in the PSD analysis, except for assessing ambient air quality impacts where necessary. A PSD analysis is presented in the BAAQMD permit application for this Project, which is currently under review by the District.

4.3.3.4 State of California

The CARB is responsible for establishing and reviewing the CAAQS, compiling the California State Implementation Plan with input from the 35 air districts, and securing approval of that plan from the USEPA. The CARB conducts research and planning and identifies TACs. The CARB also regulates mobile sources of emissions in California, such as construction equipment, portable equipment, trucks, and automobiles, and oversees the activities of California's 35 air districts, which are organized at the county or regional level. County or regional APCDs and AQMDs are primarily responsible for regulating stationary sources at industrial and commercial facilities within their geographic areas and for preparing and implementing air quality management plans[25] that are required under the federal CAA and California CAA.

4.3.3.5 Regional and Local

Bay Area Air Quality Management District

The Bay Area Air Quality Management District (BAAQMD) is the regional agency with jurisdiction over the nine-county region located in the SFBAAB, which includes Contra Costa County. The ABAG/MTC, county transportation agencies, cities and counties, and various non-governmental organizations also join in the efforts to improve air quality through a variety of programs. These programs include the adoption of rules, regulations, and policies, as well as implementation of extensive education and public outreach programs. The BAAQMD is also responsible for attaining and/or maintaining air quality in the SFBAAB within federal and state air quality standards. Specifically, the BAAQMD has the responsibility to monitor ambient air pollutant levels throughout the Bay Area and to develop and implement control strategies to attain the applicable federal and state air quality standards.

The BAAQMD regulates stationary sources through the issuance of permits. Any person or facility that puts in place, builds, erects, installs, modifies, modernizes, alters or replaces any article, machine, equipment or other contrivance, the use of which may cause, reduce or control the emission of air contaminants, shall first secure written authorization from the BAAQMD in the form of an Authority to Construct, unless the source is specifically excluded or exempt from permit requirements. The BAAQMD's permitting process is a preconstruction review and approval process. The BAAQMD's review is conducted after the equipment is designed, but before it is purchased and installed. This is because it is less costly and more efficient to correct a non-complying design at the vendor level than to retrofit or replace non-complying equipment that has already been bought and installed. The preconstruction review for new and modified sources applies to both stationary and portable sources of emissions that do not qualify for a permit exemption. Following issuance of an Authority to Construct, the equipment can be installed and tested, and if performance specifications are met, the District would issue a Permit to Operate.

In addition, Title V of the 1990 CAA Amendments requires all major sources and some minor sources of criteria pollutants to obtain a federal operating permit, where the USEPA has delegated permitting authority to state and local agencies. A Title V permit grants a source permission to operate under the

[25] Also referred to as Attainment Plans or Clean Air Plans, particularly for ozone and PM_{10}/$PM_{2.5}$ nonattainment areas

CAA. The permit includes all air pollution requirements that apply to the source, including emissions limits and monitoring, recordkeeping, and reporting requirements. It also requires that the source report its compliance status with respect to permit conditions to the permitting authority, such as the BAAQMD. Under Title V of the federal CAA, any source that emits or has the potential to emit 100 tons per year or more of any criteria air pollutant is a major source and must obtain a Title V operating permit. In nonattainment areas, the major source thresholds are lower for nonattainment pollutants (e.g., NOx and volatile organic compound [VOC] for ozone) depending on the nonattainment classification (i.e., Serious, Severe, or Extreme). Title V permits in the Bay Area are issued by the BAAQMD. The Refinery was issued a Title V Operating Permit (#A0016) on December 1, 2003, which was renewed in January 2018 and was last revised in December 2018.

In the Bay Area, Title V requirements are implemented by Regulation 2, Rule 6 of the BAAQMD Rules and Regulations. Phillips 66 is subject to the Operating Permit requirements of Title V of the federal CAA, and BAAQMD Regulation 2, Rule 6, Major Facility Review, because it is a major facility as defined by BAAQMD Regulation 2-6-212. It is a major facility because it has the "potential to emit," more than 100 tons per year of a regulated air pollutant, as defined by BAAQMD Regulation 2-6-218. Major Facility Operating permits (Title V permits) must meet specifications contained in 40 Code of Federal Regulations (CFR) Part 70 as contained in BAAQMD Regulation 2, Rule 6.

Phillips 66 has submitted an application to the BAAQMD for an Authority to Construct and update to the Major Facility Review (Title V) Permit for the Project.

California Environmental Quality Act (CEQA) Guidelines

In December 1999, the BAAQMD adopted its original *CEQA Guidelines – Assessing the Air Quality Impacts of Projects and Plans*, as a guidance document to provide lead government agencies, consultants, and project proponents with uniform procedures for assessing air quality impacts and preparing the air quality sections of environmental documents for projects subject to CEQA. The BAAQMD CEQA Guidelines is an advisory document and local jurisdictions are not required to use the methodology outlined therein. The document describes the criteria that the BAAQMD uses when reviewing and commenting on the adequacy of environmental documents. It recommends thresholds for use in determining whether projects would have significant adverse environmental impacts, identifies methodologies for predicting project emissions and impacts, and identifies measures that can be used to avoid or reduce air quality impacts.

The BAAQMD developed quantitative thresholds of significance for its updated CEQA Air Quality Guidelines in 2010 (BAAQMD 2010, 2011). The BAAQMD published its latest (as of April 2021) version of its CEQA Guidelines (BAAQMD CEQA Guidelines) in May 2017 (BAAQMD 2017b). The 2017 BAAQMD CEQA Guidelines provide BAAQMD-recommended procedures for evaluating potential air quality impacts during the environmental review process consistent with CEQA requirements.

The guidelines specify recommended thresholds of significance for construction and operational criteria air pollutants and precursor emissions, GHG emissions, and risks and hazards associated with TACs from an individual project and cumulative impact. These thresholds are outlined below.

The operational-related thresholds for Climate Action Plans (CAPs) are maximum annual emissions of 10 tons per year for ROG, NO_x, and $PM_{2.5}$ and 15 tons per year for PM_{10}. The average daily thresholds are 54 pounds per day for ROG, NO_x, and $PM_{2.5}$ and 82 pounds per day for PM_{10}. The average daily thresholds apply to both operational-related emissions and construction-related emissions, except that the particulate matter thresholds apply only to engine exhaust emissions for construction equipment (i.e., fugitive dust excluded). The BAAQMD also lists Construction BMPs to control construction PM_{10}/$PM_{2.5}$ fugitive dust emissions as a threshold of significance. The guidelines also specify thresholds for carbon monoxide 9.0 ppm as an 8-hour average concentration and 20.0 ppm as a 1-hour average concentration.

Project and cumulative health risk impact thresholds are specified below:

- Project Impact Thresholds:
  - An excess lifetime cancer risk level of more than 10 in 1 million;
  - A noncancer chronic hazard index greater than 1.0;
  - An incremental increase in the annual average $PM_{2.5}$ concentration of greater than 0.3 µg/m^3.
- Cumulative Risk Thresholds:
  - An excess lifetime cancer risk level of more than 100 in 1 million;
  - A noncancer chronic hazard index greater than 10.0; and
  - An annual average $PM_{2.5}$ concentration of greater than 0.8 µg/m^3.

2017 Bay Area Air Quality Management District Clean Air Plan

Air quality plans developed to meet federal requirements are referred to as State Implementation Plans. The federal CAA and the California CAA require plans to be developed for areas designated as nonattainment (with the exception of areas designated as nonattainment for the state PM_{10} standard). The SFBAAB is designated nonattainment for both the 1- and 8-hour state ozone standards. In addition, emissions of ozone precursors in the air basin contribute to air quality problems in neighboring air basins. Under these circumstances, state law requires the Clean Air Plan to include all feasible measures to reduce emissions of ozone precursors and to reduce the transport of ozone precursors to neighboring air basins. At a public hearing in April 2017, the BAAQMD Board of Directors adopted the Final 2017 Clean Air Plan, whose primary goals are to protect public health and to protect the climate (BAAQMD 2017c). The plan includes a wide range of proposed control measures to reduce combustion-related activities, decrease fossil fuel combustion, improve energy efficiency, and decrease emissions of potent GHGs. The Final 2017 Clean Air Plan updates the Bay Area 2010 Clean Air Plan and complies with state air quality planning requirements as codified in the California Health and Safety Code.

The Final 2017 Clean Air Plan contains 85 measures to address reduction of several pollutants: ozone precursors, particulate matter, air toxics, and GHGs. Other measures focus on a single type of pollutant, such as specific GHGs like methane (CH_4) and black carbon that consists of harmful fine particles that affect public health. The control measures are categorized based on the economic sector framework including stationary sources, transportation, energy, buildings, agriculture, natural and working lands, waste management, and water measures.

The Final 2017 Clean Air Plan also includes a Refinery Emissions Reduction Strategy, consisting of at least 12 control measures designed to reduce refinery emissions of particulate matter, ozone precursors, TACs and GHGs. Among the components of this strategy is a reduction in criteria air pollutant emissions by 20 percent from oil refineries, as well as a 20 percent reduction in health risk to local communities.

The Refinery Emissions Reduction Strategy builds upon previous refinery regulations and aims to develop new local rules to reduce refinery emissions as delineated in their plan. As of the Final 2017 Clean Air Plan's adoption in April 2017, the refinery Emissions Reduction Strategy included the adoption of four rules that would apply to Rodeo Refinery operations:

- Equipment Leaks (Regulation 8, Rule 18),
- Cooling Towers (Regulation 11, Rule 10),
- Petroleum Refining Emissions Tracking rule (Regulation 12, Rule 15), and
- Petroleum Coke Calcining Operations rule (Regulation 9, Rule 14).

The Final 2017 Clean Air Plan also references need for renewable fuels, and states the following:

> *Oil Companies Will Transform to Clean Energy Companies by 2050. Bay Area industries will need to be powered by renewable electricity wherever feasible with renewable fuels making up the difference, the carbon-intensity of products manufactured in the region will need to be greatly reduced, and a significant percentage of the light-duty vehicle fleet will be hybrid electric or fully battery-powered. In response to decreasing demand for gasoline and diesel, oil companies will need to reorient their focus to the production of renewable energy and biofuels, while perhaps continuing to provide hard-to-replace or specialty fuels (e.g., jet fuel)* (BAAQMD 2017c, p. 10.)

Air Toxics Program

The BAAQMD's Air Toxics Program integrates federal and state air toxics mandates with local goals that have been established by the BAAQMD's Board of Directors. The program consists of several elements that are designed to identify and reduce public exposure to TACs. Under the preconstruction review of new and modified sources program, proposed projects are reviewed for potential health impacts, with the requirement that significant new/modified sources use the best available control technology for toxics to minimize TAC emissions. All applications for new or modified permits are reviewed for air toxics impacts, in accordance with the BAAQMD's Risk Management Policy and by Regulation 2, Rule 5: *New Source Review of Toxic Air Contaminants*.

In addition, Regulation 11, Rule 18: *Reduction of Risk from Air Toxic Emissions at Existing Facilities* addresses actual emissions from operational facilities. District staff would conduct site-specific screening analyses for all facilities that report TAC emissions, and calculate health prioritization scores based on the amount of TACs emitted, the degree of toxicity (potency) of the pollutants emitted, and the proximity of these facilities to local communities (receptors). For facilities found to have priority scores above a threshold value, the District would conduct HRAs. Based on the HRA results, facilities found to have a potential health risk above the Risk Action Level would be required to reduce their risk below the Risk Action Level, or install (retrofit) best available control technology for toxics on all significant (risk-driving) sources of toxic emissions. This regulation is applicable to the Rodeo Refinery and to date, Phillips 66 has provided all information requested by BAAQMD.

Contra Costa County General Plan

As of March 2021, Contra Costa County is in the process of updating its general plan, referred to as *Envision Contra Costa 2040*. The Conservation Element of the 2010 Contra Costa County General Plan contains an air quality resources discussion (Section 8.14) that identifies general goals and policies designed to address air pollution. While the goals and policies apply to development projects throughout the unincorporated county, the majority of them are not directly applicable to the Project because they tend to focus on land use development, improvements to the transportation system, reducing long-distance commuting, encouraging and supporting non-auto transportation, and reducing future land use conflicts related to air pollution. However, policies that are directly applicable to the CEQA review of projects are summarized as follows:

- Mitigation measures are to be imposed when there is a finding that air quality would be significantly affected; and
- Proposed projects should be reviewed for potential to generate hazardous air pollutants.

Contra Costa County Climate Action Plan

In December 2015, the County Department of Conservation and Development completed and released a CAP (Contra Costa County 2015). The CAP identifies specific measures on how the county can achieve a GHG reduction target of 15 percent below baseline levels by the year 2020. The CAP specified GHG

reduction goals associated with energy efficiency, renewable energy, land use and transportation, solid waste, and water conservation. However, planned activities delineated in the CAP are generally directed to residential, commercial, or industrial land use development projects and would not apply to process changes at an industrial facility.

The County is in the process of updating the 2015 CAP with the 2020 CAP. In December 2020, the County issued a progress report that provided information on actions the County has taken to advance the goals of the 2015 CAP. However, due to the COVID-19 pandemic, the development of the 2020 CAP has been delayed.

San Luis Obispo County Air Pollution Control District's CEQA Air Quality Handbook

In 2012, San Luis Obispo County APCD released its CEQA Air Quality Handbook which describes the criteria used when evaluating new developments to determine when an air quality analysis is necessary, the type of analysis that should be performed, the significance of the impacts predicted by the analysis, and the mitigation measures to reduce overall air quality impacts.

In Section 2 of the Handbook, guidance is available for assessing construction emissions and mitigating construction related impacts. Construction emissions must be calculated for all development projects likely to exceed the construction emissions threshold, or if the project is subject to the special conditions defined in Section 2.1.1. Once the emissions have been calculated, they must be compared to the APCD construction phase significance thresholds (San Luis Obispo County APCD 2012). In November 2017, San Luis Obispo County APCD amended the thresholds in a memorandum appended to their handbook. These thresholds are used to evaluate the demolition activity at the Santa Maria Site and are describe in more detail in Section 4.3.3, *Significance Criteria*, of this document.

4.3.4 Project Setting

As discussed in Chapter 3, *Project Description*, the Rodeo Refinery consists of process, storage, and support facilities that produce a variety of petroleum-based products (mainly fuels) and by-products from crude oil and other petroleum-based feedstocks. Under existing conditions, semi-refined liquids are delivered to the Rodeo Refinery via pipeline from the Santa Maria Site in San Luis Obispo, California. Crude oil and gas oil are delivered to the Rodeo Refinery via tanker vessels from domestic and foreign sources. Other feedstocks are required in the refining process; some are brought by tanker vessel and by truck, while others, such as hydrogen, are produced by a third-party facility adjacent to the refinery. Tanker and barge vessels dock at the Rodeo Refinery Marine Terminal, located at the northern tip of the Rodeo Site, which is connected to the Rodeo Refinery by pipelines. Crude oil and feedstocks are stored in tanks within the refinery until they are consumed in the refining process. The refinery also produces steam, fuel gas, and electricity for use in the refining process, and purchases electricity, water, and natural gas.

4.3.4.1 Rodeo Refinery

The Rodeo Refinery includes a Cogeneration Steam Power Plant containing gas turbines that use heat recovery steam generators (HRSGs) to generate process steam and up to 50 MW of electricity for refinery use, a butane storage and railcar loading facility near the Marine Terminal, a wastewater treatment facility (U100), a vapor recovery system, a hydrogen generator, and the Carbon Plant Site (approximately 1.5 miles south of the refinery in Franklin Canyon) that upgrades the petroleum coke by-product. The refinery's products are transported out of the refinery by vessel, pipeline, truck, and rail. Liquid products (principally, gasoline and diesel fuel) are loaded onto tanker or barge vessels at the Marine Terminal via pipeline from on-shore storage tanks. Butane is loaded onto railcars for shipment to blending facilities and other customers. In addition, operations of adjacent third-party plant operator Air Liquide, which supplies hydrogen gas (H_2) for the refinery operations, may indirectly increase due to the Project and therefore, its emissions are included in the evaluation against significance criteria. However,

no modification will occur at Air Liquide as a result of the Project. Air Liquide is not increasing its hydrogen production capacity as a result of the Project.

4.3.4.2 CEQA Baseline Emissions

The CEQA baseline for this analysis is represented by year 2019, except for marine transportation, for which the baseline is an average of the years 2017–2019 (see Chapter 3, *Project Description*, for a detailed explanation of the CEQA baseline). Annual and daily average baseline emissions at the Rodeo site (including the Rodeo Refinery and the Carbon Plant) are summarized in Table 4.3-6 and Table 4.3-7, respectively. Emissions from stationary sources at the Rodeo Refinery, Air Liquide H_2 Plant and Carbon Plant for 2019 were provided by Phillips 66. Emissions from ocean-going vessels, like tankers and ATBs, assist tugs and pull tugs moving tank barges visiting the Marine Terminal were calculated based on the 3-year baseline average of 2017 through 2019 data provided by Phillips 66. Vessel emissions include hoteling at the wharf or at anchor, and vessel maneuvering and transit between the wharf or anchorage area out to the Pilot Buoy located approximately 9 nautical miles (7.8 statute miles) west of the Golden Gate. Emissions from heavy duty truck trips moving feedstocks and product to and from the Rodeo Facility were calculated based on truck trip counts for 2019 provided by Phillips 66. Emissions from rail locomotives moving railcars to and from the butane loading rack at the Rodeo Refinery and moving pet coke to and from the Carbon Plant were calculated based on railcar movement data for 2019 provided by Phillips 66. Rail emissions include all travel within the BAAQMD boundary and within other relevant Air Districts in California. Truck emissions include all travel within the BAAQMD boundaries and within California state boundary.[26] Details of the data and assumptions used to calculate emissions are provided in Section 4.3.6, *Discussion of No Air Quality Impacts*, and Section 4.3.7, *Direct and Indirect Impacts of the Proposed Project,* below and Attachments A and B of the Air Quality Technical Report provided in Appendix B (Ramboll 2021).

Table 4.3-6. Annual Baseline Emissions: Rodeo Refinery (2019)

Source	Emissions (tons/year)					
	VOC	**NO_x**	**PM_{10}[a]**	**$PM_{2.5}$[a]**	**SO_2**	**CO**
Ocean-going Vessels and Harbor Craft[b]	9	147	4	4	7	45
Trucks	0.31	10	3	1	0.03	1
Rodeo Site Stationary Sources	119	221	73	71	348	93
Rodeo Site Rail Operations	0.06	1.39	0.04	0.03	0.02	0.39
Carbon Plant Site Stationary Sources	0	359	21	19	1,080	11
Carbon Plant Site Rail Operations	0.01	0.29	0.01	0.01	0.00	0.08
Total Operational Rodeo Refinery	**128**	**739**	**102**	**95**	**1,435**	**151**
Air Liquide H_2 Plant	1	17	4	4	0	1
Total Operational with Air Liquide	**129**	**756**	**105**	**98**	**1,435**	**152**

a. PM_{10} and $PM_{2.5}$ emissions include exhaust and fugitive dust sources (road dust, tire and brake wear)
b. Ocean-going vessels and harbor craft emissions are based on a 3-year baseline average (2017–2019)

[26] Truck emissions were calculated within BAAQMD boundaries for purposes of criteria pollutant emissions evaluation and statewide total emissions were estimated for purposes of greenhouse gas analysis (see Section 2.8). Truck emissions for air districts and counties outside of BAAQMD were not estimated due to net truck traffic between Project and baseline levels decreasing significantly, and specific material truck trips increases occurring within the BAAQMD only.

Table 4.3-7. Average Daily Baseline Emissions: Rodeo Refinery (2019)

Source	Emissions (lbs/day)					
	VOC	**NO_x**	**PM_{10}[a]**	**$PM_{2.5}$[a]**	**SO_2**	**CO**
Ocean-going Vessels and Harbor Craft[b]	50	806	22	21	40	249
Trucks	2	54	17	4	0.2	7
Rodeo Site Stationary Sources	650	1,212	402	389	1,908	509
Rodeo Site Rail Operations	0.31	7.60	0.19	0.18	0.13	2.14
Carbon Plant Site Stationary Sources	2	1,967	116	106	5,918	60
Carbon Plant Site Rail Operations	0.07	1.58	0.04	0.03	0.02	0.44
Total Operational Rodeo Refinery	**703**	**4,048**	**558**	**520**	**7,865**	**828**
Air Liquide H_2 Plant	6	92	20	19	0	5
Total Operational with Air Liquide	**709**	**4,140**	**577**	**539**	**7,865**	**833**

a. PM_{10} and $PM_{2.5}$ emissions include exhaust and fugitive dust sources (road dust, tire and brake wear)

b. Ocean-going vessels and harbor craft emissions are based on a 3-year baseline average (2017–2019)

4.3.4.3 Santa Maria Site and Pipeline Sites

As mentioned previously, the Project includes the shutdown of the Santa Maria Site in San Luis Obispo, California, and the Pipeline Sites connecting the Santa Maria Site to the Rodeo Refinery. The Santa Maria Site operations include rail operations, trucking and stationary sources operations at the refinery. The Pipeline Sites operations include pumps, tanks, fugitive components and boilers located at the various pumping stations along the connecting pipeline. Upon completion of demolition activities, emissions at the Santa Maria Site would be eliminated resulting in negative criteria pollutant impacts related to that site. Similarly, upon decommissioning of the Pipeline Sites, emissions from those operations would cease. Nevertheless, existing conditions during the baseline were reviewed and are included for informational purposes.

Annual and daily average emissions at the Santa Maria Site for the Project baseline year (2019) are summarized in Table 4.3-8 and Table 4.3-9, respectively. Emissions from stationary sources at the Santa Maria Refinery and pump station and pipeline for 2019 were provided by Phillips 66. Emissions from rail locomotives moving railcars to and from the petroleum coke loading rack at the Santa Maria Refinery were calculated based on railcar movement data for 2019 provided by Phillips 66. Rail emissions include all travel within the San Luis Obispo County APCD boundary and within other relevant Air Districts in California. Truck emissions include all travel within the San Luis Obispo County APCD boundaries.[27] Details of the data and assumptions used to calculate emissions are provided in Section 4.3.6, *Discussion of No Air Quality Impacts*, and Section 4.3.7, *Direct and Indirect Impacts of the Proposed Project* below and Attachments A and B of the Air Quality Technical Report provided in Appendix B (Ramboll 2021).

[27] Truck emissions from Santa Maria Site baseline operations were estimated within SLOCAPCD boundaries for informational purposes. Project emissions for Santa Maria Site trucks would be zero, hence, emissions related to travel across other air districts and counties outside of SLOCAPCD were not estimated.

Table 4.3-8. Annual Baseline Emissions: Santa Maria and Pipeline Sites (2019)

Source	Emissions (tons/yr)					
	VOC	NO_x	PM_{10}[a]	$PM_{2.5}$[a]	SO_2	CO
Santa Maria Rail Operations	0.004	0.068	0.001	0.001	0.001	0.024
Santa Maria Trucks	0.25	8	3	0.59	0.03	0.93
Santa Maria Stationary Sources	28	51	24	24	80	6
Pipeline Sites	15	4	1	1	2	27
Total Operational	**43**	**64**	**28**	**26**	**82**	**34**

Notes:

[a] PM_{10} and $PM_{2.5}$ emissions include exhaust and fugitive dust sources (road dust, tire and brake wear).

Table 4.3-9. Average Daily Baseline Emissions: Santa Maria and Pipeline Sites (2019)

Source	Emissions (lbs/day)					
	VOC	NO_x	PM_{10}[a]	$PM_{2.5}$[a]	SO_2	CO
Santa Maria Rail Operations	0.02	0.37	0.0074	0.01	0.005	0.13
Santa Maria Trucks	1	45	16	3	0.15	5
Santa Maria Stationary Sources	151	280	133	133	440	33
Pipeline Sites	84	24	7	7	10	148
Total Operational	**237**	**349**	**156**	**143**	**450**	**186**

Notes:

[a] PM_{10} and $PM_{2.5}$ emissions include exhaust and fugitive dust sources (road dust, tire and brake wear).

4.3.5 Significance Criteria

Based on CEQA Guidelines Appendix G (2019), the significance criteria established by the applicable Air Quality Management District (AQMD) or APCD may be relied upon to make the following determinations: a project would cause adverse impacts to air quality if it would:

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 nonattainment under an applicable federal or state ambient air quality standard;

c. Expose sensitive receptors to substantial pollutant concentrations; or

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

In this analysis, components of the Project are evaluated against the significance criteria of various air districts, including the BAAQMD and San Luis Obispo County APCD, to assess air quality related impacts of the Project construction and operational activities. For the Rodeo Site and Carbon Plant Site (collectively, Rodeo Refinery), impacts of construction activities at Rodeo Site, demolition at the Carbon Plant Site and operations at the Rodeo Refinery are evaluated against thresholds defined by the BAAQMD. For the construction activities (or specifically, demolition) at the Santa Maria Site, air quality impacts of temporary construction are evaluated against the thresholds established by San Luis Obispo County APCD. Net operational emissions at the Santa Maria Site and Pipeline Sites would be negative

due to cessation of those activities, and therefore, related operational significance criteria are not discussed here.

4.3.5.1 Rodeo Refinery

This analysis uses the thresholds and methodologies from the BAAQMD's 2017 CEQA Air Quality Guidelines to evaluate the potential impacts of construction and operation of the Project. Applying the 2017 thresholds of significance, the Project would have a significant project-level air quality impact if it would:

- Result in average daily construction equipment engine exhaust emissions of 54 pounds per day of ROG, NO_x, or $PM_{2.5}$ or 82 pounds per day of PM_{10};
- Result in average daily operational emissions of 54 pounds per day of ROG, NO_x, or $PM_{2.5}$ or 82 pounds per day of PM_{10}; or result in maximum annual emissions of 10 tons per year of ROG, NO_x, or $PM_{2.5}$ or 15 tons per year of PM_{10};
- Expose persons by siting a new source or a new sensitive receptor to substantial levels of TACs resulting in (a) a cancer risk level greater than 10 in one million, (b) a non-cancer risk (chronic or acute) hazard index greater than 1.0, or (c) an increase of annual average $PM_{2.5}$ of greater than 0.3 microgram per cubic meter. For this threshold, sensitive receptors include residential uses, schools, parks, daycare centers, nursing homes, and medical centers within 1,000 feet of a new source of TACs; or
- Frequently and for a substantial duration, create or expose sensitive receptors to substantial objectionable odors affecting a substantial number of people.[28]

The Project would result in a significant cumulative health risk impact if it would:

- Expose persons, by siting a new source or a new sensitive receptor, to substantial levels of TACs during either construction or operation resulting in (a) a cancer risk level greater than 100 in a million, (b) a non-cancer risk (chronic or acute) hazard index greater than 10.0, or (c) annual average $PM_{2.5}$ of greater than 0.8 microgram per cubic meter.

The Project would result in a significant cumulative increase in criteria pollutant or precursor emissions if it would:

- Result in an emissions increase for ROG, NO_x, PM_{10}, or $PM_{2.5}$ that exceeds the BAAQMD's project-specific thresholds. Thus, if the Project would not result in a significant impact individually for ROG, NO_x, PM_{10}, and $PM_{2.5}$, its contribution to cumulative impacts is considered less than significant.

4.3.5.2 Santa Maria and Pipeline Sites

The threshold criteria established by the San Luis Obispo County APCD to determine the significance and appropriate mitigation level for a project's short-term construction emissions are shown below (San Luis Obispo County APCD 2012):

- **Daily**
  - Exceedance of the 137 pounds per day threshold for ROG and NOx combined ("ROG+NO_x") requires Standard Mitigation Measures. For construction projects expected to be completed in less than one quarter, exceedance of the 7 pounds per day threshold for exhaust diesel PM_{10} (DPM) requires Standard Mitigation Measures.

[28] Subject to verification by a District Inspector

- **Quarterly—Tier 1**
  - Exceedance of the 2.5 tons per calendar quarter threshold for ROG+NO_x requires Standard Mitigation Measures and BACT for construction equipment. If implementation of the Standard Mitigation and BACT measures cannot bring the project below the threshold, offsite mitigation may be necessary if feasible mitigation are not implemented, or if no mitigation measures are feasible for the project.
  - For construction projects lasting more than one quarter, exceedance of the 0.13 tons per quarter of DPM threshold requires Standard Mitigation Measures, BACT for construction equipment; and,
  - For construction projects lasting more than one quarter, exceedance of the 2.5 tons per quarter of Fugitive Dust PM_{10} threshold requires dust Mitigation Measures and may require the implementation of a Construction Activity Management Plan.
- **Quarterly—Tier 2**
  - Exceedance of the 6.3 ton per quarter of ROG+NO_x threshold requires Standard Mitigation Measures, BACT, implementation of a Construction Activity Management Plan, and offsite mitigation; and
  - For construction projects lasting more than one quarter, exceedance of the 0.32 tons per quarter of DPM threshold requires Standard Mitigation Measures, BACT, implementation of a Construction Activity Management Plan, and offsite mitigation.

Significance criteria for other Air Districts are applied as applicable for the Pipeline Sites, particularly regarding the decommissioning of Pipeline Sites and for rail activity outside the SFBAAB across California. For more information on the thresholds used for rail activity, refer to Attachment A in Appendix B, *Air Quality and Greenhouse Gas Emissions Technical Data*. The following construction thresholds are used to evaluate emissions from decommissioning of Pipeline Sites in San Joaquin Valley APCD and Santa Barbara County APCD:

- **San Joaquin Valley APCD:** Projects would be in exceedance of construction thresholds if annual construction emissions would exceed the thresholds of 100 tons per year of CO, 10 tons per year of NO_x, 10 tons per year of ROG, 27 tons per year of SOx and 15 tons per year of PM_{10} (San Joaquin Valley APCD 2015).
- **Santa Barbara County APCD:** Projects would be in exceedance of construction thresholds if annual construction exhaust emissions would exceed the thresholds of 25 tons per year of reactive organic compounds and 25 tons per year of NO_x (Santa Barbara County APCD 2020).

4.3.6 CEQA Baseline

Baseline conditions reflect the 2019 operation and maintenance of the Rodeo Refinery and Santa Maria Site as petroleum refineries and associated facilities, including operation and maintenance activities. The baseline setting also includes the applicable regulatory framework to protect environmental resources, which are described above.

4.3.7 Approach to Analysis

As discussed previously, the analysis approach used in this document follows recommendations provided in the BAAQMD's 2017 CEQA Air Quality Guidelines. For further details of data, calculations, and assumptions used to determine Project-related emissions and associated public health risks that would be associated with the Project, refer to the Air Quality Technical Report (Ramboll 2021).

4.3.7.1 Construction Emissions Estimates

Construction of the Project would include the removal or repurposing of the existing refinery equipment as applicable, adding new equipment to the Rodeo Site, demolition of the Carbon Plant, decommissioning of Pipeline Sites and demolition of the Santa Maria Site.

Rodeo Refinery Construction and Demolition

The Project would involve construction and demolition activities at the Rodeo Refinery as described in Section 3.10, *Overall Project Construction/Demolition Phase*. All demolition and construction associated with the Rodeo Refinery would occur within the refinery boundary (except for one laydown area) and would be conducted in accordance with established procedures and BMPs and with applicable regulations and permits. Soil and construction debris generated by construction activities would be either re-used onsite or transported offsite for recycling or disposal as appropriate. Scrap metal would be hauled away to an offsite recycling facility.

Construction and demolition activities would involve diesel-powered heavy equipment such as loaders, earthmovers, cranes, and concrete trucks, and lighter-duty equipment such as welders and compressors, some of which would also be diesel-powered. The use of diesel-powered off-road construction equipment and on-road trucks would result in criteria pollutant emissions from engine exhaust, including DPM, during the construction period and fugitive particulate matter emissions from road dust and wind erosion from earth-moving activities. Fugitive particulate matter emissions from vehicle road dust are based on CARB's methodology, using a composite silt loading factor based on the vehicle miles traveled-weighted distribution of the road types (local, corridors, major and freeways) in the region[29] because the exact route of the vehicles beyond the I-80 freeway is unknown. San Pablo Avenue is the main roadway near the Project site accessed for construction traffic and is considered an arterial (i.e. major roadway) pursuant to the County's General Plan[30] and not a local street.

Construction would employ up to 500 workers at a time who would commute daily to and from the construction site mostly by means of private gasoline passenger vehicles; the construction workforce is expected to be drawn from the greater East Bay region, within a 1-hour commute distance. Hauling trucks trips would range from a daily minimum of 10 round trips and a daily maximum of 165 round trips during the construction period.

Emissions for Rodeo Site activities were estimated through a bottom-up approach using activity assumptions for expected construction equipment and vehicle trips provided by Phillips 66, combined with emission factors from the CARB's OFFROAD2017—ORION web database model (v1.0.1) used for construction equipment, and the CARB's Emission Factor Model version 2021 (EMFAC2021) for vehicle emission factors. The emission factors for construction equipment reflect a fleet mix of Tier 4 to the maximum extent practicable for pieces >50HP, with the remaining equipment representing Bay Area air district default distribution in OFFROAD2017. The hauling trucks reflect a fleet of vehicles model year 2014 and newer. The remaining vehicles (worker and service vendors) represent the Bay Area air district default distribution in EMFAC2021.

For characterizing the Carbon Plant demolition emissions, the California Emissions Estimator Model (CalEEMod), version 2016.3.2, was used to determine associated equipment for demolition of general heavy industrial land use of square footage equivalent to that of the Carbon Plant. The number of hauling truck trips expected for the Carbon Plant demolition was based on Project estimates and entered into the model to determine vehicle emission associated with the Carbon Plant demolition.

[29] Vehicle miles travelled road type distribution nearest city, Concord, CA, from the Federal Highway Administration for is used to estimate average road type distribution in lieu of unavailable road type distribution for Rodeo, CA.

[30] Figure 5-2 of the County's General Plan. Available at //www.contracosta.ca.gov/DocumentCenter/View/30915/Ch5-Transportation-and-Circulation-Element?bidId=

During construction, a period of increased vessel traffic related to the shutdown of the Pipeline Sites is expected, and therefore, concurrent emissions from incremental vessel traffic are counted toward the Rodeo Site construction total. Marine traffic emissions estimated are described in Operational Emissions Estimates subsection below.

Annual construction-related emissions that would result from the proposed construction and demolition activities at the Rodeo Site and demolition of the Carbon Plant Site are summarized in Section 4.3.6, *Discussion of No Air Quality Impacts*, and Section 4.3.7, *Direct and Indirect Impacts of the Proposed Project* below.

For purposes of determining emission factors and developing the analysis, construction at the Rodeo Site and demolition at the Carbon Plant was assumed to occur over a period of approximately 21 months starting from 2022 through 2024 across the various Project sites. However, an exact construction schedule for any of the construction elements is dependent on when applicable permits for the Project are obtained.

Santa Maria Site and Pipeline Sites

Decommissioning and demolition activities at the Santa Maria site would involve use of off-road construction equipment and on-road vehicles that produce criteria pollutant emissions, including DPM. Emissions from these activities were calculated using emission factors from CalEEMod, version 2016.3.2, and equipment activity estimates. For emission estimating purposes, demolition at the Santa Maria Site was assumed to occur over an approximately 1-year period for purposes of emissions calculations.

In addition, emissions from cleaning and removal from service of segments of pipeline (i.e., pigging/pipeline blowdowns) and associated tanks connecting the Santa Maria Site and the Rodeo Refinery (i.e., Pipeline Sites) are included in the construction emissions compared against San Luis Obispo County APCD, Santa Barbara County APCD, and San Joaquin Valley APCD significant thresholds, shown in Section 4.3.6, *Discussion of No Air Quality Impacts*, and Section 4.3.7, *Direct and Indirect Impacts of the Proposed Project* below.

4.3.7.2 Operational Emissions Estimates

Existing operations at the Rodeo Site include refinery operations, trucking of materials into the refinery, rail shipments of products (butane) and shipping of feedstocks and products through the Marine Terminal. Operational emissions from the Project would occur at the Rodeo Site grounds and its Marine Terminal and along rail lines, roadways, and ship traffic lanes leading to and from the Rodeo Site. Existing operations at the Carbon Plant generate criteria pollutant emissions from stationary sources, rail operations and trucking, including DPM. Similarly, the Santa Maria Site baseline includes emissions from rail operations, trucking and refinery operations. Connecting the Santa Maria Site and the Rodeo Site is a pipeline and a series of midstream pumping stations (i.e., the Pipeline Sites) that include combustion engines, tanks and fugitive components. Upon completion of demolition activities, emissions at the Carbon Plant Site, Santa Maria Site and the Pipeline Sites would be eliminated resulting in negative net emissions (against the baseline) related to these specific Project Sites. For purposes of the analysis emissions were calculated assuming Project operations would commence in 2024. The following methodologies were applied to estimate emissions for operational sources.

Stationary Sources

Emissions for existing stationary sources during 2019 (baseline) were developed by Phillips 66 for their annual permit requirements. Changes to individual units and processes are summarized in Chapter 3, *Project Description*. New emissions sources would include a renewable feedstock PTU. The PTU process uses reactors, vessels, tanks and other equipment for polyethylene removal, degumming, and adsorption processes. Some of this equipment operates under vacuum and others at atmospheric pressure. Each of

the three PTU trains has a closed loop system to collect, control and discharge all vapors and gases from the process.

The PTU includes a FOG recovery process that consists of tanks, vessels, centrifuges, and evaporator units to remove organic material from process wastewater before treatment at the existing facility wastewater treatment plant. Removed organic matter is concentrated to remove excess moisture before being loaded onto trucks for shipment outside of the facility. Some hot process streams would be cooled via a non-contact wet surface air cooler, which would generate some particulate emissions from cooling water drift.

All tanks, process vessels at the PTU are connected to a closed loop vapor collection system. The closed loop vapor collection system consists of pipes that collect all vapor from the PTU preventing the vapors from entering the atmosphere. All collected vapors from the closed loop vapor collection systems are sent to the vapor treatment system. Each closed loop vapor collection system/treatment system would be a source of emissions. Collected vapors are treated for VOC removal using 2-stage treatment technology before being released to atmosphere. The proposed 1st stage treatment is biofilter and the 2nd stage unit is activated carbon adsorption. The biofilter includes a media which creates an ideal surface for bacteria to come in contact with the vapors. The bacteria aids in eliminating the fatty acids, and VOCs, with the final carbon treatment used as an air polishing stage. Per the manufacturer, this technology has a proven history of operating in multiple industries for over 20 years.

Each PTU train would also include several storage silos of dry materials called bleached earth and filter aid, which would be added to the feedstock during the treatment process. These silos would each be equipped with dust collectors to reduce the amount of particulate matter emissions from the dry materials.

Several storage tanks at the Rodeo Facility would be physically modified or repurposed to handle renewable feedstocks and products. Changes would include the installation of geodesic domes, vapor control systems, or insulation. These modifications would affect the amounts of VOC emissions from each tank.

The Project would also include the installation of a thermal oxidizer and caustic scrubber STU near the U235 Sulfur Recovery Unit. Under Project operating conditions, the U235 Sulfur Recovery Unit would no longer extract elemental sulfur from facility off-gas, and the STU would serve to control ammonia and hydrogen sulfide emissions that the Sulfur Recovery Unit currently controls. Control of these emissions would require natural gas combustion in the thermal oxidizer, which would result in the generation of additional criteria pollutant emissions.

As a result of the Project, several process units would be shut down and no longer produce emissions. The Project includes the cessation of operations at the Carbon Plant and of the crude handling units, sulfur recovery unit, reformer, and isomerization unit. Emissions associated with each of these process units would no longer occur following the Project, including associated fugitive VOC emissions from component leaks.

Detailed input parameters and assumptions associated with each of the new process units and future emissions estimates can be found in Attachment B of the Air Quality Technical Report (Ramboll 2021).

On-Road Vehicles

On-road vehicles traveling to/from the Rodeo Site consist of heavy-duty hauling diesel trucks and light duty worker vehicles (e.g., passenger cars and light trucks). Heavy-duty truck related activity including roundtrips and mileage data are summarized in Attachment A of the Air Quality Technical Report (Ramboll 2021). All hauling trucks were assumed to be diesel fueled. Baseline emissions from trucks were calculated based on 2019 actual truck trips and expected trip lengths within the BAAQMD boundary; and for the Project, truck emissions were based on estimated truck trips related to refinery deliveries and waste by-products based on the Project design. Emission rates were obtained from the CARB's EMFAC2021 onroad model and are based on Bay Area Air District fleetwide age distribution for T7 tractor

trucks. Worker vehicles are not expected to change as a result of the Project because the number of workers would not change with the Project. Therefore, emissions from worker vehicles were not estimated, but one can presume that emissions resulting from worker vehicles would decrease over time due to fleet turnover and improved vehicle efficiency associated with new model vehicles.

The Carbon Plant and Santa Maria Sites existing conditions include truck traffic related to their operation. Because these facilities would be removed as a result of the Project, the emissions related to these activities would cease, and therefore emissions are only estimated for the baseline. Truck trip emissions in 2019 for the Carbon Plant and Santa Maria were developed similarly to Rodeo Site truck emissions, using EMFAC2021 emission rates for their corresponding Project site air districts.

Marine Traffic

Marine sources at the Rodeo Site consist of tugs, barges, ATBs, and tanker vessels moving feedstock and product to and from the Marine Terminal. Emissions related to marine traffic result from vessel engine exhaust during hoteling at-berth, transit across the San Francisco Bay, and anchorage events throughout the year. Vessels within state waters and 24 nautical miles of the California coastline are assumed to operate on low sulfur marine diesel or gas oil, with 0.1 percent sulfur, consistent with CARB requirements. For analysis of marine traffic, an average activity of 2017 through 2019 was used.

Characteristics for tankers that visited the Marine Terminal during the baseline were extracted from the IHS Fairplay vessel database (IHS Markit 2018); vessel calls were categorized into dead tonnage weight size groups and average characteristics for each group (main engine kilowatts, auxiliary engine kilowatts, engine tier mix) were derived from the database. Barges visiting the terminal during the baseline were classified into two groups: non-self-propelled barges (without a propulsion engine, pulled by tugboat) and ATBs, which are self-propelled. For all barge types, characteristics were extracted from fleet specification sheets available in barge operator's website (Centerline 2021). Tugs were broken down in two categories: assist tugs accompanying tankers and barges through transit and assisting with maneuvering, and tugboats pulling non-self-propelled barges during transit. Future vessels projected to visit during the Project are assumed to have similar vessel specifications (engine loads, tier mix) than those of the same category in the baseline.

Vessel traffic, based on the 3-year baseline average of 2017 through 2019, consisted of 80 tankers of various sizes (dead tonnage weight ranges) and 90 barges (non-self-propelled and ATBs combined), and is estimated to increase to a total of 201 Handymax tankers and 161 ATB at full Project operation.

Tug and vessel emissions calculations are based on the CARB's methodology guidance for harbor craft and ocean-going vessels (CARB 2007, 2011, 2019) and San Pedro Bay Ports Emissions Inventory Methodology Report (Starcrest Consulting Group 2019). Detailed parameters and assumptions for marine emissions calculations are included in Attachment A of the Air Quality Technical Report (Ramboll 2021).

Rail Operations

Rail sources at the Rodeo Site consist of linehaul locomotive moving butane railcars during the baseline, and linehaul locomotives moving feedstock railcars during the Project. The rail rack uses a railway cargo handling off-road equipment, instead of a switcher locomotive, to assemble any trains. Emissions are generated by the diesel engines on the linehaul locomotives and from the railway cargo handling equipment. For the baseline, emission estimates are based on 2019 actual destination and counts of railcars to/from Rodeo Site across California. For the Project, the number of linehaul movements is expected to remain the same, but the number of railcars is expected to increase from an average of 4.7 railcars per day in 2019 to 16 railcars per day during the Project. The Carbon Plant Site and Santa Maria Site had rail operations during the 2019 baseline. Because the Project would remove those facilities, emissions related to the rail activities in these Project sites would be eliminated during the Project.

Rail activity is calculated based on yearly linehaul movements at each site, expected trip lengths (miles) and weight of the cargo (tons) by railcars, which combined determine the ton-mileage throughput of a project's rail operation. The ton-mileage is converted to annual fuel consumption using a fleet-wide fuel index, and consequently, grams-per-fuel-gallon emission factors are used to derive emissions. Rail emissions for all three Project sites (Santa Maria, Rodeo and Carbon Plant) follow this methodology and California age-weighted linehaul tier distributions based on CARB guidance (CARB 2021) and consistent with a recent analysis of Rodeo Site rail emissions (Yorke Engineering, LLC 2019). Emissions were estimated based on a fuel index derived from Union Pacific fleetwide average (Union Pacific Railroad Company 2019), activity defined by the Project site operations such as number of railcars, loaded and tare railcar weights, linehaul visit frequency and trip route distribution, reflecting baseline and Project conditions.

4.3.7.3 Health Risk Analysis

Below is a description of the three-step HRA process used to assess potential public health risks from exposures to environmental contaminants from emission sources.

1. A *hazard identification* is performed to determine the pollutants of concern and emissions of TACs are quantified.
2. In the *exposure assessment* step, ground-level impacts resulting from the transport and dilution of these emissions through the atmosphere are assessed at locations of predicted exposure (or "receptors") by air dispersion modeling, typically using, as with this HRA, government-developed computer air dispersion models and local weather data.
3. *Risk characterization*, potential human doses of these compounds resulting from the atmospheric transport are calculated, typically using state-approved procedures, as were used here. Potential cancer and non-cancer health risks resulting from the calculated exposures are estimated using dose-response relationships developed from toxicological data.

The procedures used in the HRA are consistent with the 2015 revisions to the 2003 California Office of Environmental Health Hazard Assessment (OEHHA) guidance, *Air Toxics Hot Spots Program Risk Assessment Guidelines: The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments* (OEHHA 2015), as referenced by the California Air Pollution Control Officers Association document, *Health Risk Assessments for Proposed Land Use Projects* (California Air Pollution Control Officers Association 2009), for conducting HRAs for land use projects. Further details on the HRA assumptions and process are provided in the Air Quality Technical Report (Ramboll 2021). The HRA includes the incorporation of age sensitivity factors to cancer risk calculations.

The HRA for the Project was conducted to assess increased cancer risk, non-cancer chronic health effects, localized annual average $PM_{2.5}$ concentrations from both construction (including the transitional phase interim vessel traffic) and operational sources, and acute health effects. Localized $PM_{2.5}$ concentrations and non-cancer chronic health risks are assessed based on annual average concentrations and exposure. Conversely, cancer risk is assessed based on the increased probability of contracting cancer over a person's lifetime, evaluated as 30 years. To determine whether significant impacts would occur, the cancer risk, non-cancer chronic hazard index, and annual average $PM_{2.5}$ concentration results are compared to the project-related significance thresholds of an increase in cancer risk level greater than 10 in 1 million, a non-cancer chronic hazard index greater than 1.0, and an annual average $PM_{2.5}$ concentration of greater than 0.3 $\mu g/m^3$ of $PM_{2.5}$, respectively each for construction and for operations, as recommended in the BAAQMD CEQA guidelines.

Construction and operation of the Project would result in the release of TACs such as DPM from sources of fuel combustion including engine exhaust from off-road equipment, on-road vehicles, locomotives, and marine vessels. Stationary TAC sources consist of combustion sources and process-related emissions emitted through stacks and fugitive emissions. The HRA includes both new sources associated with the Project, such as the STU and PTU, as well as existing sources whose emissions change as a result of the

Project. This includes shut down sources and sources with decreasing emissions, which may result in highly localized decreases in health risks.

The HRA modeled all new and existing sources associated with the Project and included the net emissions change (increase or decrease) for each source. The effects of each source's net emissions change were analyzed at every receptor modeled in the HRA. This results in a comprehensive analysis that indicates the change in health risk from the Project at every receptor from every emissions source. The HRA may result in certain receptors showing an increase in health risks, and others showing a decrease in health risks relative to the baseline. It is the receptors corresponding to the maximum increase in risk, referred to as maximum exposed individual resident (MEIR) or worker (MEIW), that are used to compare to the significance criteria.

Refer to Appendix B, Section 4.0 Health Risk Assessment, for a detailed discussion of the HRA methodology. Section 2.0 of Appendix B provides an overview of the emissions calculation methodology by source. Construction emissions and pre- and post-project emissions for marine, rail, and truck sources can be found in Attachment A of Appendix B, while pre- and post-project emissions for stationary sources can be found in Attachment B of Appendix B. Pre- and Post-project, as well as net, annual average and maximum one-hour emissions allocated to each modeled source group are presented in Attachment C. Note that modeled source group emissions for Stationary Sources are provided in Attachment B.

Further discussion of the modeling approach (receptor grid, source parameters, meteorological data, etc.) can be found in Section 3.0 of Appendix B. HARP parameters (risk pathways, intake, exposure, etc.) can be found in Table 4-2 of Appendix B. Description of the Cumulative Health Risk Assessment is included in Section 5 of Appendix B.

4.3.8 Discussion of No Air Quality Impacts

Review and comparison of the setting and Project characteristics show that no impacts would occur for some of the CEQA Guidelines criteria related to air quality impacts. Where available, the significance criteria established by the applicable AQMD or APCD may be relied upon to make the following determinations.

Would the Project:

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

The most recently adopted air quality plan for the Bay Area is the Final 2017 Clean Air Plan, which was adopted by the BAAQMD in April 2017 (BAAQMD 2017c). The Final 2017 Clean Air Plan serves as a multi-pollutant air quality plan to protect public health and the climate. The plan includes a wide range of proposed control measures to reduce combustion-related activities, decrease fossil fuel combustion, improve energy efficiency, and decrease emissions of potent GHGs. The Final 2017 Clean Air Plan updates the Bay Area 2010 Clean Air Plan and complies with state air quality planning requirements as codified in the California Health and Safety Code (although the 2017 plan was delayed beyond the 3-year update requirement of the code).

The SFBAAB is designated nonattainment for both the 1-hour and 8-hour state ozone standards, and the 8-hour federal ozone standard. In addition, emissions of ozone precursors in the air basin contribute to air quality problems in neighboring air basins, particularly the San Joaquin Valley Air Basin (SJVAB), as Bay Area pollutants are transported inland through the delta. Under these circumstances, state law requires the Clean Air Plan to include all feasible measures to reduce emissions of ozone precursors and to reduce the transport of ozone precursors to neighboring air basins.

The Final 2017 Clean Air Plan contains 85 measures to address reduction of several pollutants: ozone precursors, particulate matter, air toxics, and GHGs. Other measures focus on a single

type of pollutant, such as specific GHGs like CH_4 and black carbon that consists of harmful fine particles that affect public health.

Under the California CAA, the BAAQMD is required to develop an air quality attainment plan for criteria pollutants that are designated as nonattainment within the air district. Several project components would be subject to BAAQMD rules and regulations governing criteria pollutants, TACs, and odorous compounds, even though permits may not be required (e.g., Nuisance). Stationary sources, such as process heaters, boilers, and gas turbines, are required to have permits from the BAAQMD before constructing, changing, or operating the source. If the project is subject to BAAQMD permit requirements, the sources would need to comply with BAAQMD Regulation 2 and proceed through the two-stage Authority to Construct and Permit to Operate process.

The BAAQMD recommends that the agency approving a project where an air quality plan consistency determination is required analyze the project with respect to the following criteria: (1) Does the project support the primary goals of the air quality plan; (2) Does the project include applicable control measures from the air quality plan; and (3) Does the project disrupt or hinder implementation of any Final 2017 Clean Air Plan control measures? If the first two questions are concluded in the affirmative, and the third question concluded in the negative, the BAAQMD considers the project consistent with air quality plans prepared for the Bay Area.

Any project that would not support the Final 2017 Clean Air Plan goals would not be considered consistent with the plan. The recommended measure for determining project support of these goals is consistency with BAAQMD CEQA thresholds of significance. As presented in the subsequent impact discussions, the Project would not exceed the BAAQMD significance thresholds and would result in an overall reduction of local criteria pollutant emissions; therefore, the Project would support the primary goals of the Final 2017 Clean Air Plan. However, a more detailed evaluation of the Project's consistency with the control strategies in the 2017 Clean Air Plan is included in Appendix B, Project Consistency with 2017 Clean Air Plan. As mentioned above, projects that incorporate all feasible air quality plan control measures are considered consistent with the Final 2017 Clean Air Plan. Due to the Project's expected net decrease of emissions from stationary sources at the refinery and the closure of the Carbon Plant, the Project would not impede or conflict with these proposed goals.

In summary, the Project would support the primary goals of the Final 2017 Clean Air Plan, it would be consistent with all applicable BAAQMD rules developed from the plan, and would not disrupt or hinder implementation of any Final 2017 Clean Air Plan proposed control measures. Therefore, there would be no impact associated with, conflicting with, or obstructing implementation of the applicable air quality plan. No impact would occur.

Operations at the Santa Maria Site and the Pipeline Sites and thus, associated emissions, would be eliminated during the Project, also resulting in a net emissions decrease. Therefore, the Project is not expected to conflict or disrupt any goals of local clean air plans affecting those Project sites. No impact would occur.

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

The elimination of crude oil throughput and refining of petroleum-based feedstocks during the Project would result in a substantial reduction of sulfur compounds and would therefore likely have a beneficial impact on emissions associated with common refinery odors at the Santa Maria Site. The Pipeline Sites would be taken out of service (decommissioned) or sold since petroleum feedstocks from Santa Maria Site would no longer be shipped to the Rodeo Refinery. Therefore, no odor impacts would occur during operation and maintenance of the Santa Maria Site and Pipeline Sites.

4.3.9 Direct and Indirect Impacts of the Proposed Project

Table 4.3-10 summarizes the potential air quality impacts, as well as significance determinations for each impact.

Table 4.3-10. Summary of Potential Impacts

Impact	Significance Determination		
	LTS	LTSM	SU
Impact 4.3-1. Would the Project result in a cumulatively considerable net increase fugitive dust emissions for which the project region is nonattainment under an applicable federal or state ambient air quality?			
Rodeo Refinery			
Construction/Demolition Including Transitional Phase		✓	
Santa Maria and Pipeline Sites			
Construction/Demolition	✓		
Impact 4.3-2. Would the Project result in a cumulatively considerable net increase of criteria pollutants associated with vehicle exhaust for which the project region is nonattainment under an applicable federal or state ambient air quality?			
Rodeo Refinery			
Construction/Demolition Including Transitional Phase		✓	
Santa Maria and Pipeline Sites			
Construction/Demolition	✓		
Impact 4.3-3. Would the project expose sensitive receptors to substantial pollutant concentrations?			
Rodeo Refinery, Santa Maria and Pipeline Sites			
Operation and Maintenance	✓		
Offsite Outside SFBAAB			
Operation and Maintenance			✓ Mitigation Pre-empted
Impact 4.3-4. Would the Project expose sensitive receptors to substantial pollutant concentrations?			
Rodeo Refinery, Santa Maria and Pipeline Sites			
Construction/Demolition Including Transitional Phase[a]	✓		
Operation and Maintenance	✓		
Impact 4.3-4. Would the Project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?			
Rodeo Refinery, Santa Maria and Pipeline Sites			
Construction/Demolition Including Transitional Phase[a]	✓		
Rodeo Refinery			
Operation and Maintenance		✓	
Santa Maria and Pipeline Sites			
Operation and Maintenance	✓		

Notes: LTS = Less than significant, no mitigation proposed
LTSM = Less-than-significant impact with mitigation
SU = Significant and unavoidable

[a] Transitional phase applies only to Rodeo Refinery

* Desert AQMD, Northern Sierra AQMD, Placer County APCD, Tehama County APCD and Shasta County AQMD have significant and unavoidable impacts. Mitigation is pre-empted by federal law. See Table 4.3-17.

IMPACT 4.3-1

b. Would the Project result in a cumulatively considerable net increase in fugitive dust emissions for which the project region is nonattainment under an applicable federal or state ambient air quality?

Construction/Demolition and Transitional Phase: Less than Significant Impact with Mitigation

The Project would involve construction and demolition activities at the Rodeo Refinery, including the Rodeo Site and Carbon Plant, as described in Section 3.10, *Overall Project Construction/Demolition Phase* that would occur in phases over a period of approximately 21 months and are assumed to begin as early as the first quarter of 2022. All demolition and construction associated with the Rodeo Refinery would occur within existing refinery boundaries (except for one laydown area).

The following impact discussion addresses increased PM_{10} and $PM_{2.5.}$ emissions resulting from Project construction and demolition activities. Impact 4.3-2 addresses increases in ROG and NOx from engine exhaust.

Rodeo Refinery

Construction of new facilities and demolition of the Carbon Plant would involve diesel-powered heavy equipment such as loaders, excavators, cranes, and concrete trucks, and lighter-duty equipment such as welders and air compressors, some of which would also be diesel-powered. The use of diesel-powered off-road construction equipment and on-road trucks would result in emissions of dust (including PM_{10} and $PM_{2.5}$) primarily from "fugitive" sources (i.e., emissions released through means other than through a stack or tailpipe) during the construction period, including the transitional phase. Construction would employ up to 500 workers at a time who would commute daily to and from the construction site mostly by means of gasoline-powered private passenger vehicles and light trucks; the construction workforce is expected to be drawn from the greater East Bay region, within a 1-hour commute distance. Hauling trucks would travel a minimum daily of 10 round trips and a maximum daily of 165 round trips during the construction and site preparation phase tentatively from May 2022 through June 2023. Average daily and quarterly emissions from construction activities are shown in Tables 4.3-12 and 4.3-13. In addition to Rodeo Refinery construction emissions and Carbon Plant demolition emissions, emissions from cleaning and removal from service of segments of pipeline and associated tanks (Pipeline Sites) located in BAAQMD boundaries are included for the comparison to local construction emission thresholds.

Santa Maria Site and the Pipeline Sites in San Luis Obispo County

Demolition activities at the Santa Maria Site would involve use of off-road construction equipment and on-road vehicles that produce emissions from vehicle exhaust ($PM_{2.5}$) and fugitive dust (PM_{10}).

The Pipeline Sites would only involve activities related to cleaning-out the pipelines without extensive use of heavy equipment. It is assumed for purposes of emissions calculations that decommissioning of the pipelines would occur over an estimated 1-year period. In addition, estimated emissions from decommissioning of associated tanks and segments of Pipeline 400 located within the San Luis Obispo County APCD are included in the construction activity emissions estimates shown in Tables 4.3-12 and 4.3-13. At this point, Phillips 66 has no plans to reuse the Santa Maria Site or the Pipeline Sites, and any future reuse and remediation would be subject to subsequent environmental analysis, as applicable.

As shown in Tables 4.3-12 and 4.3-13, daily and quarterly emissions from construction activities within San Luis Obispo County would not exceed the applicable significance thresholds recommended by the San Luis Obispo County APCD (2012). Therefore, emissions from demolition of the Santa Maria Site and decommissioning of the Pipeline Sites are estimated to be less than significant.

Impacts in San Luis Obispo County (SCCAB) would be geographically independent of impacts in Contra Costa County (SFBAAB). Because the two sites are in different air basins, emissions are not additive and would be less than significant.

Decommissioning of Pipeline Sites in Other Air Districts

Emissions from cleaning and removing from service segments of pipeline and associated tanks located in other air district would increase $PM_{2.5}$, as summarized in Table 4.3-14. These emissions were compared to construction emissions and PM_{10} thresholds (annual) for each air district that would be affected.

Estimated annual emissions from decommissioning activities within San Joaquin Valley APCD and Santa Barbara County APCD would not exceed the applicable significance thresholds recommended by the respective air districts. Therefore, impacts from these activities are estimated to be less than significant in these air basins.

Impacts in Santa Barbara County (SCCAB) and the San Joaquin Valley (SJVAB) would be geographically independent of impacts in the Contra Costa County (SFBAAB). Because the three sites are in different air basins, emissions are not additive and would be less than significant.

Impact Summary

At the Rodeo Refinery demolition and construction, including the transitional phase, would result in significant impacts related to fugitive dust. Impacts in other air districts would be less than significant and not require mitigation.

Mitigation Measure AQ-1, which requires implementation of effective and comprehensive control measures recommended by the BAAQMD (BAAQMD 2017b), would reduce fugitive dust impacts to less than significant.

Mitigation Measure AQ-1: Implement BAAQMD Basic Control Measures

Construction contractors shall implement the following applicable BAAQMD basic control measures as BMPs:

- All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
- All haul trucks transporting soil, sand, or other loose material offsite shall be covered.
- All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least 2 times per day, not less than 4 hours apart, on San Pablo Avenue, between the refinery and I-80, and on the access roads between the Carbon Plant and Highway 4. The use of dry power sweeping is prohibited.
- All vehicle speeds on unpaved roads shall be limited to 15 mph.
- All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
- Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 2 minutes as recommended by the BAAQMD, and not to exceed 5 minutes as required by the California airborne toxics control measure CCR Title 13, Section 2485. Clear signage shall be provided for construction workers at all access points.
- All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications.

- All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.
- Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.

IMPACT 4.3-2

b. Would the Project result in a cumulatively considerable net increase of criteria pollutants associated with vehicle exhaust for which the project region is nonattainment under an applicable federal or state ambient air quality?

Construction/Demolition: Less than Significant Impact with Mitigation

Rodeo Refinery

Demolition and construction activities at the Rodeo Refinery, including the Carbon Plant, would involve use of off-road construction equipment and on-road vehicles that produce exhaust emissions of criteria pollutants including ROG and NO_x,. Refer to Impact 4.3-1 for discussion of PM_{10} and $PM_{2.5}$ emissions.

Project construction exhaust emissions were found to be significant for NOx, mainly related to background Marine Terminal incremental traffic during the Transitional Phase (in Year 2).

Transitional Phase

During the 7-month transitional phase there would be a short-term increase in deliveries and processing of crude oil and gas oil feedstocks by vessels, resulting in increased vessel traffic at the Marine Terminal compared to baseline conditions. During the transitional phase, vessel calls would be more frequent and include approximately 96 tankers and 92 barges (small barges and ATBs combined).

Of the 260 pounds per day of NO_x that would be emitted during the transitional phase, terrestrial NO_x emissions amount to 32 pounds per day (12.3 percent) and incremental marine vessel traffic NO_x is 228 pounds per day (87.7 percent). This would be a temporary, but significant impact.

Mitigation Measure AQ-1 includes implementation of BAAQMD basic control measures that address not only fugitive dust emissions, but also NO_x emissions. Mitigation Measure AQ-2 requires Phillips 66 to prepare and implement a NM Plan prior to the issuance of construction-related permits for site preparation. The purpose of the NM Plan is to document expected construction and transitional phase NOx emissions in detail; and, if necessary, to identify feasible and practicable contemporaneous measures to reduce aggregated construction and transition NOx emissions to below the BAAQMD's 54 pounds per day threshold of significance. With implementation of both Mitigation Measures AQ-1 and AQ-2, NO_x impacts would be less than significant in the SFBAAB.

Santa Maria Site and the Pipeline Sites in San Luis Obispo County

Demolition activities at the Santa Maria Site would involve use of off-road construction equipment and on-road vehicles that produce exhaust emissions of criteria pollutants including ROG and NO_x.

The Pipeline Sites would only involve activities related to cleaning-out the pipelines without extensive use of heavy equipment. It is assumed for purposes of emissions calculations that decommissioning of the pipelines would occur over an estimated 1-year period. In addition, estimated emissions from decommissioning of associated tanks and segments of Pipeline 400 located within the San Luis Obispo County APCD are included in the construction activity emissions estimates shown in Tables 4.3-12 and 4.3-13. At this point, Phillips 66 has no plans to reuse the Santa Maria Site or the

Pipeline Sites, and therefore any assumed future reuse and remediation would be speculative and subject to subsequent environmental analysis, as applicable.

As shown in Tables 4.3-12 and 4.3-13, daily and quarterly emissions from demolition and decommissioning activities within San Luis Obispo County would not exceed the applicable significance thresholds recommended by the San Luis Obispo County APCD (2012). Therefore, impacts from these activities are estimated to be less than significant in this air basin.

Decommissioning of Pipeline Sites in Other Air Districts

Emissions from cleaning and removing from service segments of pipeline and associated tanks in other air districts would increase, as summarized in Table 4.3-14. Emissions were compared to construction emissions thresholds (annual) for each air district that would be affected.

As shown in Table 4.3-14, estimated annual emissions from decommissioning activities within San Joaquin Valley APCD and Santa Barbara County APCD would not exceed the applicable significance thresholds recommended by the respective air districts. Therefore, impacts from these activities are estimated to be less than significant in these air basins.

Impacts in Santa Barbara County (SCCAB) and the San Joaquin Valley (SJVAB) would be geographically independent of impacts in the Contra Costa County (SFBAAB). Because the three sites are in different air basins, emissions are not additive and would be less than significant.

Impact Summary

For the Rodeo Refinery in the SFBAAB, construction and demolition would result in NO_x emissions that exceed the BAAQMD significance thresholds. Therefore, impacts would be significant.

Mitigation Measure AQ-1 includes implementation of BAAQMD basic control measures that address not only fugitive dust emissions, but also NOx emissions. Mitigation Measure AQ-2, requiring implementation of a NO_x Mitigation Plan, would further reduce NO_x emissions. With implementation of Mitigation Measures AQ-1 and AQ-2, NO_x impacts would be less than significant in the SFBAAB.

Mitigation Measure AQ-2: Implement a NOx Mitigation Plan

Phillips 66 shall prepare a NOx Mitigation Plan (NM Plan) prior to the issuance of construction-related permits for site preparation. The purpose of the NM Plan is to document expected construction and transitional phase NOx emissions in detail; and, if necessary, to identify feasible and practicable contemporaneous measures to reduce aggregated construction and transition NOx emissions to below the BAAQMD's 54 pounds per day threshold of significance.

The NOx emissions estimate for the Project shall include consideration of readily available NOx construction and transition emission reduction measures, and/or other emission reduction actions, that shall be implemented during construction and transitional phase of the Project. The NM Plan shall describe the approximate amount of NOx emissions reductions that will be associated with each action and reduction measure on a best estimate basis.

The NM Plan shall be submitted to the Contra Costa County Department of Conservation and Development and the BAAQMD for review and approval, or conditional approval based on a determination of whether the NM Plan meets the conditions described below. The NM Plan shall include those recommended measures listed below needed to reduce the Project's construction and transition NOx emissions to less than the BAAQMD's threshold of significance.

The NM Plan shall include a detailed description of the NOx emissions for all construction and transition activities based on BMPs and use data at the time of Project approval and current estimation protocols and methods. The plan shall, at a minimum, include the following elements:

1. **Project Construction and Transition NOx Emissions** – The Project's construction and transition NOx emission estimates presented in the NM Plan will be based on the emission factors for off-road and on-road mobile sources used during construction and transition, over and above baseline, along with the incorporation of vehicle fleet emission standards. Project construction and transition NOx emission estimates will be based upon the final Project design, Project-specific traffic generation estimates, equipment to be used onsite and during transition, and other emission factors appropriate for the Project prior to construction. The methodology will generally follow the approach used in this Draft EIR and in Appendix B.

2. **NOx Emission Reduction Measures** – The NM Plan shall include feasible and practicable NOx emission reduction measures that reduce or contemporaneously offset the Project's incremental NOx emissions below the threshold of significance. Planned emission reduction measures shall be verifiable and quantifiable during Project construction and transitional phase. The NM Plan shall be consistent with current applicable regulatory requirements. Measures shall be implemented as needed to achieve the significance threshold and considered in the following order: (a) onsite measures, and (b) offsite measures within the San Francisco Bay Area Air Basin. Feasible[31] onsite and offsite measures must be implemented before banked emissions offsets (emission reduction credits) are considered in the NM Plan.

   a. Recommended Onsite Emission Reduction Measures:

   i. Onsite equipment and vehicle idling and/or daily operating hour curtailments;

   ii. Construction "clean fleet" using Tier 4 construction equipment to the maximum extent practicable;

   iii. Reductions in Vessel and/or Rail Traffic;

   iv. Other onsite NOx reduction measures (e.g., add-on NOx emission controls); or

   v. Avoid the use of Suezmax vessels to the maximum extent practicable.

   Additional measures and technology to reduce NOx emissions may become available during the Project construction and operation period. Such measures may include new energy systems (such as battery storage) to replace natural gas use, new transportation systems (such as electric vehicles or equipment) to reduce fossil-fueled vehicles, or other technology (such as alternatively-fueled emergency generators or renewable backup energy supply) that is not currently available at the project-level. As provided in the NM Plan, should such measures and technology become available and be necessary to further reduce emissions to below significance thresholds, Phillips 66 shall demonstrate to the Contra Costa County Department of Conservation and Development and BAAQMD satisfaction that such measures are as, or more, effective as the existing measures described above.

   b. Recommended Offsite Emission Reduction Measures:

   Phillips 66, with the oversight of the Contra Costa County Department of Conservation and Development and BAAQMD, shall reduce emissions of NOx by directly funding or implementing a NOx control project (program) within the San Francisco Bay Area Air Basin to achieve an annual reduction equivalent to the total estimated construction NOx emission reductions needed to lower the Project's NOx impact below the 54 pound per

[31] For the purposes of this mitigation measure, "feasible" shall mean as defined under CEQA "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors."

day significance threshold. The offsite measures will be based on the NOx reductions necessary after consideration of onsite measures.

To qualify under this mitigation measure, the NOx control project must result in emission reductions within the San Francisco Bay Area Air Basin that would not otherwise be achieved through compliance with existing regulatory requirements or other program participation. Phillips 66 shall notify Contra Costa County within six months of completion of the NOx control project for verification.

3. **Annual Verification Reports** – Phillips 66 shall prepare an Annual NM Verification Report in the first quarter of each year following construction or transitional phase activities, while Project construction activities at the site are ongoing. The reporting period will extend through the last year of construction. The purpose of the Report is to verify and document that the total Project construction and transitional phase NOx emissions for the previous year, based on appropriate emissions factors for that year and the effectiveness of emission reduction measures, were implemented.

   The Report shall also show whether additional onsite and offsite emission reduction measures, or additional NOx controls, would be needed to bring the Project below the threshold of significance for the current year. The Report shall be prepared by Phillips 66 and submitted to the Contra Costa County Department of Conservation and Development and the BAAQMD for review and verification. NOx offsets for the previous year, if required, shall be in place by the end of the subsequent reporting year. If Contra Costa County and the BAAQMD determine the report is reasonably accurate, they can approve the report; otherwise, Contra Costa County and/or the BAAQMD shall identify deficiencies and direct Phillips 66 to correct and re-submit the report for approval.

Table 4.3-11. Average Daily Construction-Related Exhaust Emissions: Rodeo Refinery and Carbon Plant and Pipeline Sites Decommissioning within the BAAQMD

Source	Construction Exhaust Emissions (lb/day)			
	PM_{10}	**$PM_{2.5}$**	**NO_x**	**ROG**
Year 1 of Construction Activities				
Rodeo Site Construction Equipment	0.6	0.6	18.0	2.5
Rodeo Site Construction Vehicles	0.5	0.5	24.4	0.9
Total	**1.1**	**1.0**	**42.3**	**3.4**
CEQA Threshold	82.0	54.0	54.0	54.0
Above Threshold?	No	No	No	No
Year 2[a] of Construction Activities				
Rodeo Site Construction Equipment	0.6	0.5	17.7	2.2
Rodeo Site Construction Vehicles	0.1	0.1	3.6	0.2
Background Marine Terminal Incremental Traffic (Transitional Phase)	6.0	5.6	228.0	12.2
Carbon Plant Demolition[b]	0.3	0.2	6.5	0.6
Pipeline Sites' Tank Decommissioning	--	--	1.1	4.0
Pipeline Decommissioning	--	--	--	30.0
Total	**6.9**	**6.4**	**257.0**	**49.2**

Table 4.3-11. Average Daily Construction-Related Exhaust Emissions: Rodeo Refinery and Carbon Plant and Pipeline Sites Decommissioning within the BAAQMD

Source	Construction Exhaust Emissions (lb/day)			
	PM_{10}	$PM_{2.5}$	NO_x	ROG
CEQA Threshold	82	54	54	54
Above Threshold?	No	No	Yes	No

[a] Second year of construction would occur concurrently with Transitional Phase during which Marine Terminal traffic at the Rodeo Site would increase by 18 visits above baseline level during a 7-month period.

[b] Emissions from the Carbon Plant future demolition activities are conservatively added to second year of construction period within the BAAQMD. Construction start and end dates were assumed for purposes of estimating emission factors. More specific timing will be determined at a later date.

Table 4.3-12. Estimated Daily Construction-Related Exhaust Emissions: Santa Maria Site and Pipeline Sites, San Luis Obispo County

Source	Construction Emissions (pounds per day)	
	Diesel PM_{10}	$ROG+NO_x$
Santa Maria Demo Off-Road Construction Equipment	1.2	32.5
Santa Maria Demo On-Road Vehicles	< 0.01	0.8
Pipeline Site Tank Decommissioning	--	15.5
Pipeline Decommissioning (San Luis Obispo County Segment)	--	30.0
Total	**1.2**	**78.7**
San Luis Obispo County APCD Significance Threshold	7	137
Exceeds Threshold?	No	No

Table 4.3-13. Estimated Quarterly Construction-Related Emissions: Santa Maria Site and Pipeline Sites, San Luis Obispo County

Source	Construction Emissions (Quarterly Tons)		
	Diesel PM_{10}	$ROG+NO_x$	Fugitive PM_{10}
Santa Maria Demo Off-Road Construction Equipment	0.04	1.06	--
Santa Maria Demo Fugitive Dust	--	--	0.02
Santa Maria Demo On-Road Vehicles	< 0.01	0.03	0.01
Pipeline Site Tank Decommissioning	--	0.87	--
Pipeline Decommissioning (San Luis Obispo County Segment)	--	0.49	--
Total	**0.04**	**2.44**	**0.03**

Table 4.3-13. Estimated Quarterly Construction-Related Emissions: Santa Maria Site and Pipeline Sites, San Luis Obispo County

Source	Construction Emissions (Quarterly Tons)		
	Diesel PM_{10}	**ROG+NO_x**	**Fugitive PM_{10}**
San Luis Obispo County APCD Significance Threshold—Tier 1	0.13	2.5	2.5
Above Tier 1 Threshold?	No	No	No
San Luis Obispo County APCD Significance Threshold—Tier 2	0.32	6.3	--
Above Tier 2 Threshold?	No	No	--

Table 4.3-14. Estimated Annual Maximum Construction-Related Emissions: Pipeline Sites Decommissioning Within San Joaquin Valley APCD and Santa Barbara County APCD

Air District	Source	NOx (tons/year)	ROG (tons/year)
San Joaquin Valley APCD	Tank Decommissioning	0.04	5.95
	Pipeline Decommissioning	--	0.49
	Total	**0.04**	**5.95**
	CEQA Threshold	10	10
	Above Threshold?	No	No
Santa Barbara County APCD	Tank Decommissioning	0.04	5.95
	Pipeline Decommissioning	--	0.49
	Total	**0.04**	**5.95**
	CEQA Threshold	25	25
	Above Threshold?	No	No

IMPACT 4.3-3

c. Would the project expose sensitive receptors to substantial pollutant concentrations?

Operation and Maintenance: Less Than Significant, No Mitigation Proposed

Rodeo Refinery

Implementation of the Project would change operational emissions from the following components at the Rodeo Refinery within the SFBAAB as discussed below.

Stationary Sources

Implementation of the Project would result in both increases and decreases of criteria pollutant emissions from the new or modified stationary sources at the Rodeo Refinery. Changes to individual units and processes are described in Chapter 3, *Project Description*, Section 3.9, *Project*

Components. The Project includes the cessation of operations at the Carbon Plant and of several existing processing units at the Refinery Site (see Table 3-3). As a result of the Project, several process units would become idle (i.e., not operational) and therefore no longer produce emissions; however, the current emissions analysis is conservatively not taking credit for idle units and assumes 2019 emissions remain constant for units for which the permit is maintained. Considering all the aforementioned, criteria emissions from the sum of all stationary sources in the Project would generate fewer emissions than stationary sources during the 2019 baseline, i.e., an overall net emissions decrease.

Truck Traffic

There is presently heavy-duty truck traffic associated with deliveries and waste by-products for the Rodeo Refinery operations. Rodeo Refinery related truck traffic in 2019 consisted of 40,213 roundtrips per year. Truck traffic to and from the Carbon Plant Site related to the transport of petroleum coke, which totaled 32,673 round trips in 2019, would no longer occur, while Rodeo Site annual truck trips related to the Project would increase by about 8,400, meaning that overall total annual truck round trips under the Project would decrease to approximately 16,000 truck roundtrips per year. Criteria pollutant emissions are generated from diesel engines exhaust in the trucks, while fugitive dust emissions are generated by road dust lifted during truck movement and trucks tire and brake wear. Overall, truck emissions are expected to decrease because of reduced truck traffic during Project operation.

Marine Traffic

The existing Marine Terminal at the Rodeo Site handles feedstocks and product shipments coming through tankers of various sizes and barges. Barges comprise two categories: non-self-propelled barges, that is barges pulled by a towboat/tug, and ATB barge which are self-propelled. Support from assist tugs during transit of all vessels are also part of the marine traffic. Based on the 3-year baseline, the Rodeo Site had on average 80 tankers calls and 90 barge calls per year (non-self-propelled and ATBs combined). During the Project, vessel calls would be more frequent than under baseline conditions, approximately 201 tankers and 161 ATBs, and the mixture of vessel sizes and types would be different than under baseline conditions. Some of the larger vessel categories bringing crude during baseline (Panamax, Suezmax) are not expected to transport materials to and from the Marine Terminal during the Project.

Increased vessel traffic from baseline levels during the Project would result in an increase in transit emissions. On the other hand, visits of large tankers (Panamax, Suezmax) would likely decrease during the Project, and the change in vessel mix from the baseline would result in lower emissions on an individual-call basis. Overall, however, marine traffic annual mass emissions are expected to increase during the Project due to increased vessel traffic.

Railcar Unloading

The existing butane rail loading stations would be repurposed for the unloading of renewable feeds. The rail rack operations in 2019 consisted of a daily visit of one linehaul locomotive loading on average of 4.7 butane railcars for shipment. During the Project, the rail rack operations are expected to consist of one linehaul locomotive train visit per day bringing a maximum of 16 railcars of renewable feedstock. Although the number of locomotive visits is not expected to change during the Project, rail emissions are expected to increase slightly due to the increased number of railcars per train, which would be reflected as increased fuel consumption of the locomotive diesel engines.

Operational Components Emissions

Estimated maximum annual emissions from operation of the Project within the SFBAAB are summarized in Table 4.3-15; estimated average daily emissions are summarized in Table 4.3-16.

CEQA baseline emissions shown in these tables as "Baseline Emissions Rodeo Refinery with Air Liquide" are totals from Tables 4.3-6 and 4.3-7, respectively. As described in Section 4.3.5.1, *Construction and Emission Estimates*, truck and rail emissions include all travel within the SFBAAB boundaries and vessel emissions include hoteling emissions at the Marine Terminal and at anchorage sites in the Bay, and transiting emissions between the Marine Terminal and the Pilot Buoy west of the Golden Gate. The Project at full capacity, which would eliminate crude oil refining at the Rodeo Facility, would result in decreases in annual and daily average emissions of all criteria pollutants relative to the baseline. Therefore, impacts from these Project operations would remain below the thresholds and are estimated to be less than significant. No mitigation is required.

Table 4.3-15. Estimated Maximum Annual Operational Emissions: Rodeo Refinery Components

Source	Emissions (tons/year)					
	VOC	NO_x	PM_{10}[a]	$PM_{2.5}$[a]	SO_2	CO
Rodeo Facility Project Emissions						
Ocean-going Vessels and Harbor Craft	16	266	7	7	11	87
Trucks	0.03	2.38	2.10	0.37	0.02	0.19
Rail	0.18	4.79	0.11	0.10	0.08	1.38
Facility Stationary Sources	111	210	71	69	295	51
Total Operational	***127***	***483***	***81***	***76***	***307***	***140***
Air Liquide H_2 Plant	1	22	5	5	0	1
Total Operational with Air Liquide	***129***	***505***	***85***	***81***	***307***	***141***
CEQA Impact Evaluation						
Baseline Emissions Rodeo Refinery with Air Liquide	129	756	105	98	1,435	152
Project Minus CEQA Baseline	-0.64	-250	-20	-18	-1,129	-11
Significance Threshold	10	10	15	10	--	--
Exceeds Threshold?	No	No	No	No	--	--

[a] PM_{10} and $PM_{2.5}$ emissions include exhaust and fugitive dust sources (road dust, tire and brake wear).

Table 4.3-16. Estimated Daily Average Operational Emissions: Rodeo Refinery Components

Source	Emissions (lb/day)					
	VOC	NO_x	PM_{10}[a]	$PM_{2.5}$[a]	SO_2	CO
Rodeo Facility Project Emissions						
Ocean-going Vessels and Harbor Craft	89	1,457	39	36	60	478
Trucks	0.15	13	11	2	0.11	1
Rail	1.00	26.27	0.62	0.57	0.46	7.57
Facility Stationary Sources	607	1,152	391	378	1,619	279
Total Operational	***698***	***2,648***	***442***	***416***	***1,680***	***766***
Air Liquide H_2 Plant	8	120	26	25	0	7
Total Operational with Air Liquide	***705***	***2,768***	***467***	***441***	***1,680***	***773***

Source	Emissions (lb/day)					
	VOC	NO_x	PM_{10}[a]	$PM_{2.5}$[a]	SO_2	CO
CEQA Impact Evaluation						
Baseline Emissions Rodeo Refinery with Air Liquide	709	4,140	577	539	7,865	833
Project Minus CEQA Baseline	-4	-1,372	-110	-98	-6,185	-60
Significance Threshold	54	54	82	54	--	--
Exceeds Threshold?	No	No	No	No	--	--

[a] PM_{10} and $PM_{2.5}$ emissions include exhaust and fugitive dust sources (road dust, tire and brake wear).

Santa Maria Site

The Santa Maria Site would be phased-out and decommissioned since its output (petroleum feedstocks) would no longer be shipped via pipeline to the refinery. Operational impacts during the Project for this site would be zero.

Impacts in San Luis Obispo County (SCCAB) would be geographically independent of impacts in Contra Costa County (SFBAAB). Because the Santa Maria Site would no longer operate during the Project, emissions are not additive and would be less than significant.

Pipeline Sites

The Pipeline Sites would be taken out of service (decommissioned) or sold since petroleum feedstocks from Santa Maria Site would no longer be shipped to the refinery. Operational impacts during the Project for this site would be zero.

Impacts in in San Luis Obispo County (SCCAB), Santa Barbara County (SCCAB), and the San Joaquin Valley (SJVAB) would be geographically independent of impacts in Contra Costa County (SFBAAB). Because the three sites are in different air basins, emissions are not additive and would be less than significant.

Rail Transport Outside the SFBAAB (Significant and Unavoidable, Mitigation Pre-Empted)

For affected air districts, Table 4.3-17 shows the potential incremental rail transport emissions by District along with significant thresholds for each District where thresholds could be exceeded resulting in a significant and unavoidable impact. The incremental emissions within each air district were conservatively estimated with an assumption that each rail route in California would accommodate full Project rail traffic. This assumption is conservative because total railcar shipments are typically distributed amongst the three California routes (i.e., northern, eastern, and southern), but the distribution for the Project cannot be known in advance. Using this conservative assumption, the analysis indicates that rail transport emissions were slightly higher than the applicable thresholds in the San Joaquin Valley APCD (SJVAPCD), Butte County AQMD (BCAQM), Mojave Desert AQMD (MDAQMD), Northern Sierra AQMD (NSAQMD), Placer County APCD (PCAPCD), Tehama County APCD (TCAPCD) and the Shasta County AQMD (SHAQMD).[32] Operational impacts in the seven aforementioned air districts would be geographically independent of impacts in Contra Costa County (SFBAAB). Rail transport emissions in all other air districts through which trains transporting Project materials would pass would be less than significant. For more information on the significance thresholds and less than significant impacts related to rail transport in other air districts outside of SFBAAB, refer to Attachment A in Appendix B, *Air Quality and Greenhouse Gas Emissions Technical Data*.

[32] Shasta County Air Quality Management District is used here in lieu of South Coast Air Quality Management District, which commonly refers to the South Coast Air Quality Management District.

Table 4.3-17. Rail Transport Incremental Emissions by Air District

Pollutant	Daily Incremental Emissions from Rail (lb/day)*							Annual Incremental (tpy)*	
AIR DISTRICT ->	BCAQMD	MDAQMD	NSAQMD	PCAPCD	SHAQMD	SJVAPCD	TCAPCD	MDAQMD	SJVAPCD
NOx	34.3	162.9	36.7	63.6	56.6	180.0	30.5	30.2	34.1
CO	8.1	38.6	8.7	15.1	13.4	42.9	7.2	7.2	8.1
VOC	1.3	6.1	1.4	2.4	2.1	6.7	1.1	1.1	1.3
PM10	0.8	3.8	0.8	1.5	1.3	4.1	0.7	0.7	0.8
PM2.5	0.7	3.5	0.8	1.3	1.2	3.8	0.7	0.6	0.7
SO2	0.6	2.8	0.6	1.1	1.0	3.1	0.5	0.5	0.6
	Air District Daily Significant Emissions Thresholds - Daily							Annual Threshold	
AIR DISTRICT ->	BCAQMD	MDAQMD	NSAQMD	PCAPCD	SHAQMD	SJVAPCD	TCAPCD	MDAQMD	SJVAPCD
NOx	25	137	24	55	25	100	25	25	10
CO	—	548	—	—	500	100	—	100	100
VOC	25	137	24	55	25	100	25	25	10
PM10	80	82	79	82	80	100	80	15	15
PM2.5	—	65	—	—	—	100	—	12	15
SO2	—	137	—	—	80	100	—	25	27
	Thresholds Evaluation (incremental emissions above threshold?)								
	Daily							Annual	
AIR DISTRICT ->	BCAQMD	MDAQMD	NSAQMD	PCAPCD	SHAQMD	SJVAPCD	TCAPCD	MDAQMD	SJVAPCD
NOx	Yes (SU)	Yes (SU)	Yes (SU)	Yes (SU)	Yes (SU)	Yes (SU)	Yes (SU)	Yes (SU)	Yes (SU)
CO	—	No	—	—	No	No	—	No	No
VOC	No	No	No	No	No	No	No	No	No
PM10	No	No	No	No	No	No	No	No	No
PM2.5	—	No	—	—	—	No	—	No	No
SO2	—	No	—	—	No	No	—	No	No

* Daily incremental rail emissions = Project (lb/day) minus 2019 (lb/day)

Annual incremental rail emissions = Project (tpy) minus 2019 (tpy)

Air Districts: Butte County AQMD (BCAQMD), Mojave Desert AQMD (MDAQMD), Northern Sierra AQMD (NSAQMD), Placer County APCD (PCAPCD), Shasta County AQMD (SHAQMD), San Joaquin Valley APCD (SJVAPCD), Tehama County APCD (TCAPCD)

Impact Summary

In Contra Costa County, which is within the SFBAAB, operation of the proposed Project would result in a net emissions decrease of all pollutants compared to baseline levels. Thus, the operational impact would be less than significant, and no mitigation would be required (i.e., the proposed Project in itself would encompass mitigation) except for potentially significant and unavoidable (SU) impacts

for NOx with respect to rail operations in San Joaquin Valley APCD, Butte County AQMD, Mojave Desert AQMD, Northern Sierra AQMD, Placer County APCD, Tehama County APCD and Shasta County AQMD. However, any mitigation measures to address potentially significant and unavoidable impacts from rail transport operations, whether within or outside the SFBAAB, would be legally infeasible because of preemption by federal law governing rail transportation.[33]

In *Sierra Club v. County of Fresno*, 6 Cal. 5th 502 (2018),[34] the California Supreme Court determined that the air quality analysis in the EIR was inadequate because it did not make "a reasonable effort to substantively connect the project's air quality impacts to likely health consequences." The court determined that "the EIR should be revised to relate the expected adverse air quality impacts to likely health consequences or explain in meaningful detail why it is not feasible at the time of drafting to provide such an analysis."

This section has evaluated the potential air quality impacts of the Project and has concluded that the Project has the potential to result in significant and unavoidable air quality impacts related to rail operations in seven air districts outside of BAAQMD. The estimated rail NO_x and PM_{10} emissions (as DPM) have been conservatively overstated, with 100 percent of all operations allocated to each of the three potential routes. However, because rail transport would occur over the three potential routes, each route would be expected to carry less than 100 percent of rail shipments, thus, the probability of any actual significant impact along a single route, whether daily or annual, is low

It is currently infeasible to correlate specific health effects to these potentially significant air quality impacts. From a technical perspective, the affected air districts do not have approved methodologies for translating project-level emissions, such as NO_x and PM_{10} emissions from mobile source growth, to specific health outcomes. Furthermore, these estimated emissions are associated with existing rail operations with corresponding actual NO_x and PM_{10} emissions, which by nature are in transit (i.e., variable), making any modeling or predictive analysis of the health effects of such emissions uncertain, unproveable, and speculative. For all of these reasons, it is infeasible to relate the potentially significant air quality impacts to any specific health consequences in affected air districts. As a result, it is infeasible to identify what and where mitigation measures could be implemented to address specific health consequences. In addition, potential mitigation such as altering rail operations (e.g. preventing or delaying operation), would be pre-empted by federal law, and hence, legally infeasible (see footnote). Contra Costa County does not have the authority to impose such mitigation measures. Therefore, health effects associated with rail activity outside the SFBAAB would be significant and unavoidable. However, this does not prevent the affected air districts from developing appropriate methodologies and working with the Union Pacific Railroad and Phillips 66 to develop potential mitigation that would not unreasonably burden or interfere with rail transportation.

Mitigation Measure AQ-3: Mitigation Pre-empted by Federal Law

[33] The Interstate Commerce Commission Termination Act of 1995, 49 USC § 10101 et seq., broadly preempts state and local environmental regulations that have the effect of managing or governing rail transportation. Association. of Am. R.R. vs. Coast Air Quality Mgmt. Dist., 622 F.3d 1094, 1098 (9th Cir. 2010). Even state and local actions that do not directly regulate railroads can be preempted by this Act, depending on the degree of interference that an action has on railroad operations. As applied in the CEQA context, the Act prohibits a lead agency from requiring any mitigation that, even indirectly, "imposes an unreasonable burden on or interference with rail transportation." Ass'n of Irritated Residents v. Kern County. Board of Supervisors, 17 Cal. App. 5th 708, 753 (2017), rev. denied, 2018 Cal. LEXIS 833 (2018). What matters for the purposes of this analysis is the effect, rather than the intent, of the regulatory action. See Friends of the Eel River v. North Coast R.R. Auth., 3 Cal. 5th 677, 717 (2017), cert. denied, 138 S.Ct. 1696 (2018) ("[I]t is well settled that states [and local governments] cannot take an action that would have the effect of foreclosing or unduly restricting a railroad's ability to conduct any part of its operations or otherwise unreasonably burdening interstate commerce." (internal quotation marks omitted))

[34] State of California, Court of Appeal, 5th Appellate District (6 Cal. 5th 502). 2018. Sierra Club v. County of Fresno. Available at: https://cases.justia.com/california/supreme-court/2018-s219783a.pdf?ts=1545687370 and https://cases.justia.com/california/court-of-appeal/2020-f079904.pdf?ts=1606257048. Accessed August 3, 2021.

IMPACT 4.3-4

c. Would the Project expose sensitive receptors to substantial pollutant concentrations?

Construction/Demolition Including Transitional Phase: Less Than Significant, No Mitigation Proposed

Rodeo Refinery

Construction of the Project at the Rodeo Refinery, including the Carbon Plant, would result in the release of TACs from mobile sources including diesel engine exhaust particulate matter from off-road equipment and on-road vehicles. The HRA analysis for construction also included the Transitional Phase. This phase includes a 7-month period within the overall construction schedule resulting in increased vessel traffic at the Marine Terminal compared to baseline conditions. During the Transitional Phase, vessel calls would be more frequent than under baseline conditions, approximately 96 tankers and 92 ATBs; however, this condition would be temporary.

For the Construction and transitional phase, the location of the maximum residential impacts from those activities was in Tormey (refer to Attachment I, Figures 3-11a and b, and 3-12a and b for the analysis locations). At that location, the maximum residential net cancer risk (MEIR) was 7.71 in a million, the net chronic HI was 0.006 and the acute HI was 0.05. The location of maximum worker impacts from those activities was also in Tormey. At that location, the maximum worker net cancer risk (MEIW) is 0.17 in a million and the net chronic hazard index for a worker is 0.009.

The results of the HRA for construction impacts were also analyzed at the MEIR location for overall Project operations, located in Vallejo. The results of the HRA for Construction (including Transitional Phase) are summarized in Table 4.3-18.

Table 4.3-18. Rodeo Refinery Construction (including Transitional Phase) HRA Results for Residential and Worker for Cancer, Chronic, Acute

Type of Estimated Health Impact	Excess Lifetime Cancer Risk[a] (in a million)	Chronic Hazard Index[b] (unitless ratio)	$PM_{2.5}$[c] ($\mu g/m^3$)	Acute Hazard Index[d] (unitless ratio)
Residential Receptor—2 Years of Construction—Construction MEIR	7.71	0.006	0.027	n/a
Worker Receptor—2 Years of Construction—Construction MEIR	0.17	0.009	n/a	n/a
Acute Receptor—Construction MEIR	n/a	n/a	n/a	0.05
Residential Receptor—2 Years of Construction—Project MEIR	1.45	0.002	0.005	n/a
Worker Receptor—2 Years of Construction—Project MEIR	0.024	0.002	NA	NA
Acute Receptor—Project MEIR	NA	NA	NA	0.03
BAAQMD Significance Threshold	10.0	1.0	0.3	1.0
Exceed Threshold?	No	No	No	No

Notes: NA = not available

[a] MEIR for cancer risk located at UTMx 566126.85, UTMy 4211554.14. MEIW for cancer risk located at UTMx 565917.61, UTMy 4211339.26.
[b] MEIR for chronic hazard index located at UTMx 566126.85, UTMy 4211554.14. MEIW for chronic hazard located at UTMx 565917.61, UTMy 4211339.26.
[c] MEIR for $PM_{2.5}$ located at UTMx 566126.85, UTMy 4211554.14.
[d] MEI for acute hazard index located at UTMx 567,408, UTMy 4,212,228.

As shown in Table 4.3-18, cancer risk, non-cancer chronic hazard index, annual average $PM_{2.5}$ concentration, and acute hazard index results for project construction are all below the following project-level significance thresholds:

- An increase in cancer risk level greater than 10 in 1 million;
- A non-cancer chronic or acute hazard index greater than 1.0; and
- An annual average $PM_{2.5}$ concentration of greater than 0.3 µg/m^3.

For Construction, the maximum residential net cancer risk at the construction MEIR and the Project MEIR (7.71 and 1.45 in a million, respectively) is largely driven by emissions from heavy equipment and truck travel along San Pablo Road. In summary, the net chronic hazard index at the construction MEIR and the Project MEIR (0.17 and 0.024, respectively) and the acute hazard index at the construction MEIR and Project MEIR (0.05 and 0.03, respectively) from construction are below the significance threshold of 1.0, and the $PM_{2.5}$ concentration (0.027 and 0.005 µg/m^3, at the construction MEIR and project MEIR) is very low compared to the threshold. Additional details on the HRA analysis can be found in Appendix B, Attachment 4.0, Health Risk Assessment. Therefore, construction and demolition at the Rodeo Refinery, including the Carbon Plant, would not expose sensitive receptors to substantial pollutant concentrations. The impact would be less than significant and no mitigation is required.

Santa Maria Site and Pipeline Sites

There is no HRA of the demolition of the Santa Maria Site because there are no sensitive receptors within 1,000 feet (305 meters) of the site. Emissions associated with the cleaning of the pipeline and tanks are minimal and for only a brief duration. The impact would be less than significant and no mitigation is required.

Operation and Maintenance: Less Than Significant, No Mitigation Proposed

Rodeo Refinery

As discussed in Section 4.3.5 and Appendix B, all sources (stationary, marine, rail, trucks) considered to be part of the Project were modeled in the HRA. See Stationary Source Tables 2 and 3 of Appendix B Attachment B for modeled emission rates broken out by source group for stationary sources. See Appendix B, Attachment C1 through C4 for modeled emission rates broken out by source group for marine, truck, rail, and construction sources, respectively. Sources unaffected by the Project (zero net change in emissions and thus zero net change in risk) were not included in the HRA.

Operation of the Project at the Rodeo Refinery, including the Carbon Plant, would result in the release of TACs from stationary sources and mobile sources including engine exhaust from off-road equipment (e.g., forklifts), on-road vehicles, locomotives, and marine vessels. Results of the HRA for the operational emissions are summarized in Table 4.3-19.

As shown in Table 4.3-19, cancer risk, non-cancer chronic hazard index, annual average $PM_{2.5}$ concentration, and acute hazard index results for project operation are all below the project-level significance thresholds listed above. For long-term operations, the maximum residential net cancer risk (8.33 in a million) is largely driven by contributions from marine vessels, while the net chronic hazard index (0.14), the net acute hazard index (0.6) and $PM_{2.5}$ concentration (0.22 µg/m^3) are being driven by stationary sources. The operational MEI for cancer risk is in Vallejo, whereas the MEI for hazards index and $PM_{2.5}$ are in Crockett. Additional details on the HRA analysis can be found in the Air Quality Technical Report (Ramboll 2021).

Table 4.3-19. Rodeo Refinery Operational MEIR Results for Residential and Worker for Cancer, Chronic, Acute

Type of Estimated Health Impact	Excess Lifetime Cancer Risk[a] (in a million)	Chronic Hazard Index[b] (unitless ratio)	$PM_{2.5}$[c] ($\mu g/m^3$)	Acute Hazard Index[d] (unitless ratio)
Residential Receptor—30 Years of Operation	8.33	0.14	0.22	NA
Worker Receptor—30 Years of Operation	0.51	0.17	NA	NA
Acute Receptor	n/a	NA	NA	0.39
BAAQMD Significance Threshold	10.0	1.0	0.3	1.0
Exceed Threshold?	No	No	No	No

Notes:

[a.] MEIR for cancer risk located at UTMx 566686, UTMy 4214279. MEIW for cancer risk located at UTMx 567215, UTMy 4213753.

[b.] MEIR for chronic hazard index located at UTMx 567333, UTMy 4212103. MEIW for chronic hazard located at UTMx 566577, UTMy 4211924.

[c.] MEIR for $PM_{2.5}$ located at UTMx 567308, UTMy 4212253.

[d.] MEI for acute hazard index located at UTMx 566488, UTMy 4210717.

Table 4.3-20 shows the results of the cumulative community background HRA consistent with the BAAQMD CEQA Guidelines. The BAAQMD Stationary Source Screening Tool was used to identify existing offsite (i.e., non-Project) permitted stationary sources within 1,000 feet (305 meters) of each of the potentially maximally exposed individual residents (MEIRs) for cancer risk, hazard index and $PM_{2.5}$. A stationary source inquiry form was submitted to the BAAQMD to request updates; however, no offsite stationary sources were identified as being within 1,000 feet of the MEIRs. The BAAQMD also provided information in a geographic information system (GIS) format that contained the risks from roadways greater than 30,000 average daily traffic trips and railways. In combination with the project-level analyses described above, and the BAAQMD cumulative risk thresholds, the Project would not have a cumulatively considerable impact in the community.

Table 4.3-20. Summary of Cumulative Impacts Using the BAAQMD Methodology

Nearby Sources[a]	Excess Lifetime Cancer Risk (MEIR) (in a million)	Noncancer Chronic Hazard Index (MEIR) (unitless)	$PM_{2.5}$ Concentration (MEIR) ($\mu g/m^3$)
Existing Stationary Sources[b]	--	--	--
Roads/Highways[c,d]	5.8	--	0.18
Major Streets[d,e]	0.044	--	0.00093
Railways[d]	6.4	--	0.019
Project Net Operations[g]	8.33	0.14	0.22
Project Construction[f]	1.45	0.002	0.005
Total	**22**	**0.15**	**0.42**
Exceeds Threshold?	**NO**	**NO**	**NO**
Threshold	**100**	**10**	**0.80**

Notes: $\mu g/m^3$ = microgram per cubic meter
MEIR = maximally exposed individual residents
$PM_{2.5}$ = particulate matter with a diameter of 2.5 microns or less

a. Details for each source are shown in the preceding tables. If the cell is marked with "--", no risk was calculated. For roadways, highways, major streets, and railways, chronic hazard index is not calculated in the BAAQMD screening tools.

b. Consistent with the BAAQMD guidance, Ramboll included all facilities within 1,000 feet of the MEIRs as per the BAAQMD Stationary Source Screening Analysis Tool. No facilities were identified; therefore no values were adjusted accordingly for distance from the MEIRs using the BAAQMD guidance.

c. Ramboll searched for additional nearby roads between 10,000 and 30,000 average daily trips and confirmed there are no roadways with average daily traffic between 10,000 and 30,000 trips per day within 1,000 ft of the cancer or chronic/$PM_{2.5}$ MEIRs.

d. Nearby major streets, highway, and railway cancer and $PM_{2.5}$ impacts were taken from the BAAQMD raster files for the Project area. The BAAQMD's raster screening tools do not estimate chronic hazards since the screening levels were found to be extremely low. Thus, there are no chronic hazard values associated with highways, railways, or major streets.

e. Major streets, as evaluated in the BAAQMD raster screening tools, include all streets with average daily traffic above 30,000 trips per day.

f. Both the Project Operations and Construction risks include childhood exposure from 0 to 2 years**.** When added, this conservatively doubles the childhood exposure period**.** Actual cumulative projects risks are lower. Similarly, chronic hazard index and $PM_{2.5}$ concentrations are averaged only over a year, where the maximum yearly concentration from construction and operation is reported from the Project and Construction Risks.

g. The potential cumulative effect of the proposed Martinez Refinery Renewable Fuels Project was considered (https://www.contracosta.ca.gov/7961/Martinez-Refinery-Renewable-Fuels-Project), but the Martinez Project is not estimated to add to the cumulative condition. The Project Overview states: “The two marine terminals currently handle approximately 160 ships per year. Under the Project, the two marine terminals are expected to handle up to 35% fewer ships per year.” The Notice of Preparation for the Martinez Project does not reference an increase in vessel traffic relative to existing conditions.

Impact Summary

As shown above, the HRA results of Project construction and operation do not indicate exceedances of applicable cancer risk, non-cancer chronic hazard index, annual average $PM_{2.5}$ concentration, and acute hazard index thresholds at the project-level or community cumulative-level. Thus, the impact would be less than significant and no mitigation is required.

Mitigation Measure: None Required

IMPACT 4.3-5

d. Would the Project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Construction/Demolition, Including Transitional Phase: Less Than Significant, No Mitigation Proposed

Rodeo Refinery, Santa Maria Site, and Pipeline Sites

Decommissioning of petroleum processing equipment would involve venting and capture of gases and draining and recovery of liquids. These steps could result in some fugitive releases of odorous compounds; however, such release would be singular events for a particular equipment item, and releases would permanently cease upon completion of work. Therefore, it is not expected that potential and short-term odors would adversely affect a large number of people during construction and demolition activities at all Project sites. The impact would be less than significant.

Operation and Maintenance: Less-than-Significant Impact with Mitigation

Rodeo Refinery

Under existing conditions, some substances present in products and byproducts of the petroleum crude oil refining processes and in materials used by the Rodeo Refinery, the Santa Maria Site, and the Pipeline Sites are known to cause odors, such as H_2S, SO_2, and other reduced-sulfur compounds (e.g., mercaptans), ammonia, and some organic compounds, including benzene, naphthalene, and toluene. The elimination of crude oil throughput and refining of petroleum-based feedstocks during the Project would result in a substantial reduction of sulfur compounds and would therefore likely have a beneficial impact on emissions associated with common refinery odors. Conversely, under the Project, the Rodeo Facility would be converted to production of transportation fuels from renewable feedstocks as refining of petroleum feedstocks would be discontinued. Compared to a typical petroleum refinery, the new renewable feedstocks do not contain many of the sulfur and organic compounds that typically cause refinery type odor concerns. However, the renewable feedstocks can create odors similar to an animal and/or food processing facility unless properly managed through good engineering practices during project development combined with an Odor Management Plan after Project completion. These principles are currently used at the Rodeo Refinery and will continue after the completion of the Project.

The key element of controlling odors is to engineer control measures into the facility design. Engineered odor control strategies include covering potential odor-generating equipment with sealed covers, using fixed roof or floating roof tanks, reducing fugitive emissions, using scrubbing and incineration systems, and minimizing system upsets.

For the Project, the primary areas where engineering controls for controlling odors are being designed include Tank 100, where renewable feedstocks are unloaded from rail terminal and at the PTU. This equipment would handle and store the feedstocks prior to treatment.

Odor control at the railcar unloading racks includes a sealed header system tied to activated carbon canisters. All tallow feedstocks would be routed to Tank 100, which would be repurposed with a new fixed roof and nitrogen gas blanket in the vapor space. The nitrogen blanket gas would be discharged through activated carbon canisters for odor control prior to release to atmosphere. Other renewable feedstock with the potential to generate odors would be stored in the existing facility tankage that currently include odor treatment and abatement facilities.

The PTU includes a vapor collection system and vapor treatment consisting of a biofilter followed by an activated carbon adsorption bed. The biofilter would reduce most odor constituents from the collected vapor, and any residual components discharged from the biofilter would be further removed

by the activated carbon bed. A simplified Block Flow Diagram for the system is shown in Figure 4.3-3, followed by a discussion of how the system abates odors.

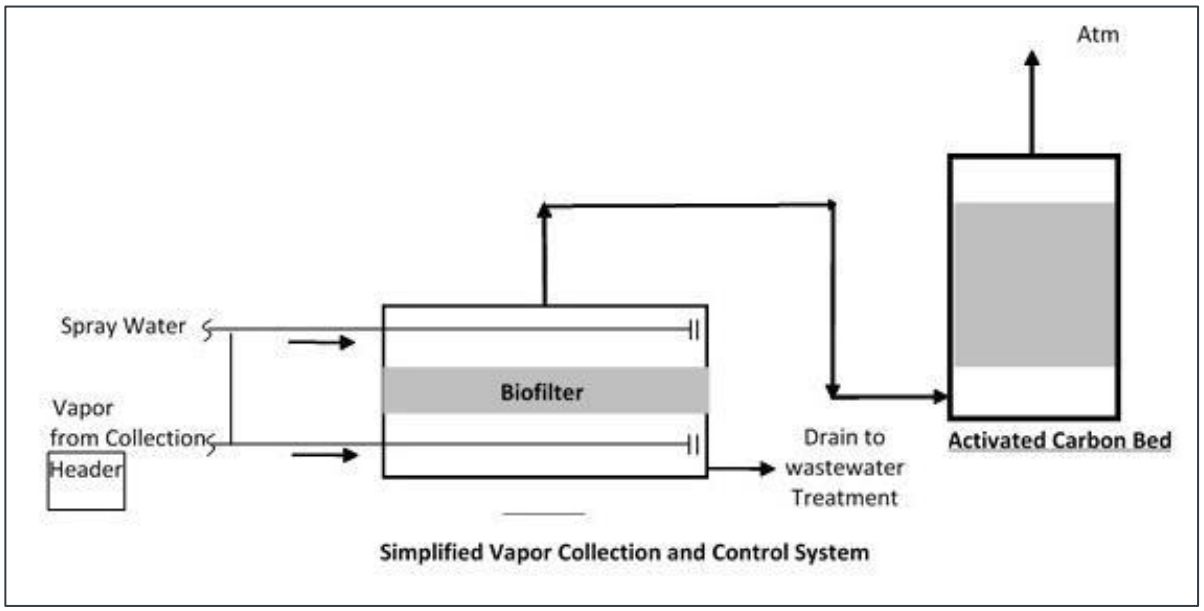


Figure 4.3-3 Simplified Vapor Collection and Control System

The system would withdraw vapors from the head space of all ambient liquid tanks/vessels in the PTU that could have potential odor-causing vapors. Equipment operated under vacuum would also have the vapor discharged from the vacuum blowers and directed to the biofilter and activated carbon for odorous constituent removal.

The biofilter uses microorganisms to degrade organic constituents in the vapor into odor-free CO_2 and water. The biofilter contains media allowing for the growth of microorganisms which degrade odor causing constituents. The media can be compost peat, wood chips, tree bark, or proprietary materials supplied by the biofilter provider. The media provides a large surface area, nutrients, and moisture for microbial activities and adsorption of odorous molecules. The treated vapor would be discharged from the nozzle located at the upper section of the biofilter to the activated carbon bed for further treatment. A water seal design provided on the biofilter drain would prevent the release of untreated vapor. This biofilter technology is widely accepted for its high performance in both industrial and municipal applications.

The activated carbon beds used to remove odorous constituents from vapor streams are designed to provide sufficient abatement alone; however the proposed 2-stage system with biofilter and activated carbon bed would provide odor abatement during steady-state operations that minimizes the generation of solid waste. This design also allows for maintenance activities at the biofilter with redundancy to minimize odors during those periods.

Impact Summary

Construction and operational emissions of petroleum-based odorous gases such as H_2S, SO_2, other reduced-sulfur compounds, ammonia, and certain organic compounds would permanently cease upon completion of the conversion to renewable fuels processing. The project includes equipment to minimize potential odors associated with processing renewable feedstocks. However, organic-based odorous gases, although generally less potent than petroleum-based odorous gases, could be emitted from the repurposed facility from time-to-time. This would be significant impact. Mitigation Measure AQ-4 requires implementation of an Odor Management Plan. With implementation of Mitigation Measure AQ-4, odor impacts would be less than significant.

Mitigation Measure AQ-4: Implement Odor Management Plan

During the 2-year construction phase of the Project, an Odor Management Plan (OMP) shall be developed and implemented upon commencement of the renewable fuels processes, which will become an integrated part of daily operations at the Rodeo Refinery. The purpose of the OMP is to prevent any offsite odors and effect diligent identification and remediation of any potential odors generated by the Project. The OMP shall outline equipment that is in place and procedures that facility personnel shall use to address odor issues, facility wide. The OMP would include evaluation of the overall system performance, identifying any trends to provide an opportunity for improvements to the plan, and updating the odor management and control strategies, as necessary. This plan would be retained at the facility for County or other government agency inspection upon request.

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4.4 Biological Resources

4.4.1 Introduction

This section assesses the potential for the Project to result in significant impacts to biological resources, including terrestrial and aquatic species. Discussed are the physical and regulatory settings, the baseline for determining environmental impacts, the significance criteria used for determining environmental impacts, and potential impacts associated with Project construction and demolition, transitional phase, and operation and maintenance at the Rodeo Refinery. Also addressed is the Santa Maria Site and Pipeline Sites to the extent information is available and at a qualitative level of discussion.

4.4.2 Environmental Setting

The environmental setting includes a discussion of the regional setting, followed by a more detailed discussion of the biological resources present in the study area of each Project site. The Project study area includes a 1- to 3-mile radius around each Project site. For the Rodeo Refinery, the study area extends west to include vessel navigation channels leading to the Golden Gate and in San Francisco-San Pablo Bay.

4.4.2.1 Regional Setting

Rodeo Refinery

The Rodeo Refinery is located in the Bay Area-Delta Bioregion in an unincorporated area of northwestern Contra Costa County (see Figure 3-1). The Bay Area-Delta Bioregion comprises a variety of natural communities that range from salt marshes to chaparral to oak woodlands. The Rodeo Refinery covers approximately 1,100 acres, including the approximately 495-acre, highly developed refinery complex (i.e., the Rodeo Site) in the northwest half of the property (north of I-80). The refinery property extends from San Pablo Bay at Davis Point, where the bay narrows at the entrance of Carquinez Strait, inland to the southeast, rising to about 300 feet in elevation toward its eastern edge. Generally, the parcel is bordered by, and partially includes hills to the north and east. The southwestern portion of the Rodeo Site features more gradually sloping hills and relatively level areas that continue south into the community of Rodeo.

Santa Maria Site

The Santa Maria Site is located on the Nipomo Mesa within the Central Coast region of San Luis Obispo County, between the cities of Arroyo Grande and Guadalupe. The region is gently rolling coastal plain that includes coastal scrub, beaches and sand dunes, aquatic areas (streams and lakes), agricultural uses, and developed areas. The region is bounded on the west by the Pacific Ocean and on the east by the Coast Range. The Santa Maria Site is bordered by rural and suburban residential uses on the north and northeast, agricultural uses on the south and southeast, and open space coastal scrublands on the west.

Pipeline Sites

The Pipeline Sites comprise four regional pipelines that traverse a variety of terrains between the coast and the San Joaquin Valley and between the San Francisco Bay area and the Elk Hills oilfield, including coastal plain, mountains, and river valleys.

4.4.2.2 Local Setting

The Rodeo Refinery is bordered by San Pablo Bay on the north and west, open land to the east and southeast, the NuStar Energy tank farm on the northeast, and the Bayo Vista residential area of Rodeo to the southwest (see Figures 3-1 through Figure 3-3). Land use in the study area of the Rodeo Refinery is characterized by a mix of land uses including undeveloped land (open space) and industrial, commercial, and residential uses (see Figure 4.11-1 in Section 4.11, *Land Use*). East of the refinery is Crockett Hills Regional Park, undeveloped land that is principally non-native grassland with patches of coastal scrub

and oak woodland. The portion of the Rodeo Refinery southeast of I-80 consists of hilly grasslands, coastal scrub, small stands of native trees, isolated seasonal ponds, and small patches of freshwater wetlands. The portion of the refinery property southeast of I-80 is largely undeveloped except for a tank farm immediately southeast of I-80 and the Carbon Plant in the southwest corner of the property.

To the northeast, a strip of non-native grassland and coastal scrub a few hundred feet wide separates the refinery from the NuStar Energy terminal. To the southwest, a 300 to 600-foot buffer of mostly disturbed ruderal vegetation and non-native grassland separates the refinery from the residential Bayo Vista area. To the northwest, the Rodeo Refinery is bordered by San Pablo Bay, an estuary (a body of water in which seawater is diluted by freshwater) of the San Francisco Bay-Delta system formed by the mixing of freshwater from the Northern Sierra snowpack and the Central Valley and seawater from the Golden Gate

Rodeo Site

The Rodeo Site is currently covered by a mixture of impervious surfaces associated with process equipment, parking areas, roads, and other pervious surfaces. With the exception of the Marine Terminal, the Rodeo Site is largely dominated by industrial infrastructure or barren areas devoid of vegetation. Habitat types occurring within the Rodeo Site consist of barren and urban (developed habitats), tidal marsh (salt and brackish), freshwater wetlands, and ponds. The Marine Terminal and the railcar unloading racks are bordered by coastal scrub and estuarine open water.

Carbon Plant Site

The Carbon Plant Site, surrounded by grasslands, non-native tree plantings, and coastal scrub, is located at the base of a 300-foot-high slope that hosts freshwater seeps resulting in wetlands and relatively lush grasses along the east side of the facility. Several stands of non-native trees are planted throughout the area, primarily as a visual barrier on the south side of the facility.

Rodeo Refinery Study Area

The Rodeo Refinery has experienced continued development since (1896), and site assessments provided in Contra Costa County (1994, 2003, 2006, 2010, 2013) found relatively stable biological conditions from the period of 1994–2012. A review of aerial photographs (Google Earth 2021a) supports this assessment, and further asserts that the Rodeo Refinery remains relatively unchanged up to 2021. Biological surveys of the Rodeo Refinery vicinity conducted for previous projects have been reported in environmental documents including, the *Draft Environmental Impact Report for the Unocal Corporation, Reformulated Gasoline Project* (Contra Costa County 1994), the *ConocoPhillips ULSD/Strategic Modernization Project Draft EIR* (Contra Costa County 2003), the *ConocoPhillips Rodeo Refinery Clean Fuels Expansion Project Draft EIR* (Contra Costa County 2006), and the *Draft Environmental Impact Report for the Phillips 66 Propane Recovery Project* (Contra Costa County 2013). Data presented in the above-referenced studies were updated to reflect current conditions through a query of existing online databases that included the following:

- California Estuary Portal (2021a, 2021b)—Benthic organisms and Fish Monitoring in the San Francisco Estuary;
- California Natural Diversity Database (CNDDB) (CDFW 2021a);
- California Department of Fish and Wildlife's (CDFW's) Bay-Delta Studies and Surveys and Fish Distribution Map online tool (CDFW 2021b);
- NOAA Fisheries Protected Resources App (NOAA Fisheries 2020);
- Point Blue Conservation Science's Whale Alert critical area maps, San Francisco (Point Blue Conservation Science 2021).

- US Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) (USFWS 2021a) and Critical Habitat Portal (USFWS 2021b);
- USFWS National Wetlands Inventory (NWI) online wetlands mapper (USFWS 2021c);
- US Forest Service (USFS) Classification and Assessment with Landsat of Visible Ecological Groupings (CALVEG) dataset (USFS 2009, 2021);
- San Francisco Estuary Institute (SFEI) and the Aquatic Science Center – EcoAtlas Eelgrass Survey GIS Data (SFEI 2017); and
- Sanctuary Integrated Monitoring Network ([SIMoN] 2021) – Marine Mammals.

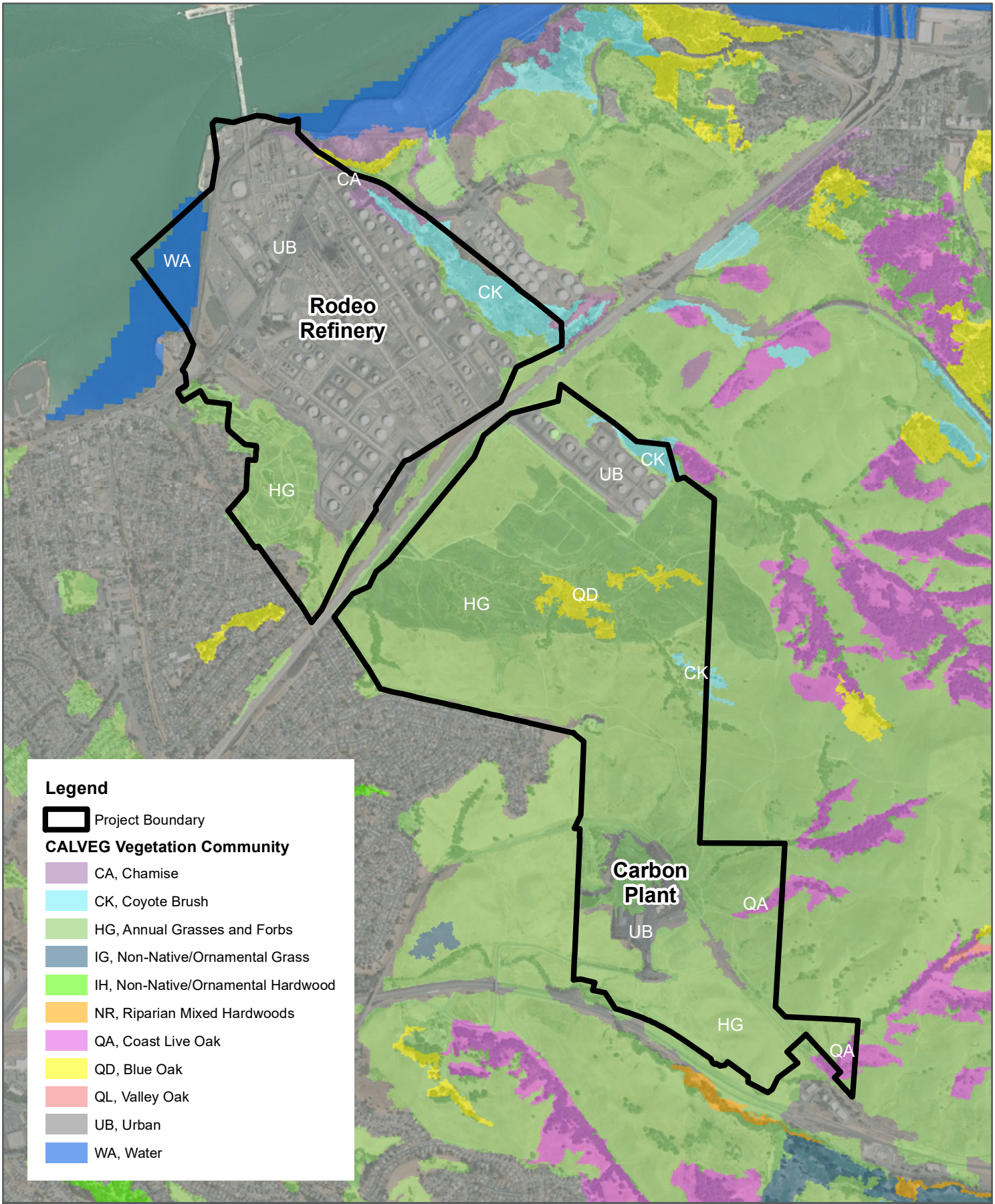
A map of vegetation communities within the Rodeo Refinery and immediate surroundings was developed from the CALVEG dataset (USFS 2009, 2021). Seven CALVEG vegetation alliances were mapped within the Rodeo Refinery (Figure 4.4-1). The NWI current mapping and descriptions of riverine and wetland resources and eelgrass (*Zostera marina*) distribution data obtained from the EcoAtlas are shown on Figure 4.4-2.

The CNDDB, USFWS Critical Habitat Portal and IPaC online databases, and NOAA Fisheries-protected resources online tool were queried for the Rodeo Refinery, plus a 3-mile buffer. All species generated from the literature review were compiled in a table and evaluated for their potential to occur in the Project study area.

Following is a description of rankings assigned to each species.

- **None:** The species has no potential to occur because of the lack of suitable habitat, and/or the Project study area is outside the species' known or historical range.
- **Low:** The elevation and/or habitat requirements for this species were not met, and/or the species has a very specific and limited distribution. Historical occurrences have been recorded and/or appropriate habitat for the species is available within the regional area (~5 to 10 miles); however, no recent occurrences have been recorded.
- **Moderate:** Known historical occurrences and preferred habitat conditions for the species are present in the Project study area (<3 miles). However, either no suitable habitat exists or only poor quality habitat occurs within or in the immediate Project area.
- **High:** The species is known to occur within the Project study area (recent or current recorded occurrences), and its preferred habitat conditions are present.
- **Known:** The species has been observed within the Project study area during protocol-level surveys or during other surveys conducted in the vicinity of the Project.

The nomenclature used in this section follows *The Jepson Manual Vascular Plants of California* (Baldwin et al. 2012) as updated by the Jepson eFlora (2021). Current listing status was taken from the CDFW-maintained lists *Special Vascular Plants, Bryophytes, and Lichens List* (CNDDB 2021a) and *Special Animals List* (CNDDB 2021b).



Imagery Source: Maxar 11/1/2019

Figure 4.4-1: CALVEG Vegetation Communities within the Rodeo Refinery and Vicinity

Rodeo Renewed Project
Contra Costa County, CA

0 2,000 4,000 Feet

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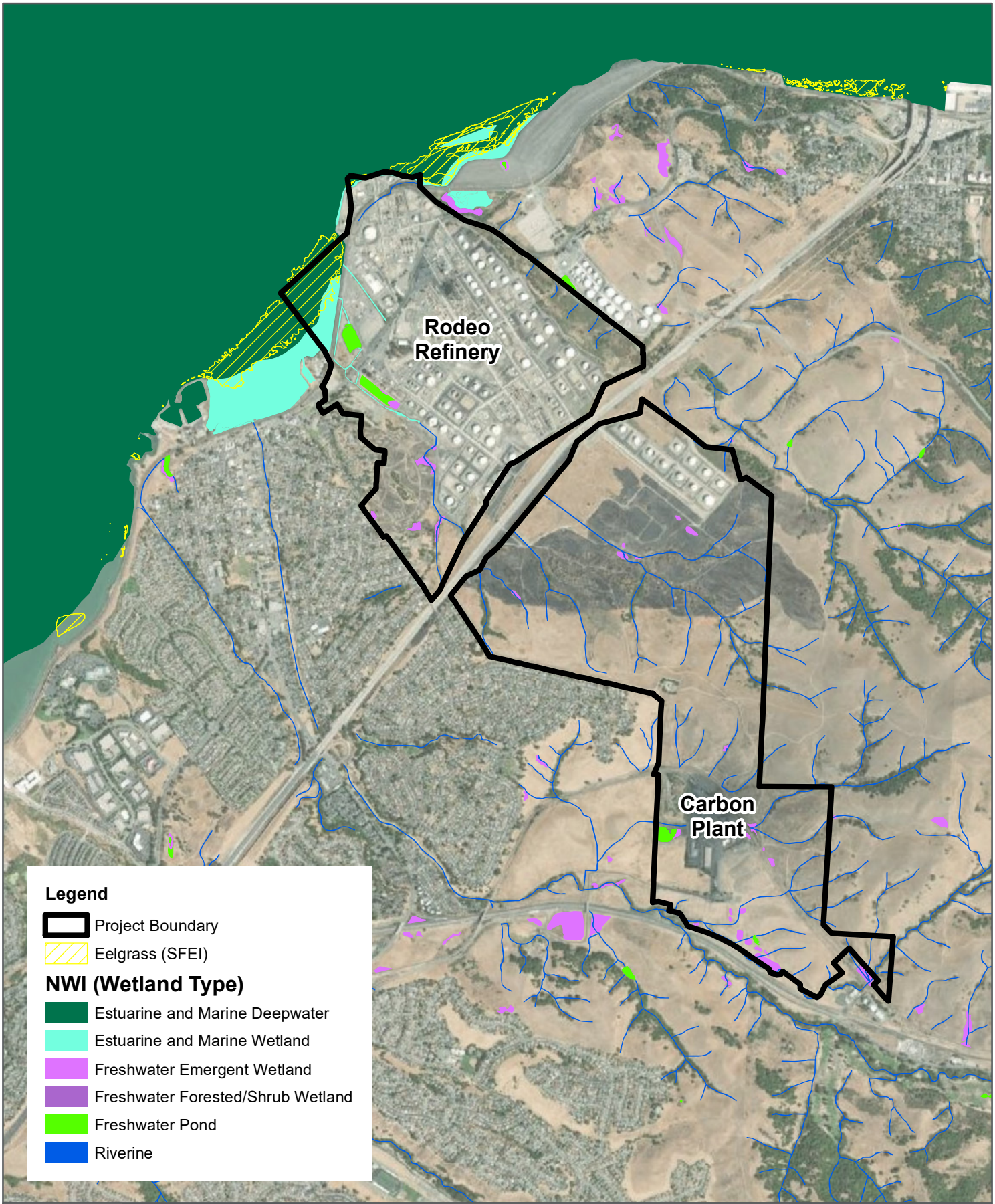
Date Created: 8/5/2021 Date Revised: 8/5/2021 File Path: R:\Cardno\Rodeo\map\Rodeo_Fig4_4_1_RodeoRefinery_CALVEG_Map.mxd
GIS Analyst: Anna.clare



Imagery Source: Maxar 11/1/2019

Figure 4.4-2: NWI Mapped Aquatic Resources within the Rodeo Refinery and Vicinity

Rodeo Renewed Project
Contra Costa County, CA

0 2,000 4,000 Feet

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GIS Analyst: anna.clare

Terrestrial Habitats

The following subsections describe vegetation communities/habitats within the Rodeo Refinery; plant community descriptions follow USFS (2009), and wildlife habitat discussions reference the California Wildlife Habitat Relationships (CWHR) System (CDFW 2014; Mayer and Laudenslayer 1988) (Figure 4.4-1). CALVEG Alliances were cross walked with the *Manual of California Vegetation* (California Native Plant Society 2021; Sawyer et al. 2009); a list of corresponding vegetation alliances was compiled; and any California Sensitive Natural Communities (CDFW 2020) were identified. Natural communities with a state rarity ranking of S1 (critically imperiled), S2 (imperiled), or S3 (vulnerable) are considered sensitive by the CDFW (CDFW 2020).

Developed Habitats: Urban or Developed (UB)

As shown on Figure 4.4-1, one of the most abundant vegetation cover types mapped in the Rodeo Refinery is *Urban* (UB) or (e.g., developed), covering approximately 500 acres across the refinery property. This category applies to landscapes that are dominated by urban structures, residential units, or other developed land use elements (USFS 2009). The urban/developed cover class corresponds to the urban CWHR habitat type. Most of the Rodeo Site has been cleared of vegetation and is maintained for fire prevention purposes by a combination of structures, hardscapes, and sealcoat (an asphalt/latex/fiber product used to provide a growth-inhibiting surface cover). Unmaintained areas support scattered ruderal plant species (non-native weedy vegetation), but total plant cover in these areas is sufficiently sparse that these areas would be classified as developed. Developed areas provide little or no habitat for animals because of the high level of disturbance from refinery operations, large continuous areas lacking in vegetation and associated food resources, and numerous barriers to movement are likely to dissuade use by animals.

Urban habitat consists of planted vegetation (i.e., landscaping including tree groves, street strips, shade tree/lawn, lawn, and shrub cover). At the Rodeo Site, this habitat is represented by eucalyptus (*Eucalyptus* spp.) planted around structures and along roads, a small grove of blue gum (*E. globulus*) on the east side of San Pablo Avenue, and other small areas of landscape vegetation around administration and office buildings. Similar plantings occur at the Carbon Plant Site to provide visual screening. While individual landscaped areas are of limited habitat value, the overall mosaic of landscaping can provide habitat of some value to common urban-adapted animal species such as rock dove (*Columba livia*), mourning dove (*Zenaida macroura*), house sparrow (*Passer domesticus*), and European starling (*Sturnus vulgaris*), all of which were observed at the Rodeo Refinery during previous evaluations. In addition, eucalyptus trees and groves can serve as roosts, perches, and nest sites for raptors, such as red-tailed hawk (*Buteo jamaicensis*) and other birds, including American crow (*Corvus brachyrhynchos*) (CDFW 2014; Mayer and Laudenslayer 1988).

Annual Grasses and Forbs (HG)

The dominant cover type across the Rodeo Refinery is mapped as *Annual Grasses and Forbs* (HG) (approximately 795 acres). Grasses and forbs generally occur beneath various oak species (*Quercus* spp.) but may occur within an overstory. Many exotic grasses are characteristic of this type, including species of wild oats (*Avena* spp.), various bromes (*Bromus* spp.), foxtail fescue (*Vulpia myuros*), and Kentucky Bluegrass (*Poa pratensis*). This alliance also includes perennial grasses that develop on course, well-drained soils occurring within sunny openings of forested savannas. In addition to the species mentioned above, savannas may also include more native sedges (*Carex* spp.), melic grass (*Melica* spp.), and limited occurrences of coastal sage scrub species such as California sagebrush (*Artemisia californica*) (USFS 2009).

The cover type corresponds to the CWHR habitat type *Annual Grassland*. Many wildlife species use Annual Grasslands for foraging, but some require special habitat features such as cliffs, caves, ponds, or habitats with woody plants for breeding, resting, and escape cover. Characteristic reptiles that breed in

Annual Grassland habitats include the western fence lizard (*Sceloporus occidentalis*), common garter snake (*Thamnophis* sp.), and western rattlesnake (*Crotalus oreganus oreganus*) (Basey and Sinclear 1980). Mammals typically found in this habitat include the black-tailed jackrabbit (*Lepus californicus*), California ground squirrel (*Otospermophilus beecheyi*), Botta's pocket gopher (*Thomomys bottae*), western harvest mouse (*Reithrodontomys megalotis*), California vole (*Microtus californicus*), badger (*Taxidea taxus*), and coyote (*Canis latrans ochropus*) (White et al. 1980). Common birds known to breed in Annual Grasslands include the burrowing owl (*Athene cunicularia*), short-eared owl (*Asio flammeus*), horned lark (*Eremophila alpestris*), and western meadowlark (*Sturnella neglecta*) (Verner et al. 1980). This habitat also provides important foraging habitat for the turkey vulture (*Cathartes aura*), northern harrier (*Circus cyaneus*), American kestrel (*Falco sparverius*), black-shouldered kite (*Elanus axillaris*), and prairie falcon (*Falco mexican*us) (CDFW 2014; Mayer and Laudenslayer 1988).

Coyote Brush Alliance (CK) and Chamise Alliance (CA)

CALVEG maps two scrub/chaparral communities within the Rodeo Refinery—*Coyote Brush Alliance* and *Chamise Alliance* (approximately 42 and 11 acres, respectively). These alliances occur primarily along the north and east edges of the Rodeo Refinery property. Coyote brush (*Baccharis pilularis*) is a shrub that colonizes moist sites after disturbances and may compete successfully with other shrubs. Coyote brush dominates this alliance and occurs in mixtures with other species such as California sagebrush, coast live oak (*Quercus agrifolia*), chamise (*Adenostoma fasciculatum*) and annual species of grasses such as *Bromus* spp. (USFS 2009); subdominants include poison oak (*Toxicodendron diversilobum*), California buckeye (*Aesculus californicus*), willow (*Salix* spp.), cow parsnip (*Heracleum maximum*), and pearly everlasting (*Gnaphalium* sp.). The Chamise Alliance is characterized by relatively pure areas of chamise that often develop on sites that are harsher in terms of having shallow soils, are more xeric, or have sunnier environments (e.g., south facing slopes) (USFS 2009). Coastal scrub habitats support a number of small animals such as California ground squirrel, common upland bird species, common garter snake, and western fence lizard. The corresponding CWHR habitat types include Coastal Scrub and Chamise-Redshank Chaparral.

Coast Live Oak (QA) and Blue Oak (QD)

Coast Live Oak and Blue Oak Alliances occupy approximately 6 and 17 acres, respectively, across the Rodeo Refinery. These alliances are dominated by native trees, including coast live oak and blue oak (*Quercus douglasii*), and form dense woodlands or open savanna-like woodlands. Understories vary from annual grasslands to shrub-dominated stands of chaparral or coastal sage scrub. Corresponding CWHR wildlife communities include Coastal Oak Woodland and Blue Oak Woodland.

Terrestrial Species

Numerous animal species, particularly waterfowl and shorebirds such as double-crested cormorant (*Phalacrocorax auritus*), snowy egret (*Egretta thula*), great blue heron (*Ardea herodias*), and mallard (*Anas platyrhynchos*), use these wetland habitat types for foraging and resting and have been observed at the refinery property. Colonies of double-crested cormorants are scattered throughout the Bay Area. Rauzon et al. (2019) documented 31 colonies that have existed over the past 40 years including two on navigational aids north of the Rodeo Refinery near Mare Island (although it is not clear whether either of those colonies is still active). Brake et al. (2014) found 17 pairs of ospreys nesting at four sites on either side of the Carquinez Strait, including two pairs in the vicinity of Rodeo.

A few animal species are adapted, and more or less restricted, to the northern coastal salt marsh habitat type, including the salt marsh harvest mouse (*Reithrodontomys raviventris*), Ridgeway rail (*Rallus longirostris obsoletus*), and black rail (*Laterallus jamaicensis coturniculus*), although none of these three species is known to inhabit the marshes at the Rodeo Site.

The CWHR reports numerous species that use mature blue oak woodland habitat including 2 species of amphibians and reptiles, 57 species of birds, and 10 species of mammals. Coastal oak woodlands provide habitat for a variety of wildlife species. Barrett (1980) reports that at least 60 species of mammals may use oaks in some way. Verner and Boss (1980) and Verner et al. (1980) report 110 species of birds observed during the breeding season in California habitats where oaks form a significant part of the canopy or subcanopy. Quail (*Callipepla californica*), turkeys (*Meleagris californica*), squirrels (*Sciurus* spp. and *Otospermophilus* spp.), and deer (*Odocoileus hemionus californicus*) depend on acorns in fall and early winter. Acorns buried by scrub jays (*Aphelocoma californica*), yellow-billed magpies (*Pica nutalli*), western gray squirrels (*Sciurus griseus*), and California ground squirrels (*Otospermophilus beecheyi*) are more likely to germinate because they root better and are less likely to be eaten (CDFW 2014; Mayer and Laudenslayer 1988).

Aquatic Habitats

The Rodeo Refinery is located adjacent to San Pablo Bay, which is one of the north bays of the San Francisco Estuary. Within the refinery's boundaries are 9.2 acres of Freshwater Emergent Wetland, 6.9 acres of Freshwater Pond, 2 acres of coastal salt marsh, 24.4 acres of Riverine wetlands, 9.7 acres of tidal flats, and 20 acres of bay waters (mapped as Estuarine and Marine Deepwater Wetland) (USFWS 2021c). Several of these areas were not shown in mapping by CALVEG, but they are depicted in Figure 4.4-2. Figure 4.4-2 also depicts 18.8 acres of eelgrass (*Zostera marina*) mapped in 2014 (SFEI 2017). Wetlands are afforded protection by several federal and state regulations, including the Clean Water Act (CWA), Porter-Cologne Water Quality Control Act, California Fish and Game Code, and State Wetland Conservation Policy (Executive Order [EO] W-59-93). Eelgrass is a special aquatic site under the CWA and a Habitat Area of Special Concern under the Magnuson-Stevens Fishery Conservation and Management Act because of its nursery function for numerous fish species. The aquatic habitats within the Rodeo site and study area are described below.

Freshwater, Brackish and Riverine Wetlands

Freshwater wetland habitat exists in Rodeo Refinery's storm water detention basins (i.e., ponds) and ephemeral drainage channels located in the southwestern part of the Rodeo Site and west of the Carbon Plant. Intermittent drainage channels carry runoff from the undeveloped area east of I-80 into San Pablo Bay. Stormwater drainage from the Rodeo Site is directed to the refinery's wastewater treatment plant.

Three stormwater basins are found within the Rodeo Refinery—two in the southwest part of the Rodeo Site (ponds 2.45 acres and 2.42 acres) and one immediately west of the Carbon Plant (1.61 acres). The lined basins are permitted as part of refinery operations and do not discharge to groundwater or surface water. Freshwater emergent wetlands (0.59, 0.1, and 0.31 acre) are mapped along the margins of two of the basins.

Intermittent stream channels and small freshwater wetlands exist throughout the Rodeo Refinery. This habitat type is dominated by perennial, emergent herbaceous plants such as bulrush (*Scirpus* spp.), cattail (*Typha* spp.), rushes (*Juncus* spp.), and sedges (*Carex* spp.).

Small amounts of northern coastal salt marsh occur along the western edge of the Rodeo Site near the outer border of a retention pond, which is part of the untreated saltwater transport and storage system used in refinery cooling processes. Northern coastal salt marsh is dominated by halophytic (salt-tolerant) vegetation such as pickleweed (*Salicornia* spp.), saltgrass (*Distichlis spicata*), and alkali heath (*Frankenia salina*).

A small (approximately 2-acre) salt marsh is located near the northern edge of the Rodeo Refinery on the landward side of the railroad tracks (Figure 4.4-2). The marsh is approximately 1,200 feet from the hydrogen plant (U-110), the closest location that would experience construction activities associated with re-purposing existing equipment, and approximately 3,500 feet from the site of the proposed pre-

treatment and off-gas treatment units, the nearest Project elements that would constitute new construction. A small salt marsh/tidal flat area also is located approximately 0.3 mile west of the Rodeo Refinery, at Lone Tree Point (Figure 4.4-2).

Open Water, Tidal Flats, and Eelgrass

San Pablo Bay is relatively shallow, averaging less than 10 feet mean lower low water (MLLW) in depth in most areas except the navigational channel, which is maintained to a water depth of 35 feet MLLW. Salinity in San Pablo Bay can vary from nearly freshwater conditions following river outflows to polyhaline (18 to 30 practical salinity units). Subtidal bottom sediments are variable with differing percentages of sand and fines (silts and clays); generally, sandier sediment is found along the eastern portion of the navigation channel and in the maneuvering area, closer to where high-energy currents flow out of the Carquinez Strait (URS Group 2015).

The Rodeo Site includes approximately 20 acres of San Pablo Bay and 10 acres of tidal flat along its western boundary (identified as Estuarine and Marine Deepwater and Estuarine and Marine Wetland, respectively on Figure 4.4-2). Although not mapped, the shoreline of the refinery is reinforced with rock riprap.

As shown on Figure 4.4-2, approximately 19 acres of eelgrass is mapped within the open water area of the Rodeo Site based on bay-wide mapping conducted in 2014. Eelgrass may vary in extent both seasonally and from year to year. It is assumed for baseline conditions that eelgrass exists at some density throughout the indicated mapped area.

Eelgrass primarily occurs along the eastern shoreline of San Pablo Bay. Approximately 73 acres was mapped within a 1 mile radius of the Rodeo Refinery in 2014. The total amount of eelgrass in San Pablo Bay varied between 1,514 acres in 2004 to 2,330 acres in 2014 (SFEI 2017). The largest eelgrass bed occurs between Pinole Point and Point San Pablo to the southwest. Animals associated with these aquatic habitats are briefly described below.

Aquatic Species

Benthic Invertebrates

Invertebrates, such as crustaceans, mollusks and worms live within sediments of intertidal mud flats and beaches, and bay-bottom sediments. These organisms also occupy rocky substrate and artificial substrates habitats (docks, pilings, riprap). Invertebrates are an important food source for fish and birds.

Benthic (bottom-dwelling) invertebrate assemblages in the San Francisco Estuary vary primarily with salinity and sediment conditions (Petersen and Vayssières 2010; Thompson and Lowe 2000; Thompson et al. 2012). Generally, marine influenced waters in the central San Francisco Bay support the highest number of species and the numbers decrease along a decreasing salinity gradient upstream. Generally, mixed fine-sand substrates support more species and higher abundance, and very sandy sediments have much fewer taxa (Thompson et al. 2012). Benthic assemblages in San Pablo Bay may include more taxa during dry versus wet years (Petersen and Vayssières 2010).

Between 2017 and 2019, a total of 36 to 45 taxa benthic invertebrates were identified in San Pablo Bay (California Estuary Portal 2021a). The most abundant included amphipod and cumacean crustaceans (*Ampelisca abdita* and *Nippoleucon hinumensis*, respectively) and overbite clam (*Corbula amurensis, formerly Potamocorbula corbula*). Other relatively common taxa included other amphipod crustaceans (*Ampelisca lobata*, *Monocorophium acherusicum*), polychaete worms (*Glycinde armigera*, *Heteromastus filiformis, Pseudopolydora kempi, Streblospio benedicti*), Asian date mussel (*Musculista senhousia*), and phoronid (*Phoronopsis harmeri*). All these species are non-native to the bay except for the polychaete *G. armigera* and the phoronid.

Recreationally important invertebrates include brown crab (*Romaleon antennarium*), red crab (*Cancer productus*), yellow crab (*Metacarcinus anthonyi*), bay shrimp (*Cragon franciscorum*), ghost shrimp (*Neotrypaea californiensis*), blue mud shrimp (*Upogebia pugettensis*), various clams, California and bay mussels (*Mytilus californianus*, *M. trossulus*), and scallops (CDFW 2021c).

Fish

More than 40 species of fish may occur in San Pablo Bay; the assemblage at a given time depends on a variety of factors, including seasonal reproductive periods, migration patterns, habitat requirements, life history, and physiological tolerances (e.g., salinity, temperature).

Between 2017 and 2019, a total of 27 fish species were caught with trawls in San Pablo Bay, although species number varied from 13 to 23 species per year (California Estuary Portal 2021b; CDFW 2021b). The most abundant species was northern anchovy (*Engraulis mordax*). Relatively common fish species (collected each year) included American shad (*Alosa sapidissima*), longfin smelt (*Spirinchus thaleichthys*), Plainfin midshipman (*Porichthys notatus*), and striped bass (*Morone saxatilis*).

The fish assemblages included several anadromous species, including Chinook salmon (*Oncorhynchus tshawytscha*), steelhead (*Oncorhynchus mykiss irideus*), green sturgeon (*Acipenser medirostris*), longfin smelt, and introduced American shad and striped bass. Fish common to bays and estuaries included bay goby (*Lepidogobius lepidus*), the introduced Shokihaze goby (*Tridentiger barbatus*) and yellowfin goby (*Acanthogobius flavimanus*), jacksmelt (*Atherinopsis californiensis*), Sacramento splittail (*Pogonichthys macrolepidotus*), topsmelt (*Atherinops affinis*), Pacific staghorn sculpin (*Leptocottus armatus*), shiner perch (*Cymatogaster aggregata*), bat ray (*Mylobatis californica*), and leopardshark (*Triakis semifasciata*). The fish assemblages also included marine fish that spawn in bays or nearshore and early life stages use estuaries as nursery habitats, such as California halibut (*Paralichthys californicus*), California tonguefish (*Symphurus atricauda*), English sole (*Pleuronichthys vetulus*), northern anchovy, Pacific herring (*Clupea pallasi*), Plainfin midshipman, speckled sanddab (*Citharichthys stigmateus*), starry flounder (*Platichthys stellatus*), and white croaker (*Genyonemus lineatus*). Pacific sardine (*Sardinops sagax*), which is a wide ranging marine schooling fish that often spawns nearshore, also was collected.

Other fish that may have transient occurrence during migration include the anadromous Pacific lamprey (*Lampetra tridentata*) and western river lamprey (*Lampetra ayresi*), which were collected during the same surveys downstream of San Pablo Bay (CDFW 2021b).

Marine Mammals

California sea lions (*Zalophus californianus*) and harbor seals (*Phoca vitulina richardii*) are known to occur in San Pablo Bay (Dubois and Danos 2017; Dubois and Harris 2015). The largest haul outs for these species occur in Central San Francisco Bay. All marine mammals are protected under the Marine Mammal Protection Act. Additional species with the potential to occur in navigation channels, shipping lanes outside the bay, or within the projected large oil spill trajectories modeled for this Project are described under the special-status species section below.

Non-Indigenous Aquatic Species

San Pablo Bay and the San Francisco Estuary are listed as impaired waterbodies due to, among other issues, invasive species (SWRCB 2021). Exotic species that grow and reproduce quickly, and spread aggressively, with potential to cause harm, are given the label “invasive.” Invasive species pose serious threats of ecosystem disruption through a variety of means, including differential predation, out-competing native species, physical displacement of native organisms, and altering trophic food webs. San Francisco Bay Estuary has been described as one of the most invaded ecosystems in the world with more than 250 species identified as not being native and an additional 125 cryptogenic (species that are neither clearly native or exotic) (Cohen and Carlton 1998; Cohen and Laws 2000). Nonindigenous (non-native, exotic)

aquatic species dominate many parts of the San Francisco Bay, to the extent that in some locations no native species can be found. The species have been introduced by a variety of mechanisms, including past intentional introductions (for food, sport or other reasons), as "hitchhikers" with other released organisms (aquaculture, bait, stocking), and with shipping (fouling attached to the hulls of ships, discharge of ballast water).

A total of 15 to 20 exotic and 4 to 14 cryptogenic invertebrate species have been documented at three locations surveyed in San Pablo Bay, including Rodeo Marina, Point San Pablo Yacht Harbor, and Port Sonoma (Cohen et al. 2005). The exotic species included a variety of invertebrate species including, amphipod, cumacean, decapod, and isopod crustaceans (e.g., *Corophium alienense*, *Grandidierella japonica*, *Melita nitida*, *N. hinumensis*, *Palaemon macrodactylus, Iais californica*, *Pseudosphaeroma campbellensis, Sphaeroma quoianum*, *Synidotea laevidorsalis*); several mollusks (*Gemma*, *Ilyanassa obsolete*, *Macoma petalum*, *M. senhousia*); polychaete worms (*Ficopomatus enigmaticus*, *Neanthes succinea*, *Pseudopolydora* spp., *S. benedicti*); several species of other phyla including, acideans (*Molgula manhattensis*); bryozoans (*Anguinella palmata*, *Bowerbankia gracilis*, *Conopeum* cf. *tenuissimum*, *Cryptosula pallasiana*); cnidarians (*Diadumene* spp., *Garveia franciscana*, *Gonothyraea loveni, Obelia longissima*); and sponges (*Clathria prolifera*, *Halichondria* cf. *bowerbanki*, *Haliclona* cf. *loosanofi*, *Prosuberites* sp.).

Prominent examples of invasive species in the San Francisco-San Pablo Bay Estuary include European green crab (*Carcinus maenas*), Chinese mitten crab (*Eriocheir sinensis*), and the overbite clam (*Corbula amurensis*) (California Department of Fish and Game 2001). Green crabs have been linked to loss of eelgrass beds in San Francisco Bay (Matheson et al. 2016). Chinese mitten crabs have had an explosive population increase in San Francisco Bay, competing with native species for food resources and resulting in bank erosion (Rudnick et al. 2000). Altered food web dynamics in the San Francisco Estuary caused by the invasion of the overbite clam has been linked to reductions in plankton and changed fish diets and declines in fish abundance (Freyer et al. 2003; Kimmerer et al. 1994; Mac Nally et al. 2010).

Invasive fish species collected in San Pablo Bay during recent surveys included American shad, striped bass, Shokihaze goby, and yellowfin goby (CDFW 2021b).

Federal and State Special-Status Species

Special-status species are defined as any plant or animal species protection by a federal or state agency. Federally listed species granted status by the USFWS under the federal Endangered Species Act (ESA) include federal threatened (FT), endangered (FE), proposed federal threatened or endangered (FPT, FPE), candidate (FC), or species proposed for delisting (FPD). California state special-status species are granted status by the CDFW under the California ESA and include California state threatened (ST), endangered (SE), state candidate for listing as endangered or threatened (SCE, SCT), state candidate for delisting (SCD), and rare plant species (SR).

Pursuant to CEQA guidelines (Section 15380), special-status plant species are also defined as those species identified by the California Native Plant Society's California Rare Plant Rank (CRPR) rating system as rare, threatened, or endangered plants in California and includes the following CRPRs:

- **1A:** Presumed extirpated in California and either rare or extinct elsewhere;
- **1B:** Rare, threatened, or endangered in California and elsewhere;
- **2A:** Presumed extirpated in California, but common elsewhere); and
- **2B:** Rare, threatened, or endangered in California, but common elsewhere;
- **3:** Review List—plants about which more information is needed; and
- **4:** Watch List—plants of limited distribution.

Species also given consideration as special-status per Section 15380 of the CEQA Guidelines include species listed by the CDFW as California Species of Special Concern (SSC) or Watch List (WL) species, CDFW Fully Protected Species (CFP), and/or any other species tracked by the CNDDB in its quarterly Special Animals List (CNDDB 2021b).

Special Status Terrestrial Species

Table 4.4-7 at the end of this section tabulates special-status species known to occur within the study area of the Rodeo Refinery or with potential to be affected by Project activities.

Special-Status Aquatic Species

Special status aquatic invertebrates, fish, and sea turtles included on Table 4.4-7 have the potential to occur within San Pablo Bay, navigation channels between the Marine Terminal and San Francisco Bay, or the offshore traffic separation scheme (TSS)[35] shipping lanes on approach to the bay. Special status aquatic invertebrates, fish, and sea turtles included on Table 4.4-7 have the potential to occur within San Pablo Bay, navigation channels between the Marine Terminal and San Francisco Bay, or the offshore TSS shipping lanes on approach to the bay. Additionally, special status marine mammals that may occur within the modeled large oil spill trajectories for the Project (Appendix C, *Maritime Risk Assessments*) are listed on Table 4.4-8 located at the end of this section.

Threatened or endangered fish species with the potential to occur in San Pablo Bay include the delta smelt (*Hypomesus transpacificus*), longfin smelt, green sturgeon southern distinct population segment (DPS), Chinook salmon Sacramento River winter-run evolutionary significant unit (ESU) and Central Valley spring-run ESU, and steelhead Central Valley DPS and Central California Coast DPS. California species of special concern with the potential to occur include Chinook salmon Central Valley fall and late fall-run DPSs, Pacific lamprey, western river lamprey, Sacramento splittail, and white sturgeon (*Acipenser transmontanus*).

Invertebrate species with the potential to occur on the outer coast within the Project region include the endangered black abalone (*Haliotis cracherodii*) and California species of special concern pinto abalone (*H. kamtschatkana*). The tidewater goby is known to occur in Rodeo Lagoon, which has its ocean inlet on the coast. Green sea turtle (*Chelonia mydas)* and Leatherback turtle (*Dermochelys coriacea)* have the potential to occur offshore.

California sea lions and harbor seals may frequent San Pablo Bay. The endangered humpback whale (*Megaptera novaeangliae*), gray whale (*Eschrichtius robustus*) and harbor porpoise (*Phocoena phocoena*) have been observed in the main entrance channel and central San Francisco Bay during the past five years.

An identified biologically important area for foraging marine mammals occurs offshore (Calambokidis et al. 2015) that overlaps the Traffic Separation Scheme shipping lanes, precautionary area, and approach to San Francisco Bay. Marine mammal observations in the past five years within this area included endangered blue (*Balaenoptera musculus*), fin (*B. physalus*), and humpback whales; gray and minke whales (*B. acutorostrata*); northern right whale dolphin (*Lissodelphis borealis*), Risso's dolphin (*Grampus griseus*), and harbor porpoise (Point Blue Conservation Science 2021).

Occasional sightings in this same offshore area during 2013 to 2016 included killer whale (*Orcinus orca*), coastal bottlenose dolphin (*Tursiops truncates*), Pacific white-sided dolphin (*Lagenorhynchus obliquidens*), short-beaked common dolphin (*Delphinus delphis*), and Dall's porpoise (*Phocoenoides dalli*)

[35] A traffic separation scheme (or TSS) is a maritime traffic-management route-system ruled by the International Maritime Organization. The traffic-lanes indicate the general direction of the ships in that zone; ships navigating within a TSS all sail in the same direction or they cross the lane in an angle as close to 90 degrees as possible. Traffic separation schemes are used to regulate the traffic at busy, confined waterways or around capes. Within a TSS, there is normally at least one traffic-lane in each main-direction, turning-points, deep-water lanes and separation zones between the main traffic lanes.

(Point Blue Conservation Science 2021). Two sightings of sperm whale (*Physeter macrocephalus*) were reported more than 10 miles from the shipping lanes, one in 2001 within the Cordell Bank National Marine Sanctuary and one in 2005 offshore the boundaries of the Greater Farallones National Marine Sanctuary (Point Blue Conservation Science 2021).

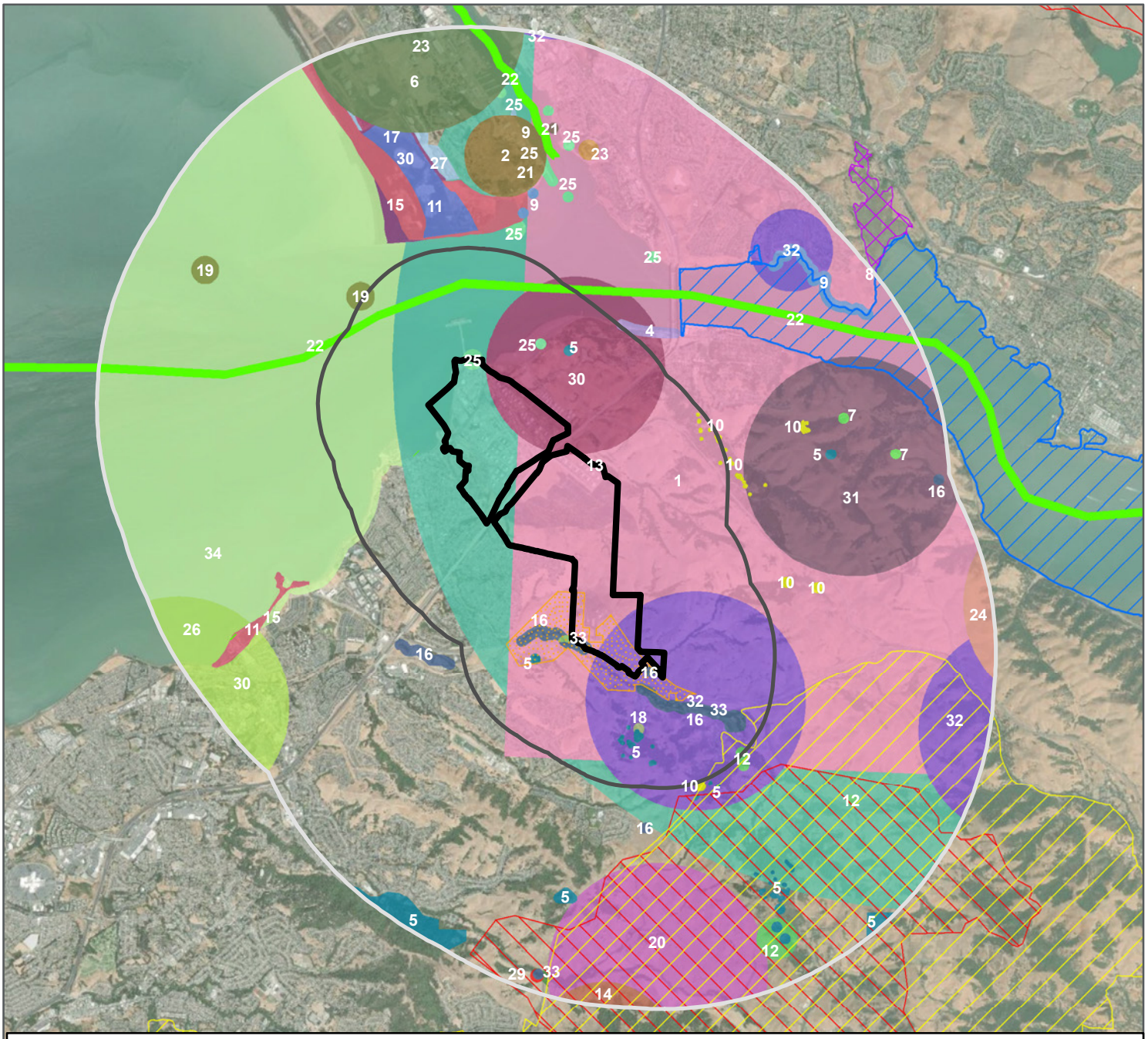
Other pinnipeds with the potential to occur within the region include Steller sea lion (*Eumetopias jubatus*), northern elephant seal (*Mirounga angustirostris*), and northern fur seal (*Callorhinus ursinus*). These species would be expected primarily in coastal waters outside the bay but may have the potential to enter the bay during El Niño conditions. There have been rare sightings in last decade of the threatened Guadalupe fur seal (*Arctocephalus townsendi*) at the Farallon Islands (NMFS 2020a) and of southern sea otter (*Enhydra lutris nereis*) in San Francisco Bay. Endangered leatherback turtles (*Demochelys coriacea*) and threatened green sea turtles (*Chelonia mydas*) have a potential to occur offshore in the vicinity of the Traffic Separation Scheme shipping lanes.

Designated Critical Habitat for Special Status Species

The USFWS designated critical habitat within the Rodeo Refinery study area includes two plants, one amphibian, and one reptile: Contra Costa goldfields *(Lasthenia conjugens*), soft bird's-beak (*Chloropyron molle* ssp*. molle*), California red-legged frog (*Rana draytonii*), and Alameda whipsnake (=striped racer) (*Masticophis lateralis euryxanthus*). Critical habitat for the above species is shown in Figure 4.4-3; the only designated critical habitat mapped within the Rodeo Refinery is for Contra Costa goldfields, mapped within grasslands immediately adjacent to the Carbon Plant Site.

NMFS or USFWS designated critical habitat in San Pablo Bay includes green sturgeon southern DPS, Chinook salmon Sacramento River-winter run ESU, Chinook salmon Central Valley spring-run ESU, and steelhead Central Valley DPS and Central California Coast DPS (Figure 4.4-4).

Critical habitat designated in the Traffic Separations Scheme shipping lanes outside San Francisco Bay include green sturgeon southern DPS, leatherback turtle, humpback whale Central American and Mexico DPS, and killer whale southern resident DPS. Additional critical habitat along the coast within the modeled large oil spill trajectories include black abalone and tidewater goby.



Legend

- 3 Mile Buffer
- 1 Mile Buffer
- Project Boundary

Critical Habitat

- Steelhead
- Alameda whipsnake
- California red-legged frog
- Contra Costa goldfields
- Delta smelt
- Soft bird's-beak

CNDDB Plant Species and Vegetation Communities

- 1, Carquinez goldenbush
- 2, chaparral ragwort
- 3, Contra Costa goldfields
- 4, Delta tule pea
- 5, Diablo helianthella
- 6, fragrant fritillary
- 7, Jepson's coyote-thistle
- 8, Marin knotweed
- 9, Mason's lilaeopsis
- 10, western leatherwood
- 11, Northern Coastal Salt Marsh

CNDDB Wildlife Species

- 12, Alameda whipsnake
- 13, American peregrine
- 14, cackling goose
- 15, California black rail
- 16, California red-legged frog
- 17, California Ridgway's rail
- 18, Cooper's hawk
- 19, Delta smelt
- 20, foothill yellow-legged frog
- 21, great blue heron
- 22, longfin smelt
- 23, monarch - California overwintering population
- 24, obscure bumble bee
- 25, osprey
- 26, pallid bat
- 27, salt-marsh harvest mouse
- 28, saltmarsh common yellowthroat
- 29, San Francisco dusky-footed woodrat
- 30, San Pablo song sparrow
- 31, Suisun song sparrow
- 31, Suisun shrew
- 32, western bumble bee
- 33, western pond turtle
- 34, yellow-headed blackbird

Imagery Source: Maxar 11/1/2019

Figure 4.4-3: CNDDB Occurrences and Critical Habitat within 1 and 3-Miles of the Rodeo Refinery

Rodeo Renewed Project
Contra Costa County, CA

0 1.5 3 Miles

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GIS Analyst: anna.clare

Special Aquatic Sites

Special aquatic sites are a subset of waters of the United States regulated under the CWA that are large or small areas possessing special ecological characteristics of productivity, habitat, wildlife protection, or other important and easily disrupted ecological values. Special aquatic sites include wetlands, mud flats and vegetated shallows (described above), riffle and pool complexes (occur in tributaries that drain to the San Francisco Estuary), coral reefs (not applicable here), and sanctuaries and refuges.

The San Pablo Bay National Wildlife Refuge, a 13,000-acre expanse of brackish marsh, is located on the north shore of San Pablo Bay in Napa, Sonoma, and Solano Counties. While the refuge is approximately 4 miles north of the Rodeo Refinery, its main hydraulic connection with San Pablo Bay, the Napa River, meets the bay approximately 1 mile northeast of the Rodeo Refinery's Marine Terminal. The refuge is notable as a major stopover for migratory waterfowl. The San Francisco Bay National Estuarine Research Reserve, which includes China Camp, is located on the west shoreline of San Pablo Bay more than 10 miles from the Marine Terminal. Special aquatic sites in the region of the Rodeo Site are shown on Figure 4.4-4.

The Traffic Separation Scheme shipping lanes approaching the bay cross three marine sanctuaries: Cordell Bank National Marine Sanctuary, Greater Farallones National Marine Sanctuary, and Monterey Bay National Marine Sanctuary.

Essential Fish Habitat

The Magnuson-Stevens Fishery Conservation and Management Act defines essential fish habitat as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." The entire San Francisco Estuary is an essential fish habitat of particular concern for fish managed under two federal Fishery Management Plans: Pacific Groundfish, and Salmon. Other essential fish habitats of particular concern include seagrass (including eelgrass) within San Pablo and San Francisco Bays, and in coastal waters of the region: seagrass, canopy kelp and rocky reefs.

Significant Ecological Resource Areas

The Conservation Element of the Contra Costa General Plan (Contra Costa County 2010) lists several significant ecological resource areas. Lone Tree Point is located on the shoreline of San Pablo Bay approximately 0.75 mile southwest of the Rodeo Refinery. This area has stratified cliff faces that demonstrate the underlying trend of coastal uplift, including fossiliferous strata with marine-life fossils such as clams and oysters.

Other significant ecological resource areas outside the 4-mile Project vicinity include Point Pinole, Mouth of Point Pinole Creek, San Pablo Creek and Wildcat Creek Marshes, and San Pablo Ridge. These significant ecological resource areas in the region of the Rodeo Site are shown on Figure 4.4-4.

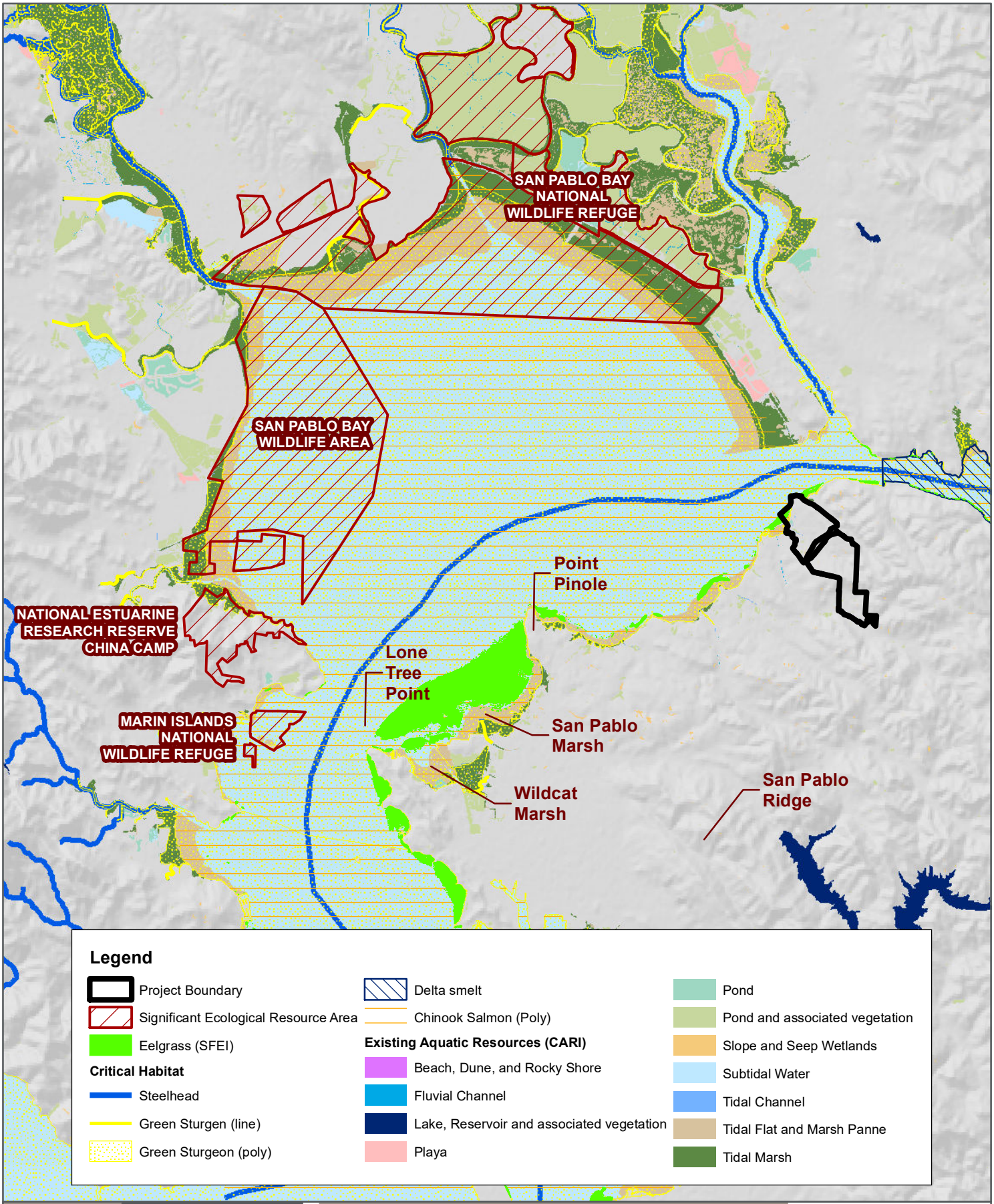

Figure 4.4-4: Special Aquatics Sites

Rodeo Renewed Project
Contra Costa County, CA

0 3 6 Miles

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GIS Analyst: anna.clare

4.4.2.3 Santa Maria Site

The Santa Maria Site is located just west of California Route 1 and south of the town of Arroyo Grande in southern San Luis Obispo County (see Figure 3-4). The facility was built in 1955, and occupies approximately 1,600 acres, much of which is undeveloped open space, surrounded by undeveloped land and by commercial, industrial, recreational, agricultural, and residential uses.

The Santa Maria Site study area was surveyed for biological resources in support of a previous project (San Luis Obispo County 2015); a review of historic aerial photography indicates no substantial changes in vegetation or land use since 2014 (San Luis Obispo County 2015; Google Earth 2021b). The following section is adapted from San Luis Obispo County (2015) and augmented, as needed, with a current literature search including the CNDDB (CDFW 2021a), NWI (USFWS 2021c), IPaC (USFWS 2021a) and the Critical Habitat Portal (USFWS 2021b). Methods for the literature review were similar to those described for the Rodeo Refinery (Section 4.1.2.2). CALVEG vegetation mapping was not available for the Santa Maria Site study area (USFS 2009, 2021); therefore, vegetation descriptions follow the *Manual of California Vegetation* (Sawyer et al. 2009) as described in San Luis Obispo County (2015).

Terrestrial Habitats

The Santa Maria Site consists of a refinery complex and an adjacent petroleum coke storage and shipment facility. The refinery complex is intensely developed with equipment, parking lots, and support buildings. The complex is unvegetated, the surfaces consisting of a mixture of hardscape and sealcoat. The petroleum coke facility on the south side of the site is also unvegetated, being entirely covered with petroleum coke, sand, and hardscape. The undeveloped portion of the Santa Maria Site is vegetated chiefly by coastal scrub assemblages and non-native grasses. A few trees are present within the Santa Maria Site, notably a row of eucalyptus and isolated stands of Monterey pine, but in general the non-developed area of the Santa Maria Site is characterized by non-native perennial grasses and shrubs. No Project activities (i.e., demolition) would occur in these non-developed areas of the Santa Maria Site.

Vegetation mapping was completed in a portion of the Santa Maria Site by Arcadis in 2013 (San Luis Obispo County 2015). Vegetation communities characteristic of coastal dunes; *Lupinus chamissonis*–*Ericameria ericoides* Shrubland Alliance (silver dune lupine-mock heather scrub, and Baccharis pilularis Shrubland Alliance (coyote brush scrub) (Sawyer et al. 2009) occupy the undeveloped portion of the Santa Maria Site and surrounding area. Dominant native shrubs include mock-heather (*Ericameria ericoides*), silver dune lupine (*Lupinus chamissonis*), coyote bush, and black sage (*Salvia mellifera*). Silver dune lupine-mock heather scrub is consistent with the Central Dune Scrub vegetation type (Holland 1986), which is tracked by the CNDDB as a sensitive natural community. The *Lupinus chamissonis*–*Ericameria ericoides* Shrubland Alliance is also listed as a California Sensitive Community, and has a state rarity ranking of S2 (imperiled) (CDFW 2020).

Colonization and invasion by non-native invasive species such as perennial veldt grass (*Erharta calycina*), ice plant (*Carpobrotus edulis* and C*. chilensis*), and wild mustard species (*Brassica* spp.) is common throughout Central Coast dune habitats. The result is a more degraded or ruderal form of dune scrub; these degraded habitats are most common in and adjacent to developed areas, such as the refinery complex and coke storage facility. Areas that are completely dominated by ice plant may be best described by the *Carpobrotus edulis* or Other Ice Plants Semi-Natural Herbaceous Stands (Sawyer et al. 2009). Likewise, areas dominated by perennial veldt grass may provide habitat more functionally equivalent to a perennial grassland, although no suitable grass-dominated association has been described by Sawyer et al. (2009).

Aquatic Habitats

Aquatic resources mapped within Santa Maria Site boundary include Freshwater Emergent Wetlands and Freshwater Forested/Shrub Wetlands (USFWS 2021c). Immediately south of the refinery is an area (1.47 acres) colonized by arroyo willow (*Salix lasiolepis*) associated with a storm water retention basin. NWI also maps a Freshwater Emergent Wetland (2.7 acres) in this area. East of the refinery are five additional shrub dominated wetlands (8.43, 5.45, 1.84, 1.72, 0.97 acres) with associated Freshwater Emergent Wetlands (1.41 and 4.59 acres). Shrub dominated wetlands can be classified under the Salix lasiolepis Shrubland Alliance (Arroyo willow thickets) while emergent wetlands are likely dominated by sedge (*Carex* spp.) or rush (*Juncus* spp.) species and would likely be classified as Juncus arcticus (var *balticus*, *mexicanus*) Herbaceous Alliance (Baltic and Mexican rush marshes) (Sawyer et al. 2009). Just south of the Santa Maria Site, Oso Flaco Creek and its tributaries support willow-riparian habitat and would likewise be considered jurisdictional wetlands, as well as sensitive habitat.

The variety of habitats in the area supports diverse animal life. The trees in the area provide perches for raptors such as great horned owls (*Bubo virginianus*) and food for woodpeckers, jays, squirrels, and deer (San Luis Obispo County 2015).

Significant Ecological Areas

Several important habitats occur in the study area of the Santa Maria Site, including the ODSVRA approximately 1.5 miles west, Rancho Guadalupe Dunes Preserve 5 miles south, and Black Lake Canyon, approximately 1 mile north of the site. The Rancho Guadalupe Dunes Preserve is pristine dune habitat that supports nesting habitat for two endangered bird species (snowy plover [*Charadrius alexandrines*] and California least tern [*Sternula antillarum browni*]). Black Lake Canyon provides riparian habitat that supports a number of rare plant and wildlife species including the threatened California red-legged from (*Rana draytoni*). Oso Flaco Lake Natural Area (located within the ODSVRA), includes dune habitat, chapparal, and a small freshwater lake providing important nesting habitat for a variety of migratory bird species (San Luis Obispo County 2015).

Special-status Terrestrial Species

The Santa Maria Site study area provides suitable habitat for approximately 20 special-status plant species:

- aphanisma (*Aphanisma blitoides*) – CRPR 1B.2
- Davidson's saltscale (*Atriplex serenana* var. *davidsonii*) – CRPR 1B.2
- coastal goosefoot (*Chenopodium littoreum*) – CRPR 1B.2
- straight-awned spineflower (*Chorizanthe rectispina*) – CRPR 1B.3
- surf thistle (*Cirsium rothophilum*) – ST, CRPR 1B.2
- Gaviota tarplant (*Deinandra increscens* subsp. *villosa*) – FE, SE, CRPR 1B.1
- dune larkspur (*Delphinium parryi* subsp. *blochmaniae*) – CRPR 1B.2
- Blochman's leafy daisy (*Erigeron blochmaniae*) - CRPR 1B.1
- suffrutescent wallflower (*Erysimum suffrutescens*) – CRPR 4.2
- mesa horkelia (*Horkelia cuneata* subsp. *puberula*) – CRPR 1B.1
- Kellogg's horkelia (*Horkelia cuneata* subsp. *sericea*) – CRPR 1B.1
- Nipomo Mesa lupine (*Lupinus nipomensis*) – SE, FE, CRPR 1B.1

- San Luis Obispo monardella (*Monardella frutescens*) – CRPR
- crisp monardella (*Monardella crispa* subsp. *crispa*) – CRPR
- California spineflower (*Mucronea californica*) – CRPR 4.2
- sand almond (*Prunus fasciculata* var. *punctata*) – CRPR 4.2
- black-flowered figwort (*Scropularia atrata*) – CRPR 1B.2
- chaparral (=rayless) ragwort (*Senecio aphanactis*) – CRPR 2B.2
- Blochman's groundsel (*Senecio blochmaniae*) – CRPR 4.2
- San Bernadino aster (*Symphyotrichum defoliatum*) – CRPR 1B.2

Site surveys in 2012–2015 noted five special-status species in the study area of the Santa Maria Site, including California spineflower (CRPR 4.2), sand almond (CRPR 4.2), Blochman's ragwort (CRPR 4.2); Blochman's leafy daisy (CRPR 1B.1), and dune larkspur (CRPR 1B.2) (San Luis Obispo County 2015). The federally and state listed Nipomo Mesa lupine (FE, SE) has several historical and current occurrences within the undeveloped portions of the Santa Maria Site.

Based on a review of the literature, a total of 39 special-status wildlife species have the potential to occur within the Santa Maria Site study area. Following an evaluation of their known range, habitat preferences and historical and current occurrences, ten special-status species (including migratory bird) were determined to have potential to occur within the Santa Maria Site study area.

These include six bird species: Cooper's hawk (*Accipiter cooperii,* WL), Bell's sage sparrow (*Artemisiospiza belli* [=*Amphispiza belli*], WL), western burrowing owl (*Athene cunicularia,* SSC), ferruginous hawk (*Buteo regalis,* WL), northern harrier (*Circus hudsonius* [=*C. cyaneus*]), loggerhead shrike (*Lanius ludovicianus,* SSC); two reptiles: coast horned lizard (*Phrynosoma blainvillii* [= *P. coronatum*], SSC), and Northern California (=silvery) legless lizard, (*Anniella pulchra* [=*A. pulchra,* SSC); and one insect species, monarch butterfly (*Danaus plexippus*, FC). Seven of these species were observed on site in 2013 (San Luis Obispo County 2015).

Special-status Aquatic Species

A population of the endangered tidewater goby (*Eucyclogobius newberryi*) lives in the Santa Maria River, several miles south of the Santa Maria Site, and Oso Flaco Lake is proposed as a recovery site for the species (San Luis Obispo County 2015).

4.4.2.4 Pipeline Sites

The Project also includes the Pipeline Sites—four regional pipelines serving the Santa Maria Site and the Rodeo Refinery. The Santa Maria Site is connected to the Rodeo Refinery by approximately 200 miles of subterranean pipeline (Figure 3-5), designated Line 400 and Line 200. Line 400 runs north and east from the Santa Maria Site through the Coastal Range of central California in San Luis Obispo and Kern Counties, a region of grassland and live oak woodland, to connect with Line 200 north of McKittrick. Line 200 runs northwest up the west side of the San Joaquin Valley, and then west to the Rodeo Refinery. Line 200 traverses Kern, Kings, Fresno, Merced, Stanislaus, San Joaquin, Alameda and Contra Costa Counties; habitats include a mixture of grasslands and agricultural land. Two other pipelines—Line 100 and Line 300—connect the Santa Maria Site to crude oil collection facilities elsewhere in California. Line 100 traverses the San Joaquin Valley through agricultural land and grasslands in Kern County, and Line 300 traverses agricultural land and grasslands in the Santa Maria Valley area in San Luis Obispo and Santa Barbara Counties.

4.4.3 Regulatory Setting

This section briefly describes federal, State, and local regulations, permits, and policies pertaining to biological resources and wetlands as they may apply to the Project.

4.4.3.1 Federal Authority

Federal Endangered Species Act

The Secretary of the Interior (represented by the USFWS) and the Secretary of Commerce (represented by the NMFS) oversee the federal Endangered Species Act.

Federal Endangered Species Act Sections 7, 9, and 10

Federal ESA Section 7 mandates that all federal agencies consult with the USFWS and/or the NMFS to ensure that federal agency actions do not jeopardize the continued existence of a listed species or destroy or adversely modify critical habitat for listed species. The USFWS has jurisdiction over plants, wildlife, and resident fish; and the NMFS has jurisdiction over anadromous fish and marine fish and mammals. The federal agency is required to consult with the USFWS and/or NMFS if it determines a "may effect" situation will occur in association with its action(s). The federal ESA prohibits the "take" (defined as harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, collecting, or attempting to engage in any such conduct) of any fish or wildlife species listed as threatened or endangered, including the destruction of habitat that could hinder species recovery.

Under federal ESA Section 9, the take prohibition applies only to wildlife and fish species. However, Section 9 also prohibits the removal, possession, damage, or destruction of any endangered plant from federal land, as well as acts to remove, cut, dig up, damage, or destroy an endangered plant species in non-federal areas in knowing violation of any state law or in the course of criminal trespass. Candidate species and species that are proposed or under petition for listing receive no protection under Section 9 of the federal ESA.

Federal ESA Section 10 requires the issuance of an "incidental take" permit before any public or private action that may take an individual of an endangered or threatened species. The permit requires preparation and implementation of a habitat conservation plan that provides specific measures to avoid, offset, or minimize impacts on endangered or threatened species.

Critical Habitat

USFWS designates critical habitat for listed species under the federal ESA. Critical habitat designations are specific areas within a geographic region that are occupied by a species and determined to be critical to its survival in accordance with the federal ESA. Federal entities issuing permits or acting as a lead agency must show that their actions do not negatively affect the critical habitat to the extent that it impedes the recovery of the species. Within designated critical habitat, USFWS protects habitat that provides the primary constituent elements for survival of the listed species. Primary constituent elements are the physical and biological functions considered essential to species conservation that require special management considerations or protection.

Federal Migratory Bird Treaty Act

The federal Migratory Bird Treaty Act (16 USC 703, Supp. I, 1989), as amended by the Migratory Bird Treaty Reform Act, prohibits killing, possessing, or trading in migratory birds, except in accordance with regulations prescribed by the Secretary of the Interior. The act addresses whole birds, parts of birds, and bird nests and eggs. For projects that would not cause direct mortality of birds, the Migratory Bird Treaty Act is generally interpreted in CEQA analyses as protecting active nests of all species of birds that are included in the "List of Migratory Birds" published in the Federal Register in 1995 and as amended in 2005. Although

the Migratory Bird Treaty Act allows permits to be issued for scientific, trade, and rehabilitation, among other reasons, it has no provision for "take" related to project development (50 CFR Part 21).

Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) (16 USC Section 1801−1884) of 1976, as amended, is the primary law that governs marine fisheries management in US federal waters. Its primary goal and objectives are to foster the long-term biological and economic sustainability of marine fisheries by preventing overfishing, rebuilding overfished stocks, increasing long-term economic and social benefits, and ensuring a safe and sustainable supply of seafood. This law extended US jurisdiction to 200 nautical miles and established eight regional fishery management councils with representation from the coastal states and fishery stakeholders. The councils develop fishery management plans that comply with the Magnuson-Stevens Act's conservation and management requirements. Four fishery management plans apply to the West Coast: Coastal Pelagic Species, Pacific Groundfish Species, Pacific Coast Salmon, and Highly Migratory Species. The Magnuson-Stevens Act defines "essential fish habitat" as those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. Essential fish habitat identified in a fishery management plan applies to all managed fish, regardless of whether the species is a protected species or not. Federal agency actions that fund, permit, or carry out activities that may adversely affect essential fish habitat are required under Section 305(b), in conjunction with required Section 7 consultation under the federal ESA, to consult with NOAA Fisheries regarding potential adverse effects of its actions on essential fish habitat and to respond in writing to NOAA Fisheries' recommendations.

Marine Mammal Protection Act

The Marine Mammal Protection Act (16 USC 1361 et seq.) prohibits the taking (including harassment, disturbance, capture, and death) of any marine mammals, except as set forth in the act. All marine mammal species that may be found in the project area are under the jurisdiction of NOAA Fisheries.

Wetlands

The Estuary Protection Act (16 USC 1221–1226) highlights the value of estuaries and the need for conservation of their valuable natural resources. It authorizes the Secretary of the Interior, in cooperation with other federal agencies and the states, to study and inventory estuaries of the United States and to determine whether any areas should be acquired by the federal government for future protection. Under this act, the Secretary of the Interior is required to review all project plans and reports for land and water resource development affecting estuaries and make an assessment of likely impacts and related recommendations for conservation, protection, and enhancement of estuaries.

The federal government also supports a policy of minimizing "the destruction, loss, or degradation of wetlands." EO 11990 (May 24, 1977) requires that each federal agency take action to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands.

Clean Water Act, Section 404

The US Army Corps of Engineers (USACE) administers Section 404 of the CWA. Section 404 regulates activities in wetlands and "other waters of the United States." Wetlands are a subset of waters of the United States that are defined in the Code of Federal Regulations as waters used for interstate or foreign commerce, including all waters that are subject to the ebb and flow of the tide; interstate waters including wetlands; all other waters—such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds—which could affect interstate or foreign commerce; water impoundments; tributaries of waters; territorial seas; and adjacent wetlands.

Section 401 of the CWA requires that applicants obtain an USACE permit to obtain state certification that the activity associated with the permit will comply with applicable State effluent limitations and water quality standards. In California, water quality certification, or a waiver, must be obtained from the State Water Resources Control Board (SWRCB) or the Regional Water Quality Control Board (RWQCB), for both Individual Permits, General and Regional Permits and Nationwide Permits.

Rivers and Harbors Act, Section 10

The USACE also regulates activities in navigable waters under section 10 of the Rivers and Harbors Act. Section 10 of the federal Rivers and Harbors Appropriations Act of 1899 (30 Stat. 1151, codified at 33 USC Sections 401, 403) prohibits the unauthorized obstruction or alteration of any navigable water (33 USC Section 403). Navigable waters under the Rivers and Harbors Appropriations Act are those "subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce" (33 CFR Section 3294). Typical activities requiring Section 10 permits are construction of piers, wharves, bulkheads, marinas, ramps, floats, intake structures, cable or pipeline crossings, and dredging and excavation. The construction of structures, such as tide gates, bridges, or piers, or work that could interfere with navigation, including dredging or stream channelization, may require a Section 10 permit, in addition to a Section 404 permit if the activity involves the discharge of fill.

Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 / National Invasive Species Act of 1996

The Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 established a federal program to prevent introduction of and to control the spread of introduced aquatic nuisance species, primarily the zebra mussel in the Great Lakes area and the brown tree snake. The USFWS, US Coast Guard (USCG), USEPA, USACE, and NOAA Fisheries all participate in its implementation, including membership on an Aquatic Nuisance Species Task Force established to develop a program of prevention, monitoring, control, and study.

The Nonindigenous Aquatic Nuisance Prevention and Control Act was amended in 1996 by the National Invasive Species Act and again in 2000 to broaden the Act's scope. Under National Invasive Species Act, the USCG established national voluntary ballast water guidelines. The USCG published regulations on June 14, 2004, establishing a national ballast water management program with mandatory requirements for all vessels equipped with ballast water tanks that enter or operate in US waters. The regulations carry mandatory reporting requirements to aid in the USCG's responsibility, under the National Invasive Species Act, to determine patterns of ballast water movement. The regulations also require ships to maintain and implement vessel-specific ballast water management plans.

Vessel Incidental Discharge Act

In 2018, Congress passed this act, which is intended to establish a framework for the regulation of discharges incidental to the normal operation of a vessel under a new CWA Section 312(p). The act applies to commercial vessels greater than 79 ft in length and to ballast water from smaller vessels and all commercial fishing vessels. In October 2020, the USEPA published proposed rulemaking, and when finalized the rule will establish national standards of performance for incidental discharges. Until finalization (expected in 2022), the existing discharge requirements of the Vessel General Permit and the USCG ballast water regulations will continue to apply.

Oil Spill Pollution Act of 1990

The Oil Pollution Act (OPA) was signed into law in August 1990, largely in response to rising public concern following the Exxon Valdez incident. The OPA improved the nation's ability to prevent and respond to oil spills by establishing provisions that expand the federal government's ability, and provide

the money and resources necessary, to respond to oil spills. The OPA also created the national Oil Spill Liability Trust Fund, which is available to provide up to one billion dollars per spill incident. One of the key provisions of the OPA is that it strengthens planning and prevention activities by (1) by establishing spill contingency plans for all areas of the US; (2) mandating the development of response plans for individual tank vessels and certain facilities for responding to a worst-case discharge or a substantial threat of such a discharge; and (3) providing requirements for spill removal equipment and periodic inspections. One of the key provisions of the OPA is that it strengthens planning and prevention activities by (1) by establishing spill contingency plans for all areas of the US; (2) mandating the development of response plans for individual tank vessels and certain facilities for responding to a worst-case discharge or a substantial threat of such a discharge; and (3) providing requirements for spill removal equipment and periodic inspections. The current regulations require that a comprehensive oil spill response plan (OSRP) be developed for large oil shipments. The purpose of the OSRP is to ensure that personnel are trained and available and equipment is in place to respond to an oil spill, and that procedures are established before a spill occurs, so that required notifications and appropriate response actions will follow quickly when there is a spill.

4.4.3.2 State Authority

California Endangered Species Act

The California ESA (Fish and Game Code Section 2050 et seq.) was implemented in 1984. The California ESA defines “endangered” species as those whose continued existence in California is jeopardized. State-listed “threatened” species are those not presently threatened with extinction, but which may become endangered if their environments change or deteriorate. Protection of special-status species is detailed in Sections 2050 and 2098 of the California Fish and Game Code. In addition to recognizing three levels of endangerment, CDFW can provide interim protection to candidate species while they are being reviewed by the Fish and Wildlife Commission. Section 2090 of the California ESA requires state agencies to comply with endangered species protection and recovery and to promote conservation of these species. The CDFW administers the listing of species and authorizes take through Section 2081 agreements (except for designated “fully protected species”).

California Fully Protected Species and Species of Special Concern

The classification of “fully protected” was the CDFW’s initial effort to identify and provide additional protection to those animals that were rare or faced possible extinction. Lists were created for fish, amphibian and reptiles, birds, and mammals. Most of the species on these lists have subsequently been listed under the California ESA and/or the federal ESA. The California Fish and Game Code sections (fish at Section 5515, amphibian and reptiles at Section 5050, birds at Section 3511, and mammals at Section 4700) dealing with “fully protected” species states that these species “…may not be taken or possessed at any time and no provision of this code or any other law shall be construed to authorize the issuance of permits or licenses to take any fully protected species,” although take may be authorized for necessary scientific research. This language makes the “fully protected” designation the strongest and most restrictive regarding the “take” of these species. In 2003, the code sections dealing with fully protected species were amended to allow the CDFW to authorize take resulting from recovery activities for State-listed species.

Species of Special Concern are broadly defined as those not listed under the federal ESA or California ESA, but that are nonetheless of concern to the CDFW because they are declining at rates that could result in listing, or that historically occurred in low numbers and known threats to their persistence currently exist. This designation is intended to result in special consideration for these animals by the CDFW, land managers, consulting biologists, and others, and is intended to focus attention on those species to help avert the need for costly listing under the federal ESA and California ESA and

cumbersome recovery efforts that might ultimately be required. Although these species generally have no special legal status, they are given special consideration under the CEQA during project review.

California Fish and Game Code 3503

Independent of the Migratory Bird Treaty Act, birds of prey are protected in California under the Fish and Game Code (Section 3503.5, 1992). Section 3503.5 states that it is "unlawful to take, possess, or destroy any birds in the order Falconiformes (diurnal birds of prey) or Strigiformes (owls) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto." Disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings or otherwise lead to nest abandonment, and the CDFW considers any disturbance that causes nest abandonment and/or loss of reproductive effort to be "taking."

Native Plants Protection Act

California Fish and Game Code Sections 1900 through 1913, also known as the Native Plant Protection Act, are intended to preserve, protect, and enhance endangered or rare native plants in California. Vascular plants identified as rare or endangered by the California Native Plant Society, but which may have no designated status or protection under federal or State endangered species legislation, are defined as follows:

- **List 1A:** Plants presumed extinct;
- **List 1B:** Plants rare, threatened, or endangered in California and elsewhere;
- **List 2:** Plants rare, threatened, or endangered in California, but more numerous elsewhere;
- **List 3:** Plants about which more information is needed (a review list); and
- **List 4:** Plants of limited distribution (a watch list).

In general, plants appearing on California Native Plant Society Lists 1A, 1B, or 2 are considered to meet the criteria of endangered, rare, or threatened under CEQA Guidelines.

California Department of Fish and Wildlife Code Sections 1600–1616

The CDFW regulates activities that would interfere with the natural flow of, or substantially alter, the channel, bed, or bank of a lake, river, or stream (California Fish and Game Code Section 1600 et seq.) Regulated features include any body of water that flows at least periodically or intermittently through a bed or channel having banks, and supports wildlife, fish, or other aquatic life. Notification to the CDFW through the Lake and Streambed Alteration Program is required prior to initiating such activities. A Streambed Alteration Agreement may be issued by CDFW for construction activities that have the potential to result in an accidental release into a jurisdictional area. Requirements to protect the integrity of biological resources and water quality are often conditions of streambed alteration agreements and may include avoidance or minimization of the use of heavy equipment, limitations on work periods, and measures to restore degraded sites or compensate for permanent habitat losses.

Marine Life Management Act

Within California, most of the legislative authority over fisheries management is enacted within the Marine Life Management Act. This law directs CDFW and the Fish and Game Commission to issue sport and commercial harvesting licenses, as well license aquaculture operations. CDFW, through the Commission, is the State's lead biological resource agency and is responsible for enforcement of the State endangered species regulations and the protection and management of all State biological resources.

Senate Bill (SB) 861 Oil Spill Prevention and Response

In 2014, Governor Brown expanded California's oil spill prevention and response program to cover all statewide surface waters at risk of oil spills. This expansion provided funding for industry preparedness, spill response, and continued coordination with local, state and federal government along with industry and non-governmental organizations. Senate Bill 861 authorized the Office of Spill Prevention and Response (OSPR) with the statewide expansion and regulatory oversight.

Coastal Ecosystems Protection Act of 2006, California State Lands Act

The Coastal Ecosystems Protection Act of 2006 directed the CSLC to adopt performance standards for discharging ballast water by January 1, 2008, and prepare a report assessing the availability of treatment technologies to meet those standards (Falkner et al. 2009). The CSLC completed the rulemaking process and adopted the standards in October 2007 as part of its Marine Invasive Species Program (a multi-agency programs that includes CDFW's OSPR, the SWRCB, and the Department of Tax and Fee Administration). The technology assessment report was completed in December 2007. In response to the report's recommendations, the California Legislature passed Senate Bill 1781 (Chapter 696, Statutes of 2008), which delayed initial implementation of the performance standards from January 1, 2009, to January 1, 2010, and required an update of the technology assessment report by January 1, 2009. The CSLC continues to support research into evolving ballast water management practices, treatment technologies, compliance monitoring techniques and equipment, and environmental effects of ballast water treatment. According to CSLC (2021), in 2018–2019, less than 1 percent of reported ballast water discharged in California did not meet the state's ballast water management requirements.

The CSLC is also mandated to adopt regulations governing the management of vessel fouling by January 1, 2012, specifically, introduction of nonindigenous invasive species via vectors other than ballast water. Two studies are currently underway to guide the development of these regulations. In January 2008, Hull Husbandry Reporting Forms were used to gather data on fouling-related husbandry practices of the commercial vessel fleet visiting California waters. In addition, ongoing fouling-related research conducted by the CSLC's Marine Invasive Species Program will better define how hull husbandry practices and voyage characteristics affect the quantity and quality of fouling biota associated with vessels operating in California (CSLC 2021).

California Marine Invasive Species Act

The California Marine Invasive Species Act (Public Resources Code §§ 71200–21271) was created to ultimately eliminate the discharge of non-indigenous species into the waters of the State or into waters that may impact the waters of the State, based on the best available technology economically achievable. Since its passage, the Act has been amended several times to reflect changing technology and federal regulations, with the most recent amendment in 2019.

The Act requires mid-ocean exchange or retention of all ballast water and associated sediments for all vessels over 300 gross register tons, United States and foreign, carrying ballast water into the waters of the State after operating outside the waters of the State. For all vessels over 300 gross register tons arriving at a California port or place carrying ballast water from another port or place within the Pacific Coast Region, the Act mandates near-coast exchange or retention of all ballast water. The Act requires completion and submission of a Ballast Water Report Form upon departure from each port of call in California, annual submittal of a hull husbandry reporting form, the keeping of a ballast management plan and logs, and the application of "Good Housekeeping" Practices designed to minimize the transfer and introduction of invasive species.

Porter-Cologne Water Quality Control Act

Pursuant to the Porter-Cologne Water Quality Control Act, each of California's nine RWQCBs must prepare and periodically update basin plans that set forth water quality standards for surface and groundwater, and that propose actions to control nonpoint and point sources of pollution to achieve and maintain these standards. Basin plans offer an opportunity to achieve wetlands protection based on water quality standards. Water quality for the area including the Rodeo Refinery is under the jurisdiction of the San Francisco RWQCB. The RWQCB has issued to the Refinery a specific National Pollutant Discharge Elimination System (NPDES) Permit for their operations. Among other things, the NPDES permit establishes maximum once-through volumes and velocities, maximum temperatures for effluent discharge plumes, and water quality standards for effluent discharge. Annual or periodic evaluations are reported to the RWQCB. These standards ensure the health and safety of biological resources in San Pablo Bay, especially those occurring in open waters and near shorelines.

Water Quality Control Plan for the San Francisco Region

The applicable basin plan is the San Francisco Bay Basin Water Quality Control Plan (Basin Plan), revised in 2011. The RWQCB is responsible for developing and implementing the Basin Plan, which documents approaches to implementing State and federal policies in the context of actual water quality conditions. The RWQCB's other activities include permitting of waste discharges, and implementing monitoring programs of pollutant effects. For more information about the State and RWQCB regulations and permits that affect the proposed Project, see Section 4.10, Hydrology and Water Quality.

California State Lands Commission

The CSLC administers lands owned by the state, which includes the beds of all naturally navigable waterways, such as major rivers, streams and lakes, and tidal and submerged lands below the high tide line. The CSLC issues land use leases or permits for use of state lands that are determined to be consistent with the public trust values for fisheries, navigation, public access, recreation, wildlife habitat and open space. Phillips 66 operates the Rodeo Refinery's Marine Terminal and the portion of the refinery within the tidelands under a lease from CSLC. The CSLC establishes controls on the operation of the Marine Terminal through lease conditions.

The CSLC promulgated and administers the MOTEMS (Marine Oil Terminal Engineering and Maintenance Standards) that establish design and operating standards intended to ensure the safe operation of such terminals. The MOTEMS, by bringing existing and new oil terminals into compliance with modern safety standards, substantially decrease the risk of large-scale releases of liquid bulk cargos from vessels at-berth.

4.4.3.3 Local Authority

San Francisco Bay Conservation and Development Commission

The BCDC is authorized by the McAteer Petris Act to analyze, plan, and regulate San Francisco Bay and its shoreline. It implements the San Francisco Bay Plan and, in the Bay Area, the California Coastal Act, and regulates filling and dredging in the Bay, its sloughs and marshes, and certain creeks and tributaries. BCDC jurisdiction includes San Pablo Bay and a shoreline band that extends 100 feet landward of and parallel with the high tide line.

In 1968, the BCDC completed and adopted the San Francisco Bay Plan, which has been periodically amended during the past 40 years. In 1975, BCDC, City and County of San Francisco, and the Port adopted the San Francisco Waterfront Special Area Plan. The Special Area Plan, together with the McAteer-Petris Act and the San Francisco Bay Plan and subsequent amendments to all three documents, prescribes a set of rules for non-maritime shoreline development along the San Francisco Waterfront. Several policies of the San Francisco Bay Plan are aimed at protecting the Bay's water quality, ecology, and guiding the dredging activities of the Bay's sediment.

In addition, the federal Coastal Zone Management Act of 1972, as amended, set forth the national policy that state coastal management programs should provide for public access to the coasts for recreational purposes and that federal activities within the Coastal Zone be conducted in accordance with state environmental policies. While boating and associated activities, such as marinas, are an important means of public access, they may also pose a threat to the health of aquatic systems if poorly planned or managed. In 1990, Contra Costa County assumed jurisdiction for implementation of the Coastal Zone Management Act throughout the state, except within the Bay-Delta where the San Francisco BCDC has authority for implementation of the Coastal Zone Management Act within its jurisdictional area, which includes the Project site. BCDC permits would be required for any work within either the Bay or the shoreline band.

San Francisco Bay Subtidal Habitat Goals Project

The BCDC, California Ocean Protection Council (OPC)/California State Coastal Conservancy, NOAA, and the San Francisco Estuary Partnership, in collaboration with the broader scientific community, managers, restoration practitioners, and stakeholders, published in 2010 a set of restoration planning goals and guidelines for the subtidal areas and habitats of the Bay-Delta (State Coastal Conservancy 2010).

Subtidal habitats include all of the submerged area beneath the bay water's surface and include mud, shell, sand, rocks, artificial structures, shellfish beds, submerged aquatic vegetation, macroalgal beds, and the water column above the bay bottom. Submerged habitats are important for threatened species such as green sturgeon and Chinook salmon, commercial species like Dungeness crab and Pacific herring, and a host of other fish, shrimp, crabs, migratory waterfowl, and marine mammals.

The Subtidal Goals Project takes a Bay-wide approach in setting science-based goals for maintaining a healthy, productive, and resilient ecosystem. Where possible, these subtidal goals are designed to connect with intertidal habitats and with goals developed by other projects, including goals for Baylands and uplands habitats. The goals and recommendations contained within the Subtidal Goals Project are not regulatory binding but rather are intended to serve as guidance to local, State, and federal agencies when evaluating projects and their potential ecological affects, and when issuing permits.

Contra Costa County General Plan

The Contra Costa County General Plan designates 41 areas as Significant Ecological Resource Areas. These areas are defined by the presence of rare, threatened, or endangered species; unique natural areas; or wetlands and marshes. A number of these areas occur in the general area, but only Lone Pine Point is in the study area of the Rodeo Refinery (see Section 4.1.2.2, *Significant Ecological Areas*).

The Contra Costa County General Plan contains numerous goals, policies, and programs related to the protection of wildlife and vegetation. Goals and policies include: protection of rare, threatened, and endangered species and their habitats (Goals 8-D and 8-E); recognition and protection of the critical ecological characteristics of rangelands and wildlands (Policy 8-13); identification and protection of seasonal wetlands in grassland areas (Policy 8-27); conservation of upland habitat areas adjacent to wetlands that are critical to the survival of wetland species (Policy 8-24); protection of marshes, wetlands, and riparian corridors from the effects of potential industrial spills (Policy 8-25); thorough evaluation of the environmental impacts of using poisons to control ground squirrel populations in grasslands (Policy 8-26); and retention of existing vegetation and wildlife habitat areas in large open areas sufficient to support wildlife populations (Policy 8-15) (Contra Costa County 2010).

San Luis Obispo County Coastal Plan

The San Luis Obispo County Coastal Plan Policies (1988; revised 2007) provides general plan policies and identification of detailed land use recommendations in order to implement the policies of the

California Coastal Act of 1976. Related to biological resources, the Coastal Plan contains policies that are specific to environmentally sensitive habitat (Chapter 6), and coastal watershed (Chapter 9), which are mapped in the Land Use Element. Within Chapter 6, *Environmentally Sensitive Habitat*, the Coastal Plan provides specific policies for the sensitive habitat areas mapped on the Land Use Element combining designation maps. None of those mapped designations are within the boundaries of the Santa Maria Site.

San Luis Obispo County Coastal Zone Land Use Ordinance

As part of a proposed project, the Coastal Zone Land Use Ordinance (CZLUO) (1988; revised November 2013) standards and associated findings for mapped combining designations in the Land Use Element must be considered. Applicable combining designations are identified and discussed within section of Chapter 7 of the CZLUO. For biological resource impact analysis, the relevant combining designations include Sensitive Resource Area (Section 23.07.160 through 23.07.166); Environmentally Sensitive Habitat Area, including unmapped Environmentally Sensitive Habitat Area (Section 23.07.170); Wetlands, Wetland Setbacks (Section 23.07.172); Stream and Riparian Vegetation (Section 23.07.174); and Terrestrial Habitat Protection (Section 23.07.176).For biological resource impact analysis, the relevant combining designations include Sensitive Resource Area(Section 23.07.160 through 23.07.166); Environmentally Sensitive Habitat Area, including unmapped Environmentally Sensitive Habitat Area (Section 23.07.170); Wetlands, Wetland Setbacks (Section 23.07.172); Stream and Riparian Vegetation (Section 23.07.174); and Terrestrial Habitat Protection (Section 23.07.176).

4.4.4 Significance Criteria

Based on CEQA Guidelines Appendix G (updated with revised California resources agency name and to include both federal resources agencies), a project would cause significant adverse impacts to biological resources if it would:

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 CDFW, NMFS, or USFWS;

b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies or regulations, or by the CDFW or the USFWS;

c. Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA (including but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;

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

e. Conflict with any local policies or ordinances protecting biological resources, such as tree preservation policy or ordinance; or

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.

4.4.5 CEQA Baseline

The environmental setting section describes the physical and regulatory setting of the Project. The physical setting describes conditions in 2019, which is the CEQA baseline for this analysis except for vessel traffic, for which the baseline is the 3-year average of 2017 through 2019.

4.4.6 Approach to Analysis

In accordance with CEQA, the impacts of a proposed project are evaluated by comparing expected environmental conditions during the transition period and after full Project implementation to the baseline condition.

With the exception of Project activities that could affect estuarine and marine resources, all Project activities at the Rodeo Refinery and Santa Maria Site would occur within the boundaries of the existing refineries, on land classified as urban, or previously disturbed and occupied by existing refinery equipment. Estuarine and marine resources associated with Project operations at the Rodeo Refinery are addressed separately beginning in Section 4.4.8, *Approach to Analysis*, *Aquatic Biological Resources*.

4.4.7 Discussion of No Biological Resources Impacts

Review and comparison of the setting circumstances and Project characteristics with each of the significance criteria stated above, show that no impacts to biological resources would result.

The Pipeline Sites are located in San Luis Obispo, Santa Barbara, Kern, Kings, Fresno, Merced, Stanislaus, San Joaquin, Alameda, and Contra Costa Counties. The Project would not involve construction or modifications at the Pipeline Sites (i.e., Lines 100, 200, 300, and 400). Upon completion of the Project, the Pipeline Sites (Figure 3-5) would be unnecessary to transport crude-based feedstocks to the Rodeo Refinery and Phillips 66 would decommission the pipelines. The cleaned pipelines would cease to operate and be abandoned in place; they would not be excavated as part of this Project. Phillips 66 would empty and clean the collection points with pipeline inspection gages (PIGs). Material removed from the pipelines would be handled in accordance with applicable regulations and standard practices, which include processing as much as possible in Phillips 66 refining facilities and disposing of the remainder in approved facilities, including hazardous waste facilities, as appropriate. Due to the limited scope and duration of Project activities at the Pipeline Sites, and their location within previously disturbed, and developed areas, no direct or indirect impacts to biological resources would occur.

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

   All Project activities would occur within the boundaries of the existing refinery where vegetation communities are classified as urban, on previously disturbed lands or occupied by existing refinery equipment. Likewise, Project activities at the Santa Maria Site would occur within existing refinery boundaries on previously disturbed “urban” land. Estuarine and marine resources associated with Project operations at the Rodeo Refinery are addressed separately in the next section.

   Therefore, with the exception of operational impacts to estuarine and marine species, the Project would have no impact on special-status, sensitive, or candidate terrestrial species in local and/or regional plans, policies, or regulations, or by the CDFW or USFWS as no habitat supporting such species is present within the Rodeo Refinery and Santa Maria Site.

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

   Natural plant communities mapped by CALVEG within the Rodeo Refinery include Annual Grasses and Forbs, Coyote Brush, Chamise, Blue Oak, Coast Live Oak, and Water. Other natural plant communities known to occur within the Rodeo Refinery (based on the past studies in the area) include Ornamental Tree Rows. None of these provide riparian or other sensitive natural communities. Aquatic resources mapped by the NWI in the study area include Estuarine and Marine (Deepwater and Wetland), Freshwater Emergent Wetland, Freshwater Forested/Shrub Wetland, Freshwater Pond and Riverine habitats. Estuarine and marine

resources associated with Project operations at the Rodeo Refinery are addressed separately in the next section.

At the Santa Maria Site natural plant communities are characteristic of coastal dunes and occupy the undeveloped portion of the Santa Maria Site and surrounding area. Silver dune lupine-mock heather scrub is consistent with the Central Dune Scrub vegetation type, which is tracked by the CNDDB as a sensitive natural community. The Shrubland Alliance is also listed as a California Sensitive Community, and has a state rarity ranking of S2 (imperiled) (CDFW 2020). However, all Project activities would be located within the existing refinery boundaries on previously disturbed lands classified as urban or occupied by existing refinery equipment.

As a result, with the exception of estuarine and marine habitats addressed below, there would be no impact to any sensitive natural communities, riparian habitat, or included in any local and/or regional plans, policies, or regulations, or by CDFW or USFWS. Therefore, no impacts related to terrestrial resources would occur at the Rodeo Refinery and Santa Maria Site.

c. *Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA (including but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?*

All Project activities would occur within the boundaries of the existing refinery complex where vegetation communities are classified as urban. The Project site is situated on previously disturbed lands or occupied by existing refinery equipment. Likewise, Project activities at the Santa Maria Site would occur within existing refinery boundaries on previously disturbed “urban” habitat. No federally protected wetlands occur within the refinery boundaries of the Rodeo Refinery and Santa Maria Site. Estuarine and marine resources associated with Project operations at the Rodeo Refinery are addressed separately in the next section.

As a result, with the exception of estuarine and marine habitats addressed below, the Project would have no impact to federally protected wetlands or other waters of the United States defined by Section 404 of the CWA. No impact would occur at the Rodeo Refinery and Santa Maria Site.

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?*

Project construction and demolition activities would occur within the boundaries of the existing refinery complex where vegetation communities are classified as urban. The Project site is situated on previously disturbed lands or occupied by existing refinery equipment. Likewise, Project activities at the Santa Maria Site would occur within existing refinery boundaries on previously disturbed “urban” habitat. No native wildlife nursery sites occur within the refinery boundaries. Estuarine and marine resources associated with Project operations at the Rodeo Refinery are addressed separately in the next section.

Therefore, the Project would not result in any impacts to wildlife species, and would not interfere with the movement of any native resident or migratory fish or wildlife species, or interfere with any established native resident or migratory wildlife corridors during construction and demolition. No impact would occur.

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

All Project activities would occur within the boundaries of the existing refinery complex where vegetation communities are classified as urban. The Project site is situated on previously disturbed lands or occupied by existing refinery equipment. Likewise, Project activities at the Santa Maria Site would occur within existing refinery boundaries on previously disturbed “urban”

habitat. Estuarine and marine resources associated with Project operations at the Rodeo Refinery are addressed separately in the next section.

Therefore, with the exception of estuarine and marine habitats addressed below, the Project would not result in conflicts with any local policies or ordinances protecting biological resources, and no impact would occur.

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?

All Project activities would be located within the boundaries of the existing Rodeo Refinery and Santa Maria Site, and situated on previously disturbed lands and therefore would not fall under the jurisdiction of, or conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional or state habitat conservation plan.

Therefore, with the exception of estuarine and marine habitats addressed below, the Project would not result in conflicts with any local policies or ordinances protecting biological resources, and no impact would occur

4.4.8 Approach to Analysis – Aquatic Biological Resources

4.4.8.1 Estuarine and Marine Resources

In accordance with CEQA, the impacts of a proposed project are evaluated by comparing expected environmental conditions during the transition period and after full Project implementation to the baseline condition. During the transition period, crude oil would continue to be processed but marine transportation would increase as conveyance by pipelines would be discontinued. After full Project implementation, marine transportation would increase, crude oil would no longer be processed, and the facility would be converted to process renewable feedstocks into renewable diesel fuel, other transportation fuels, and fuel gas. Wastewaters associated with the refinery processes are treated onsite and discharged offshore; the discharge volume and composition would change after full Project implementation (see Section 4.9, *Hydrology and Water Quality*).

The analysis is based on the CEQA Guidelines Appendix G significance criteria listed above. Also considered under the first significance criterion (a), are federal endangered and threatened species and their critical habitat, as applicable that have been designated under the federal ESA by NOAA Fisheries (NMFS) and marine mammals protected under the MMPA.

The third significance criterion (c) also considers designated special aquatic sites as identified under the 404(b)(1) guidelines of the CWA (40 CFR Section 230.43). Special aquatic sites are geographic areas possessing special ecological characteristics of productivity, habitat, wildlife protection, or other important and easily disrupted ecological values. These areas are generally recognized as significantly influencing or positively contributing to the general overall environmental health or vitality of the entire ecosystem of a region. Special aquatic sites present in the Project study area include wetlands, mud flats, vegetated shallows, sanctuaries and refuges.

The approach taken to determining significance for aquatic biological resources is the same or similar as the CSLC used for the original EIR for this project (CSLC 1995) and other oil terminal projects in the vicinity, including the Shore Marine Oil Terminal Lease Project, Tesoro Amorco Marine Oil Terminal Lease Consideration, Tesoro Avon Marine Oil Terminal Lease Consideration, and Martinez Refinery Renewable Fuels Project EIRs (CSLC 2014, 2015).

The aquatic biological resources analysis considers the potential for substantial adverse effects on estuarine and marine species or their habitat from the following changes from baseline conditions:

- Construction/demolition activities,

- Change in wastewater discharge during future operations and maintenance, and
- Increase in vessel traffic during the transition period and future operations and maintenance.

For the evaluation of increased vessel traffic, the primary consideration was whether there would be the potential to substantially increase above baseline conditions the following potential types of vessel effects on special-status and resident estuarine and marine species, and their habitats:

- Effects of vessel collisions (ship strikes),
- Effects of vessel noise,
- Effects of vessel sediment resuspension and deposition,
- Effects of vessel or cargo offloading accidental oil spills, and
- Effects of vessel introductions of non-indigenous invasive species.

The following subsection describes pertinent information regarding the Marine Terminal, vessels, and operations considered in the analysis.

4.4.8.2 Marine Terminal and Vessels

The Marine Terminal is comprised of a tee-head ship and barge berthing structure, a mooring breasting dolphin, and shore-connecting trestle-pipelineway. The ship-berthing structure is 1,250 feet long by 136 feet wide with two ship-berthing areas on the portside and three berths for barges on the shoreside. The mooring breasting dolphin is 74 feet from the west end of the tee and measures 51 by 32 feet. The trestle-pipelineway connecting the Marine Terminal to shore is 1,730 feet long by 77 feet wide.

Vessel Trips

The average total annual number of vessel calls at the Marine Terminal under baseline conditions is 80 tankers and 90 ATBs/mix barges, totaling 170 tank vessels per year (Table 4.4-1). The annual total number of vessels with the Project is estimated to be 96 tankers and 92 ATBs during the transitional period (total of 188 tank vessels per year), and 201 tankers and 161 ATBs during full Project implementation (362 tank vessels per year). This equates to a total of 340 vessel trips during baseline conditions (counting both inbound arrivals and outbound departures), 376 vessel trips per year during the transition period (11% increase), and 724 vessel trips per year during full Project implementation (113 percent increase).

Table 4.4-1. Number of Vessel Trips Per Year During Existing Baseline Compared to the Project Transitional Phase and Full Operations.

Vessel	Baseline	Transitional Phase	Project Operations
Tankers	80	96	201
ATBs/Barges	90	92	161
Total Vessels	170	188	362
Total Tanker Trips	160	192	402
Total ATB Trips	180	184	322
Total Trips	340	376	724
Difference Tanker Trips		32	241
Difference ATB Trips		4	142
Total Difference Trips		36	384
Total Change		11%	113%

On a weekly basis, there are 3 vessel calls (6 trips) per week during baseline conditions. Because only one vessel is berthed and unloaded at a time, the number of vessel trips on any given day ranges from 1 to 2 under baseline conditions depending on vessel call schedule (Table 4.4-2). It is expected that the number of vessel trips also would range from 1 to 2 per day depending on vessel call schedule during the transitional phase. There would be 2 vessel trips per day (one inbound, one outbound) during full Project operations.

Table 4.4-2. Example Number of Vessel Trips Per Week During Existing Baseline Compared to the Transitional Phase and Full Operations.

Vessel	Mon	Tue	Wed	Thur	Fri	Sat	Sun	Total per Week
Baseline								
Example 1								
1	1A	1D						
2			2A	2D				
3					3A	3D		
Total/Day	1	1	1	1	1	1		6
Example 2								
1	1A	1D						
2		2A	2D					
3					3A	3D		
Total/Day	1	2	1		1	1		6
Transition								
1	1A	1D						
2		2A	2D					
3			3A	3D				
4					4A	4D		
Total/Day	1	2	2	1	1	1		8
Operations								
1	1A	1D						
2		2A	2D					
3			3A	3D				
4				4A	4D			
5					5A	5D		
6						6A	6D	
7	7D*						7A	
Total/Day	2	2	2	2	2	2	2	14

Note: A = Vessel arrival
D = Vessel departure
* = Vessel departure following week.

To access the Rodeo Refinery, vessels pick up a bar pilot in the precautionary area offshore, standby for arrival of tug escort(s), then proceed via marked navigational channels to the Marine Terminal at San Pablo Bay. In accordance with state law (14 CCR § 851.5) and the San Francisco, San Pablo, and Suisun Bays Harbor Safety Plan (Harbor Safety Committee 2020), all tank vessels carrying 5,000 long tons or more of oil (approximately 36,500 barrels) are required to have tugboat(s) escorts, ranging from one to three depending on vessel displacement.

San Pablo Bay has substantial commercial vessel traffic, both by vessels traveling to or from (inbound or outbound) the bay as well as vessels traveling through the bay to other locations either upbound (e.g., Carquinez Strait, Suisun Bay, Sacramento River, San Joaquin River) or downbound (e.g., San Francisco Bay). The Waterborne Commerce of the United States reports for 2015 through 2019 indicate that on average a relatively small percentage of all commercial freight (10 percent), including petroleum freight (13 percent), had San Pablo Bay as the vessel's point of arrival/departure; most commercial freight (90 percent; 87 percent petroleum freight) was transported through San Pablo Bay to upbound or downbound locations between 2015 and 2019 (Table 4.4-3). Not included in these reports are vessel trips associated with ferries or commercial fishing.

Table 4.4-3. Annual and Average Vessel Freight To/From and Through San Pablo Bay, 2017–2019.

Year	Freight (thousand short tons) To/From San Pablo Bay						Freight (thousand short tons) Through San Pablo Bay						Grand Total
	Foreign		US Coast		Internal (Int.) Bay /Delta		Through Upbound			Through Downbound			
	In	Out	In	Out	In	Out	Foreign	Coast	Int.	Foreign	Coast	Int.	
All Commodities													
2019	1,819	1,029	322	171	74	48	16,755	4,942	273	5,939	1,967	130	33,469
2018	1,762	799	444	68	285	31	17,981	3,558	371	5,690	2,324	255	33,568
2017	1,732	748	229	136	143	75	17,737	2,939	637	4,987	2,364	255	31,983
2016	1,405	660	189	183	114	118	15,740	3,635	477	4,289	2,008	284	29,102
2015	1,432	889	308	40	200	110	13,949	3,441	777	4,704	2,731	272	28,853
Average	1,630	825	298	120	163	76	16,432	3,703	507	5,121	2,279	239	31,395
Average Total	3,113				20,642					7,639.80			31,395
Percent	10				66					24			100
Petroleum Oil and Petroleum Products													
2019	1,703	1,025	322	171	40	47	11,225	4,942	246	2,971	1,967	92	24,751
2018	1,735	793	444	68	158	29	12,416	3,558	353	3,144	2,324	97	25,119
2017	1,724	748	228	136	16	73	12,196	2,885	591	3,013	2,340	107	24,057
2016	1,320	638	189	182	30	116	10,642	3,477	426	2,537	1,894	129	21,580
2015	1,615	889	306	38	43	101	9,192	3,319	731	2,325	2,607	79	21,245
Average	1,619	819	298	119	57	73	11,134	3,636	469	2,798	2,226	101	23,350
Average Total	2,985				15,240					5,125			23,350
Percent	13				65					22			100

Source: USACE–IWR 2015, 2016, 2017, 2018, 2019

Notes: In = inbound (traffic moving from one waterway into another where the destination is on the subject waterway); Out = outbound (traffic moving from one waterway into another where the origin is on the subject waterway); thousand short tons (one short ton = 2,000 pounds)

Between 2015 and 2019, an annual average of 28,396 vessel trips were logged for the commercial freight traffic on San Pablo Bay (Table 4.4-4). On average, most vessel trips were by cargo ships and barges (average: 90 percent), substantially fewer were by tankers and tank barges (average: 5 percent), and by tugs (average: 5 percent). As noted in Table 4.4-3, most of the commercial freight traffic was through this bay to upbound or downbound destinations. Vessel movements are logged according to specific reporting requirements (e.g., USACE–IWR 2019), which consider both location and number of stops, as follows:

1. For self-propelled vessels, a trip is logged between every point of departure and every point of arrival;
2. For loaded barges, a trip is logged from the point of the loading of the barge to the point of unloading of the barge (i.e., excluding fleeting areas); and
3. For empty barges, trips are logged from point of unloading to the point of loading counting the fleeting areas in between (e.g., if an empty barge moved from Dock A to Dock B and the barge stopped at three fleeting areas in between, then four trips are logged).

Table 4.4-4. Annual Total and Average Number of Vessel Trips by Vessel Type and Draft for San Pablo Bay, 2015–2019.

	Dry Cargo				Tanker				Tug		
	SP		NSP		SP		NSP		SP		
Year	Up	Down	Up	Down	Up	Down	Up	Down	Up	Down	Total
Annual and Average Total Vessel Trips by Type											
2019	17,259	17,540	141	136	488	467	207	194	604	616	37,656
2018	16,617	16,595	140	162	466	447	213	185	588	591	36,005
2017	15,421	15,508	122	154	500	483	192	193	562	558	33,693
2016	9,189	9,331	179	202	410	397	235	234	709	706	21,592
2015	4,672	4,691	265	288	362	361	298	276	910	913	13,036
Average	12,632	12,733	169	188	445	431	229	216	675	677	28,396
Average Total	25,365		358		877		445		1,351		28,396
Percent	89		1		3		2		5		100
Draft (feet)	**Average Number of Trips by Vessel Draft (2015–2019)**										
1–15	24,610		355		18		201		1,103		26,287
16–25	229		1		84		160		245		718
26–32	437		2		456		81		4		980
33–41	89		0		303		4		0		396
>41	0		0		16		0		0		16
Average Total	25,365		358		877		445		1,352		28,396

Source: USACE–IWR 2015, 2016, 2017, 2018, 2019

Notes: SP = self-propelled vessel, NSP = non-self-propelled vessel (e.g., barge), Up = upbound traffic (e.g., to Carquinez Strait), Down = downbound traffic (e.g., to San Francisco Bay). The vessel drafts were compiled into categories for ease of comparison among different types of vessels.

Therefore, vessel trips compiled in the Waterborne Commerce of the United States reports reflect the number of stops logged by a vessel operator. This is considered potentially more influential to vessel trip counts for dry cargo ships and barges (90 percent of trips) than tank vessels (tankers, tank barges) (5 percent of trips). For example, the average number of self-propelled tanker trips reported for San Pablo Bay (887) is similar to the number of trips reported at the entrance of San Francisco Bay between 2015 and 2019 (756 to 881 vessel trips, see Section 4.9. *Hazardous Materials and Hazardous Materials*, Table 4.9-1). However, the vessel trips associated with cargo ships, non-self-propelled tankers and tugs reported for San Pablo Bay are substantially higher than at the entrance likely due to the combined effects of reporting each vessel stop within the bay, as well as the operation of vessels internal to the San Francisco Estuary system.

Between 2015 and 2019, most of the commercial freight traffic to and through San Pablo Bay was by shallow draft vessels. Draft refers to the distance from waterline to the lowest point on the vessel (e.g., bottom or keel). Vessel draft (e.g., how close the propeller is to the bottom) is an important consideration for evaluations of the potential to disturb bottom habitats and resources directly, or by sediment resuspension and turbidity. Between 2015 and 2019, most (95 percent) commercial traffic was by vessels with drafts less than 25 feet, including dry cargo ships and barges, self-propelled and non-self-propelled tank barges, and tugs (Table 4.4-4). Deeper draft dry cargo ships and tankers accounted for 5 percent of the commercial vessel traffic.

While most of the reported vessel trips were by vessels passing through San Pablo Bay, the range of tanker and tank barge vessel drafts and tug drafts are considered representative of the vessels calling at the Rodeo Refinery. Under Project baseline conditions, the oil tankers and tank barges are of various sizes (less than 10,000 to 200,000 deadweight tons, with over half being of “Handymax” size (20,000 to 60,000 deadweight tons, and barges include non-self-propelled and ATBs (see Section 4.9.2, *Hazards and Hazardous Materials*, *Environmental Setting*). Tanker drafts typically range from 26 to 34 feet for Handysize vessels (10,000 to 39,000 deadweight tons), and 34 to 39 feet for Handymax vessels (40,000 to 60,000 deadweight tons) (Duran and Martin 2016). Representative ATBs (20,000 to 27,000 deadweight tons) have drafts ranging from approximately 16 to 31 feet (Crowley 2021). Tugs used to escort ships in San Francisco Bay have drafts ranging from 11 to 20 feet (e.g., Baydelta Maritime 2021; Crowley 2021; Westar Marine Services 2021).

Under future conditions, Project vessels would include a mix of tankers (20,000 to 60,000 deadweight tons) and ATBs. Based on the above-review of vessel drafts, it is estimated that most tankers would have drafts ranging between 26 and 39 feet and ATB drafts would range between 16 and 30 feet. The vessel drafts during the transitional phase and full operations were estimated using percentages derived from 2015–2019 vessel trips for applicable vessel draft categories (Table 4.4-4). For instance, the average number of vessel trips between 2015 and 2019 had a 70/30 percent allocation between applicable tanker vessel draft categories (26-32, 33-41 feet), 42/58 percent allocation for applicable ATB vessel draft categories (16-25, 26-32 feet), and 82/18 percent allocation between applicable tug draft categories (1-15, 16-25 feet). A factor of 1.5 was applied to the increase in self-propelled tanker and ATB vessel trips to obtain an estimate of the number of additional tug escort vessel trips; the number of tugs required to escort tankers varies from 1 to 3 depending on vessel size, 1.5 represents a mean value.

The estimated increase in vessel trips would result in only a small increase in average annual total commercial vessel traffic on San Pablo Bay during the transitional phase (less than 1 percent) and full operation (3 percent) (Table 4.4-5). During the transitional phase, the estimated increase in Project vessel trips and tug escorts compared to average baseline traffic for San Pablo Bay would be a negligible (0.2 percent increase) for shallow draft vessels (less than 16 feet) and low (8 percent increase) for mid- to deep-draft vessels. During Project operation, the estimated increase in Project vessel trips and tug escorts compared to average baseline traffic for San Pablo Bay would be very low (2 percent increase) for shallow draft vessels but substantially higher (54 percent) for mid- to deep-draft vessels.

Table 4.4-5. Estimated Change in Annual Vessel Trips by Vessel Draft During Transitional Phase and Operations and Maintenance Compared to Average Vessel Drafts, 2015–2019.

Draft (feet)	2015–2019 Baseline Average	Transitional Phase					Operations and Maintenance					
		Project Trips			Project Plus Average Total	% Change	2015–2019 Average	Project Trips			Project Plus Average Total	% Change
		Tanker	ATB	Tug				Tanker	ATB	Tug		
1–15	26,287			44	44	0.2	26,287			472	26,759	1.8
16–25	718		2	10	730	1.6	718		60	104	881	18.5
26–32	980	23	2		1,005	2.5	980	172	82		1,234	20.6
33–41	396	9			0	3.9	396	70			466	15.1
>41	16				16	0.0	16				16	0.0
Annual Total	**28,396**	**32**	**4**	**54**	**28,490**	**0.3**	**28,396**	**242**	**142**	**576**	**29,356**	**3.3**

Notes: Annual Baseline is 80 tankers and 90 ATBs. This would increase to 96 tankers and 92 ATBs during Project transition and to 201 tankers and 161 ATBs during Project operation. The new vessel trips include both arrivals and departures. The vessel drafts were compiled into categories for ease of comparison among different types of vessels in Table 4.4-1; these same categories are shown here for comparison of the Project proposed vessel trips with baseline conditions. The largest Handymax vessels associated with the Project have drafts ranging from 34 to 39 feet.

Vessel Speed

The San Francisco, San Pablo, and Suisun Bays Harbor Safety Plan (Harbor Safety Committee 2020) identify 15 knots as the maximum speed inside the bay for power driven vessels of 1,600 or more gross tons. Coastal tankers have speeds of about 12-15 knots, while ATBs have speeds of 10 to 12 knots (Crowley 2021; Fritelli 2014, 2017). Coastal tankers have speeds of about 12 to 15 knots, while ATBs have speeds of 10 to 12 knots (Crowley 2021; Fritelli 2014, 2017). Phillips 66's records indicate that vessels calling the Rodeo Refinery observe a 12 knot limit up until just outside the Golden Gate. At that point, they reduce their speed to 10 knots and maintain it until they reach a point north of Angel Island ("Light 5"); from that point, they travel at 8 knots until they near the Marine Terminal and slow to maneuver into the berth (see Section 4.9.2, *Hazardous and Hazardous Materials*, *Vessel Transport*).

The USACE–IWR maritime statistics reports do not include ferries in the vessel trip counts. High speed jet propulsion ferries operate the Vallejo route on San Pablo Bay to/from San Francisco. This ferry operates 27 trips/day Monday through Friday and 16 trips/day on weekends. Ferries operate in accordance with best practices developed by San Francisco ferry operators in coordination with the Harbor Safety Committee for safe passenger vessel operation in the Bay (Harbor Safety Committee 2020).

Maintenance dredging of the federal channel within San Pablo Bay and in the maneuver and dock area of the Marine Terminal has occurred annually for more than 10 years. There would be no change to the frequency of maintenance dredging under the Project.

4.4.9 Discussion of Aquatic Biological Resources Impacts and Mitigation Measures

Table 4.4-6 presents a summary of the potential impacts to aquatic biological resources, as well as significance determinations for each impact.

Table 4.4-6. Summary of Aquatic Biological Resources Impacts

Impact	Significance Determination		
	LTS	LTSM	SU
Impact 4.4-1. Would the Proposed Project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or US Fish and Wildlife Service? • Effects of Vessel Collisions (Ship Strikes)			
Rodeo Refinery			
Transitional Phase, Operation and Maintenance		✓	
Impact 4.4-2. Would the Proposed Project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or US Fish and Wildlife Service? • Effects of Vessel Noise			
Rodeo Refinery			
Transitional Phase, Operation and Maintenance	✓		
Impact 4.4-3. Would the Proposed Project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or US Fish and Wildlife Service? • Effects of Sediment Resuspension and Deposition			
Rodeo Refinery			
Transitional Phase, Operation and Maintenance	✓		
Impact 4.4-4. Would the Proposed Project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or US Fish and Wildlife Service? • Effects of Vessel Cargo Loading/Offloading Accidental Oil Spills			
Rodeo Refinery			
Transitional Phase, Operation and Maintenance			✓
Impact 4.4-5. Would the Proposed Project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or US Fish and Wildlife Service? • Effects of Introductions of Nonindigenous Invasive Species			
Rodeo Refinery			
Transitional Phase, Operation and Maintenance			✓
Impact 4.4-6. Would the Project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA (including but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means? • Eelgrass (Vegetated Shallows)			
Rodeo Refinery			
Transitional Phase, Operation and Maintenance	✓		
Impact 4.4-7. Would the Project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA (including but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means? Effects of Vessel or Cargo Offloading Accidental Oil Spills • Effects of Introductions of Non-Indigenous Invasive Species			
Rodeo Refinery			
Transitional Phase, Operation and Maintenance			✓

Impact	Significance Determination		
	LTS	LTSM	SU
Impact 4.4-8. Would the Project Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites? • Effects of Vessel Collisions (Ship Strikes) • Effects of Vessel Noise • Effects of Vessel Sediment Resuspension and Deposition			
Rodeo Refinery			
Transitional Phase, Operation and Maintenance		✓	
Impact 4.4-9. Would the Project Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites? • Effects of Vessel or Cargo Offloading Accidental Oil Spills			
Rodeo Refinery			
Transitional Phase, Operation and Maintenance			✓
Impact 4.4-10. Would the Project Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites? • Effects of Introductions of Non-Indigenous Invasive Species			
Rodeo Refinery			
Transitional Phase, Operation and Maintenance			✓
Impact 4.4-11. Would the Project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional or state habitat conservation plan?			
Rodeo Refinery			
Transitional Phase, Operation and Maintenance		✓	

NOTES: LTS = Less than Significant, no mitigation proposed
LTSM = Less than Significant impact with mitigation
SU = Significant and Unavoidable

IMPACT 4.4-1

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

Effects of Vessel Collisions (Ship Strikes)

Transitional Phase, Operations and Maintenance: *Less than Significant Impact with Mitigation*

A vessel collision (ship strike) refers to impact between a vessel (most commonly bow or propeller) and aquatic animal. Vessel collisions have been reported for over 75 marine species including whales, dolphins, porpoises, seals, sea otters, sea turtles, and fish (Schoeman et al. 2020). Collisions with whales may not be reported because vessel crew are not aware of the collision; lack of awareness is even more likely for smaller species, or go unnoticed because carcasses sink (whales, turtles) (Schoeman et al. 2020). The probability of collision between ships and aquatic animals generally increases in areas with overlap of higher vessel traffic (e.g., shipping and navigation lanes, port approaches) and animal density (e.g., important foraging areas, breeding or haul out areas,

migration routes, or in narrow waterways that confine animal movement). Potential effects from vessel collisions on special-status fish, marine mammals and sea turtles are assessed below.

Fish

Vessel interactions with fish may include propeller strikes or propeller entrainment, which refers to fish being transported along with the volume of water "drawn" through the propeller(s) area while it spins. Entrained fish may be affected by propeller strikes or rapid changes in pressure, shear stress, and turbulence. In either case, injury or mortality may occur immediately upon contact with the propeller or result later from injury or increased susceptibility to predation or disease (Killgore et al. 2011).

Threatened and endangered fish that have the potential to occur in San Pablo and San Francisco Bay include salmonids (Chinook salmon, steelhead), smelt (delta, longfin), and green sturgeon. Species of special concern include fall and late-fall DPSs of Chinook salmon, lampreys (Pacific, western river), Sacramento splittail, and white sturgeon. The following analysis focuses on species that differ in life history, size, and longevity representing a range of pertinent considerations relative to vulnerability to vessel interaction effects.

Smelt

Delta and longfin smelt share many of the same life history characteristics (Wang 2010). Both typically spawn in Suisun Bay and the Delta, depositing eggs onto substrate (submerged vegetation, sand, hard substrate; the eggs are adhesive and attach to the substrate). Newly hatched larvae are found near the surface of the water column. Juveniles move down to San Pablo Bay and move back to freshwater to spawn. Delta smelt reach maturity their first year and most die after spawning. Longfin smelt reach maturity after their second year and most die after spawning upstream, although some females may spawn twice. Generally, small and large delta smelt are distributed upstream of the 2 practical salinity units isohaline, but larger fish may be centered closer to the isohaline; juveniles and adults occupy waters of 1 to 7 practical salinity units (Dege and Brown 2004). The 2 practical salinity units isohaline is of particular interest in the estuary as it has been shown to have statistically significant relationships with many ecological resources, including fish. Both small and large longfin smelt also appear closely associated with this isohaline, with large individuals seaward; this species is anadromous, and juveniles and adults tend to be located in San Francisco Bay. Nursery areas and successful recruitment of longfin smelt has been associated with the 2 practical salinity units isohaline (Hobbs et al. 2010).

The likelihood of substantial adverse effects to smelts from Project vessel propellers or entrainment is considered low. This is because the distribution of early life stages tends to center farther upstream than San Pablo Bay and there is no strong overlap between juvenile/adult distribution and vessels in the navigation channel given the width (miles) of the bay. Therefore, impacts to smelts from vessel collisions would be less than significant and no mitigation is required.

Salmonids

Salmonids (Chinook salmon, steelhead) both spawn in Sacramento and San Joaquin Rivers and tributaries, and steelheads also spawn in tributaries to San Francisco Bay. Spawning substrate includes gravel to coarse gravel; egg s are demersal. Early life stages are in freshwater. Chinook may rear in freshwater from months up to 2 years. Steelhead rear in freshwater streams 1 to 3 years. Juveniles of both species undergo physiological changes prior to out-migration to the ocean (smoltification). After spending a few years at sea, fish migrate back to natal streams to spawn. Chinook salmon may live up to 9 years, mostly 4 to 5 years; fish die after spawning. Steelhead may migrate back to natal streams after varying time at sea, and may repeat spawning/migration cycle multiple times; life expectancy ranges from 6 to 8 years.

Substantial adverse effects to salmonids from Project vessel propellers or entrainment would not be expected for similar reasons stated above for smelts. Additionally, results of the acoustic tagging studies indicate relatively high migration success through San Pablo Bay for both Chinook salmon and steelhead. Therefore, impacts to salmonids from vessel collisions or acoustics would be less than significant and no mitigation is required.

Sturgeon

Green sturgeon spawn in the Sacramento River, and white sturgeon mostly do. Green sturgeon eggs, larvae, and young of year typically occur in freshwater portions of the natal river, and juveniles are more frequently observed in the San Francisco Bay-Delta (Moser et al. 2016). Juveniles may reside in freshwater 1 to 3 years, but are able to survive and may seek out seawater by the end of their first year. Juveniles use riverine, subtidal, and intertidal habitats in lower mainstem rivers and estuaries. Subadult and adult green sturgeon occupy coastal waters for most of their life span. They make long-distance migrations along the coast (Lindley et al. 2011). Green sturgeon enter estuaries to feed and sexually mature individuals migrate upriver to spawn in their natal river system every 1 to 3 years; after spawning fish occupy deep holding pools in the river for 6 to 10 months, presumably for feeding and/or energy conservation (Miller et al. 2020).

Juvenile and adults are opportunistic demersal predators on a variety of crustaceans, clams, worms, fish eggs and fish. Benthic invertebrates, ghost shrimp are a favored item. Juveniles feed on amphipods, mysids, small clams, worms and fish eggs and demersal fish (Dumbauld et al. 2008; Radtke 1966). Green sturgeon is a relatively large fish, up to 8 to 9 feet in length, 5 feet on average for sexually mature adults. Green sturgeon reach maturity around age 15 and can live to be 70 years old. Spawning habitat of white sturgeon also is in the Sacramento River, but does not overlap with green sturgeon farther upriver (Poytress et al. 2015). Larval distribution also does not overlap, seasonally or spatially (white sturgeon larvae disperse more broadly in the freshwater delta, and may enter the estuary earlier as larvae or juveniles (Heublein et al. 2017). Both juvenile green and white sturgeon move between the Delta and San Francisco Bay, but only the white sturgeon overwinters in the Delta (Miller et al. 2020). Adult White sturgeon spend most of their life in the estuary and migrate to and from freshwater only for spawning.

There is one documented report of a fatal propellor strike on an adult white sturgeon, from a deep-draft tanker in Carquinez Strait (Demetras et al. 2020). Deep-draft vessel strikes is a listed threat for the endangered Atlantic salmon DPSs in the Delaware Estuary and in the James River, Virginia in areas where vessel traffic supports large ports and navigation channels are relatively narrow (Balazik et al. 2012; Brown and Murphy 2010). Vessel strikes is not a listed threat in the final rule to list the green sturgeon southern DPS as threatened, nor in the recovery plan for the species (NOAA Fisheries 2018a). Currently, Research Sturgeon is requesting information from the public on any carcasses found within the estuary to gain better understanding of causes of death (disease, marine mammal predation, toxicity or vessel strikes).

The likelihood of substantial adverse effects to smelts from Project vessel propellers or entrainment is considered low. This is because the distribution of early life stages tends to center farther upstream than San Pablo Bay and there is no strong overlap between juvenile/adult distribution and vessels in the navigation channel given the width (miles) of the bay.

Based on the above considerations, the potential for Project vessel propeller entrainment of early life stages of green sturgeon would not be expected to occur and would be expected to be less than substantial for white sturgeon given the broad dispersal of their larvae. There is the potential for vessel propeller strikes, as indicated by the documented record in the Carquinez Strait, but insufficient information is available to assess its potential threat. Acoustic tagging studies suggests that subadult green sturgeon prefer foraging outside the navigation channel, which makes sense from a habitat quality perspective. Given that, propeller strike vulnerability in San Pablo Bay may be

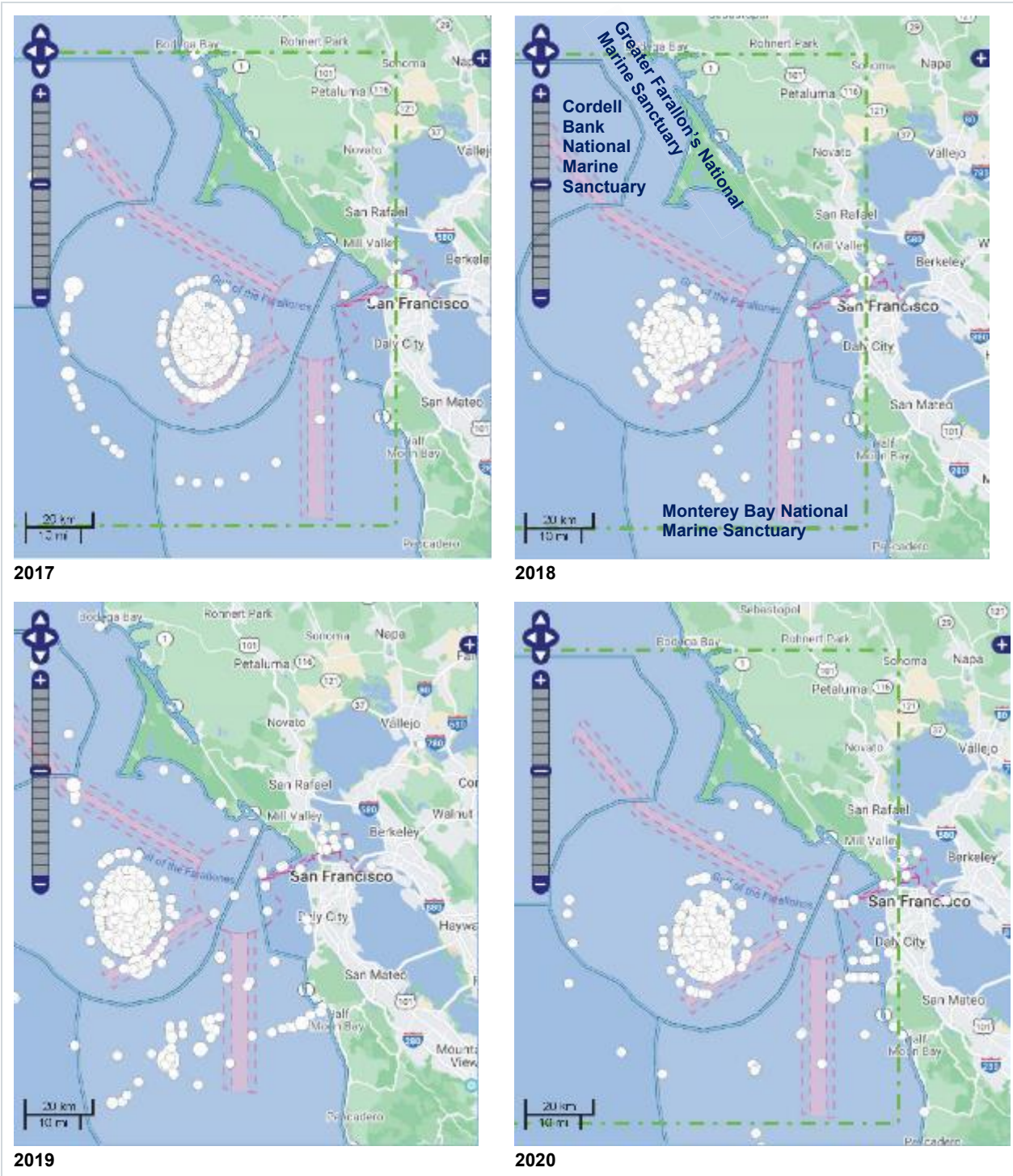
incidental to crossing the channel. More than 400 deep-draft vessel trips /year occur in the navigational channel. With the Project, it is estimated there will be a 15 percent increase in deep-draft vessels. The potential for vessel strike effects on green sturgeon is speculative in this analysis unknown, but if it occurred, the potential for substantial adverse effects cannot be ruled out because of their low population size and their longevity. This would be a significant impact.

Marine Mammals

Harbor seals and California sea lions forage in San Pablo Bay. Marine mammal observations in the region during 2017–2020 (Figure 4.4-5) included several whale species (blue, fin, gray, humpback; killer, and minke), dolphins (northern right whale dolphin, Risso's dolphin, and harbor porpoises. Most observations were centered on an important foraging area near the Farallon Islands. Several of these species were observed in the Traffic Separation Scheme shipping lanes. Occurrence in the relatively narrow approach channel, Golden Gate and outer bay area were occasional and included humpback and gray whales and the harbor porpoise. Other species with the potential to occur in the offshore area near the shipping lanes are listed in Table 4.4-8.

Of all the large whale species that inhabit the California coastline, endangered blue, fin, and humpback whales, and the delisted (recovered) gray whale are considered the most vulnerable to vessel strikes. This is because their migration and coastal feeding areas overlap with shipping traffic near San Francisco of other major West Coast ports (Rockwood et al. 2017). Large whales typically swim too slowly to avoid ships moving at typical speeds in ocean waters (15 knots or more); in the last three decades dozens of whales have been struck by vessels, generally with fatal results, in the approaches to San Francisco Bay. The actual numbers killed and injured are unknown because many collisions with whales go unnoticed or unreported (Rockwood et al. 2017). Studies indicate that vessel speed is an important factor in whale strikes, the risk increasing dramatically at speeds above 14 knots and decreasing substantially at speeds 10 knots and lower (Jensen and Silber 2003; Redfern et al. 2019; Rockwood et al. 2017). The risk is greater when ships travel in areas that are highly productive fishing grounds due to local environmental conditions (e.g., upwelling, island shelves), and in turn are preferred foraging areas for highly intelligent marine mammals. The foraging area offshore and including the approach up to and including the Golden Gate Bridge is a designated biologically important area unit of critical habitat for humpback whale.

Based on concerns over whale mortality off San Francisco, collaborative efforts were undertaken by NOAA marine sanctuaries and research and education institutions in coordination with the USCG (NOAA 2021b). As a result, a revised San Francisco Traffic Separation Scheme went into effect in 2013 to reduce the risk of ship strike collisions. Beginning in 2015, NOAA Marine Sanctuaries requested voluntary Vessel Speed Reduction (VSR) in the designated shipping routes off San Francisco to decrease whale mortality from ship strikes. In 2017, the Protecting Blue Whales and Blue Skies Incentive Program was expanded to include San Francisco with participation by the Marine Sanctuaries and the BAAQMD.



Source: Point Blue Conservation Science 2021

Note: White dots represent daily observations, which may be one or several animals. Data sources: Access Cruises (Point Blue, NOAA/Office National Marine Sanctuaries), Whale Alert APP, Farallon Island Spotter, and Farallon Spotter App)

Note: Blue lines delineate marine sanctuaries. Pink dashed lines delineate shipping routes and precautionary area; the pink bands indicate the Traffic Separation Scheme for ships arriving/departing San Francisco Bay.

Figure 4.4-5. Marine Mammal Occurrence In and Offshore San Francisco Bay, 2017–2020.

For the last several years, the USCG annually issues a Local Notice to Mariners requesting that all vessels 300 gross registered tons or larger reduce speeds to 10 knots when transiting the San Francisco Traffic Separation Scheme (Northern, Western and Southern shipping lanes and Precautionary Area) from 1 May until 15 November to protect endangered blue, humpback and fin whales, which are federally protected under the federal ESA (16 USC 1538 et seq.), the Marine Mammal Protection Act (16 USC 1361 et seq.), and the National Marine Sanctuaries Act (16 USC 1431 et seq).

Tank vessels calling at the Marine Terminal use the Traffic Separation Scheme, but approach San Francisco Bay at approximately 12 knots. Modeled average predicted whale mortality prior to the VSR (2012–2014) compared to after (2016–2017) indicated that the 11 to 15 percent observed reduction of speed from 12 to 10 knots likely resulted in a reduction of vessel strike deaths of blue whales by 11 to 13 percent and humpback whales by 9 to 10 percent; it was predicted that twice as many blue whale and three times as many humpback whale deaths would be avoided with 95 percent of the vessels participating (Rockwood et al. 2020). Based on the above considerations, the additional Project vessel traffic has the potential to incrementally increase the potential for a substantial adverse impact on endangered and threatened whales, and adverse effects to non-listed whale species.

Other protected dolphins and porpoises with the potential to occur in the shipping lanes are fast swimmers, wide-ranging, and have a “Least Concern” conservation status (International Union for the Conservation of Nature 2019). Other protected dolphins and porpoises with the potential to occur in the shipping lanes are fast swimmers, wide-ranging, and have a “Least Concern” conservation status (International Union for the Conservation of Nature 2019 cited in Schoeman et al. 2020). Therefore, the potential for ship strikes from increased vessel traffic from the Project would not be expected to result in substantial adverse effects on populations of protected dolphins and porpoises.

Threatened Guadalupe fur seal has a low potential to occur in the Project study area as they have only occasionally been seen at the Farallon Islands in the last decade (NMFS 2020a). Therefore, a substantial adverse impact on this species is considered unlikely.

Harbor seals and sea lion haul outs are common in the bay. Harbor seals have several haulouts and breeding colonies along the coast in the Project region. California sea lion breed in southern California. The closest northern elephant seal and northern fur seal breeding and/or major haul out rookeries on the Farallon Islands and Point Reyes National Seashore are several miles from the Traffic Separation Scheme shipping lanes approaching San Francisco Bay, indicating low overlap between Project vessels and pinniped congregating areas. Seals and sea lions are fast and agile swimmers, which lowers their vulnerability to vessel strikes. In the unlikely event of a vessel strike, the impact would not be adverse but a substantial population impact would not be expected since their stocks are not considered depleted.

Sea otters would not be expected to occur in the Traffic Separation Scheme shipping lanes.

Sea Turtles

Endangered leatherback turtles and green sea turtles may occur offshore in the Project study area and are considered vulnerable to ship strikes when near the surface (NOAA Fisheries 2021a, 2021b; Schoeman et al. 2020). Leatherback turtle critical habitat occurs offshore the bay extending both up- and downcoast. Therefore, the additional Project vessel traffic has the potential to incrementally increase the potential for a substantial adverse impact on endangered leatherback turtles. The impact would be significant.

Summary

No substantial adverse effects from potential Project ship strikes or propeller entrainment are expected for special-status salmonids or smelt. The potential for Project ship strike effects to threatened green sturgeon is unknown due to limited information on their behavior. It is possible that green sturgeon vulnerability to this impact may not be substantial because navigation channels provide low quality benthic foraging habitat due to frequent disturbance, they swim rapidly in the upper water column during migration, and Project vessel speeds are reduced inside the bay (8 to 10 knots).

Existing mitigation measures that have been implemented to minimize vessel strikes on whales in the Project study area include the realignment of the shipping lanes approaching the bay farther away from the highly utilized foraging area near the Farallon Islands in 2013. A 10-knot VSR program with Notice to Mariners and incentivized Protecting Blue Whales and Blue Skies program have been implemented to minimize ship strike hazards to whales. Slowing vessel speed also is considered by NMFS as applicable for reducing ship strike injury to sea turtles.

The additional Project vessel traffic would incrementally increase the potential for substantial adverse impacts on threatened and endangered whales and endangered sea turtles. While ship strike impacts to other marine mammals would be adverse, substantial population impacts would not be expected.

Phillips 66's records indicate that vessels calling at the Marine Terminal observe a 12 knot limit up until just outside the Golden Gate, and then transit navigation channels at 8 to 10 knots until they near the Marine Terminal and slow to maneuver into the berth. Implementation of Mitigation Measure BIO-1(a) would substantially reduce the potential for the increase in Project vessel trips to have a substantial adverse effect on special-status marine mammals and sea turtles. Implementation of BIO-1(b) would contribute to the collection of data to further the understanding of vulnerability of sturgeon to ship strike effects that could inform future management actions on behalf of both green and white sturgeon.

With implementation of Mitigation Measures BIO-1a and BIO-1b impacts on threatened and endangered whales, endangered sea turtles, and threatened and endangered sturgeon related to vessel strikes would be less than significant.

Mitigation Measure BIO-1a: Update Pre-Arrival Documents

Phillips 66 shall update pre-arrival document materials and instructions sent to tank vessels agents/operators scheduled to arrive at the Marine Terminal with the following information and requests:

- Available outreach materials regarding the Blue Whales and Blue Skies incentive program;
- Whale strike outreach materials and collision reporting from NMFS;
- Request extra vigilance by ship crews upon entering the Traffic Separation Scheme shipping lanes approaching San Francisco Bay and departing San Francisco Bay to aid in detection and avoidance of ship strike collisions with whales;
- Request compliance to the maximum extent feasible (based on vessel safety) with the 10 knot voluntary speed reduction zone.
- Encourage participation in the Blue Whales and Blue Skies incentive program.

Mitigation Measure BIO-1b: CDFW and Research Sturgeon Support

Phillips 66 will conduct and support the following activities to further the understanding of vessel strike vulnerability of sturgeon in San Francisco and San Pablo Bay.

- Coordinate with CDFW and Research Sturgeon to ensure appropriate messaging on information flyers suitable for display at bait and tackle shops, boat rentals, fuel docks, fishing piers, ferry stations, dockside businesses, etc. to briefly introduce interesting facts about the sturgeon and research being conducted to learn more about its requirements and how the public's observations can inform strategies being developed to improve fisheries habitat within the estuary.

IMPACT 4.4-2

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

Effects of Vessel Noise

Transitional Phase, Operations and Maintenance: *Less Than Significant, No Mitigation Proposed*

Project vessel calls would increase from a baseline of 3 times per week to 4 times per week during the Project transitional phase and 7 days per week during full operation. The additional Project vessel trips would change the frequency of the number of underwater noise events per week. However, there would not be a substantial change to the number of vessel trips on any particular day. For instance, the total number of vessel trips (inbound or outbound) on any given day may range from 1 to 2 depending on weekly vessel call schedule under baseline conditions and also would apply during the Project transitional phase (Table 4.4-2). There would be two vessel trips per day for most weeks during full operation of the Project.

Underwater soundscapes differ within the bay compared to the offshore Traffic Separation Scheme shipping lanes. In addition to the commercial vessels that approach and enter the bay from other home ports, San Francisco Bay also supports substantial internal commercial and recreational vessel traffic. Sound propagation (spreading outward from the source) is highly complex in shallow water environments such as the bay because of varying water depths and waters with different characteristics (salinity, temperature, sediment load). Sound propagation and attenuation (reduction, loss) are greatly influenced by sound reflectance between both the water surface and bay bottom, where wind chop or waves and penetration into substrate contribute to transmission loss. Sound propagation within navigation channels also is attenuated by the side slopes, especially where the channel transits much shallower habitat on either side such as in San Pablo Bay; this would be most pronounced for deeper-draft vessels. .

Noise modeling studies using ship tracking data (Automatic Identification System) and known noise levels for different types of ships, indicate broadly elevated underwater noise and concentration may occur in areas with major ports and harbors (Erbe et al. 2012; Redfern et al. 2017). Ships' propulsion systems and other machinery generate underwater noise, with the strongest noise source typically from the propeller when it cavitates (formation of bubbles behind the propeller, which produces sound as the bubbles vibrate and collapse) (Ross 1976 cited in Erbe et al. 2019). Cavitation noise generally increases with vessel speed, size, and load. Flow past the ship's hull also generates sound, particularly at higher ship speeds.

Cope et al. (2021) recently measured underwater sound levels for 565 vessel transits in San Francisco Bay. Median broadband (0.02 to 20 kilohertz) sound exposure levels (SEL[36]) reported in decibels (dB) were reported for the following vessel types: crude oil tankers (177.9), oil/chemical tankers (178.1 dB), bulk carriers (170.8 dB), vehicle carriers (177.5 dB), ferries (170.0 dB) and motorized recreational craft (168.2 dB). Vessel speeds ranged from 9.7 for crude oil tankers to 32.8 knots for high-speed ferries.

Underwater sound levels measured offshore in southern California shipping lanes averaged 179 dB root-mean-square (RMS[37]) for crude oil and chemical product tankers traveling at speeds between 12 and 13 knots, averaged within 3.3 feet of the vessel (broadband frequency 20 to 1,000 Hertz, mainly below 40) (McKenna et al. 2012). Sound levels would be much lower at farther distances from the vessel.

Fish

Popper et al. (2019) reviewed that most studies on noise effects to fish have focused on very loud anthropogenic noises (e.g., pile driving) and few studies associated with ships and ship noises. Fish have been shown to react to ships (e.g., avoidance, alter swimming speed and direction, alter schooling behavior), but most studies associated with specific sound levels have been done under laboratory conditions, and data, while informative have been considered insufficient to set guidelines relative to vessel noise. Continuous noise sources detectable by fishes can mask signal detection; there is also limited evidence that anthropogenic sounds will result in fishes altering their own sounds to avoid masking. Putland et al. (2019) reviewed that vessel noise has been found to elicit an increase in the stress hormone, cortisol, in both freshwater and marine fish species; and reduce species' communication space beyond natural variation The consequences of vessel noise related behavioral changes on fish populations are unknown.

Fish interim guidelines for acoustic thresholds for onset of injury to hearing include SEL values of 187 dB for fish 2 grams or larger and 183 dB for smaller fish (Stadler and Woodbury 2009). The injury thresholds were developed for pile driving, which is not applicable for the Project; however, the above-noted median SELs for crude oil tankers and oil/chemical tankers (177.9–178.1 dB) for San Francisco Bay are substantially below the injury thresholds. As a conservative measure, the federal resource agencies (NMFS, USFWS) have used a sound pressure level of 150 dB RMS as a guideline for potential onset of behavioral effects on ESA-listed species.

The zone of influence associated with the 150 dB fish disturbance threshold was calculated as extending within approximately 92 to 300 feet of the vessel based on the above-noted average 179 dB RMS sound pressure level, measured for crude oil and chemical product tankers within shipping lanes in the Santa Barbara Channel, and is based on simplified sound transmission loss assumptions for coastal waters (spherical spreading loss model to practical spreading loss model, respectively). The disturbance zone of influence would be expected to be substantially less within San Pablo Bay due to the bathymetric difference between shallow habitat and the deeper navigation channel; substantial sound attenuation would be expected from the channel side-slopes.

[36] SEL or Sound exposure level is the integral, over time, of squared sound pressure. The unit of sound exposure is decibels microPascal squared (dB re 1µPa2. (Pa^2s).

[37] In the case of underwater noise, A sound pressure level in decibels is described as the ratio between a measured pressure and a reference pressure (for underwater sound, this is 1 microPascal (up), and is a logarithmic unit that accounts for large variations in amplitude. Therefore, a relatively small change in dB corresponds to large changes in sound pressure. The source level represents the sound pressure level referenced at a distance of 3.3 feet (1 m) from the source (referenced to 1 µPa). The sound levels noted in this section have the units of RMS re 1 µPa.

Acoustical Tagging Studies

Acoustic tagging studies indicate that salmonids rapidly migrate to spawning grounds and migrations of young smolts to coastal waters are fairly rapid. For example, acoustic tagged late-fall run DPS Chinook salmon smolts were tracked to take 2 to 4 days from the Benicia Bridge to the Golden Gate, mainly following the deep navigation channel, but also using nearshore shallows (Hearn et al. 2013). A comparative acoustic tagging study of the migration success of Chinook salmon and steelhead released in the Sacramento River and tracked to the Golden Gate showed declining migration success for both species with migration distance and difference success rates between years (Singer et al. 2013). Reach-specific migration success for steelhead through San Pablo Bay (defined as between Carquinez and Richmond Bridges) ranged from 75 to 99 percent between years, respectively. Chinook salmon reach-specific success for the same reach ranged from 64 to 78 percent, respectively. The lowest reach-specific migration success for both species was between Richmond and Golden Gate Bridges: 46 to 56 percent in 2009 and 75 to 78 percent in 2010.

Acoustic tagging studies indicate that green sturgeon display different behaviors when migrating or foraging. Kelly et al. (2007) conducted a study of green sturgeon movement patterns in San Pablo Bay (5 subadults, 1 adult). Green sturgeon swim near the top of the water column at an average speed of 1.8 feet per second when displaying directional swimming behavior (e.g., migrating), but swim at slower speeds 0.7 feet per second and stop to linger in areas near the bottom, presumably when foraging. Foraging green sturgeon were mostly documented over benthic habitats in shallower waters west of the navigation channel, one concentrated track was noted along the edge of the channel; none were recorded east of the channel over Pinole Shoal. It is considered possible that this distribution pattern may have been related to habitat and food quality. Green sturgeon feed on a variety of demersal prey, including longer-lived clams and crustaceans. The navigational channel and shoal have been subject to maintenance dredging on an annual basis for years; channels subject to frequent dredging typically support less diverse benthic communities dominated by small species (Newell et al. 1998).

Based on the above considerations, no substantial adverse noise effects to bay or anadromous special-status fish species would be expected from increased vessel trips during Project transition or full operations. The impact would be less than significant.

Marine Mammals

Whales may display a variety of behaviors associated with ship proximity and noise, including moving away, diving, increased respiration rates, and changing their vocalizations to compensate for making noises (e.g., increasing the strength, frequency, or lowering the bandwidth frequency of their vocalizations) (Erbe et al. 2019). Whale behavioral effects have been documented when received sound pressure levels ranged from 94 to 142 dB RMS depending on species.

As a group, marine mammals have a very broad hearing range of 5 hertz to 200 kilohertz. Acoustic thresholds for onset of injury to hearing vary somewhat among different types of marine mammals due to differences in their hearing capabilities, as follows (cumulative SEL): baleen whales (199 dB), dolphins and toothed whales (198 dB), porpoises (173 dB), harbor seals (201 dB), and other seals and sea lions (219 dB) (NMFS Fisheries 2018b). The onset of disturbance threshold is 120 dB for all marine mammals.

The above-noted 177.9-178.1 dB SEL median vessel sound levels for crude oil and oil/chemical tankers would not be expected to result in injury to hearing. These levels are below onset of injury thresholds for all marine mammals when computed as a cumulative SEL over a one-hour duration, which coincides with the travel time through San Pablo Bay (NMFS 2020b). A one hour duration also was used in that calculation as an estimate of the duration of vessel transit time in shipping lanes with the closest approach to the biologically important area (foraging) near the Farallon Islands (refer to Figure 4.4-4).

Average (mean and median power spectral density rounded to a whole number) ambient sound levels were 88 dB μPa^2 /Hertz between 10 and 100 Hertz at the Cordell Bank offshore of the north Traffic Separation Scheme lanes approaching San Francisco Bay (Haver et al. 2020). The authors indicated that range dependent transmission loss calculations revealed that low frequency noise emanating from the vessels would exceed average ambient sound levels by 15 to 20 dB, depending on vessel characteristics. Vessels and whales overlapped in their contributions to the ambient sound levels within this low-frequency range, although vessel contributions were more omnipresent and seasonal peaks were associated with vocalizing whales (Haver et al. 2020).

The zone of influence associated with the 120 dB RMS marine mammal behavioral disturbance threshold was estimated as 0.6 mile from the ship based on published underwater sound levels for oil tankers and use of the spherical spreading loss model. Review of the map provided in the Cordell Bank ambient sound study (Haver et al. 2020, Figure 1), and noting that the hydrophone was sited approximately 12 miles offshore the shipping channel, allowed identification of better agreement of the calculated distance to threshold using that model compared to the practical spreading loss model.

Based on the above considerations, the Project would incrementally contribute noise effects to marine mammals within the biologically important area identified as part of critical habitat designated for the endangered humpback whale Central American DPS and threatened Mexico DPS, which also overlaps with critical habitat for the southern resident DPS of killer whale. The estimated zone of influence to the behavioral disturbance acoustic threshold is relatively small compared to the area of frequent marine mammal occurrence centered at the Farallon Islands (Figure 4.4-4).

Sea Turtles

Limited information is available on response of sea turtles to noise. A laboratory study on leatherback turtle hatchlings demonstrated they appear to have a relatively narrow, low-frequency range of hearing sensitivity, responding to stimuli between 50 and 1,200 Hz in water with maximum sensitivity between 100 and 400 Hertz (84 dB RMS at 300 Hertz) (Dow Piniak 2012). Leatherback hearing sensitivity overlaps with the frequencies and source levels produced by vessels, suggesting the potential for auditory masking effects.

No formal acoustic thresholds have been established for sea turtles. Finneran and Jenkins (2012) developed onset of acoustic injury (weighted SEL of 175 dB) and behavioral disturbance (weighted SEL of 198 dB) criteria based on consideration of their low-frequency range of hearing and weighting consistent with criteria developed for certain marine mammals. However, Popper et al. (2014) concluded that sea turtle hearing is better represented by data from fishes than from marine mammals because the functioning of the inner ear of sea turtles (basilar papilla) is dissimilar to that of mammals (cochlea). The following thresholds are being used by the NOAA's Greater Atlantic Fisheries Office to support effects analyses to ESA-listed species: onset of injury to hearing (204 dB weighted SEL, 232 dB peak), onset of temporary hearing shift (189 dB SEL, 226 dB peak), and behavioral disturbance (175 dB SEL).

The above-noted 177.9-178.1 dB SEL median vessel sound levels for crude oil and oil/chemical tankers would not be expected to result in injury to sea turtle hearing. Project vessel noise effects have the potential to disturb sea turtles; however, at a calculated distance to the disturbance guideline (6 feet), no substantial adverse noise effects to turtles would be expected based on the NOAA East Coast effects.

Summary

The increase in numbers of vessels calling at the Marine Terminal would incrementally increase Project vessel noise effects to special-status fish, marine mammals, and sea turtles. No noise-related injuries would be expected. Noise effects would disturb special status species with the potential to alter behavior, interfere with communication, mask biologically important sounds, or result in stress.

The Project would incrementally increase the frequency of noise exposure events. There would be 1 additional vessel call per week during the Project transitional phase, and 2 additional vessel calls per day for an additional 8 trips per week during Project operation. There would be a small increase in the duration of noise effects on any particular day, increasing from a baseline of 1 to 2 events per day to 2 events every day during full Project operation. The duration of each vessel arrival or departure would remain the same (e.g., one hour to transit San Pablo Bay, two hours to transit San Francisco Bay, approximately 3 to 4 hours to clear the Traffic Separation Scheme shipping lanes depending on ship direction).

The zones of influence associated with onset of disturbance thresholds are small in comparison to the relatively broad San Pablo and San Francisco Bays and the nearshore coastal zone, including the designated critical habitats for fish and marine mammals, and the biologically important area for foraging whales offshore. The noise effects also would be temporary, not only because of the movement of the vessel, but also the limited number of vessel trips per day. Based on these considerations, Project noise effects may be adverse but would not be expected to have a substantial adverse impact to special status.

Measures to reduce vessel adverse noise effects on marine life are addressed in the International Maritime Organization (2014) guidelines, which fall into three categories: hull design, vessel maintenance, and vessel operation. Maintenance guidelines to reduce underwater noise and improve fuel efficiency include: propeller polishing to remove marine fouling to help reduce cavitation; maintaining a smooth underwater hull surface (remove fouling); and maintaining an effective hull coating. Reducing ship speed is considered a very effective operational measure for reducing underwater noise, especially when it becomes lower than the cavitation inception speed.

Good vessel hull husbandry measures to control biofouling (removal from hull and propeller, maintaining an effective hull coating) not only reduce underwater noise and increase fuel efficiency, they also are pertinent to reduction of invasive non-indigenous species, as discussed in detail for Impact 4.4-5. Existing federal and state regulations require vessel owners/operators to comply with vessel biofouling management requirements to reduce potential introductions of invasive nonindigenous species. With such compliance, no additional feasible mitigation measures would further reduce underwater noise levels of vessels.

The anticipated impact from the relatively small daily increase in vessel trips is not considered significant and adverse relative to baseline conditions. The impact would be less than significant and no mitigation is required.

It should be noted that with implementation of Mitigation Measure BIO-1a, which requires vessel operators to comply to the maximum extent feasible (based on safety considerations) with the voluntary 10 knot VSR program in the offshore Traffic Separation Scheme shipping channels and precautionary area, as safety allows. This measure would contribute to reduced noise levels of ships bound to or from the Marine Terminal. Once inside San Francisco Bay, ships already operate at reduced speeds, at 8 to 10 knots compared to 15 knots allowed under the guidelines of the Harbor Committee Safety Plan for San Francisco (Harbor Safety Committee 2020). Although not required to mitigate noise impacts resulting from the Project, implementation of Mitigation Measure BIO-1a has the potential to further lower noise effects, thereby incrementally reducing the footprint of noise effects to special-status species from Project operations in the bay and offshore.

Mitigation Measure: **None Required**

IMPACT 4.4-3

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

Effects of Sediment Resuspension and Deposition

Transitional Phase, Operations and Maintenance: *Less Than Significant, No Mitigation Proposed*

The potential for increased vessel traffic to modify habitat of special-status species was evaluated based on whether there would be a substantial change in the following: (1) the number of vessel arrivals/departures per day, (2) the size and type of vessels calling at the Marine Terminal, (3) existing habitat conditions within the navigation channels and surrounding habitat potentially influenced by propellor wash induced sediment resuspension, turbidity and deposition, and (4) the relative contribution of the Project vessel calls to existing vessel traffic levels.

Compared to baseline conditions, the frequency of vessel calls would increase from 3 to 4 per week during the transitional phase and from 1 to 2 under baseline to 2 during full operation. The size and type of vessels calling at the Marine Terminal would be similar or smaller than under existing conditions, with drafts ranging from less than 15 to 39 feet (see Tables 4.4-2, 4.4-3). In addition, the size of vessels calling at the Marine Terminal are limited by the water depths of the Federal navigation channels, which range from approximately -55 feet Mean Lower Low Water (MLLW) at the entrance to -35 feet MLLW in the Project area (URS Group 2015).

While ATBs and tugs have sufficient under keel clearance when transiting the navigation channels to the northern part of the bay, some Handysize and all Handymax tankers would have minimum clearance. To maintain safety, the San Francisco Bar Pilots require an under-keel minimum clearance of 3 feet for tankers in navigation channels and schedule tug-assist transits during high tide for deep draft vessels, as applicable. For example, an oil tanker arriving at the offshore pilot station with a draft of -37 feet MLLW, would require a high tide of at least 5 feet above the -35 foot MLLW channel depth to navigate safely through the -35 foot MLLW channel (or Pinole shoal limiting depth) – this is referred to as “riding the tide” (USACE 2020). Departures also must be timed according to tides and/or managed through “light-loading” – this refers to vessels carrying less cargo than design capacity to reduce their draft.

Navigation Channels

Deep-draft vessel propeller-induced water velocities, and resulting shear velocities, would be expected to scour and lift sediment along the navigation channels, resulting in suspended sediment turbidity plumes in the water column. Sediment scouring can displace, injure or kill bottom-dwelling (benthic) invertebrates (e.g., crustaceans, mollusks, worms); however, benthic communities in navigation channels are already frequently disturbed under existing conditions. Because the Federal navigation channel in San Pablo Bay has been dredged on an annual basis for many years, the quality of benthic prey base generally is lower than undisturbed sediments due to the benthic invertebrate recolonization process that occurs after substantial sediment disturbance events (Newell et al. 1998). While benthic invertebrate recovery to pre-dredged conditions may be relatively rapid (months), the community would be expected to be dominated by “weedy” opportunistic species with high turnover rates since regular maintenance dredging precludes the development of more developed communities (e.g., with long-lived and larger invertebrates). Existing deep-draft vessel traffic (more than 400 trips/year in San Pablo Bay, Table 4.4-2) also disturbs bottom sediments in the navigation channel. While the Project increase in deep-draft vessel trips (Table 4.4-3) would incrementally increase scour effects in the navigation channels, the impact would be less than

significant based on existing disturbance levels that impact benthic community development under baseline conditions, and no mitigation is required.

Sediment Resuspension and Deposition from Deep-Draft Vessels

Propeller-induced turbidity plumes vary depending on vessel draft, vessel movement patterns (e.g., steady track, docking maneuvers), whether another ship passes before the plume decays, and environmental conditions that affect plume dispersion and decay rates (e.g., tide stage, currents). Generally, deep-draft vessels have the potential to create widespread resuspended sediment plumes since the source is moving; plumes are characterized by uniform suspended sediment concentrations due to prop wash mixing. Monitoring studies have measured total suspended concentrations ranging from 80 to above 90 milligrams/liter (mg/L) immediately after vessel passage with reports of rapid decay to ambient levels in the upper water column, and near bottom concentrations at decreasing concentrations over time with maximum concentrations of 20 to 40 mg/L 1 to 2 hours after vessel passage (Clarke et al. 2015; Wang et al. 2016). Little evidence of propeller-induced turbidity from tugs and barges were observed, although tugs assisting deep-draft vessels during docking maneuvers contributed to the plume effects (Clarke et al. 2015; Wang et al. 2016). Very large prominent plumes extending initially to the surface were primarily associated with deep-draft vessel turning maneuvers at the entrance of secondary berth access channels; whereas, turbidity plumes were less pronounced during vessel passage.

The Project increase in deep-draft tanker vessel trips would be expected to contribute to an incremental increase the frequency of temporary turbidity effects. The Project increase in ATBs (those with deeper drafts) also would incrementally increase temporary turbidity effects; shallower draft ATBs and tugs would not be expected to appreciably increase turbidity effects over baseline conditions.

Turbidity plumes generated by deep-draft tankers and relatively deep draft ATBs would be expected to be temporary and quickly dissipate. High energy currents flowing from the Carquinez Strait contribute to the sandier sediments generally found along the eastern portion of the channel near the Marine Terminal (USACE 2012). Typical tidal currents range from 0.7 foot per second in shallow water (less than 7 feet) to more than 3 feet per second in the navigation channel near the southern shore (Cheng and Gartner 1984 cited in Schoellhamer 2002).

During vessel transit, the turbidity plume at any particular point would be temporary and suspended sediment concentrations would be expected to quickly dissipate to background concentrations. Suspended sediment concentrations in San Pablo Bay vary with tides (daily, spring-neap tides), annual pulses of freshwater inflow, and spring-summer wind-induced waves that resuspend sediments in shallow waters (Schoellhamer 2002; Schoellhamer et al. 2008).

There has been a long-term trend of decreased sediment supply and outflows from the Sacramento River since the 1950s, which has resulted in a decrease in suspended particulate matter in the estuary and increase in water clarity (Cloern 2019). Suspended sediment concentrations at mid-depth near Point San Pablo was substantially greater between the early 1990s and 1998 (ranging from less than 100 mg/L to 1,600 mg/L; annual mean of 73 mg/L) compared to 1999 to 2006 (less than 25 to 400 mg/L; annual mean of 51 mg/L); this shift to lower suspended sediment concentrations may relate to a reduction in the erodible sediment supply over time (McKee et al. 2006; Schoellhamer 2011).

MacVean and Lacy (2014) found that San Pablo Bay suspended sediment concentrations in shallow waters (less the 10 feet) west of the navigation channel were 30–50 mg/L when tides alone affected currents, but ranged 1 to 2 orders of magnitude higher (up to 500 mg/L) in the presence of wind waves due to the higher silt-clay content of sediments. Similarly, recent suspended sediments concentrations measured between 0.6 and 2.5 feet off the bottom at a central location within San Pablo Bay ranged from approximately 13 to 412 mg/L between June and August 2019 (Lacy et al. 2019).

Remobilization of sediments during deep-draft vessel during docking or departures at the Marine Terminal would not be expected to significantly impact water quality that could affect marine biological resources. Dredge material removed from the navigation channel has been determined to be suitable for discharge and beneficial reuse in San Francisco Bay since the 1990s. A sediment evaluation in 2020 summarized past sediment characterizations near the Marine Terminal as primarily sand with similar sediment quality as ambient Bay conditions, no observed sediment toxicity, and water column test results met state narrative water quality objectives (Pacific EcoRisk 2020).

Summary

While the increase in numbers of vessels calling at the Rodeo Facility would incrementally increase the frequency of scour and sediment resuspension in the navigation channel, the impact on critical habitat would be expected to be less than significant based on existing disturbance associated with more than 400 deep-draft vessel trips/year, and annual maintenance dredging that impact benthic community development in the navigation channel under existing conditions. Similarly, temporary increases in turbidity would be expected to rapidly dissipate to background levels and not significantly affect water quality of critical habitat. Therefore, impacts related to sediment resuspension and deposition would be less than significant and no mitigation is required.

Mitigation Measure: **None required**

IMPACT 4.4-4

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

Effects of Vessel Cargo Loading/Offloading Accidental Oil Spills

Transitional Phase, Operations and Maintenance: *Significant and Unavoidable*

During the 7-month transitional phase, there would be an 11 percent increase in vessel traffic over baseline conditions. There would be a temporary increase of crude and gas oil feedstocks being delivered at the Marine Terminal as deliveries shift away from use of the Pipeline sites. There would be a 113 percent increase in vessel traffic when the Project is fully operational. Impacts to special-status species and their habitat would depend on the type and amount of oil spilled and capability to rapidly contain and clean-up the spill.

Toxicity of Renewable Fuels and Feedstocks

Generally, renewable fuels have less toxicity than petroleum-based fuels although toxicity may vary depending on feedstocks, additives or blending with petroleum (Fingas 2015; Hellebone et al. 2008; Kass et al. 2021; Salam et al. 2012). Some are more dispersible in high energy environments than petroleum diesel and may form a white, milky emulsion. A spill may quickly spread and if it reaches the shoreline can result in reduced oxygen levels in shallow waters, coat shorelines, and have similar oiling effects on wildlife as petroleum spills (Fingas 2015; USEPA 2021). Documented substantial effects from vegetable oil spills include depletion of oxygen levels in shallow waters resulting in death of up to thousands of invertebrates and fish, thick and persistent oil coating of shorelines, and oiling and death of thousands of waterbirds (Fingas 2015). No effects on marine mammals have been reported; however, like petroleum oiling effects on species that rely on fur for insulation (e.g., sea otters) (Helm et al. 2015), it is assumed that external oiling could be life threatening due to extreme hypothermia.

Spill Containment

Containment of the spill before it reaches shore is essential for lessening potential impacts since clean up can be difficult and effects may be persistent. Similar containment and cleanup measures are used for renewable feedstock spills as with petroleum oil spills.

The 1995 CSLC EIR concluded that spills of 1 to 50 barrels (bbl) had the potential for significant impact to biological resources, but could be contained and cleaned before significant impacts occurred. Larger spills were considered an unavoidable and significant impact. Modeling was performed for this Project to estimate the trajectory 24-hours after a large spill (i.e., 20,000 bbl) of three types of oil (diesel, gasoline, non-weathering renewable feedstock such as vegetable oil) during summer and winter at the Marine Terminal and from a vessel travelling by the Golden Gate Bridge assuming no mitigation clean up (Section 4.9, *Hazards and Hazardous Materials,* and Appendix C, *Maritime Risk Assessments*). Therefore, the modeling assumes worst case scenarios for the modeled spill size.

Marine Terminal Modeling Results

Modeling results for a large spill at the Marine Terminal indicate that the highest probability of oiling (for both summer and winter) would extend along the southeastern shoreline of San Pablo Bay, and directly across the bay from the Marine Terminal, extend along both shorelines in the Carquinez Straight, and . A large spill just east of the Golden Gate Bridge would have the highest probability of oiling both shorelines along the bay entrance, around Angel Island and Treasure Island, east shoreline of the central bay, and extend outside the bay entrance both up- and down coast. A higher percentage of shoreline oiling was projected for summer conditions than in winter (Section 4.9, *Hazards and Hazardous Materials,* and Appendix C, *Maritime Risk Assessments*). The biological effects from an oil spill of this size on special-status species (especially fish, birds, sea otters, marsh mammals) would be significant.

Vessel Spill Response Plans

All marine terminals and all vessels calling at the Marine Terminal are required to have oil spill response plans and a prescribed level of initial response capability. The information contained in these plans must be consistent with the National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR Part 300) and applicable Area Contingency Plans prepared pursuant to section 311(j)(4) of the CWA. Briefly, the facility and vessel response plans must identify the qualified individuals having full authority to implement the response plan; notification procedures; response activities within regulatory time requirements; equipment and other resources, secured through contract or other approved means, that would provide oil spill removal; procedures for training, exercises and drills; procedures for plan review and updates; and be submitted to the USEPA (Facility Response Plan) or USCG (Vessel Response Plan) for review and with each significant change. Vessel Response Plans also must include vessel-specific information (ship plans and diagrams, capacities and locations of all onboard tanks, etc.) and must include geographic-specific appendices for all Captain of the Port zones (e.g., Coast Guard Sector San Francisco) that identify zone-specific required state and federal notifications and list of contacts for the companies identified to provide oil spill removal, firefighting, lightering (cargo transfer), and salvage.

As noted in Section 4.9, *Hazards and Hazardous Materials,* Phillips 66 complies with marine terminal requirements for onsite oil spill response equipment to respond to spills up to 50 bbl in size. In addition, Phillips 66 contracts with Marine Spill Response Corporation (MSRC) to serve as the primary Oil Spill Response Organization for offshore, onshore, and shallow-water response services. MSRC has inventory of response equipment located throughout the Bay Area, with the closest locations to the Marine Terminal ranging from 4.4 to 7.2 miles away. Response to a facility or vessel spill at the Marine Terminal would consist of required notifications, oil spill containment (deploy booms) and recovery (e.g., sorbents, skimmers).

If there was the threat of a large spill beyond the in-place response capabilities, a coordinated response would be initiated and organized in accordance with the Area Contingency Plan for San Francisco and directed by a Unified Command, including the federal (USEPA or USCG) and CDFW'S Office of Spill Prevention and Response (OSPR) on scene coordinators, the responsible party, and may include local government representation. Initial response is focused on minimizing impacts though the strategic objectives of "Stopping the Source, Containment and Recovery, and Protection of Sensitive Areas." Sensitive area protection prioritization is based on two considerations; how soon the oil will reach the sensitive site, and the predefined protection priority associated with the site. This second consideration is applied only when there are insufficient response resources to protect all resources at risk before they are impacted by the oil.

Generally, booms would be deployed in San Pablo Bay and elsewhere in San Francisco Bay, as necessary, to contain oil and exclude or divert oil from sensitive habitat locations. OSPR Ecologically Sensitive Site maps (USCG and CDFW 2014), include pre-determined protection priorities and logistical considerations for the placement of booms depending on local conditions. Oil removal/recovery in open water is accomplished using skimmering devices once the oil has been contained. Due to the large number of mudflats and marshes in San Pablo Bay, the primary oil recovery strategy is to use deflection booms to contain the oil in the deeper channel so that the thickest concentrations of oil may be attacked with as many high skimming capacity vessels as possible. Similar response measures would be taken if an oil spill occurred from a vessel in transit within the San Francisco Bay navigation channels.

In the event of an oil spill by tanker or ATB in the shipping lanes approaching San Francisco Bay, the primary response strategy is on-water containment and recovery due to the high sensitivity and difficulty of protecting the rocky outer coast and Farallon Islands. Alternative response technologies (e.g., dispersants and in-situ burning) may be considered by the Unified Command in consultation with the resource Trustee agencies, if applicable.

Summary

As noted in Section 4.9, *Hazards and Hazardous Materials*, a small accidental spill or discharge at the Marine Terminal would likely be contained and removed quickly using established procedures. While the potential for large spills is rare, any increase in vessel traffic over baseline conditions would be significant. The effects of a spill of crude oil or petroleum blendstocks are well documented and include oiling of birds and marine mammals; toxicity to invertebrates, fish, marine mammals; and degradation of shoreline and subtidal habitats by coats of oily and tarry residues (National Research Council 2003). The risk of a significant spill cannot be eliminated. Therefore, the increased potential for large spills would be significant.

Implementation of Mitigation Measures HAZ-1 and HAZ-2 identified in Section 4.9, *Hazards and Hazardous Materials,* would (1) reduce the frequency and size of potential feedstock spills from operation of the Marine Terminal, (2) provide automated monitoring that can warn operators of the development of dangerous mooring situations (3) provide automated monitoring of vessel approach that can warn operators of potential for allison with the Marine Terminal, and (4) Phillips 66 shall respond to any spill near the Marine Terminal from a vessel traveling to or from the Marine Terminal or moored at the Marine Terminal as if it were its own, without assuming liability, until such time as the vessel's response organization can take over management of the response actions in a coordinated manner.

Mitigation Measures HAZ-1 and HAZ-2, and Mitigation Measure BIO-3 below will increase Facility and Oil Spill Response Organization (OSRO) coordinated response to on-water equipment deployment and recovery to protect sensitive shoreline and nearshore resources. With implementation of these measures, Phillips 66 will increase emergency preparedness, and further reduce the potential for significant effects from an accidental spill or discharge. Because the risk of a

significant spill cannot be eliminated, potential impacts on special-status species and their habitat would remain significant and unavoidable.

Mitigation Measure BIO-2: Implement Mitigation Measures HAZ-1 and HAZ-2.

Mitigation Measure BIO-3: Update and Review Facility Response Plan and Spill Prevention, Control, and Countermeasure Plan with OSPR

- The Facility Response Plan and Spill Prevention, Control, and Countermeasure (SPCC) Plan shall be updated to address the change in proposed feedstocks. Phillips 66 will consult with OSPR during update of the SPCC Plan, especially adequacy of booms at the Marine Terminal to quickly contain a spill of renewable feedstocks.
- In accordance with CCR Title 14, Chapter 3, Subchapter 3, several types of drills are required at specified intervals. Due to the potential for rapid dispersion of biofuels and oils under high energy conditions, Phillips 66 shall increase the frequency of the following drills to increase preparedness for quick response and site-specific deployment of equipment under different environmental conditions.
  - Semi-annual equipment deployment drills to test the deployment of facility-owned equipment, which shall include immediate containment strategies, are required on a semiannual pass/fail basis – if there is fail during first six months, then another drill is required. Phillips 66 will require that both semi-annual drills are conducted and schedule them under different tide conditions.
  - An OSRO field equipment deployment drill for on-water recovery is required at least once every three years. Phillips will increase the frequency of this drill to annual.
  - CDFW-OSPR shall be provided an opportunity to help design, attend and evaluate all equipment deployment drills and tabletop exercises. To ensure this, Phillips 66 shall schedule annual drills during the first quarter of each year to ensure a spot on OSPR's calendar.

IMPACT 4.4-5

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

Effects of Introductions of Nonindigenous Invasive Species

Transitional Phase, Operations and Maintenance: *Significant and Unavoidable*

Invasive species are plants, animals, or pathogens that are non-native (or non-indigenous) to the ecosystem under consideration, and whose introduction causes or is likely to cause harm (NISIC 2021). Invasive species can lead to the extinction of native plants and animals, destroy biodiversity, and permanently alter habitats.

The potential for marine vessels calling at the Marine Terminal to introduce invasive species into the San Francisco Estuary was evaluated by the CSLC in the in a Rodeo Refinery Marine Terminal Lease EIR (CSLC 1995). The analysis determined that a potentially significant adverse effect could be mitigated to level of non-significance. Prohibiting ballast discharge was identified to mitigate this impact. No ballast water discharge is allowed under baseline conditions and has not occurred during the past 10 years.

During the 7-month transitional phase, there would be an 11 percent increase in vessel traffic over baseline conditions. There would be a temporary increase of crude and gas oil feedstocks being delivered at the Marine Terminal as deliveries shift away from use of the Pipeline sites. There would be a 113 percent increase in vessel traffic when the Project is fully operational.

Shipping is the major pathway by which aquatic nonindigenous species (NIS) are transported around the globe and is responsible for up to 79.5 percent of established aquatic NIS introductions in North America (Fofonoff et al. 2003). Vessels introduce aquatic NIS into ports and harbors by two main mechanisms, discharge of ballast water and from vessel biofouling (CSLC 2021). Vessels take on, discharge, or redistribute ballast water to maintain stability, balance or trim. When vessels load ballast water, they pick up species in the water from one location and release them during discharge at another location. Vessel biofouling refers to animal and plant communities that attach directly to the vessels wetted surfaces or live in association with the habitat structure provided by the communities (e.g., algae, anemones, barnacles, crabs, fishes, mussels, sponges, tunicates, tubeworms). Approximately 500 NIS species are identified as present in the US in the National Estuarine Marine Exotic Species Information System (Smithsonian Environmental Research Center 2021). Approximately 500 NIS species are identified as present in the US in the National Estuarine Marine Exotic Species Information System (Smithsonian Environmental Research Center 2021).

San Pablo Bay is on California's 303d list of impaired waterbodies for several constituents, including exotic species that disrupt natural benthos, change pollutant availability in food chain, and disrupt food availability to native species (SWRCB 2021). More than 250 NIS and cryptogenic species (not clearly native or non-native) have been identified in the San Francisco Estuary. Loss of eelgrass beds in San Francisco Bay has been associated with the invasive European Green crab (Matheson et al. 2016). The invasive overbite clam, which filter-feeds on zooplankton concentration, has been associated with the decline of the native delta smelt and other pelagic fishes in the Sacramento-San Joaquin River Delta (Feyrer et al. 2003; Mac Nally et al. 2010; Sommer et al. 2007).

The California Marine Invasive Species Program works to prevent new species introductions by implementing vessel ballast water and biofouling management requirements that are authorized by the Marine Invasive Species Act. These regulations apply to vessels that are 300 gross registered tons or more and capable of carrying ballast water.

Vessels calling at the Marine Terminal are required to comply with all federal and State ballast water laws, regulations, and permits. Ballast water discharges in the United States are under the jurisdiction of the USCG and the USEPA, and at the State level by the CSLC. Applicable laws and regulations are described in Section 4.4-3, Regulatory Setting. The principal components of the regulations include (1) Vessel-specific Ballast Water and Biofouling Management Plans with specific recordkeeping and reporting requirements; (2) managing ballast water in accordance with BMPs and conducting ballast water exchanges per location requirements (ballast water from within the Pacific Coast Region: exchange more than 50 nautical miles from land (including islands) in water depths greater than 200 meters; ballast water from outside the Pacific Coast Region: exchange more than 200 nautical miles from land (including islands) and in water depths greater than 2,000 meters); (3) strategies to manage biofouling on vessel's wetted surfaces (e.g., anti-fouling coatings, cleaning); and (4) management of biofouling after extended idle periods. This program is funded from fees collected on qualifying vessel voyages by the California Department of Tax and Fee Administration. Penalties from enforcement actions also are deposited into the Marine Invasive Species Control Fund.

The Marine Invasive Species Program collects information on ballast water management and biofouling management from forms submitted by vessel operators and vessel arrival inspections. The 2021 Biennial Report on the Marine Invasive Species Program reported that during 2018 and 2019, 97.5 percent of California arrivals were compliant with both biofouling and ballast water management requirements, with 99.8 percent of arrivals being compliant with ballast water management

requirements and 96 percent compliant with biofouling management requirements within 60 days of failing a first inspection (CSLC 2021). During 2018 and 2019, 85.5 percent of vessels reported retaining all ballast water while in California waters, representing the most common management approach used by vessels. Compliance with interim and final ballast water performance standards, which would require treatment rather than ballast water exchange, has been delayed until technologies are available that would enable the regulated community to meet these standards.

Compliance with the regulatory requirements is necessary to achieve the objectives of preventing the introduction of aquatic NIS to US ports and harbors. With implementation of the Mitigation Measures BIO-4a and BIO-4b, which address assurance of vessel regulatory compliance, the risk of new invasive nonindigenous species introductions from vessels calling at the Marine Terminal would be reduced, but remain significant.

Because the risk of new species introductions from vessel calls at the Marine Terminal cannot be fully prevented, potential impacts on special-status species and their habitat would remain significant and unavoidable.

Mitigation Measure BIO-4a: Prohibit Ballast Water Exchange

- Phillips 66 shall prohibit vessels from ballast water exchange at the Marine Terminal.

Mitigation Measure BIO-4b: Update Pre-Arrival Documentation

- Phillips 66 shall update pre-arrival document materials and instructions sent to tank vessels agents/operators to ensure they are advised prior to vessel departure of California's Marine Invasive Species Act and implementing regulations pertinent to (1) ballast water management, and (2) biofouling management. Additionally, Phillips 66 will request that vessel operations provide documentation of compliance with regulatory requirements (e.g., copy of ballast water management forms and logs of hull husbandry cleaning/inspections).

IMPACT 4.4-6

c. Would the Project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA (including but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

This analysis considers Special Aquatic Sites as defined under Section 404(b)(1) guidelines of the CWA, as applicable, including wetlands, mud flats, and designated sanctuaries and refuges. Other than the San Francisco Estuary and San Pablo Bay (refer to Impact 4.4-4 addressing marine vessel spills, and Impact 4.4-5 addressing invasive species), the following wetlands, and designated sanctuaries and refuges are within the Project study area.

Eelgrass (Vegetated Shallows)

In 2014, approximately 72 acres of eelgrass were mapped within the 1-mile radius of the Rodeo Refinery, and an additional 53 acres were mapped within 3 miles of the southeast shoreline from the Rodeo Refinery, and 0.2 acre to the northeast within the Carquinez Strait.

Transitional Phase, Operations and Maintenance: *Less Than Significant, No Mitigation Proposed*

Eelgrass is a marine flowering plant with a rhizomatous root system and long leaves (also referred to as blades, shoots). Eelgrass may occur on soft bottom habitats in the intertidal and subtidal, forming beds that range from patchy clumps to large meadows. Eelgrass beds are highly productive habitats that provide shelter, breeding and nursery grounds for a variety of invertebrates and fish; their leaves support attachment from various small plants, invertebrates, and fish eggs (e.g., Pacific herring); and their leaves serve as a food source for various grazers. Their distribution, depth range, and extent of

development in a specific area depends on environmental conditions (e.g., light, salinity, temperature, current strength, sediment, nutrients, water depth) and various pressures (e.g., grazing, epiphyte cover, disease).

Eelgrass has high light requirements, and its water depth range, growth and survival are influenced by the amount of light available for photosynthesis each day (Dennison and Alberte 1986; Zimmerman et al. 1991, Zimmerman et al. 1995). During favorable growth periods, eelgrass stores carbohydrates in their rhizomes and this reserve, if sufficient, may sustain them during unfavorable, growth-limiting conditions such as low light or high temperature (Zimmerman et al. 1991). Seasonal or extended pulses of turbidity have been shown to result in eelgrass loss and lower long-term survival (Backman and Barilotti 1976; Burke et al. 1996; Cabello-Pasini 2002; Zimmerman et al. 1991; Moore et al. 1996, 1997; Zimmerman et al. 19911996, 1997).

Eelgrass occurs along the eastern shore of San Pablo Bay, in discontinuous beds of various sizes between the Carquinez Strait and Point Pinole, whereas the largest bed occurs between Point Pinole and Point San Pablo to the south. Eelgrass does not occur in deep navigation channels in the San Francisco and San Pablo Bays. The San Francisco Bay Subtidal Habitat Goals (State Coastal Conservancy 2010) for eelgrass focus on protecting and enhancing existing eelgrass beds, creating additional eelgrass beds, and improving understanding of ecosystem services, factors influencing the beds, and methods for restoration.

As discussed under Impact 4.4-5, deep-draft vessel propeller-induced water velocities, and resulting shear velocities, would be expected to scour sediment and resuspend sediments, causing turbidity plumes. Turbidity would be expected to be more pronounced during docking maneuvers and departures. Potential sediment resuspension and turbidity effects would be expected to be less pronounced for shallower draft ATBs and escort tugs. Propeller-induced turbidity would be expected to be temporary with rapid decay to background levels due to mixing by currents and tides. . Depending on local environmental conditions (e.g., wind chop, waves, seasonal river outflows) that affect ambient turbidity levels in San Pablo Bay, vessel propeller-induced turbidity may or may not be detectable. While the increase in numbers of vessels calling at the Marine Terminal would incrementally increase (from 1 to up to 2 trips per day), the turbidity plumes would be temporary and of short duration. Substantial reduction in light levels below eelgrass daily requirements would not be expected.

Several hundred deep-draft vessels annually transit San Pablo Bay to and from upstream facilities and ports. The largest eelgrass bed in the San Francisco estuary is located in San Pablo Bay between Point Pinole and Point San Pablo. Eelgrass mapping between 2004 and 2014 indicates there were substantial increases in eelgrass from 1,514 to 2,330 acres, suggesting no substantial adverse effects from ongoing vessel traffic.

Based on the above considerations, no substantial adverse effects to eelgrass would be expected from the effects sediment resuspension due to increased vessel traffic. The impact would be less than significant and no mitigation is required.

Mitigation Measure: **None Required**

IMPACT 4.4-7

c. Would the Project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA (including but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

Effects of Vessel or Cargo Offloading Accidental Oil Spills

Transitional Phase, Operations and Maintenance: *Significant and Unavoidable*

Similar to the discussion under Impact 4.4-4 on this same topic, the potential to impact special aquatic sites including wetlands, mud flats, vegetated shallows, and designated sanctuaries would depend on the type and amount of oil spilled and success of containment measures in the event of a large spill. While there are differences in behavior, fate and transport depending on type of oil spilled, substantial adverse effects would be expected in the event of a spill during the transitional phase (petroleum) or during Project operation (feedstocks, processed biodiesel fuel, renewable fuel gas or blending components). Potential effects of a large petroleum spill include toxic effects to wildlife; oiling and mortality of birds and marine mammals; coating of mudflats, tidal marshes, rocky shorelines; and mortality of plants and invertebrates. Similar effects would be expected with large vegetable oil or animal fat spills. Additionally, vegetable or animal fat spills may result in oxygen depletion in shallow waters and mortality of invertebrates and fish and have long persistence.

Implementation of Mitigation Measures BIO-2, BIO-3 and Mitigation Measure HAZ-1 (Section 4.9, *Hazards and Hazardous Materials*) would further reduce the frequency and size of potential spills and preparedness for responding to a spill. Despite these additional mitigation measures, the potential for a substantial adverse impact on special status species or their habitat cannot be eliminated; therefore, therefore, the impact remains potentially significant and unavoidable.

Effects of Introductions of Non-Indigenous Invasive Species

Transitional Phase, Operations and Maintenance (*Significant and Unavoidable*)

Invasive species have the potential to impact special aquatic sites such as wetlands, mudflats, vegetated shallows and designated refuges and sanctuaries. For example, loss of eelgrass beds in San Francisco Bay has been associated with the invasive European green crab (*Carcinus maenas*) (Matheson et al. 2016).

As discussed in under Impact 4.4-5 on this same topic, compliance with these regulatory requirements is essential to achieve the purpose “to move the State expeditiously toward elimination of the discharge of nonindigenous species into the waters of the State or into waters that may impact the waters of the State, based on the best available technology economically achievable.” Compliance with California’s ballast water management and biofouling management regulations were relatively high during 2018 and 2019, 99.8 percent of arrivals being compliant with ballast water management requirements and 96 percent compliant with biofouling management requirements within 60 days of failing a first inspection (CSLC 2021).

With implementation of Mitigation Measures BIO-4a and BIO-4b, the potential risk of new invasive species introductions from increase vessel calls at the Marine Terminal would be reduced to the maximum extent achievable.

Implementation of these measures would reduce the potential for vessels calling at the Marine Terminal to introduce or spread NIS. Because the risk of new species introductions from vessel calls at the Marine Terminal cannot be fully prevented, potential impacts on special-status species and their habitat would remain significant and unavoidable.

Mitigation Measure BIO-5: Implement Mitigation Measures BIO-4a and BIO-4b

IMPACT 4.4-8

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

Effects of Vessel Collisions (Ship Strikes)

Transitional *Phase, Operations and Maintenance: Less Than Significant, No Mitigation Proposed*

Vessel interactions with fish may include propeller entrainment, which refers to fish being transported along with the volume of water "drawn" to or through the propeller(s) while it spins. Entrained fish may be affected by propeller strikes or rapid changes in pressure, shear stress, and turbulence. Injury or mortality may occur immediately upon contact with the propeller or result later from increased susceptibility to predation or disease (Killgore et al. 2011). Generally, the probability of being struck by a propeller blade increases with fish size. Entrainment rates generally are less in wider waterways, deeper water, and stronger current areas compared to narrow, shallow, and slow current areas (Kilgore et al. 2011).

Impact 4.4.1 addresses vessel collision impacts to marine special-status species. However, the likelihood of substantial adverse effects to other native fish from Project vessel propellers or entrainment is considered low. This is because there is no strong overlap between early live stages and juvenile/adult distribution and vessels in the navigation channel given the width (miles) of the bay. Therefore, vessel collision impacts would be less than significant for other native aquatic species, migration corridors, or nursery habitats.

Mitigation Measure: **None required**

Effects of Vessel Noise

Transitional and *Operations and Maintenance: Less Than Significant, No Mitigation Proposed*

Cope et al. (2021) recently measured underwater sound levels from vessels in San Francisco Bay. Median broadband (0.02 to 20 kilohertz) SELs were approximately 178 dB SEL for crude oil tankers and oil/chemical tankers. This noise level is substantially below the fish interim guidelines for acoustic thresholds for onset of injury to hearing for fish two grams or larger (187 dB SEL) and smaller fish (183 dB). The zone of influence associated with the 150 dB fish disturbance guideline was calculated as extending approximately 0.5 mile from the vessel based on simplified sound transmission loss assumptions (practical spreading loss model).

Similar to the discussion under Impact 4.4-2 for this same topic, the disturbance zone of influence would be expected to be substantially less within San Pablo Bay due to the bathymetric difference between shallow habitat and the deeper navigation channel and the substantial noise attenuation expected from the channel side-slopes. Because the Rodeo Facility is located near Carquinez Strait, noise effects from Project vessels during docking maneuvers or departure from the Marine Terminal have the potential to disturb native aquatic species and migration corridor where the bay narrows near the outlet of the Strait. The noise effects would be temporary, the docking or departure maneuvers would be of short duration, and the daily increase in number of vessel calls would be small (from 1-2 under baseline to 2 during full operation). Therefore, noise effects to other native species, migration corridors, or nursery habitat would be expected to be less than significant.

It should be noted that with implementation of Mitigation Measure BIO-1a, which requires vessel operators to comply to the maximum extent feasible (based on safety considerations) with the voluntary 10 knot VSR program in the offshore Traffic Separation Scheme shipping channels and precautionary area, as safety allows. This measure would contribute to reduced noise levels of ships bound to or from the Marine Terminal. Once inside San Francisco Bay, ships already operate at reduced speeds, at 8 to 10 knots compared to 15 knots allowed under the guidelines of the Harbor

Committee Safety Plan for San Francisco (Harbor Safety Committee 2020). Although not required to mitigate noise impacts resulting from the Project, implementation of Mitigation Measure BIO-1a has the potential to further lower noise effects, thereby incrementally reducing the footprint of noise effects to special-status species from Project operations in the bay and offshore.

Mitigation Measure: **None required**

Effects of Vessel Sediment Resuspension and Deposition

Transitional and Operations and Maintenance*: Less Than Significant, No Mitigation Proposed*

As noted under Impact 4.4-3 for this same topic, deep-draft vessel propeller-induced water velocities, and resulting shear velocities, would be expected to scour navigation channels, and sediment resuspended would create turbidity plumes. Turbidity would be expected to be more pronounced during docking maneuvers and departures. Potential sediment resuspension and turbidity effects would be expected to be less pronounced for shallower draft ATBs and escort tugs. Propeller-induced turbidity would be expected to be temporary with rapid decay to background levels due to mixing by currents and tides. Depending on local environmental conditions (e.g., wind chop, waves, seasonal river outflows) that affect ambient turbidity levels in San Pablo Bay, vessel propeller-induced turbidity may or may not be detectable. While the increase in numbers of vessels calling at the Rodeo Facility would incrementally increase (from 1 to up to 2 trips per day), the turbidity plumes would be temporary and of short duration.

Based on the above considerations, the Project would not be expected to substantially interfere with the movement of any native resident or migratory fish or wildlife species, established migratory corridors or impede the use of native wildlife nursery sites. .

Mitigation Measure: **None required**

IMPACT 4.4-9

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

Effects of Vessel or Cargo Offloading Accidental Oil Spills

Transitional Phase, Operations and Maintenance: Significant and Unavoidable

Similar to the discussion under Impact 4.4-4, the potential to interfere with movement of resident or migratory fish or wildlife, wildlife corridors or use of native wildlife sites would depend on the type and amount of oil spilled and success of containment measures in the event of a large spill. Substantial adverse impacts have the potential to occur in the event of a significant spill during the Project transitional phase (petroleum) or during Project operation (feedstock vegetable oils, animal fats, or processed biodiesel fuel, renewable fuel gas, renewable components for blending with other transportation fuels). Potential effects of a large spill would result in significant impacts to native aquatic species and nursery habitat. Additionally, vegetable or animal fat spills may result in oxygen depletion in shallow waters and mortality of invertebrates and fish and have long persistence.

Mitigation Measures HAZ-1 and HAZ-2, and Mitigation Measure BIO-3 will increase Facility and OSRO coordinated response to on-water equipment deployment and recovery to protect sensitive shoreline and nearshore resources. With implementation of these measures, Phillips 66 will increase emergency preparedness, and further reduce the potential for significant effects from an accidental

spill or discharge. Because the risk of a significant spill cannot be eliminated, potential impacts on special-status species and their habitat would remain significant and unavoidable.

Mitigation Measure BIO-6: Implement Mitigation Measures BIO-2 (HAZ-1 and HAZ-2) and BIO-3

IMPACT 4.4-10

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

Effects of Introductions of Non-Indigenous Invasive Species

Transitional / Operations and Maintenance: Significant and Unavoidable

Introductions of non-indigenous species can reduce native species diversity, food for native species, and has the potential to substantially alter habitat quality of aquatic nursery areas. As discussed in Section 4.4-5 on this same topic, compliance with these regulatory requirements is essential to achieve the purpose "to move the State expeditiously toward elimination of the discharge of nonindigenous species into the waters of the State or into waters that may impact the waters of the State, based on the best available technology economically achievable." Compliance with California's ballast water management and biofouling management regulations were relatively high during 2018 and 2019, 99.8 percent of arrivals being compliant with ballast water management requirements and 96 percent compliant with biofouling management requirements within 60 days of failing a first inspection (CSLC 2021).

Compliance with the regulatory requirements is necessary to achieve the objectives of preventing the introduction of NIS to US ports and harbors. With implementation of the Mitigation Measures BIO-4a and 4b, which address assurance of vessel regulatory compliance, the risk of new invasive nonindigenous species introductions from vessels calling at the Marine Terminal would be reduced, but remain significant.

Because the risk of new species introductions from vessel calls at the Marine Terminal cannot be fully prevented, potential impacts on special-status species and their habitat would remain significant and unavoidable.

Mitigation Measure BIO-7: Implement Mitigation Measures BIO-2 (HAZ-1 and HAZ-2) and BIO-3

IMPACT 4.4-11

f. Would the Project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional or state habitat conservation plan?

Transitional *Phase, Operations and Maintenance: Less than Significant Impact with Mitigation*

The Project area is identified in the San Francisco Bay Plan (BCDC 2021) as designated for Water-Related Industry Priority Use. San Francisco Bay Plan policies require tidal marshes and tidal flats to be conserved to the fullest possible extent. The Conservation Element of the Contra Costa County General Plan (2010) provides policies to protect the County's natural resources and their uses. Two designated refuges occur within San Pablo Bay and offshore shipping lanes transit two national marine sanctuaries.

Mitigation Measures BIO-1 to BIO-4, which also require implementation of Mitigation Measures HAZ-1 and HAZ-2, would ensure that the tidal marshes and tidal flats within San Pablo Bay and the greater San Francisco estuary are protected to the maximum extent feasible from accidental harm or habitat degradation during the Project's transitional phase, and future operations and maintenance. Therefore, the effects of the Project on local, regional, state and federal conservation plans would be less than significant to the extent feasible.

Mitigation Measure BIO-8: Implement Mitigation Measures BIO-1 to BIO-4

Table 4.4-7. List of Special-Status Species (other than Marine Mammals) with Potential to Occur within the Vicinity of the Rodeo Refinery

Common Name Scientific Name	Listing Status	General Habitat Conditions	Potential to Occur
Invertebrates			
Federal or State Threatened and Endangered Species			
Conservancy fairy shrimp Branchinecta conservatio	FE Critical Habitat designated	Found in large, cool-water vernal pools with moderately turbid water. Eight populations currently known, including a population in Solano County, which is present along the northeastern coast of San Pablo Bay.	Moderate potential to occur in vernal pool habitat. Critical habitat for this species is approximately 19 miles NE of the Rodeo Refinery.
Black abalone Haliotis cracherodii	FE Critical Habitat designated	Range from about Point Arena, California to Bahia Tortugas and Isla Guadalupe, Mexico. Live on rocky substrates with crevices and varied relief in intertidal and shallow vegetated subtidal reefs (to about 18 feet deep) along the coast. Rare north of San Francisco. Critical habitat ranges from mean higher high water line to water depth of 19.7 feet within designated sections of coastline and offshore islands, including in the Project region: Del Mar Landing Ecological Reserve in Sonoma County to Point Bonita in Marin County; South of San Francisco Bay in San Francisco County to Natural Bridges State Beach in Santa Cruz County; Farallon Islands; and Año Nuevo Island.	Potential to occur rocky intertidal and shallow subtidal coastal habitat. Low numbers during 2019 survey at Golden Gate National Recreation Area. None detected during 2015 survey at Farallon Islands.
Callippe silverspot butterfly *Speyeria callippe callippe*	FE	Uses *Viola* plants located in grasslands bordering San Francisco Bay. Since 1988, populations have been recorded in San Mateo County, Alameda County, Sonoma County, and in the hills between Vallejo and Cordelia.	Moderate potential to occur; limited suitable habitat present.
California freshwater shrimp *Syncaris pacifica*	FE/SE	Found in small, coastal streams with low elevation and low-gradient, including streams flowing southward into northern San Pablo Bay.	High potential to occur toward the northern San Pablo Bay.

Common Name Scientific Name	Listing Status	General Habitat Conditions	Potential to Occur
Other Special-Status Species			
Obscure bumble bee *Bombus caliginosus*	SA	Typically found at lower elevations near the coast.	Moderate potential to occur. One CNDDB occurrence in the 3-mile buffer.
Crotch bumble bee *Bombus crotchii*	SCE	Found in grasslands and shrublands primarily within southern and central California, with occasional records in the northern portion of the state.	Low potential to occur within grassland habitats.
Western bumble bee *Bombus occidentalis*	SCE	Historically found in much of California, now mostly restricted to high meadows or coastal environments with ample floral resources.	High potential to occur within suitable habitat; several CNDDB occurrences in the 3-mile buffer.
Monarch butterfly–California overwintering population *Danaus plexippus*	FC/SA (Wintering sites)	Eucalyptus groves used as winter roost sites.	Moderate potential to occur at wintering roosts within the Rodeo Vicinity at Point Pinole Regional Park. Potential wintering habitat (*Eucalyptus* grove) present within the Rodeo Refinery although no roosting observed. Two CNDDB occurrences in the 3-mile buffer.
Pinto abalone *Haliotis kamtschatkana*	SSC	Range from Southeast Alaska to Baja California, Mexico. Live on rocky substrates in intertidal and subtidal vegetated reefs to water depths of 120 feet.	Low abundance, potential to occur suitable coastal rocky habitat.
Curved-foot hygrotus diving beetle *Hygrotus curvipes*	SA	Occurs in seasonal pools and small in-stream pools in the Sacramento-San Joaquin Delta. Typically occurs in association with alkali vegetation.	Moderate potential to occur within suitable habitat; marginal suitable habitat present in seasonally ponded areas.
Fish			
Fish - Federal or State Threatened and Endangered Species			
Green sturgeon – southern DPS *Acipenser medirostris*	FT/SSC Critical Habitat designated	Anadromous; this DPS, inhabits near-shore marine waters from Mexico to Bering Sea; may occur in bays and estuaries along the West Coast. Requires deep (> 15 feet depth) freshwater pools with suitable substrate for spawning and holding, estuarine rearing habitat, and unobstructed migratory corridors. Spawns in the Sacramento River, early life stages Sacramento-San Joaquin Delta. Critical habitat in the Project vicinity includes San Pablo, San Francisco, and Suisun Bays; Sacramento-San Joaquin Delta; and coastal waters north from Monterey Bay at depths of 60 fathoms.	Known to occur in San Pablo, San Francisco, and Suisun bays (adult migration, juvenile rearing/migration).

Common Name Scientific Name	Listing Status	General Habitat Conditions	Potential to Occur
Tidewater goby *Eucyclogobius newberryi*	FE Critical Habitat designated	Discontinuously distributed along most of the California Coast. Inhabits fresh water–saltwater interface such as the upper edge of tidal bays and in coastal lagoons. Critical habitat includes Rodeo Lagoon in the Project region upcoast from San Francisco Bay.	Known to occur. Nearest known population is in Rodeo lagoon on the coast of Marin County.
Delta smelt *Hypomesus transpacificus*	FT/SE Critical Habitat designated	Endemic to the upper San Francisco Bay–Delta Estuary. Spawning habitat in the region includes Sacramento River and tributaries of northern Suisun Bay (December/January to June/July). Critical habitat includes areas of all water and all submerged lands below ordinary high water and the entire water column eastward of Carquinez Strait, including Suisun Bay (including the contiguous Grizzly and Honker Bays); the length of Goodyear, Suisun, Cutoff, First Mallard (Spring Branch), and Montezuma sloughs; and the existing contiguous waters contained within the Delta.	Low potential to occur. Low to no delta smelt caught during surveys past 5 years (summer townet, spring Kodiak and fall midwater trawls, and Enhanced Delta Smelt Monitoring Program). Potential to spawn in San Pablo Bay in wet years.
Coho salmon – Central California Coast ESU *Oncorhynchus kisutch*	FE Critical Habitat designated	Anadromous; this ESU includes all includes naturally spawned coho salmon originating from rivers south of Punta Gorda, California to and including Aptos Creek, as well as such coho salmon originating from tributaries to San Francisco Bay. The ESU includes the San Francisco Bay estuary and its tributaries (except for the Sacramento-San Joaquin rivers). Critical habitat for the Central California Coast ESU encompasses accessible reaches of all rivers (including estuarine areas and tributaries) between Punta Gorda and the San Lorenzo River (inclusive) in California, including two streams entering central San Francisco Bay: Arroyo Corte Madera Del Presidio and Corte Madera Creek.	Not expected to occur. Extirpated from all rivers flowing into San Francisco Bay.
Steelhead – Central California Coast DPS *Oncorhynchus mykiss*	FT Critical Habitat designated	Anadromous; requires clear, cool water and clean gravels for spawning. Occurs in coastal basins from the Russian River in Sonoma County south to Soquel Creek in Santa Cruz County. Requires, cool, clean streams with deep pools and moderate velocities and substrate for spawning, adequate cover/shelter, and unobstructed migratory corridors.	Known to occur in San Pablo and San Francisco Bays (adult migration and juvenile rearing/migration).

Common Name Scientific Name	Listing Status	General Habitat Conditions	Potential to Occur
		Critical habitat in the Project vicinity includes drainages to San Francisco and San Pablo Bays (excludes Suisun Bay), and the estuarine habitat of these bays.	
Steelhead—Central Valley DPS *Oncorhynchus mykiss*	FT Critical Habitat designated	Anadromous; this DPS includes naturally spawned anadromous steelhead originating below natural and manmade impassable barriers from the Sacramento and San Joaquin Rivers and their tributaries; excludes fish originating from San Francisco and San Pablo Bays and their tributaries (i.e., California Central Coast DPS). Requires, cool, clean streams with deep pools and moderate velocities and substrate for spawning, adequate cover/shelter, and unobstructed migratory corridors. Critical habitat in the Project vicinity includes San Pablo and San Francisco Bays (excludes South Bay).	Known to occur in San Pablo and San Francisco Bays (adult migration and juvenile rearing/migration).
Chinook salmon—Central Valley spring-run ESU *Oncorhynchus tshawytscha*	FT/ST Critical Habitat designated	Anadromous; this ESU includes naturally spawned spring-run Chinook salmon originating from the Sacramento River and its tributaries, and spring-run Chinook salmon from the Feather River Hatchery Spring-run Chinook Program. Requires, cool streams with deep pools and moderate velocities and clean gravels for spawning. The lower reaches of rivers and deltas provide rearing habitat for fry. Spawning and rearing is restricted to a few tributaries to the Sacramento River basin. Critical habitat in the Project vicinity includes estuarine habitat in San Francisco and San Pablo Bays and the Sacramento River delta.	Known to occur in San Pablo and San Francisco Bays (adult migration and juvenile rearing/migration).
Chinook salmon—Sacramento River winter run ESU *Oncorhynchus tshawytscha*	FE/SE Critical Habitat designated	Anadromous; requires clean, cold water with gravel beds for spawning, and unobstructed passage. Spawning of the Sacramento River winter run ESU is restricted to the Sacramento River. Critical habitat in the Project vicinity includes all waters in San Pablo Bay and San Francisco Bay to the Golden Gate Bridge.	Known to occur in San Pablo and San Francisco Bays and coastal waters (adult migration and juvenile rearing/migration).
Longfin smelt *Spirinchus thaleichthys*	FC/ST	Anadromous; found in open waters of estuaries. A portion of population out migrates to ocean March to January with adults returning to San Francisco Estuary in December to May. Spawns	Known to occur. Larvae, juveniles, and adults documented in San Pablo and San Francisco Bays. Several CNDDB occurrences within the 3-mile buffer.

Common Name Scientific Name	Listing Status	General Habitat Conditions	Potential to Occur
		in freshwater streams in lower San Joaquin and Sacramento Rivers and upper Suisun Bay from January/February to April. Larval nursery habitat consists of brackish estuarine waters. Juvenile and subadult rearing habitat in San Francisco, San Pablo and Suisun Bays.	
Other Special-Status Species			
White sturgeon *Acipenser transmontanus*	SSC	Anadromous; found in Pacific Ocean from Alaska to Baja California, spawn in a few large rivers from the Sacramento-San Joaquin system northward. Migrate upriver to spawn when water quality and flow conditions are favorable (generally late February to early June). Typically spawn in deep water over gravel substrates or in rocky pools with swift currents. Feed on benthic prey in shallow water. Adults migrate back to the estuary after spawning.	Known to occur in San Pablo and San Francisco Bays (juvenile rearing/migration, adult migration).
Western river lamprey *Lampetra ayresii*	SSC	Anadromous; found in Pacific Ocean and spawns in coastal streams from Alaska to San Francisco Bay. Habitat requirements have not been studied in California; presumably, like other lampreys (see Pacific lamprey). They have been recorded from the Sacramento-San Joaquin Delta while migrating, tributaries to Sacramento and San Joaquin Rivers, tributaries to San Pablo (Napa River, Sonoma Creek) and San Francisco Bay (Alameda Creek). Migrates through San Francisco-San Pablo Bay.	Known to occur in San Pablo and San Francisco Bays (migration).
Pacific lamprey *Lampetra tridentata*	SSC	Anadromous; occurs in Pacific Ocean and spawns in coastal streams from Alaska to Baja California. Adults build nests gravel and cobble substrates with cover vegetation and woody debris. Ammocoetes larvae require sandy to silty backwaters or stream edges in which to bury themselves. Water quality and cool temperatures that do not exceed 77 degrees Fahrenheit. Occupy habitat in larger streams entering San Francisco and San Pablo bays; spawning adults and ammocoetes larvae also occur edges of channels in the Sacramento-San Joaquin Delta. Migrates through San Francisco-San Pablo Bay to and from upriver spawning habitat and ocean.	Known to occur in San Pablo and San Francisco Bays (migration).

Common Name Scientific Name	Listing Status	General Habitat Conditions	Potential to Occur
Chinook salmon —- Central Valley fall / late fall-run ESU *Oncorhynchus tshawytscha*	SSC	Anadromous; general habitat requirements are similar to those of other "ocean type" Chinook salmon that minimize their time in fresh water. Requires clean, cold water and gravel beds for spawning. Peak spawning time is typically in October-November but can continue through December and into January. Fall ESU spawn in the Sacramento and San Joaquin River watersheds, as far upstream as the first impassible dams. Late fall-run ESU occur in tributary streams to the Sacramento River, most spawn in the main river. Fall run juveniles rear in fresh water for 1-7 months; late fall run juveniles rear 7-13 months.	Known to occur in San Pablo and San Francisco Bays (adult migration, juvenile rearing/migration).
Sacramento splittail *Pogonichthys macrolepidotus*	SSC	Endemic to California's Central Valley; requires brackish water rearing habitats in the San Francisco Estuary and on floodplain and river-edge spawning habitats immediately above the estuary. Most migrate between these two habitat types on a near annual basis. Spawn on submerged annual vegetation in flooded areas or along the edges of rising rivers. Juveniles rear in estuarine marshes. Two genetically distinct populations, one centered in San Pablo Bay around the Petaluma and Napa Rivers, and the other centered around the Delta and Suisun Marsh.	Known to occur in San Pablo Bay and marshes (rearing).
Amphibians			
Federal or State Threatened and Endangered Species			
California tiger salamander – central California DPS *Ambystoma californiense*	FT/ST/WL Critical Habitat designated	Grassland, oak savanna, and low elevation foothills with vernal pools, seasonal ponds, or slow streams or semi-permanent waters that are necessary for breeding. Utilizes burrows made by squirrels and other burrowing mammals for refuge. Currently found in the Bay Area in Sacramento, Contra Costa, and Alameda counties.	Moderate potential to occur in vernal pool habitat. Critical habitat for this species is approximately 25 miles NE of the Rodeo Refinery.
Foothill yellow-legged frog *Rana boylii*	SE/SSC	Rocky streams and rivers with open, sunny banks in woodland, chaparral, and forest.	Low potential to occur. Limited to no suitable habitat present. One historical CNDDB occurrence in the 3-mile buffer along Pinole Creek.
California red-legged frog *Rana draytonii*	FT/SSC Critical Habitat designated	Breeds in stock ponds, pools, and slow-moving streams with emergent vegetation; adjacent upland habitats are often used outside the breeding season.	Moderate potential to occur. Marginal suitable habitat present. Several CNDDB records present, mostly associated with Rodeo Creek, Refugio Creek, Telephone Creek, and Pinole Creek. The

Common Name Scientific Name	Listing Status	General Habitat Conditions	Potential to Occur
			closest CNDDB record is 1-mile from the Rodeo Refinery along Rodeo Creek. Critical habitat for this species is approximately 4 miles SE of Rodeo Refinery.
Reptiles			
Federal or State Threatened and Endangered Species			
Green sea turtle – east Pacific DPS *Chelonia mydas*	FT Critical Habitat designated	Commonly occur from southern California to northwestern Mexico; have been sighted as far north as southern Alaska. They are herbivores, eating mostly seaweed, seagrasses, and algae.	Low potential to occur. Critical habitat for this species includes coastal waters of Puerto Rico.
Leatherback sea turtle *Dermochelys coriacea*	FE/SCE Critical Habitat designated	Pelagic (open ocean), also forages in coastal waters. Critical habitat in the Project vicinity occurs offshore San Francisco Bay; extends north to Point Arena and south to Point Arguello. Includes waters from the ocean surface to a maximum depth of 262 feet and other waters within the US Exclusive Economic Zone.	Known to occur. Recent sightings off San Francisco Bay.
Alameda whipsnake *Masticophis lateralis euryxanthus*	FT/ST Critical Habitat designated	Chaparral, northern coastal sage scrub and coastal sage most commonly on east, south, southeast, and southwest facing slopes. Hibernate in rock outcrops and crevices and mammal burrows, typically from November to March. Currently found in the inner coast range of California, primarily Contra Costa and Alameda Counties.	High potential to occur. Critical habitat for this species is approximately 2.5 miles SE of the Rodeo Refinery. Three CNDDB occurrences within the designated critical habitat.
Giant garter snake *Thamnophis gigas*	FT/ST	Agricultural wetlands, irrigation and drainage canals, sloughs, ponds, small lakes, low gradient streams, and adjacent uplands in the Central Valley. Hibernate from October through April. Relies heavily on rice fields in the Sacramento Valley and managed marsh areas in State and Federal Wildlife Refuges.	Moderate potential to occur. Limited suitable habitat present.
Other Special-Status Species			
Western pond turtle *Actinemys marmorata*	SSC	Freshwater ponds, slow streams, and other slow moving waterways with abundant vegetation and rocky or muddy bottoms. Logs, rocks, exposed vegetation and banks are required for basking. May enter brackish water and even seawater.	Moderate potential to occur. Potential habitat present in freshwater ponds with emergent aquatic vegetation. Several CNDDB records in the 3-mile buffer along Rodeo Creek.

Common Name Scientific Name	Listing Status	General Habitat Conditions	Potential to Occur
Birds			
Federal or State Threatened and Endangered Species			
Tricolored blackbird *Agelaius tricolor*	ST/SSC (nesting colony)	Cattail or tule marshes; forages in field and farms. Breeds in large freshwater marshes.	Low potential to occur within the Rodeo Refinery area; moderate potential to occur in freshwater marshes in undeveloped areas.
Marbled murrelet *Brachyramphus marmoratus*	FT/SE (nesting) Critical Habitat designated	Majority of life spent at sea. In California, this species typically nests in coastal redwood and Douglas-fir forests, usually within a few miles of the ocean. Suitable forests are characterized by large trees, multiple canopy layers, and moderate to high canopy closure.	Low potential to occur within the Rodeo Refinery area; moderate potential to occur in suitable habitat present. Critical habitat for this species is approximately 2 miles S of the Rodeo Refinery.
Cackling (=Aleutian Canada) goose (wintering) *Branta hutchinsii leucopareia*	FD/WL	Breeds in the Aleutian Islands and winters on inland lakes, rivers and marshes; coastal salt marshes, bays, and tidal flats; brackish ponds, pastures and agricultural fields, and in grassy fields in urban and suburban parks with close proximity to water along the Pacific coast to central California. Current winter range includes areas of the San Francisco and San Pablo Bays and western Contra Costa and Alameda counties.	Moderate potential to occur. Potential suitable wintering habitat present. One CNDDB occurrence in the 3-mile buffer.
Swainson's hawk *Buteo swainsoni*	ST (nesting)	Breeds in wide variety of open habitats, ranging from prairie and shrub steppe to desert and agricultural systems. Often nests peripheral to riparian systems. May use lone trees in agricultural fields or pastures or urban areas if adjacent to suitable foraging habitat.	High potential to occur. Suitable nesting and foraging habitat exists in undeveloped areas.
Western snowy plover *Charadrius nivosus nivosus*	FT/SSC Critical Habitat designated	Nests on sandy beaches and back bay sand flats adjacent to tidal waters of the Pacific Ocean.	Remote potential to occur; no suitable habitat present. Critical habitat for this species is approximately 10 miles northwest of the Rodeo Refinery.
Western yellow-billed cuckoo *Coccyzus americanus occidentalis*	FT/SE Critical Habitat designated	Forages and nests in a variety of riparian habitats. Cottonwood and willow trees and shrubs are important for foraging, with large blocks of riparian habitats with dense understory foliage important for breeding and nesting. Along the Sacramento River, home ranges include 25 acres or more of riparian habitat. Overwinters in South America.	Low potential to occur; limited suitable habitat present. Critical habitat for this species is in the northern Central Valley.
Bald eagle *Haliaeetus leucocephalus*	FD/SE/FP	Winter throughout most of California at lakes, reservoirs, rivers, and some rangeland and coastal wetlands. Breed in mountain and foothill forests and	Moderate potential to occur (foraging); low potential to occur (nesting). Marginal suitable roosting and foraging habitat present.

Common Name Scientific Name	Listing Status	General Habitat Conditions	Potential to Occur
		woodlands near reservoirs, rivers, and lakes.	
California black rail *Laterallus jamaicensis coturniculus*	ST/FP	Nests and forages in the shallow margins of salt, brackish, or freshwater marsh and tidal emergent wetlands typically with high densities of short vegetation predominantly pickleweed, gumplant, and rushes (*Juncus* spp.).	Moderate potential to occur; potential coastal marginal habitat present. Three CNDDB occurrences in the 3-mile buffer.
Short-tailed albatross *Phoebastria (=Diomedea) albatrus*	FE/SSC	Forages for squid, fish, eggs of flying fish, shrimp and other crustaceans on open ocean waters and islands. Occasionally sighted off the Pacific Coast of the United States. Nests on a few islands in the western Pacific Ocean.	Remote potential to occur. This is a coastal species not likely to be found in San Pablo Bay.
Bank swallow *Riparia riparia*	ST (nesting)	Nests in lowland areas with alluvial soils along rivers, streams, lakes, and ocean coasts. Forages mostly over water in riparian areas, various aquatic habitats, and wet croplands.	Low potential to occur. No record of breeding in Contra Costa County and limited suitable habitat present.
California Ridgeway's rail *Rallus obsoletus obsoletus*	FE/SE/FP	Salty and brackish tidal marshes in San Francisco Bay typically dominated by pickleweed and Pacific cordgrass (*Spartina foliosa*). A small population has been documented in the San Pablo Bay and Suisun Marsh area.	High potential to occur within coastal areas of the Rodeo Vicinity. Two CNDDB occurrences in the 3-mile buffer on Mare Island.
California least tern *Sterna antillarum browni*	FE/SE/FP	Breeds and nests on beaches, mudflats, and sand dunes kept free of vegetation by the tide, usually near shallow estuaries and lagoons with access to open ocean. Found in the San Francisco Bay and other areas along the California Coast. Migrates south to Mexico in the winter.	High potential to occur within suitable shoreline habitat.
Northern spotted owl *Strix occidentalis caurina* Critical Habitat designated	FT/ST	Prefers forested habitat with a multi-layered, multi-species canopy with moderate to high canopy closure, typically in older forests. An abundance of large, dead wood on the ground and open space within and below the upper canopy is important for foraging, and large snags and a high incidence of trees with large cavities are structural requirements for nesting and roosting.	Remote potential to occur. No suitable habitat within the Rodeo Refinery area or the vicinity. Critical habitat for this species is approximately 19 miles W of the Rodeo Refinery.
Other Special-Status Species			
Cooper's hawk *Accipiter cooperii*	WL (nesting)	Nests in dense coniferous, deciduous, and mixed wood forests, usually with tall trees with openings or edge habitats. Nests in crotches in deciduous trees or conifers on horizontal branches usually in second-growth conifer stands or deciduous riparian areas near streams.	Moderate potential to occur; marginal nesting habitat present. One CNDDB record in the 3-mile buffer.

Common Name Scientific Name	Listing Status	General Habitat Conditions	Potential to Occur
Great egret *Ardea alba*	SA (nesting colony)	Forages for fishes, amphibians and invertebrates in open freshwater and saline wetlands, lake margins, shallow coastal lagoons and estuaries, and rivers. Nests in large trees and shrubs near water.	High potential to occur; observed foraging in the San Pablo Bay in 1994 (Contra Costa County 1994). Marginal nesting habitat present.
Great blue heron *Ardea herodias*	SA (nesting colony)	Nests in colonies in trees or shrubs near lakes and estuaries and forages in calm, fresh waters, slow-moving rivers, emergent wetlands, and shallow coastal bays.	High potential to occur; observed foraging in the San Pablo Bay in 1994 (two CNDDB occurrences). Marginal nesting habitat present.
Short-eared owl *Asio flammeus*	SSC (nesting)	Nests typically on inland and coastal prairies, marshes, and farmland. Forages in fresh water and salt marshes and swamps, lowland meadows, prairies, and irrigated fields.	Moderate potential to occur. Potential marginal habitat present.
Northern harrier *Circus hudsonius*	SSC (nesting)	Often nests in marshes and sometimes dry, open fields. Forages in marshes, fields, and prairies in both wet and dry habitats where there is open terrain and good ground cover.	High potential to occur. Current year-round range includes the coast of California. Potential suitable habitat exists present.
Yellow rail *Coturnicops noveboracensis*	SSC	Nests in densely vegetated sedge marshes or meadows with moist soil or shallow standing water. In winter, inhabits wet meadows and coastal tidal marshes.	Low potential to occur. Small numbers winter regularly in a few coastal California marshes and the Suisun Marsh region.
Snowy egret *Egretta thula*	SA (nesting colony)	Marshes, swamps, ponds, lakes, and coastal tidal flats and shores. Seeks out sheltered bays in coastal areas. Nests in colonies in trees, usually near water, and sometimes on or near the ground in marshy areas.	High potential to occur. Observed foraging within the RS and the RV (Contra Costa County 1994). No nesting habitat present.
California horned lark *Eremophila alpestris actia*	WL	Found on barren ground with short grass or scattered bushes. Nests in hollows or depressions on the ground often next to a grass tuft or a clod of earth or manure.	Moderate potential to occur. Suitable habitat present.
American peregrine falcon *Falco peregrinus anatum*	FD/SD/FP (nesting)	Open country, cliffs, and sometimes cities. Often near water, especially along coastal areas. Nesting habitat includes a variety of locations from cliffs, tall buildings, bridges, or occasionally the nests of other birds.	High potential to occur; suitable nesting and foraging habitat present. One CNDDB occurrence (non-specific area) in the 3-mile buffer.
Saltmarsh common yellowthroat *Geothlypis trichas sinuosa*	SSC	Endemic to California. Breeds primarily in brackish marsh, woody swamp, freshwater marsh, and salt marsh with a high percent cover of tules (*Scirpus* spp.), Peppergrass (*leipidium latifolium*), and *Juncus* spp.	Moderate potential to occur; marginal coastal marsh habitat present. One CNDDB occurrence in the 3-mile buffer.
Loggerhead shrike *Lanius ludovicianus*	SSC (nesting)	Breeds mainly in shrublands or open woodlands in chaparral, oak woodland, or oak savannah with grass cover and some areas of bare ground. Require	Moderate potential to occur. Potential suitable foraging habitat and marginal nesting habitat present.

Common Name Scientific Name	Listing Status	General Habitat Conditions	Potential to Occur
		tall shrubs, trees, or anthropogenic features for hunting perches; open areas of short grasses or bare ground for hunting, an large shrubs or trees for nest placement.	
San Pablo song sparrow *Melospiza melodia samuelis*	SSC	Year-round resident endemic to tidal marshes of San Pablo Bay. Dense vegetation is required for nesting sites, song perches, and as cover from predators. Some exposed ground for foraging is also required.	Moderate potential to occur; marginal habitat present in coastal areas. Three CNDDB occurrences in the 3-mile buffer.
Suisun song sparrow *Melospiza melodia maxillaris*	SSC	Year-round resident endemic to tidal marshes in the Suisun Marsh from the Carquinez Straight east to the confluence of the Sacramento and San Joaquin Rivers. Dense vegetation is required for nesting sites, song perches, and as cover from predators. Some exposed ground for foraging is also required. Associated primarily with tidal channels, especially in marshes where pickleweed (*Salicornia virginica*) dominates and gumplant (*Grindelia sp.*) lines the channels.	Moderate potential to occur; marginal habitat present in coastal areas. Two CNDDB occurrences in the 3-mile buffer.
Osprey *Pandion haliaetus*	WL (nesting)	Found near water, either fresh or salt, where large numbers of fish are present. Nesting typically occurs on top of a large snag usually near water.	Occurs. Multiple CNDDB records, including several nests, in the 3-mile buffer
Double-crested cormorant *Phalacrocorax auritus*	WL (nesting colony)	Nests along coast on isolated islands or in trees or cliffs along lake margins or on bridges. High adaptable and may be found in almost any aquatic habitat, including coasts, bays, lakes, ponds, rivers, and estuaries.	Occurs. Observed foraging in Safety Basins within the Rodeo Refinery area (Contra Costa County 1994), however limited potential nesting habitat present.
Yellow-headed blackbird *Xanthocephalus xanthocephalus*	SSC (nesting)	Breeding requires marshes with tall emergent vegetation such as tules or cattails (*Typha* spp.), usually in open areas and edges over deeper water. Nesting occurs in low vegetation over water.	Low potential to occur; potential marginal habitat present. Historic breeding sites included the town of Pinole and Contra Costa and Alameda Counties. One historical CNDDB occurrence in the 3-mile buffer.
Mammals			
Federal or State Threatened and Endangered Species			
Salt marsh harvest mouse *Reithrodontomys raviventris*	FE/SE/FP	Saline emergent marshlands with dense pickleweed. Moves into adjoining grasslands during the highest winter tides and during winter. Restricted to the salt and brackish marshes of San Francisco, San Pablo, and Suisun Bay areas.	Moderate potential to occur. Potential marginal habitat in saltwater marshes. Two CNDDB occurrences in the 3-mile buffer on Mare Island.

Common Name Scientific Name	Listing Status	General Habitat Conditions	Potential to Occur
Other Special-Status Species			
Pallid bat *Antrozous pallidus*	SSC	Found in a number of habitats including coniferous forests, non-coniferous woodlands, brushy terrain, rocky canyons, open farmland, and desert. Typically roosts in crevices, buildings, caves, tree hollows, and mines. Hibernate close to or within their summer roosts.	Moderate potential to occur. Potential roosting habitat in buildings and other man-made structures within the Rodeo Refinery and vicinity, but these are high-disturbance areas that likely deter use. One historical CNDDB occurrence in the 3-mile buffer.
Townsend's big-eared bat *Corynorhinus townsendi*	SSC	Distribution correlated largely with caves, mines, tunnels, buildings, or other human-made structures for roosting. Often roosts in the open, sensitive to disturbance. Prefers mesic habitats for foraging.	Moderate potential to occur. Potential roosting habitat in buildings and other man-made structures present in lower-disturbance areas.
Western mastiff bat *Eumops perotis californicus*	SSC	Foraging habitat includes dry desert washes, flood plants, chaparral, coastal sage scrub, oak woodland, open ponderosa pine forest, grassland, and agricultural areas. However, requires significant rock features (crevices) nearby for roosting. Occasionally roosts in cracks in buildings.	Low potential to occur; limited potential roosting habitat present.
San Pablo vole *Microtus californicus sanpabloensis*	SSC	Grassy habitats associated with salt-marshes.	Moderate potential to occur; marginal habitat present.
San Francisco dusky-footed woodrat *Neotoma fuscipes annectens*	SSC	Found in forests of coast live oak and native riparian vegetation with thick underbrush and cover. Terrestrial stick houses are built around logs or trees in cool and shady areas.	Moderate potential to occur; limited suitable habitat present. One CNDDB occurrence in the 3-mile buffer along Pinole Creek.
Salt marsh wandering shrew *Sorex vagrans halicoetes*	SSC	Salt marsh habitat that is inundated daily by tidal waters with abundant pickleweed and driftwood that provides dense cover. Foraging occurs under litter and debris found on moist ground.	Moderate potential to occur; marginal habitat present in coastal areas.
Suisun shrew *Sorex ornatus sinuosus*	SSC	Salt and brackish marshes around the northern margins of San Pablo and Suisun Bays with low, dense vegetation. Driftwood and other surface litter above the average high-tide line is likely an important feature for nesting and foraging.	Moderate potential to occur; marginal habitat present in coastal areas in the 3-mile buffer. One CNDDB occurrence in the 3-mile buffer.

Common Name Scientific Name	Listing Status	General Habitat Conditions	Potential to Occur
Plants			
Federal or State Threatened and Endangered Species			
Pallid manzanita *Arctostaphylos pallida*	FT/SE/ CRPR 1B.1	Grows on rocky ridges and outcrops in maritime chaparral or coastal scrub habitats in the East Bay hills or Alameda and Contra Costa Counties.	Low potential to occur; no suitable habitat present.
Sonoma sunshine *Blennosperma bakeri*	FE/SE/CR PR 1B.1	Occurs in vernal pools and wet grasslands in Sonoma valley and the Santa Rosa Plain.	Low potential to occur; no suitable habitat present.
Tiburon mariposa lily *Calochortus tiburonensis*	FT/ST/CR PR 1B.1	Grows on serpentine and serpentine-derived soil in open areas on the northern end of the Tiburon peninsula.	Low potential to occur; no suitable habitat present.
Tiburon paintbrush *Castilleja affinis* var. *neglecta*	FE/ST/CR PR 1B.2	Occurs in serpentine bunch grass communities, typically on open, rocky west or north-facing slopes between 75 and 400 meters above sea level.	Low potential to occur; no suitable habitat present.
Soft bird's beak *Chloropyron molle* ssp. *molle*	FE/SR/ CRPR 1B.2 Critical Habitat designated	Valley and foothill grassland, alkali grassland, chenopod scrub; heavy clay soils of either coastal salt or brackish marshes of northern San Francisco Bay.	Low potential to occur; no suitable habitat present. CNDDB occurrences at Point Pinole and Benicia Sensitive Resource Area, approximately 6 and 4 miles from the Rodeo Refinery. Critical habitat for this species is approximately 3 miles NE of the refinery.
Contra Costa goldfields *Lasthenia conjugens*	FE/CRPR 1B.1 Critical Habitat designated	Vernal pool, swales, moist flats, and depressions typically in grassland matrices at elevations up to 100 meters above sea level. Limited to the San Francisco Bay area.	High potential to occur in grassland habitats. Critical habitat for this species includes grasslands immediately surrounding the Carbon Plant at the south end of the Rodeo Refinery. One CNDDB occurrence in the 3-mile buffer within designated critical habitat.
Mason's lilaeopsis *Lilaeopsis masonii*	SR/CRPR 1B.1	Freshwater and brackish marshes, and other estuary habitats. Occurs in Sacramento-San Joaquin River Delta and shores of the San Francisco Bay.	High potential to occur in estuarine and other brackish water habitats. Three CNDDB occurrences in the 3-mile buffer.
Sebastopol meadowfoam *Limnanthes vinculans*	FE/SE/CR PR 1B.1	Occurs in wet meadows and around vernal pools at elevations below 300 meters above sea level. Only known to occur in Sonoma County.	Low potential to occur; no suitable habitat present.
Marin western flax *Hesperolinon congestum*	FT/ST/ CRPR 1B.1	Occurs in serpentine soils, especially in dry native bunch grasses, chaparral or other grasslands at elevations less than 200 meters above sea level.	Low potential to occur. Calflora has no reports from Contra Costa County.
Santa Cruz tarplant *Holocarpha macradenia*	FT/SE/ CRPR 1B.1 Critical Habitat designated	Occurs in coastal terrace prairie habitat along California's central coast, mostly in Santa Cruz and Contra Costa Counties.	Moderate potential to occur in grassland habitats. Several CNDDB occurrences within the 3-mile buffer. Critical habitat for this species is approximately 7 miles southwest of the refinery.

Common Name Scientific Name	Listing Status	General Habitat Conditions	Potential to Occur
White-rayed pentachaeta *Pentachaeta bellidiflora*	FE/SE/CRPR 1B.1	Grows in serpentine soils. Historically known in Marin, San Francisco, and San Mateo counties; currently restricted to San Mateo County.	Low potential to occur; no known current populations in the area.
California seablite *Suaeda californica*	FE/CRPR 1B.1	Historically found in tidally influenced salt marsh and estuarine habitat in and around San Francisco Bay. Currently restricted to upper tidal salt marshes of Morro Bay and estuarine creak mouths near Cayucos and reintroduced populations in San Francisco Bay.	Low potential to occur; no known populations in the area.
Tiburon jewelflower *Streptanthus niger*	FE/SE/CRPR 1B.1	Occurs on shallow, rocky, serpentine soils on the southwest facing slopes at elevations of approximately 350 feet on the Tiburon Peninsula in Marin County.	Low potential to occur; no known current populations in the area.
Two-fork clover *Trifolium amoenum*	FE/CRPR 1B.1	Occurs in variety of habitats including low, wet swales, grasslands, and grassy hillsides, typically in moist, heavy soils below 100 meters above sea level.	Low potential to occur; no suitable habitat present.
Other Special-Status Species			
Bent flowered fiddleneck *Amsinkia lunaris*	CRPR 1B.2	Coastal bluff scrub, cismontane woodland, and valley and foothill grassland at elevations from 3 to 500 meters above sea level.	Moderate potential to occur in grassland habitats. Several CNDDB occurrences in the 3-mile buffer.
Bolander's water-hemlock *Cicuta maculata* var. *bolanderi*	CRPR 2B.1	Coastal marshes and swamps; fresh or brackish water.	Moderate potential to occur; marginal habitat present. Nearest CNDDB location is approximately 4 miles east of Project.
Western leatherwood *Dirca occidentalis*	CRPR 1B.2	Endemic to the San Francisco Bay area. Grows on moist and shaded slopes in coniferous, pine, and mixed evergreen forests; foothill woodland, chaparral, and wetland-riparian communities.	Moderate potential to occur in chaparral and scrub habitats. Several CNDDB occurrences in the 3-mile buffer.
Jepson's coyote-thistle *Eryngium jepsonii*	CRPR 1B.2	Moist, clay soils at elevations under 500 meters above sea level.	Moderate potential to occur. Several CNDDB occurrences in the 3-mile buffer.
Fragrant fritillary *Fritillaria liliacea*	CRPR 1B.2	Found in heavy soils on open hillsides near the coast in coastal prairie, bluff scrub, and coastal scrub habitats. Historically occurred in counties around the San Francisco Bay area.	Low potential to occur. One historical CNDDB occurrence in the 3-mile buffer.
Diablo helianthella *Helianthella castanea*	CRPR 1B.2	Endemic to San Francisco Bay area. Grows in open, grassy habitats in woodlands, chaparral, and coastal scrub, transition zone between woodland and chaparral, primarily below 2,400 feet above sea level.	High potential to occur. Multiple CNDDB occurrences in the 3-mile buffer.

Common Name Scientific Name	Listing Status	General Habitat Conditions	Potential to Occur
Carquinez goldenbush *Isocoma arguta*	CRPR 1B.1	Endemic to California. Has been found only in Solano and Contra Costa counties in alkali flats and other mineral rich soils in Suisun marsh.	Low potential to occur. One CNDDB occurrence in the 3-mile buffer.
Delta tule pea *Lathyrus jepsonii* var. *jepsonii*	CRPR 1B.2	Natural edges of estuarine marshes, sloughs, and rivers in the Sacramento – San Joaquin Delta.	Moderate potential to occur in estuarine/marsh habitat along the immediate coastline. Several CNDDB occurrences in the 3-mile buffer.
Marin knotweed *Polygonum marinense*	CRPR 3.1	Salt marsh and other wet coastal habitat. Endemic to California; known only in a few locations north and east of San Francisco Bay.	Low potential to occur. One CNDDB occurrence in the 3-mile buffer.
Chaparral ragwort *Senecio aphanactis*	CRPR 2B.2	Dry coastal areas, particularly alkali flats. The closest known population is in Alameda County.	Low potential to occur. One historical CNDDB occurrence in the 3-mile buffer.
Suisun Marsh aster *Symphyotrichum lentum*	CRPR 1B.2	Brackish and freshwater marsh habitats. Endemic to California.	Low potential to occur in marsh habitat. One CNDDB occurrence mapped in South Hampton Marsh northwest of Benicia.

Sources: Bennett et al. 2005; California Estuary Portal 2021b; CDFW 2021a; CNDDB 2021a, 2021b; eCFR 2021; Merz et al. 2013; Moyle et al. 2015; NMFS 2012; USFWS 2021a; Wang 2010.

Status Codes

Federal Listing Status:

FC = Candidate for Federal Listing
FD = Federally Delisted
FE = Listed as Endangered by the Federal Government
FT = Listed as Threatened by the Federal Government

State Listing Status:

SCE = Candidate State Endangered
SD = State Delisted
SE = State Listed as Endangered
ST = State Listed as Threatened
FP = California Fully Protected
SR = State Listed as Rare
SSC = CDFW Species of Special Concern
WL = CDFW Watch List
SA = Tracked by the CNDDB as a "Special Animal"

California Rare Plant Rank (CRPR):

CRPR 1B = Plants rare, threatened, or endangered in California and elsewhere
CRPR 2B = Plants rare, threatened, or endangered in California, but more common elsewhere
CRPR 3 = A review list; plants about which more information is needed

Threat Ranks

0.1: Seriously threatened in California (over 80% of occurrences threatened/high degree and immediacy of threat)
0.2: Moderately threatened in California (20-80% occurrences threatened/moderate degree and immediacy of threat)
0.3: Not very threatened in California (<20% of occurrences threatened/low degree and immediacy of threat or no current threats known

Table 4.4-8. Marine Mammals with Potential to Occur in the San Francisco/San Pablo Bay Area and nearby Coastal Waters

Common Name ***Scientific Name***	**Listing Status**	**General Habitat**	**Stock Abundance Minimum to Estimated (CV)**	**Potential to Occur**
Cetaceans (Whales and Dolphins)				
Federal or State Threatened and Endangered Species				
Blue whale *Balaenoptera musculus*	FE	Eastern North Pacific Stock. Range from Gulf of Alaska to the eastern tropical Pacific. US West Coast is an important feeding area in summer and fall, most of stock believed to migrate south to spend winter-spring in high productivity areas. A Biologically Important Area (Feeding) overlaps with predicted high density (primarily July-November) in the Gulf of Farallones offshore San Francisco Bay.	1,050-1,496 (0.44)	Known to occur. Documented within and outside the Traffic Separation Scheme shipping lanes offshore San Francisco Bay 2001-2021.
Fin whale *Balaenoptera physalus*	FE	The second-largest species of whale. World-wide range, primarily deep, offshore waters in temperate to polar latitudes, including offshore waters centered about 100 nmi west of the Gulf of the Farallones and Monterey Bay. They also may occur in nearshore waters. California, Oregon, and Washington stock present year-round off California, their distribution appears to shift somewhat seasonally.	8,127-9,029 (0.12)	Known to occur. Documented in proximity to Traffic Separation Scheme shipping lanes offshore San Francisco Bay during 2004, 2013-2021.
Gray Whale *Eschrichtius robustus* Eastern No. Pacific DPS	FDR	Eastern North Pacific stock. Inhabit shallow coastal waters from Mexico to the Bering Sea. Migratory, spending summer in the Bering Sea and Aleutians, winters in shallow waters of Mexico.	25,849-26,960 (0.05)	Known to occur. Documented within and outside the vessel Traffic Separation Scheme shipping lanes offshore San Francisco Bay, and within main approach channel and Golden Gate area of San Francisco Bay 2013-2021; earlier records intermittent.

Common Name ***Scientific Name***	**Listing Status**	**General Habitat**	**Stock Abundance Minimum to Estimated (CV)**	**Potential to Occur**
Humpback whale *Megaptera novaeangliae* Central American DPS Mexico DPS	FE FT Critical Habitat Designated	California/Oregon/Washington stock. Includes Central American DPS and Mexico DPS. Abundant and worldwide in various habitat types. Migrate along the West Coast between their tropical winter ranges and high-latitude summer ranges. Critical Habitat in the region includes an identified biological important area, which includes waters off of the southern edge of Mendocino County, and Sonoma, Marin, San Francisco, San Mateo, Santa Cruz, and Monterey counties at water depths from 49 to 12,139 feet MLLW and extends to the Golden Gate Bridge, San Francisco Bay.	2,784-2,900 (0.05)	Known to occur. Documented within and outside the vessel Traffic Separation Scheme shipping lanes offshore San Francisco Bay, and within main approach channel and Golden Gate area of San Francisco Bay during 2000-2021.
Killer whale *Orcinus orca* Southern Resident DPS	FE Critical Habitat Designated	Eastern N Pacific Offshore stock. Worldwide, principally in cold waters. Southern Resident population members occasionally spotted off central California. Critical habitat in the region includes marine waters between the 20- and 656.2-ft depth contours from the US international border with Canada south to Point Sur, California.	276-300 (0.1)	Known to occur. Documented in proximity in vessel Traffic Separation Scheme shipping lanes offshore San Francisco Bay. Not sighted past five years. Recorded in area between 2004 and 2014.
Sperm whale *Physeter macrocephalus*	FE	California/Oregon/Washington stock. Worldwide distribution in deep oceans.	1,270-1,997 (0.57)	Low potential to occur. Recorded in 2001 and 2005 deep water offshore of shipping lanes.
Other Special-Status Species – Protected Under the Marine Mammal Protection Act				
Minke whale *Balaenoptera acutorostrata*		California/Oregon/Washington stock. Widely distributed worldwide in coastal and open oceans.	369-636 (0.72)	Known to occur. Documented in proximity to vessel Traffic Separation Scheme shipping lanes offshore San Francisco Bay 2013-2018, intermittent 2001-2011.
Common bottlenose dolphin *Tursiops truncatus*		California Coastal stock. California coastal bottlenose dolphins are found within about one kilometer of shore. Commonly found in bays and harbors.	346-453 (0.06)	Known to occur. Documented in proximity to vessel Traffic Separation Scheme shipping lanes offshore San Francisco Bay during past two years. Documented within main approach channel and Golden Gate area of San Francisco Bay 2012-2015.

Common Name ***Scientific Name***	**Listing Status**	**General Habitat**	**Stock Abundance Minimum to Estimated (CV)**	**Potential to Occur**
Harbor porpoise *Phocoena phocoena*		San Francisco—Russian River stock. Common in small groups along coasts and into inland waters, typically in small groups. Re-established in San Francisco Bay since 2008 and now common.	4,801-7,524 (0.57)	Known to occur. Documented precautionary area and main shipping channel offshore San Francisco Bay, and within Central San Francisco Bay during 2005-2019.
Dall's porpoise *Phocoenoides dalli*		California/Oregon/Washington stock. Off the US west coast, they are commonly seen in shelf, slope and offshore waters.	17,954-25,750 (0.45)	Known to occur. Documented in proximity to vessel Traffic Separation Scheme shipping lanes offshore San Francisco Bay 2001-2014.
Northern right whale dolphin *Lissodelphis borealis*		California/Oregon/Washington stock. Off the US west coast, they have been seen primarily in shelf and slope waters	18,608- 26,556 (0.44)	Known to occur. Documented in proximity to vessel Traffic Separation Scheme shipping lanes offshore San Francisco Bay intermittent 2001-2013, 2018-2019.
Pacific white-sided dolphin *Lagenorhynchus obliquidens*		California/Oregon/Washington stock. Off the US west coast, Pacific white-sided dolphins occur primarily in shelf and slope waters.	21,195- 26,814 (0.28)	Known to occur. Documented in proximity to vessel Traffic Separation Scheme shipping lanes offshore San Francisco Bay during 2001-2014.
Risso's dolphin *Grampus griseus*		California/Oregon/Washington stock. Off the US West coast, Risso's dolphins are commonly seen on the shelf in the Southern California Bight and in slope and offshore waters of California, Oregon and Washington.	4,817-6,336 (0.32)	Known to occur. Documented in proximity to vessel Traffic Separation Scheme shipping lanes offshore San Francisco Bay during 2001-2011, 2013-2021.
Common dolphin, short-beaked *Delphinus delphis*		California/Oregon/Washington stock. Widespread, but on the West Coast primarily associated with the California Current. Abundant off California year-round from near shore to about 300 miles offshore	839,325-969,861 (0.17)	Known to occur. Documented in proximity to vessel Traffic Separation Scheme shipping lanes offshore San Francisco Bay in 2015.
Striped Dolphin *Stenella coeruleoalba*		California/Oregon/Washington Stock. World-wide distribution. Striped dolphins are commonly encountered in warm offshore waters of California, and a few sightings have been made off Oregon.	24,782-29,211 (0.20)	Low potential to occur. Not recorded near Traffic Separation Scheme shipping lanes offshore San Francisco Bay. Found year-round in offshore waters of the Greater Farallones National Marine Sanctuary.

Common Name *Scientific Name*	Listing Status	General Habitat	Stock Abundance Minimum to Estimated (CV)	Potential to Occur
Pinnipeds (Seals and Sea Lions)				
Federal or State Threatened and Endangered Species				
Guadalupe fur seal Arctocephalus townsendi	FT/ST/FP	Mexico stock. Waters off southern California and Mexico, breeding grounds on Guadalupe Island, Mexico.	31,019- 34,187 (n/a)	Low potential to occur. Occasionally seen at the Farallon Islands in the last decade.
Steller sea lion – Eastern DPS *Eumetopias jubatus*	FDR	The eastern DPS includes animals born east of Cape Suckling, Alaska, and includes sea lions living in southeast Alaska, British Columbia, Washington, Oregon, and California. Haul out and rookery sites usually consist of beaches (gravel, rocky, or sand), ledges, and rocky reefs.	The minimum total count estimate of pups and non-pups for the US portion of the eastern stock of Steller sea lions (excluding Canada) is 43,201 (32,510 non-pups plus 10,691 pups)	Known to occur. Breed at Farallon and Año Nuevo Islands. Females and juveniles are year-round residents, while males migrate north and offshore during the non-breeding season from the end of August through May.
Other Special-Status Species				
California sea lion *Zalophus californianus*		US stock. The Pacific Temperate population includes breeding rookeries at Channel Islands in southern California and the Coronados Islands just south of US/Mexico border. Animals from the Pacific Temperate population range into Canadian and Baja California waters. Haul out on rocks, beaches and on human structures (e.g., buoys, boat docks).	233,515- 257,606 (n/a)	High potential to occur. Observed low numbers in San Pablo and Suisun Bays during fish monitoring surveys. Haul out on buoys, docks (primarily Pier 39 area) and rocks in San Francisco Bay. Major coastal haul outs at Farallon Islands and along the Point Reyes Headlands.
Harbor seal *Phoca vitulina richardii*		California stock. Inhabit nearshore coastal and estuarine areas from Baja California, Mexico, to the Pribilof Islands in Alaska. The California stock ranges from Mexico to the Oregon-California border. Haul outs include rocky shores, beaches and intertidal sandbars.	27,348- 30,968 (n/a)	High potential to occur. Year round residents in region. Observed San Pablo and Suisun Bays during fish monitoring. Major haul out sites include Castro Rocks, Alcatraz and Yerba Buena Islands, and Pier 39 in San Francisco Bay. Most abundant marine mammal in San Francisco Bay. Closest breeding rookeries Point Bonita, Bolinas Lagoon and Duxbury Reef. Largest colony in state at Point Reyes National Seashore. Haul out Farallon and Año Nuevo Islands.

Common Name ***Scientific Name***	**Listing Status**	**General Habitat**	**Stock Abundance Minimum to Estimated (CV)**	**Potential to Occur**
Northern elephant seal *Mirounga angustirostris*		California Breeding stock. They are usually underwater, diving to depths of about 1,000 to 2,500 feet (330–800 m) for 20- to 30-minute intervals with only short breaks at the surface. They are rarely seen out at sea for this reason. While on land, they prefer sandy beaches.	81,368- 179,000 (n/a)	Known to occur. Breed at Farallon and Año Nuevo Islands and Point Reyes National Seashore. Breeding season ranges from December to mid-March; present year-round. Females and immatures return to the haul-out sites to molt during the spring, and males molt during the summer.
Northern fur seal *Callorhinus ursinus*		California stock. Breed primarily at offshore islands, including at the Farallon Islands. Spend approximately 90 percent of time at sea, typically in areas of upwelling along the continental slopes and over seamount; the remainder of its life is spent on or near rookery islands or haul outs.	7,524- 14,050 (n/a)	Known to occur. Breed at Farallon Islands; remain at sea during their non-breeding season (September through May).
Family Mustelidae (Sea Otter)				
Southern sea otter *Enhydra lutris nereis*	FT/FP	*Southern (California) stock*. Most sea otters reside within 1.2 ml of shore. Southern sea otters forage in both rocky and soft-sediment communities in water depths generally 82 feet or less, although some animals use deeper waters.	3,272-3,272 (n/a)	Low potential to occur. Males rarely sighted in San Francisco Bay. Currently range from Pigeon Point (San Mateo County) to Point Conception. Females, dependent pups, and territorial males mainly occur near center of range in rocky, kelp-dominated areas.

Sources: Calambokidis et al. 2015; Caretta et al. 2014; CDFW 2021a; Codde and Allen 2020; Danos et al. 2020; Dubois and Danos 2017; Dubois and Harris 2015; Golden Gate Cetacean Research 2021; Greater Farallones National Marine Sanctuary 2021; National Park Service 2021; NMFS 2020a, 2021a; Point Blue Conservation Science 2021; Stern et al. 2017; USFWS 2017, 2015

Notes: DPS – distinct population segment

Status Codes

Federal Categories (US Fish and Wildlife Service):

FDR = Federally Delisted (Recovered)
FE = Listed as Endangered by the Federal Government
FT = Listed as Threatened by the Federal Government

State Categories (California Department of Fish and Wildlife):

SE = Listed as Endangered by the State of California
ST = Listed as Threatened by the State of California
FP = Fully Protected Species

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§226.207 Critical habitat for leatherback turtles (*Dermochelys coriacea*);

§226.207 Critical habitat for green turtle;

§ 226.210 Central California Coast Coho Salmon (*Oncorhynchus kisutch*), Southern Oregon/Northern California Coasts Coho Salmon (*Oncorhynchus kisutch*);

§226.211 Critical habitat for Seven Evolutionarily Significant Units (ESUs) of Salmon (*Oncorhynchus* spp.) in California;

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4.5 Cultural Resources

4.5.1 Introduction

This section assesses the potential for the Project to result in significant impacts to cultural resources. Discussed are the physical and regulatory settings, the baseline for determining environmental impacts, the significance criteria used for determining environmental impacts, and potential impacts associated with the Project construction and demolition, the transitional phase, and operation and maintenance at the Rodeo Refinery. The Santa Maria Site is addressed to the extent information is available and at a qualitative level of discussion.

The Project also includes the Pipeline Sites—four regional pipelines serving the Santa Maria Site and the Rodeo Refinery. The Santa Maria Site is connected to the Rodeo Refinery by approximately 200 miles of subterranean pipeline, crossing San Luis Obispo, Santa Barbara, Kern, Kings, Fresno, Merced, Stanislaus, San Joaquin, Alameda, and Contra Costa Counties. Phillips 66 proposes to empty and clean the pipelines at existing maintenance access points and to decommission or sell them; they would not be excavated as part of this Project. No physical changes would occur. Therefore, the Pipeline Sites are not further addressed in this section.

The cultural resources considered in this section are historic-period architectural, structural, and archeological resources. Tribal cultural resources are addressed in Section 4.14, *Tribal Cultural Resources*, and paleontological resources are considered in Section 4.7, *Geology and Soils*.

4.5.2 Environmental Setting

4.5.2.1 Regional Setting

Rodeo Refinery

The Rodeo Refinery is in unincorporated northwestern Contra Costa County, near the community of Rodeo and adjoining the shore of San Pablo Bay. The San Pablo Bay region is within the Coast Ranges Geomorphic Province of California, which probably began to form 2 to 3 million years ago. A system of northwest/southeast-trending longitudinal mountain ranges and valleys, such as nearby Pinole Ridge and Refugio Valley, controlled by faulting and folding, characterizes the Coast Ranges. Prior to development, native vegetation in the vicinity of the refinery included coastal salt marsh, annual grassland, coastal scrub, and riparian woodlands. Development and agriculture have substantially modified the landscape, but extensive grasslands and woodlands still occur in the region, particularly in the hilly areas.

The area was inhabited by humans for approximately 10,000 years before the arrival of the first Europeans (see Section 4.14, *Tribal Cultural Resources*, for a description of the area's prehistoric context). The following historic context is summarized from Contra Costa County (2013). The first European expedition into the East Bay occurred in 1772 when Pedro Fages and his party explored the east shore of San Francisco Bay up to San Pablo Bay, then traveling east along the south shore of the Carquinez Strait, and returning to the San Jose area through the Diablo and Livermore Valleys near Concord. The Fages expedition encountered five villages between the locations of the towns of Rodeo and Crockett.

Three years later, the ship San Carlos sailed through the Golden Gate, tasked with charting the bay. The ship's commander, Lieutenant Juan Manuel de Ayala, and his crew encountered many Ohlone (from the Contra Costa shore) and neighboring Coast Miwok villagers (from the Marin County shore). The natives recounted the earlier visit by Fages and provided food and gifts to the new arrivals. Between 1776 and 1797, the Spanish established three missions in the Bay Area (San Jose, Santa Clara, and San Francisco [Mission Dolores]) in their attempt to Christianize the Bay Area native people. The native population soon declined precipitously from the disease, famine, and mistreatment brought by the Europeans.

In 1821, Mexico won its independence from Spain, and most of present-day California south of Sonoma became part of the new country as Alta California. Historic settlement in the region began in earnest in 1823 when the Mexican government awarded large grants of land to wealthy and politically influential individuals willing to settle in what was still known as Alta California. In 1833 and 1834, the Mexican government secularized the Spanish missions, and many mission lands were also subsequently granted to individuals who established vast cattle-raising estates, or ranchos. The present-day site of the Rodeo Refinery was part of the Rancho El Pinole, which was granted in 1842 to Ygnacio Martinez, a retired commandant of the Presidio of San Francisco.

At the end of the Mexican War in 1848, all of Alta California was ceded to the US under the Treaty of Guadalupe Hidalgo. One condition of the treaty was that the US government would honor the Mexican rancho grants. Rancho El Pinole was passed to Martinez' children with a large portion, including the Rodeo area, going to his daughter Rafaela and her husband Dr. Samuel Tennent.

Patrick Tormey and his brother John bought several large tracts of the Rancho El Pinole from the Martinez heirs in the 1860s. Patrick's section included today's townsites of Rodeo, Oleum, and Selby. In 1890, the Union Stockyard Company bought a large parcel from Patrick Tormey with the intent of establishing a meat canning center in the area where Ygnacio Martinez had once held his yearly cattle roundups, or rodeos. The resulting establishment became known as Rodeo.

The success of the stockyards, slaughterhouse, and packing plants soon encouraged the establishment of other businesses catering to plant employees and their families. A year after the town's official founding, Rodeo had its own newspaper, and by 1894, it held its first local election. A fire department and other services soon followed. By 1895, the Union Stockyard Company went bankrupt, slowing the booming rate of growth in Rodeo. The Union Oil Company bought a nearby piece of land and a wharf from a lumber company in 1895, and in 1896 opened the first oil refinery in the East Bay. This area became known as "Oleum," abbreviated from the word "petroleum," and it provided an economic base for several nearby larger towns including Rodeo. Because this portion of Contra Costa County had become increasingly industrialized, the Southern Pacific Railroad added a regular stop in Rodeo to its local train schedule in 1898 (Rodeo Chamber of Commerce 2003).

The region grew slowly through the early 1900s, and a variety of industries flourished along the southeastern San Pablo Bay shoreline. As automobile traffic increased, a ferry was established between Rodeo and Vallejo and ran until the completion of the Carquinez Bridge in 1927. In the 1930s, the Lincoln Highway was completed, linking San Francisco and New York, and long-distance traffic drove through the center of Rodeo, leading to an increase in restaurants and service stations along the route (Rodeo Chamber of Commerce 2003).

Following the industrial and economic boom of the post-World War II years, the region gradually settled into the current pattern of small downtowns and bedroom communities interspersed with ongoing industrial activities. The completion of I-80 in 1958 routed long-distance traffic away from downtown Rodeo, and many of the restaurants, service stations, and other traveler-related enterprises closed down or relocated closer to the new freeway. While the explosives factory and shipyards in Pinole and Richmond eventually closed, the Rodeo Refinery has continued production even as it changed hands. In 1997, Union Oil Company of California (Unocal) sold its western US refining and marketing operations to Tosco Corporation, which was later acquired by Phillips Petroleum.

Santa Maria Site

This description of the cultural setting of the Santa Maria Site is summarized from the *Phillips 66 Rail Spur Extension and Crude Unloading Project Final EIR* (San Luis Obispo County 2015). The Santa Maria Site has been occupied by humans for at least 10,000 years. In historic times, the area was inhabited by the Obispeño Chumash, one of a group of linguistically related societies inhabiting the region between San Luis Obispo and northwestern Los Angeles County. Missionization devastated these populations,

and during the Mexican period (1821–1848) and the American period (post-1848), the area was dominated by European settlers.

The Santa Maria Site vicinity has been largely agricultural from the earliest settlements until the present, even as control passed from the Spanish to the Mexican government and then to the US government, and very little infrastructure that could constitute historic cultural resources was ever constructed. One exception is the railroad main line, which reached the Guadalupe area in 1985 and was completed by the Southern Pacific Railroad in 1900 as the Coast Line between Los Angeles and San Francisco.

4.5.2.2 Local Setting

Rodeo Refinery

The Rodeo Refinery has been continuously operating at its current location since it was originally built by Union Oil Company in 1896. It was the first major oil refinery in the Bay Area, and the original site occupied 22 acres and processed 1,600 bpd of crude oil. Currently, the Rodeo Refinery occupies approximately 1,600 acres and can be divided into three main areas. The section west of San Pablo Avenue includes the Marine Terminal, a railcar loading facility, crude oil and product storage, a hydrogen generating plant, a cogeneration steam/power plant, and support and administration buildings. Development in this area dates from 1940 to 1994. The section between San Pablo Avenue and I-80 contains most of the process, blending, and storage units and the Wastewater Treatment Plant. Construction in this area dates from 1940 to the present. These two sections, containing most of the active refinery infrastructure and units, make up the 495-acre Rodeo Site. The section of the Rodeo Refinery west of I-80 is mostly undeveloped open space but does include a small tank farm and the Carbon Plant that processes petroleum coke.

There have been no substantial recent developments within the Rodeo Refinery. Studies conducted at and near the Rodeo Refinery, including the *ConocoPhillips Rodeo Refinery Clean Fuels Expansion Project* (Contra Costa County 2006) and the *Phillips 66 Propane Recovery Project* (Contra Costa County 2013), indicated negative results within the areas of the Project component sites. In addition, the ground surface in these areas has been thoroughly graded, filled, and paved or built on during the various stages of development of the Rodeo Refinery.

A records search was conducted at the Northwest Information Center (NWIC) of the California Historical Resources Information System at Sonoma State University on September 6, 2012 (File No. 12-0246). The purpose of the records search was to (1) determine whether known cultural resources have been recorded within or adjacent to the Project site; (2) assess the likelihood for unrecorded cultural resources to be present based on historical references and the distribution of nearby sites; and (3) develop a context for the identification and evaluation of cultural resources. The records search included an examination of the following documents (note that the portion of the search involving prehistoric resources is described in Section 4.14, *Tribal Cultural Resources*):

- **NWIC-digitized base maps:** US Geological Survey [USGS] Mare Island and Benicia 7.5-minute topographic maps to identify recorded archaeological sites and studies within or adjacent to the Rodeo Refinery.
- **NWIC-digitized base maps:** USGS Mare Island and Benicia 7.5-minute topographic maps to identify recorded historic-period resources of the built environment (buildings, structures, and objects) within or adjacent to the Rodeo Refinery.
- **Resource Inventories**: California Inventory of Historical Resources, California Historical Landmarks, Historic Properties Directory Listing by City (through April 5, 2012).

- **Historic Maps:** An extensive online historic map collection with more than 300 maps and views of California and Contra Costa County is available at http://davidrumsey.com; historic USGS topographic quadrangles were downloaded from the USGS website at http://store.usgs.gov/.

Table 4.5-1 identifies eight cultural resources that have been recorded in the vicinity of the Rodeo Refinery property: one historic-era ranch; a historic segment of the Atchison, Topeka and Santa Fe Railroad; a historic segment of State Route 4 (John Muir Parkway); and five prehistoric shell mounds (see Section 4.14, *Tribal Cultural Resources*). None of the three historic resources is within, or in the immediate vicinity of, the Rodeo Refinery.

In addition to these recorded sites, the site of Oleum is listed in the State Historic Properties Directory. This resource, the first (c. 1895) oil refinery in Contra Costa County, was recorded for the Contra Costa County Historic Resources Inventory as a structure of historical significance, but it has not been evaluated for its eligibility for listing in the National Register of Historic Places (National Register) or the California Register of Historical Resources (California Register). The site of the Selby Smelter, located between Oleum and Crockett, is also listed in the Contra Costa County Historic Resources Inventory and State Historic Properties Directory, although the physical remains of the plant were demolished and removed in 1971.

The records search identified 40 reports that have been prepared to describe the results of cultural resources research. Seventeen are literature searches, Master's theses, or other "unmappable" studies that did not necessarily include physical inspections. The remaining 23 reports document the results of archaeological and/or historic architectural surveys, testing, or monitoring in or immediately adjacent to the Rodeo Refinery. Only four of those describe activities within the Rodeo Refinery that includes Project component sites, and all four reports yielded negative results.

Table 4.5-1. Identified Historic Cultural Resources Within or Adjacent to the Project Site

Primary Number	Trinomial	Age	Description	Comments	Location
P-07-000513	None	Historic: 1923	Barry Ranch Historic District including two groups of buildings about 0.25 mile apart	Modern buildings and structures co-mingled with historic ones; the district is not considered eligible for the National Register (Hill 1996a).	Adjacent to State Route 4, on southern edge of Refinery property
P-07-000514	CA-CCO-709H	Historic: 1895–1900	Atchison, Topeka and Santa Fe Railroad and associated telephone line	"…railroad right-of-way and infrastructure…have received numerous and continuous upgrades." Does not appear eligible for the National Register (Hill 1996b).	North of State Route 4, through southern portion of Refinery property
P-07-000518	CA-CCO-710H	Historic: 1951 (current road)	Highway 4	"Route 4 was originally a trail between Ygnacio Martinez's adobe [near Pinole] and his son's house, located in the City of Martinez"(Samuelson 1995).	Adjacent to southern boundary of Refinery property

Source: NWIC 2012

Santa Maria Site

The Santa Maria Site is located in southwestern San Luis Obispo County, immediately west of the community of Nipomo and south of the city of Arroyo Grande. As described in San Luis Obispo County (2015), the site is on the coastal plain at the eastern edge of the Oceano Dune complex within the South Coast Ranges physiographic province. The area has surficial deposits composed of recent sand dunes underlain by older Quartenary and possibly Pliocene deposits.

According to the analysis for a previous proposed project at the Santa Maria Site (San Luis Obispo County 2015), the Rodeo Site and its surroundings were completely undeveloped, except for the railroad and a network of dirt roads, through 1952. Only isolated single structures were located near the site. By 1965, little had changed except for the construction of the refinery, and although the surrounding area has experienced residential and commercial development since then, conditions in the immediate vicinity of the Santa Maria Site have remained relatively undeveloped.

4.5.2.3 Regulatory Setting

Federal Authority

Section 106 of the National Historic Preservation Act of 1966

Section 106 of the National Historic Preservation Act (Section 106) requires that every federal agency "take into account" how each of its undertakings could affect historic properties. Historic properties are districts, sites, buildings, structures, traditional cultural properties, and objects significant in American history, architecture, engineering, and culture that are eligible for or listed in the National Register. Historic properties are resources listed in or eligible for listing in the National Register (36 CFR Section 800.16(l)(1)). A property may be listed in the National Register if it meets criteria provided in the National Register regulations (36 CFR Section 60.4).

State Authority

California Environmental Quality Act

CEQA, as codified in PRC Sections 21000 et seq., is the principal statute governing the environmental review of projects in the state. CEQA requires lead agencies to determine whether a proposed project would have a significant effect on historical resources, including archaeological resources. The CEQA Guidelines define a historical resource as (1) a resource in the California Register; (2) a resource included in a local register of historical resources, as defined in PRC Section 5020.1(k) or identified as significant in a historical resource survey meeting the requirements of PRC Section 5024.1(g); or (3) any object, building, structure, site, area, place, record, or manuscript that 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 lead agency's determination is supported by substantial evidence in light of the whole record. Section 15064.5 of CEQA assigns special importance to human remains and specifies procedures to be followed when Native American remains are discovered.

If a lead agency determines that an archaeological site is a historical resource, the provisions of PRC Section 21084.1 and CEQA Guidelines Section 15064.5 would apply. If an archaeological site does not meet the CEQA Guidelines criteria for a historical resource, then the site may meet the threshold of PRC Section 21083 regarding unique archaeological resources. A unique archaeological resource is "an

archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

- Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.
- Has a special and particular quality such as being the oldest of its type or the best available example of its type.
- Is directly associated with a scientifically recognized important prehistoric or historic event or person" (PRC Section 21083.2 [g]).

CEQA Guidelines note that if a resource is neither a unique archaeological resource nor a historical resource, the effects of the project on that resource shall not be considered a significant effect on the environment (CEQA Guidelines Section 15064[c][4]).

California Register of Historical Resources

The California Register 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" (PRC Section 5024.1[a]). Criteria eligibility to the California Register are based on National Register criteria (PRC Section 5024.1[b]). Certain resources are determined by the statute to be automatically included in the California Register, including California properties formally determined eligible for, or listed in the National Register.

For a resource to meet the criteria for listing in the California Register, it must satisfy all of the following three provisions:

- The resource meets one or more of the following four criteria of significance (PRC Section 5024.1[c] and CEQA Guidelines 15064.5):
- The resource "is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;"
- the resource "is associated with the lives of persons important in our past;"
- the resource "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;" or
- the resource "has yielded, or may be likely to yield information important in prehistory or history" (this criterion applies primarily to archaeological sites).
- The resource retains sufficient integrity to be recognizable as a historical resource and to convey its significance; and
- It is 50 years old or older (except where it can be demonstrated that sufficient time has passed to understand the historical importance of the resource).

California Public Resources Code

In addition to the definition of "unique archaeological resources" in PRC Section 21083.2, the sections of the California Public Resource Code applicable to the Project follow:

- PRC Title 14, Section 5097.5: any unauthorized removal or destruction of archaeological, paleontological resources on sites located on public lands is a misdemeanor.

- PRC Title 14, Section 5097.99: prohibits obtaining or possessing Native American artifacts or human remains taken from a grave or cairn; sets penalties.

California Health and Safety Code

The Project is also subject to the provisions of the California Health and Safety Code with respect to the discovery of human remains. Health and Safety Code Section 7050.5 states: "Every person who knowingly mutilates or disinters, wantonly disturbs, or willfully removes any human remains in or from any location other than a dedicated cemetery without authority of law is guilty of a misdemeanor, except as provided in Section 5097.99 of the Public Resources Code." The measures outlined in Section 7050.5 of the Health and Safety Code and Section 5097.98 of the PRC are considered standard mitigation measures implemented in the event of an accidental discovery of human remains during excavation activities.

Local Authority

Contra Costa County General Plan

The Open Space Element of the Contra Costa County General Plan (2010) provides a general overview of cultural resources in the county and includes an archaeological sensitivity map for planning purposes. The Rodeo Site is in an area of this map described as "Largely urbanized areas and publicly owned lands excluded from archaeological sensitivity survey. However, there are also significant archaeological resources within this area." The Contra Costa County General Plan describes a historic resources inventory compiled by the county in 1976 and revised in 1989; its findings are described in Section 2.5.2.2.

The general plan also contains goals and policies related to the protection of cultural resources. The goals and policies that could be applicable to the proposed Project follow:

- **Goal 9-31:** To identify and preserve important archaeological and historic resources within the county.
- **Policy 9-32:** Areas that have identifiable and important archaeological or historic significance shall be preserved for such uses, preferably in public ownership.
- **Policy 9-33:** Buildings or structures that have visual merit and historic value shall be protected.

San Luis Obispo County Coastal Zone Land Use Ordinance

The CZLUO includes ordinance requirements for the protection of known cultural resources and implementation of mitigation measures to minimize potential impacts to known and unknown resources. In addition to San Luis Obispo County General Plan and ordinance requirements, Coastal Plan Policies include policies for the protection of cultural resources consistent with the requirements of the California Coastal Act (1976).

4.5.3 Significance Criteria

Based on CEQA Guidelines Section 15064.5 and CEQA Guidelines Appendix G, a project would cause adverse impacts to cultural resources if it would:

a. Cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines Section 15064.5;

b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5;

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

4.5.4 CEQA Baseline

Baseline conditions reflect the 2019 operation and maintenance of the Rodeo Refinery and Santa Maria Site as petroleum refineries, including operation and maintenance activities. The baseline setting also includes the applicable regulatory framework to protect environmental resources, which are described above.

4.5.5 Approach to Analysis

According to the CEQA Guidelines Section 15064.5(a)(3), in general, a resource shall be considered "historically significant" if the resource meets the criteria for listing on the California Register of Historic Resources (PRC Section 5024.1; CCR Title 14, Section 4852). This section also provides standards for determining what constitutes a "substantial adverse change" that must be considered a significant impact on historical resources.

In addition, a resource included on a local register of historical resources, as defined by PRC Section 5020.1(k) or identified as significant in a historical resource survey meeting the requirements of PRC Section 5024.1(g), shall be presumed to be historically or culturally significant.

4.5.6 Discussion of No Cultural Resources Impacts

Continuing operation and maintenance of the Rodeo Refinery does not involve any new activities or ground disturbance that could affect cultural resources. Therefore, operation and maintenance impacts associated with the Rodeo Refinery are not further addressed, and the focus of analysis is on construction of new facilities and demolition impacts.

The transitional phase of the Project would not involve activities that could affect cultural resources above that identified for construction/demolition impacts. Therefore, the transitional phase is not further addressed.

Review and comparison of the setting circumstances and proposed Project characteristics with the significance criteria stated above, clearly show that no impacts would be associated with criteria a-c related to operation and maintenance activities. The following discusses the reasoning supporting this conclusion:

a. Cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines Section 15064.5;

b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5;

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

Continuing operation and maintenance of the Rodeo Refinery does not involve any new activities or ground disturbance that could affect cultural resources.

Therefore, operation and maintenance impacts associated with the Rodeo Refinery would have no impact. The focus of analysis is on construction of new facilities and demolition impacts. The transitional phase of the Project would not involve activities that could affect cultural resources above that identified for construction/demolition impacts. Therefore, the transitional phase is not further addressed.

4.5.7 Direct and Indirect Impacts of the Proposed Project

Direct impacts would result from land modification directly and immediately caused by the construction, operation, or maintenance of a facility. Indirect impacts also would occur as a result of a specific project, but would not result from intentional ground disturbance. Common indirect impacts would include erosion, vibration, unauthorized artifact collecting, and vandalism. The proposed Project would entail ground disturbance during construction and demolition activities at the Rodeo Refinery and Santa Maria Site.

Table 4.5-2 presents a summary of the potential cultural resources impacts, as well as significance determinations for each impact.

Table 4.5-2. Summary of Impacts

Impact	Significance Determination		
	LTS	LTSM	SU
Impact 4.5-1. Would the proposed project cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5?			
Rodeo Refinery and Santa Maria Site			
Construction/Demolition, Transitional Phase [a]	✓		
Impact 4.5-2. Would the proposed project cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5?			
Rodeo Refinery and Santa Maria Site			
Construction/Demolition, Transitional Phase [a]		✓	
Impact 4.5-3. Would the proposed project disturb any human remains, including those interred outside of formal cemeteries?			
Rodeo Refinery and Santa Maria Site			
Construction/Demolition, Transitional Phase [a]		✓	

Notes: LTS = Less than significant, no mitigation proposed
LTSM = Less-than-significant impact with mitigation
SU = Significant and unavoidable

[a] Transitional phase applies only to Rodeo Refinery

IMPACT 4.5-1

a. Would the proposed project cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5?

Construction/Demolition: Less Than Significant, No Mitigation Proposed

Rodeo Refinery

Construction of the new facilities and demolition and modification of existing facilities would result in physical changes at the Rodeo Refinery, including the Carbon Plant. Implementation of the Project would include grading, excavation, and pipe installation activities. Project activities would occur within the existing refinery boundary in areas that have been substantially graded and filled as part of the facility's development. In addition, equipment and buildings have been replaced or modified throughout years to keep the facility properly operating.

As described in the regulatory setting discussion of this section, a historical resource under CEQA can include historic-era archaeological sites as well as buildings, structures, objects, and other built-environment resources that meet the eligibility requirements for the California Register or other criteria included in Section 15064.5. Although the Rodeo Refinery has existed and operated at the same location for more than 100 years, its current physical structures do not convey any association with the facility's historic past, do not display any discernible architectural style or distinction, and do not possess any inherent information that would not be readily available from engineering plans and building records (Contra Costa County 2013). In addition, background research did not reveal any connection to significant events or persons in California's history. Therefore, development of the Project at the Rodeo Refinery would not directly or indirectly result in a change to any historic-period architectural resources that meet the definition of a historical resource found in Section 15064.5. Potential impacts would be less than significant.

Santa Maria Site

Demolition activities at the Santa Maria Site would include minor grading and excavation activities. The Santa Maria Site is older than 50 years, having been developed starting in the 1950s. Site development at that time included extensive grading and filling (to level the site) and excavation (for piping and foundations). As with the Rodeo Refinery, the buildings and equipment at the Santa Maria Site have been modified over the decades. A cultural resources assessment for a previous project concluded that the Santa Maria Site is not eligible for listing in the California Register (San Luis Obispo County 2015). Therefore, development of the Project at the Santa Maria Site would not directly or indirectly result in a change to any historic-period architectural resources that meet the definition of a historical resource found in Section 15064.5. Therefore, potential impacts related to a substantial adverse change in the significance of a historical resource would be less than significant.

Mitigation Measure: **None Required**

IMPACT 4.5-2

b. Would the proposed project cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5?

Construction/Demolition: Less-than-Significant Impact with Mitigation

Rodeo Refinery

One prehistoric archaeological site (CA-CCO-257) has been previously recorded at the Rodeo Refinery, located near the shoreline in the western part of the Rodeo Site. As described in detail in Section 4.14, *Tribal Cultural Resources*, the site was largely removed and built upon during the 1909 development of the original Union Oil Company Refinery. Although CA-CCO-257 has not been evaluated for its eligibility for the California Register, any remaining intact deposits could potentially meet the CEQA definition of a historical resource. Additionally, construction activities could unearth previously unknown archaeological sites that are not visible on the ground surface. Although this scenario is unlikely given the extreme disturbance of the native soils on the Rodeo Site (including the placement of up to 15 feet of imported fill), pockets of intact buried cultural remains could still exist. Therefore, the Project could cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5. With implementation of Mitigation Measure CUL-1, potential impacts would be reduced to less than significant.

Santa Maria Site

A records search of the Santa Maria Site identified one prehistoric archeological resource in the immediate area. That resource, CA-SLO-1190, consists of marine shell, lithic artifacts and debitage, fire affected rock (i.e., hearth stones), and midden soil; it is located at the undeveloped eastern edge of the Santa Maria Site; only a small portion of the resource is within the Santa Maria Site (San Luis Obispo County 2015). Demolition activities could potentially affect this known resource. Consultation was conducted with the NAHC for a previous project that was never implemented; however, that analysis resulted in a series of measures to protect the resource in the event of disturbance. Because the project was not constructed, the resource is still in place.

Additionally, demolition activities could unearth previously unknown archaeological sites that are not visible on the ground surface. Although this scenario is very unlikely given the extreme disturbance of the native soils, pockets of intact buried cultural remains could still exist. The impact would be considered potentially significant. However, with implementation of Mitigation Measure CUL-1 construction- and demolition-related impacts to previously unknown archaeological resources would be less than significant.

Mitigation Measure CUL-1: Inadvertent Discovery of Archaeological Resources

- Pursuant to CEQA Guidelines Section 15064.5(f), "provisions for historical or unique archaeological resources accidentally discovered during construction" shall be instituted. In the event that any cultural resources are discovered during ground-disturbing activities, all work within 100 feet of the find shall be halted and Phillips 66 shall consult with the County and a qualified archaeologist (as approved by the County) to assess the significance of the find pursuant to CEQA Guidelines Section 15064.5. If any find is determined to be significant, representatives of the County and the qualified archaeologist would meet to determine the appropriate course of action.
- Avoidance is always the preferred course of action for archaeological sites. In considering any suggestion proposed by the consulting archaeologist to reduce impacts to archaeological resources, the County would determine whether avoidance is feasible in light of factors such as the nature of the find, project design, costs, and other considerations. If avoidance is infeasible, other appropriate measures (e.g., data recovery, interpretation of finds in a public venue) would be instituted. Work may proceed on other parts of the Project site while mitigation for archaeological resources is carried out. All significant cultural materials recovered shall be, at the discretion of the consulting archaeologist, subject to scientific analysis, professional museum curation, and documented according to current professional standards.

IMPACT 4.5-3

c. Would the proposed project disturb any human remains, including those interred outside of formal cemeteries?

Construction/Demolition: Less-than-Significant Impact with Mitigation

Rodeo Refinery

The original 1909 site record for CA-CCO-257 reports that "many" skeletons had been unearthed from the mound prior to and during its removal from the Rodeo Site for the construction of the Union Oil Company Refinery. There are no records or indication that human remains have been encountered during any subsequent construction activities at the Rodeo Site. Despite this lack of records, it is nearly impossible to conclusively state that no human remains associated with CA-CCO-257 or other unknown archaeological sites exist at the Rodeo Site. Operation of the Project would not involve any activities that would have the potential to expose human remains. If buried human remains exist within the areas involving Project elements, grading, excavation, and other construction-related activities could cause significant impacts to those remains. Implementation of Mitigation Measure CUL-2 would reduce potential impacts to less than significant.

Santa Maria Site

Similarly, although no human remains are known to have been encountered during development of the Santa Maria Site, the presence of a prehistoric archeological site adjacent to the site makes it nearly impossible to state conclusively that no human remains associated or other unknown archaeological sites exist at the site. If buried human remains exist within the area of Project-related activities, grading or excavation could cause significant impacts to those remains. Implementation of Mitigation Measure CUL-2 would reduce potential impacts to less than significant.

For analysis of impacts associated with tribal cultural resources, refer to Section 4.14, *Tribal Cultural Resources*.

Mitigation Measure CUL-2: Inadvertent Discovery of Human Remains

- The treatment of human remains and associated or unassociated funerary objects discovered during any ground-disturbing activity shall comply with applicable State law. Project personnel shall be alerted to the possibility of encountering human remains during Project implementation, and apprised of the proper procedures to follow in the event they are found. State law requires immediate notification of the County coroner.

4.5.8 References

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4.6 Energy Conservation

4.6.1 Introduction

This section establishes the existing conditions and identifies and evaluates potential impacts related to energy resources that could result from construction and operation of the Project. This section considers energy consumption and conservation at the Rodeo Refinery, including the Carbon Plant, Santa Maria Site, and the Pipeline Sites.

4.6.2 Environmental Setting

4.6.2.1 Regional Setting

With a relatively mild Mediterranean climate and strict energy efficiency and conservation requirements, California has lower energy consumption rates on a per person basis than most other parts of the country.

Total energy usage in California in 2018 (the most recent year for which this specific data is available) was 7,967 trillion British Thermal Units (Btu), which equates to an average of 202 million Btu per capita (USEIA 2020). These figures place California second among the nation's 50 states in total energy use and 48th in per capita consumption. Of California's total energy usage, the breakdown by sector is roughly 40 percent transportation, 23 percent industrial, 19 percent commercial, and 18 percent residential.

California relies on a regional power system composed of a diverse mix of natural gas, renewable, hydroelectric, and nuclear generation resources. Approximately 72 percent of the electrical power needed to meet California's demand is produced in the state; the balance, approximately 28 percent, is imported from the Pacific Northwest and the Southwest. In 2019, California's in-state electricity use was derived from natural gas (43 percent), coal (0.1 percent), large hydroelectric resources (17 percent), nuclear sources (8 percent), and renewable resources that include geothermal, biomass, small hydroelectric resources, wind, and solar (32 percent) (California Energy Commission [CEC] 2020a).

Electricity and natural gas in California are generally consumed by stationary users such as residences and commercial and industrial facilities, whereas petroleum-based fuel is generally consumed by transportation-related uses (USEIA 2020).

California accounted for 7 percent of total electricity consumption in the US (US Department of Energy 2020); and in 2019 represented approximately 6.9 percent of total US natural gas consumption (USEIA 2020).

Transportation Fuels Supply

The energy consumed by the transportation sector accounts for roughly 86 percent of California's petroleum products demand (USEIA 2020). According to the CEC, the state relies on petroleum-based fuels for 98 percent of its transportation needs (USEIA 2020), where the remainder 2 percent is other types of energy, such as electric power. In 2019, taxable gasoline sales (including aviation gasoline) in California accounted for approximately 15.4 billion gallons of gasoline (California Board of Equalization [CBE] 2020a), and taxable diesel fuel sales accounted for approximately 3.1 billion gallons of diesel fuel (CBE 2020b), although the CARB (2020) estimates total usage of diesel in 2019 to be 4.5 billion gallons. The differences in diesel fuel consumption could be attributable to differences in accounting methods.

The CEC forecasts that demand for gasoline in California will range from 12.1 billion to 12.6 billion gallons in 2030, with most of the demand generated by light-duty vehicles. This is lower than the 2019 estimate provided by CBE (2020a). While the models show an increase in light-duty vehicles along with population and income growth over the forecast horizon, total gasoline consumption is expected to decline, primarily due to increasing fuel economy (stemming from federal and state regulations) and gasoline displacement from the increasing market penetration of zero emission vehicles (ZEVs). For diesel, demand is forecast to increase modestly by 2030, following the growth of California's economy, but would be tempered by an

increase in fleet fuel economy and market penetration of alternative fuels, most prominently by natural gas in the medium- and heavy-duty vehicle sectors (CEC 2018).

In 2019, California consumed approximately 3.8 billion gallons of diesel fuel (the average of the above CBE and CARB estimates), and of that, about 830 million gallons were low-carbon diesel, 618 million gallons of renewable diesel, and 212 million gallons of biodiesel (CEC 2021). With the LCFS program and proposed expansions and conversions for increased renewable diesel production, including the Rodeo Renewed Project, renewable diesel production in California is expected to increase to 1.2 billion gallons per year within 4 years (CEC 2021).

Other transportation fuel sources used in California include alternative fuels, such as methanol and denatured ethanol (alcohol mixtures that contain no less than 70 percent alcohol), natural gas (compressed or liquefied), liquefied petroleum gas, hydrogen, and fuels derived from biological materials (i.e., biomass).

According to the CEC (2019), sales of gasoline and diesel fuel in Contra Costa County were 427 million gallons and 27 million gallons, respectively (CEC 2020b), and for San Luis Obispo County, 138 million and 22 million gallons, respectively. Note that the CEC only tracks fuel sales at the retail level, which allows for data to be collected on a county-by-county basis, whereas the California Board of Equalization (CBE) tracks all fuel sales, retail and non-retail, but only at the statewide level. Thus, the impact calculations presented in Section 4.6.5, *CEQA Baseline*, rely on separate data sets for comparison to Contra Costa County and statewide transportation fuel consumption figures.

Electricity

In 2019, total system electric generation for California was 277,704 gigawatt-hours (GWh), down 2.7 percent from 2018's total generation of 285,488 GWh (USEIA 2020). Electricity from non-CO_2 emitting electric generation categories (i.e., nuclear, large hydroelectric, and renewable generation) accounted for 57 percent of total in-state generation.

Total system electric generation in California is predicted to increase in coming years. Factors contributing to the projected increase include greater numbers of light duty electric vehicles, increased manufacturing electricity consumption, and decreases in savings from energy efficiency programs as population increases. With regard to total consumption of electricity across all sectors, California consumed 250,379 GWh of electricity in 2019 (USEIA 2020). Pacific Gas and Electric (PG&E) provides electrical services to most residential, commercial, industrial, and agricultural consumers in much of northern California, including the Bay Area. In 2019, PG&E generated and/or procured a total of 35,956 GWh of electricity (PG&E 2019). PG&E has established contracts and commitments to ensure there is adequate electricity generation and natural gas capacity to meet its current and future energy loads (PG&E 2020c). Table 4.6-1 shows the mix of sources for PG&E's electrical supply (PG&E 2020a). In Contra Costa County, electricity consumption in 2019 was 9,639 GWh (CEC 2020c).

California law requires load-serving entities, such as PG&E, to gradually increase the amount of renewable energy they deliver to their customers to at least 33 percent of their total annual retail sales by 2020, 44 percent by 2024, 52 percent by 2027, 60 percent by 2030, and 100 percent by 2045. This program, known as the Renewables Portfolio Standard (RPS), became effective in December 2011, and has since been enhanced with the passage of Senate Bill (SB) 350 and SB 100. Renewable generation resources, for purposes of the RPS program, include bioenergy, small hydroelectric facilities (30 MW or less), wind, solar, and geothermal energy. In 2019 PG&E obtained almost 30 percent of its electricity from renewable sources (PG&E 2020b).

Table 4.6-1. PG&E 2019 Power Content Label

Energy Resources	PG&E 2019 Power Mix			(For Comparison) 2019 CA Power Mix
	Base Plan	50% Solar Choice	100% Solar Choice	
Eligible Renewable[a]	29%	64%	100%	32%
• Biomass & Biowaste	3%	2%	0%	2%
• Geothermal	2%	1%	0%	5%
• Eligible Hydroelectric	2%	1%	0%	2%
• Solar	12%	56%	100%	12%
• Wind	9%	5%	0%	10%
Coal	0%	0%	0%	3%
Large Hydroelectric	27%	14%	0%	15%
Natural Gas	0%	0%	0%	34%
Nuclear	44%	22%	0%	9%
Other	0%	0%	0%	0%
Unspecified Sources of Power[b]	0%	0%	0%	7%
Total	100%	100%	100%	100%

Notes:

[a.] The eligible renewable percentage above does not reflect Renewables Portfolio Standard (RPS) compliance, which is determined using a different methodology.

[b.] Unspecified power is electricity that has been purchased through open market transactions and is not traceable to a specific generation source.

Natural Gas

One-third of the energy consumed in California is natural gas, which is largely imported from other regions (CEC 2019). Californians consumed 13,158 million therms of natural gas in 2019, which is equal to approximately 1,315,800,000 million British thermal units (MMBtu) (CEC 2020d). Nearly 45 percent of the natural gas burned in California is used for electricity generation, and most of the remainder is consumed in the residential (21 percent), industrial (25 percent), and commercial (9 percent) sectors.

PG&E provides natural gas service to industrial, large commercial, and natural-gas-fired electric generation facilities, as well as residential users that are connected to the gas system in much of northern California, including the Bay Area. In 2019, the total consumption of natural gas in Contra Costa County was 1,205 million therms, or 120,504,522 MMBtu (CEC 2020d), which was approximately 9 percent of California's total gas consumption.

4.6.2.2 Project Setting

Rodeo Refinery

Under baseline conditions, the Rodeo Refinery (consisting of the Rodeo Site and Carbon Plant Site) produces and consumes energy. Energy is primarily consumed as refinery fuel gas (RFG, a hydrocarbon gas by-product of refining and coking operations), electricity, and natural gas. The Rodeo Site purchases natural gas from PG&E to supplement the energy provided by RFG. In addition to PG&E purchases, the Rodeo Site also receives electricity from the third-party plant operator Air Liquide, which supplies hydrogen for the refinery operations. The main source of electricity at the Rodeo Site is the Cogeneration Steam Power Plant, which uses three units equipped with simple-cycle gas turbines fueled by RFG and

purchased natural gas to generate electricity for refinery operations. Waste heat from the gas turbines is used to generate steam. The Carbon Plant Site also produces electricity for its operational use and exports the surplus to PG&E. The calcining process burns off residual volatile combustible matter from petroleum coke and uses a small amount of supplemental natural gas. The hot flue gas is used to produce steam, which then drives a steam turbine to generate electricity.

In 2019, the Rodeo Refinery used 520,000 megawatt-hours (MWh) of electricity, with 502,300 MWh used at the Rodeo Site and 17,700 MWh used at the Carbon Plant Site. The majority of the electricity consumed at the Rodeo Site (406,800 MWh) was generated onsite by the Steam Power Plant fueled by RFG and natural gas, with the remainder of electric power needs provided by Air Liquide (25,800 MWh) or PG&E (69,800 MWh).

Table 4.6-2a shows the amount of natural gas purchased at the Rodeo and Carbon Plant Sites in 2019. The Refinery Site produced 17,126,500 MMBtu of RFG in 2019. All of the RFG produced onsite is consumed onsite. The natural gas is purchased to provide the additional fuel necessary for the process.

Table 4.6-2a. Rodeo Refinery 2019 Purchased Natural Gas

Utility Natural Gas Purchased (MMBtu/yr)	CEQA Baseline (2019)
Rodeo Site	8,404,700
Carbon Plant Site	302,300

The Rodeo Refinery generated 510,000 MWh of electricity in 2019. The electricity balance is shown in Table 4.6-2b. Due largely to the excess electricity produced at the Carbon Plant Site, the Rodeo Refinery had a net export of electricity to PG&E of 15,600 MWh in 2019.

Table 4.6-2b. Rodeo Refinery 2019 Electricity Production, Consumption and Export (Rounded to the Nearest 100 MWh)

Energy Type	CEQA Baseline (2019)
Electricity Produced (MWh)	
Rodeo Site	406,800
Carbon Plant Site	103,200
Electricity Used (MWh)	
Rodeo Site	502,300
Carbon Plant Site	17,700
Electricity Imported from Air Liquide (MWh)	
Import from Air Liquide to Rodeo Site	25,800
Electricity Imported/Exported from PG&E (MWh)	
Import from PG&E to Rodeo Site	69,800
Export from Carbon Plant Site to PG&E	85,400

Santa Maria Site and Pipeline Sites

The Santa Maria Site purchased 825,400 million Btu of natural gas and 37,500 MWh of electricity in 2019, while the Pipeline Sites consumed a total of 337,200 million Btu of natural gas and 20,200 MWh of electricity (Table 4.6-3). This consumption would permanently cease with implementation of the Project because these sites would be taken out of service.

Table 4.6-3. Santa Maria Site and Pipeline Sites 2019 Energy Usage

Energy Type	CEQA Baseline (2019)
Net Electricity Imports (MWh/yr)	
Santa Maria Refinery	37,500
Pipeline/Midstream Pumping	20,200
Natural Gas Purchases (MMBtu/yr)	
Santa Maria Site	825,400
Pipeline Sites	337,200

4.6.3 Regulatory Setting

Federal and state agencies regulate energy use and consumption through various programs. On the federal level, the US Department of Transportation (USDOT), US Department of Energy, and USEPA are three agencies with substantial influence over energy policies and programs. Generally, federal agencies influence transportation energy consumption through establishment and enforcement of fuel economy standards for automobiles and light trucks, through funding of energy related research and development projects, and through funding for transportation infrastructure projects. On the state level, the California Public Utilities Commission (CPUC) and CEC are the agencies with authority over different aspects of energy.

4.6.3.1 Federal Authority

Energy Policy and Conservation Act

The Energy Policy and Conservation Act of 1975 was established in response to the oil crisis of 1973, which increased oil prices due to a shortage of reserves. The Act requires vehicles sold in the US to meet certain fuel economy goals, known as the Corporate Average Fuel Economy (CAFE) standards, to reduce energy consumption by increasing the fuel economy of cars and light trucks. The National Highway Traffic Safety Administration (NHTSA) of the USDOT administers the CAFE program, and the USEPA provides the fuel economy data. The US Congress specified that CAFE standards must be set at the “maximum feasible level” with consideration given for (1) technological feasibility; (2) economic practicality; (3) effect of other standards on fuel economy; and (4) need for the nation to conserve energy.

Energy Policy Act of 2005

The Energy Policy Act of 2005 seeks to reduce reliance on non-renewable energy resources and provide incentives to reduce current demand on these resources. For example, under the Energy Policy Act, consumers and businesses can attain federal tax credits for purchasing fuel-efficient appliances and products. Businesses are eligible for tax credits for buying hybrid vehicles, building energy-efficient buildings, and improving the energy efficiency of commercial buildings. Additionally, tax credits are given for the installation of qualified fuel cells, stationary microturbine power plants, and solar power equipment. The Energy Policy Act of 2005 also established the first renewable fuel volume mandate in the US. The original Renewable Fuel Standard program required 7.5 billion gallons of renewable fuel to be blended into gasoline by 2012.

Under the Energy Independence and Security Act of 2007, the Renewable Fuel Standard program was expanded to include diesel and to increase the volume of renewable fuel required to be blended into transportation fuel from 9 billion gallons in 2008 to 36 billion gallons by 2022.

USEPA and NHTSA Joint Rulemaking for Vehicle Standards (2011)

In April 2010, the USEPA and NHTSA issued a final rulemaking establishing new federal GHG and fuel economy standards for model years 2012 to 2016 passenger cars, light-duty trucks, and medium-duty passenger vehicles. In addition, on August 9, 2011, the USEPA and NHTSA finalized regulations to reduce GHG emissions and improve fuel efficiency of medium- and heavy-duty vehicles, including large pickup trucks and vans, semi-trucks, and all types and sizes of work trucks and buses. For model year 2012, the fuel economy standards for passenger cars, light trucks, and combined cars and trucks were 33.3 miles per gallon (mpg), 25.4 mpg, and 29.7 mpg, respectively (USEPA and USDOT 2010). These standards increase progressively up to 37.8 mpg, 28.8 mpg, and 34.1, respectively, for model year 2016. In subsequent rulemakings the agencies extended the national program of fuel economy standards to passenger vehicles and light-duty trucks of model years 2017-2025, culminating in fuel economy of 54.5 mpg by model year 2025 (USEPA and USDOT 2014), as well as to medium- and heavy-duty vehicles of model years 2014-2018, including large pickup trucks and vans, semi-trucks, and all types and sizes of work trucks and buses (USEPA and USDOT 2011).

USEPA and NHTSA Joint Rulemaking for Vehicle Standards (2020)

The NHTSA and the USEPA updated the CAFE and GHG emissions standards for passenger cars and light trucks and established new standards, covering model years 2021 through 2026 under the Safer Affordable Fuel Efficient (SAFE) vehicles final rule. This rule rolled back some of the fuel efficiency mandates that had been in effect. The rule was judicially challenged, but the litigation has been placed in abeyance while undergoing review by the Biden Administration.

4.6.3.2 State Authority

California continues to be the national leader in energy efficiency. While energy use per person in the rest of the nation has increased by 45 percent over the last 30 years, California's per capita use has remained relatively flat as a result of the State of California's energy efficiency measures.

Warren-Alquist Act

The 1975 Warren-Alquist Act established the California Energy Resources Conservation and Development Commission, now known as the CEC. The Act established a state policy to reduce wasteful, uneconomical, and unnecessary uses of energy by employing a range of measures.

Integrated Energy Policy

In 2002, the Legislature passed SB 1389, which required the CEC to develop an integrated energy plan biannually for electricity, natural gas, and transportation fuels. The plan calls for the State to assist in the transformation of the transportation system to improve air quality, reduce congestion, and increase the efficient use of fuel supplies with the least environmental and energy costs. To further this policy, the plan identifies a number of strategies, including assistance to public agencies and fleet operators in implementing incentive programs for Zero Emission Vehicles and their infrastructure needs, and encouragement of urban designs that reduce the vehicle miles traveled and accommodate pedestrian and bicycle access.

The latest update is the 2020 Update to the Integrated Energy Policy Report (CEC 2021). The 2020 Update identifies actions the state and others can take to ensure a clean, affordable, and reliable energy system. California's innovative energy policies strengthen energy resiliency, reduce GHG emissions that cause climate change, improve air quality, and contribute to a more equitable future.

Senate Bill 1037

In 2004, the CPUC established aggressive energy savings goals and authorized a significant increase in energy efficiency funding. Meeting these goals would reduce the utilities' need for additional electricity supplies between 2004 and 2013 by more than half. The passage of SB 1037 (Kehoe), Chapter 366, Statutes of 2005, further reinforced the state's energy efficiency policies by requiring all utilities to meet their unmet resource needs first with energy efficiency and demand reduction resources that are cost-effective, reliable, and feasible.

Assembly Bill 1007 (Pavley)-Alternative Fuel Standards

AB 1007 (Pavley, Chapter 371, Statutes of 2005) required the CEC to prepare a state plan to increase the use of alternative fuels in California (State Alternative Fuels Plan). The CEC prepared the State Alternative Fuels Plan in partnership with CARB and in consultation with other state, federal, and local agencies. The final State Alternative Fuels Plan, published in December 2007, attempts to achieve an 80 percent reduction in GHG emissions associated with personal modes of transportation, even as California's population increases.

Low Carbon Fuel Standard

The LCFS, established in 2007 through EO S-1-07 and administered by CARB, requires producers of petroleum-based fuels to reduce the CI of their products that started with a 0.25 percent reduction in 2011 and culminated in a 10 percent total reduction in 2020. In September 2018, CARB extended the LCFS program to 2030, making significant changes to the design and implementation of the Program including a doubling of the CI reduction to 20 percent by 2030.

Petroleum importers, refiners, and wholesalers can either develop their own low carbon fuel products or buy LCFS credits from other companies that develop and sell low carbon alternative fuels, such as biofuels, electricity, natural gas, and hydrogen.

Renewables Portfolio Standard

The State of California adopted standards to increase the percentage of energy from renewable resources that retail sellers of electricity, including investor-owned utilities (IOUs), publicly-owned utilities (POUs), and community choice aggregators, must provide in their portfolio. The RPS was established in 2002 under SB 1078, accelerated in 2006 under SB 107, and expanded in 2011 under SB 2. Qualifying renewables under the RPS include bioenergy such as biogas and biomass, small hydroelectric facilities (30 MW or less), wind, solar, and geothermal energy. The CPUC and the CEC jointly implement the RPS program. The CPUC's responsibilities include (1) determining annual procurement targets and enforcing compliance, (2) reviewing and approving each investor-owned utility's renewable energy procurement plan, (3) reviewing contracts for RPS-eligible energy, and (4) establishing the standard terms and conditions used in contracts for eligible renewable energy (CPUC 2019).

In November 2008, then-Governor Schwarzenegger signed EO S-14-08, which expanded the state's RPS to 33 percent renewable power by 2020. In September 2009, then-Governor Schwarzenegger continued California's commitment to the RPS by signing EO S-21-09, which directed the CARB under its AB 32 authority to enact regulations to help the state meet its RPS goal of 33 percent renewable energy by 2020.

Assembly Bill 1613 (Waste Heat and Carbon Emissions Reduction Act)

AB 1613 directed the CEC, CPUC, and CARB to implement the Waste Heat and Carbon Emissions Reduction Act. The Act is designed to encourage the development of new combined heat and power systems in California with a generating capacity of not more than 20 MW. In June 2010, the CEC published modified final guidelines establishing technical criteria for eligibility of combined heat and power systems for programs to be developed by the CPUC and publicly-owned utilities (CEC 2010). Section 2843 of the Act provides that the CEC's guidelines require that combined heat and power systems:

- Be designed to reduce waste energy.
- Have a minimum efficiency of 60 percent.
- Have nitrogen oxide (NOx) emissions of no more than 0.07 pound per MWh.
- Be sized to meet the eligible customer generation thermal load.
- Operate continuously in a manner that meets the expected thermal load and optimizes the efficient use of waste heat.
- Be cost effective, technologically feasible, and environmentally beneficial.

As directed by AB 1613, the CPUC also established (1) a standard tariff for the sale of electricity to corporations for delivery to the electrical grid; and (2) a “pay as you save” pilot program requiring electricity corporations to finance the installation of qualifying combined heat and power systems by non-profit and government entities. A January 2011 decision by an administrative law judge determined that the pilot program would not be established due to lack of customer interest and difficulties in instituting a program that meets California Department of Corporations requirements.

Executive Order B-16-12, 2025 Goal for Zero Emission Vehicles

In March 2012, then-Governor Brown issued an EO establishing a goal of 1.5 million ZEVs on California roads by 2025. In addition to the ZEV goal, EO B-16-12 stipulated that by 2015 all major cities in California will have adequate infrastructure and be “zero-emission vehicle ready”; that by 2020 the state will have established adequate infrastructure to support 1 million ZEVs; and that by 2050, virtually all personal transportation in the state will be based on ZEVs, and GHG emissions from the transportation sector will be reduced by 80 percent below 1990 levels.

Senate Bill 350, Clean Energy and Pollution Reduction Act of 2015

SB 350, also known as the Clean Energy and Pollution Reduction Act of 2015, was enacted on October 7, 2015, and provides a new set of objectives in clean energy, clean air, and pollution reduction by 2030. The objectives include the following:

1. To increase from 33 percent to 50 percent by December 31, 2030, the procurement of California’s electricity from renewable sources.
2. To double the energy efficiency savings in electricity and natural gas final end uses of retail customers through energy efficiency and conservation.

Senate Bill 100

On September 10, 2018, then-Governor Brown signed SB 100, establishing that 100 percent of all electricity in California must be obtained from renewable and zero-carbon energy resources by December 31, 2045. SB 100 also creates new standards for the RPS goals that were established by SB 350 in 2015. Specifically, the bill increases required energy from renewable sources for both IOUs and POUs from 50 percent to 60 percent by 2030. Incrementally, these energy providers are also required to

have a renewable energy supply of 33 percent by 2020, 44 percent by 2024, and 52 percent by 2027. The updated RPS goals are considered achievable, since many California energy providers are already meeting or exceeding the RPS goals established by SB 350.

On the same day that SB 100 was signed, then-Governor Brown signed EO B-55-18 with a new statewide goal to achieve carbon neutrality (zero-net GHG emissions) by 2045 and to maintain net negative emissions thereafter.

Integrated Energy Policy Report Strategy: Decarbonizing the Electricity Sector

Decarbonizing the electricity sector is part of an integrated approach to reducing emissions from energy use. In 2019, about 36 percent of the electricity used to serve California was produced from renewable resources such as solar and wind (CEC 2020e). Although the AB 32 and SB 32 GHG reduction goals are economy-wide, in 2017, the electricity sector surpassed AB 32's 2020 goal and met SB 32's 2030 goal. Over the last 10 years, GHG emissions from imported electricity have declined by more than 60 percent, and emissions from in-state generation have declined by nearly 30 percent (CEC 2020e). These gains are largely attributable to advancements in energy efficiency, increased use of renewable energy resources, and reduced use of coal-fired electricity. To further reduce GHG emissions, California is increasingly using renewable resources to produce electricity while planning for increased demand from transportation electrification and other opportunities for electrification.

In 2019, solar accounted for 42 percent of the state's renewable generation (CEC 2020e). The increase in solar and other renewables is a California success story in reducing GHG emissions, but also creates operational challenges. Grid operators must manage the ramp-up of solar generation as it peaks midday and then ramps down at sunset while electricity demand remains high.

The 2020 Integrated Energy Policy Report emphasizes the current challenge the state faces in increasing the state's ability to integrate more renewable energy into the grid (CEC 2021). There is an increasing need for energy storage that can balance supply and demand by absorbing excess energy and reinjecting it into the grid when demand increases. There is also a need for transmission investments to link our extensive renewable resources to load centers throughout the grid. The challenges are compounded by increasing numbers of Californians who are generating, and in some cases, storing their own electricity or purchasing electricity from local providers called community choice aggregators.

Integrated Energy Policy Report Strategy: Transportation Electrification

California is working to transform the transportation sector away from petroleum to near-ZEVs operating with low-carbon fuels and ZEVs that run on electricity from batteries or hydrogen fuel cells. Including emissions from refineries, the transportation sector accounted for more than 50 percent of the state's GHG emissions as of 2016. The state is advancing goals, policies, and plans to support the proliferation of ZEVs and near-zero-emission vehicles. As described in more detail below, Governor Brown's EOs have set goals of reaching 1.5 million ZEVs on California's roadways by 2025 and 5 million by 2030, while Governor Newsom's September 2020 EO increased this target to include 100 percent ZEV sales for new light- and medium-duty automobiles by 2035 and increased penetration of heavy-duty and off-road ZEVs. As usage grows, ZEVs will have an increasing role in grid management and the integration of renewables in particular.

Advance Clean Cars Program

The Advanced Clean Cars emissions-control program was approved by CARB in 2012 and is closely associated with the Pavley regulations (CARB 2017a). The program requires a greater number of ZEV models for years 2015 through 2025 to control smog, soot, and GHG emissions. This program includes the Low-Emissions Vehicle regulations to reduce criteria pollutants and GHG emissions from light- and medium-duty vehicles; and the ZEV regulations to require manufactures to produce an increasing number

of pure ZEV's (meaning battery and fuel cell electric vehicles) with the provision to produce plug-in hybrid electric vehicles between 2018 and 2025.

Due to the federal adoption of the Final SAFE Rule, new cars of model years 2021 through 2026 are not currently required to achieve the fuel economy targets set by the Advanced Clean Cars program. The rule was judicially challenged, but the litigation has been placed in abeyance while undergoing review by the Biden Administration.

CARB's Mobile Source Strategy

The Mobile Source Strategy (2016) includes an expansion of the Advanced Clean Cars program and further increases the stringency of GHG emissions for all light-duty vehicles, and 4.2 million ZEVs and plug-in hybrid light-duty vehicles by 2030. It also calls for more stringent GHG requirements for light-duty vehicles beyond 2025 as well as GHG reductions from medium-duty and heavy-duty vehicles and increased deployment of zero-emission trucks primarily for classes 3 through 7 "last mile" delivery trucks in California. Statewide, the Mobile Source Strategy would result in a 45 percent reduction in GHG emissions, and a 50 percent reduction in the consumption of petroleum-based fuels. CARB's Mobile Source Strategy includes measures to reduce the total light-duty vehicle miles traveled by 15 percent compared to business as usual in 2050.

In 2004, the CARB adopted an Airborne Toxics Control Measure to limit diesel-fueled commercial motor vehicle idling to reduce public exposure to diesel particulate matter emissions (Title 13 California Code of Regulations Section 2485). The measure applies to diesel-fueled commercial vehicles with gross vehicle weight ratings greater than 10,000 pounds that are licensed to operate on highways, regardless of where they are registered. This measure does not allow diesel-fueled commercial vehicles to idle for more than 5 minutes at any given location. While the goal of this measure is primarily to reduce public health impacts from diesel emissions, compliance with the regulation also results in energy savings in the form of reduced fuel consumption from unnecessary idling.

In addition to limiting exhaust from idling trucks, CARB also promulgated emission standards for off-road diesel construction equipment of greater than 25 horsepower such as bulldozers, loaders, backhoes and forklifts, as well as many other self-propelled off-road diesel vehicles. The In-Use Off-Road Diesel-Fueled Fleets regulation adopted by CARB on July 26, 2007, aims to reduce emissions by installation of diesel soot filters and encouraging the retirement, replacement, or repower of older, dirtier engines with newer emission-controlled models (13 California Code of Regulations Section 2449). The compliance schedule requires full implementation by 2023 in all equipment for large and medium fleets and by 2028 for small fleets.

Executive Order B-48-18

On January 26, 2018, then-Governor Brown issued an EO establishing a goal of 5 million ZEVs on California roads by 2030 and spur the installation and construction of 250,000 plug-in electric vehicle chargers, including 10,000 direct current fast chargers, and 200 hydrogen refueling stations by 2025.

Executive Order N-79-20

In September 2020, Governor Newsom signed EO N-79-20, which sets a new State goal that 100 percent of in-state sales of new passenger cars and trucks will be zero-emission by 2035; that 100 percent of medium- and heavy-duty vehicles in the state be zero-emission by 2045 for all operations where feasible; and by 2035 for drayage trucks; and that 100 percent of off-road vehicles and equipment will be zero emission by 2035 where feasible. This order calls upon state agencies including the CARB, CEC, CPUC, the Department of Finance, and others to develop and propose regulations and strategies to achieve these goals.

4.6.3.3 Local Authority

Contra Costa County General Plan

The Contra Costa County General Plan contains goals and policies that apply to development projects, such as the Project, in the unincorporated County (Contra Costa County 2010). The goals and policies relating to energy and renewable energy resources are summarized as follows:

- Reduce energy use in the County to avoid risks of air pollution and energy shortages which prevent orderly development.
- Achieve utilization of oil and gas resources in a manner beneficial to all County residents.
- Encourage use of renewable resources where they are compatible with the environment.

4.6.4 Significance Criteria

Based on CEQA Guidelines Sections 15064.4 and 15064.7(c), as well as Appendix G, a project would cause adverse impacts associated with GHG emissions if it would:

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

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

4.6.5 CEQA Baseline

Baseline conditions reflect the 2019 operation and maintenance of the Rodeo Refinery and Santa Maria Site as petroleum refineries, including operation and maintenance activities. The baseline setting also includes the applicable regulatory framework to protect environmental resources, which are described above. The CEQA baseline for analysis of marine transportation is an average of the years 2017–2019.

4.6.6 Approach to Analysis

This impact analysis evaluates the potential for the Project to result in the wasteful use of energy or energy resources, or conflict with renewable energy or energy efficiency plans during Project construction and operation, consistent with Public Resources Code 21100(b)(3) and Section 15126.2(b), and Appendices F and G of the State CEQA Guidelines. The analysis provides construction and operational energy use estimates for the Project and the CEQA baseline. The analysis then uses this information to evaluate whether this energy use would be considered wasteful, inefficient, or unnecessary, taking into account available energy supplies and existing use patterns, the Project's energy efficiency features, and compliance with applicable standards and policies aimed to reduce energy consumption, including the Contra Costa County CAP.

This energy analysis includes quantification of electricity, natural gas, gasoline, and diesel fuel that would be required to construct and operate the Project as compared to the CEQA Baseline (year 2019). Construction energy use includes off-road equipment and on-road mobile sources. Sources of operational energy use include: stationary sources at the Rodeo Site, Carbon Plant Site, and Santa Maria and Pipeline Sites; on-road mobile sources, marine traffic at the Rodeo Site; rail activity at Project sites; and electricity related to operations and water distribution and treatment.

The energy analysis is based on default values in latest versions of CalEEMod and CARB's EMFAC2021, which have not been updated for the most recent EOs, specifically EO N-79-20 which bans the sale of gasoline-powered cars in California by 2035, and EO B-55-18, which set as a goal carbon neutrality in California by 2045. Both of these EOs, if implemented, will change the energy mix in California for the Project, decreasing substantially fossil fuel usage and increasing electricity usage. However, there is insufficient information to incorporate these EOs into this analysis; to do so would be speculative.

Accordingly, this energy analysis has been conducted with the most recent available tools prepared and accepted by the regulatory agencies.

4.6.6.1 Construction Energy Estimates

Construction of the Project would include the repurposing of the existing refinery equipment, adding new equipment to the Rodeo Site, demolition of the Santa Maria facility, decommissioning of Pipeline Sites and demolition of the Carbon Plant. Construction of the Project would occur over a period of twenty-one months.

Rodeo Refinery Construction and Demolition

The Project would involve construction and demolition activities at the Rodeo Refinery as described in Chapter 3, *Project Description*, Section 3.10, *Overall Project Construction/Demolition Phase*, that would occur in phases over a period of approximately 21 months and, for analysis purposes, was assumed to begin as early as the first quarter of 2022. All demolition and construction associated with the Rodeo Refinery would occur within its boundaries (except for one laydown area). All demolition and construction would be conducted in accordance with established procedures and BMPs and with applicable regulations and permits. Soil and construction debris generated by construction activities would be either re-used onsite or transported offsite for recycling or disposal as appropriate.

Construction and demolition activities would involve diesel-powered off-road construction equipment such as loaders, earthmovers, cranes, and concrete trucks, and lighter-duty equipment such as welders and compressors, some of which would also be diesel-powered. The use of diesel-powered off-road construction equipment and on-road trucks would result in energy use during the construction period. Construction would employ up to 500 workers at a time who would commute daily to and from the construction site mostly by means of private gasoline passenger vehicles; the construction workforce is expected to be drawn from the greater East Bay region, within a one-hour commute distance. Hauling trucks trips would range from a daily minimum of 10 round trips to a daily maximum of 165 round trips during the construction period. During construction, a period of increased marine vessel traffic would occur, and therefore, concurrent energy use from incremental marine vessel traffic are counted towards the Rodeo Site construction total.

Santa Maria Site and Pipeline Sites

Demolition activities at the Santa Maria site would involve use of off-road construction equipment and on-road vehicles. Fuel consumption estimates from these activities were calculated using data from CalEEMod and activity estimates from Phillips 66. Demolition at the Santa Maria Site was assumed, for purposes of calculations only, to occur over a 1-year period.

Off-Road Equipment

Off-road equipment is the most significant source of construction fuel usage. Diesel fuel consumption associated with onsite off-road construction equipment has been estimated based on the construction schedule, equipment list, and CARB estimated diesel consumption rate for off-road equipment. Further details on the construction schedule and equipment are provided in Attachment A of the Air Quality Technical Report (Ramboll 2021). For the purposes of the energy analysis, all equipment was assumed to be diesel-fueled; electricity- or gasoline-fueled equipment would not be expected to substantially affect energy resource demands. Fuel consumption rates in gallons per horsepower-hour (gal/hp-hr) were calculated from CARB's "OFFROAD2017 Orion" database (CARB 2017b).

On-Road Vehicles

On-road construction vehicles such as light-duty automobiles and trucks that would be used by workers for commuting to and from the construction site are assumed to be fueled by gasoline; and on-road trucks, such as vendor and haul trucks for demolition debris, soil, and other material hauling, are assumed to be fueled by diesel fuel. The fuel quantities that would be required for on-road vehicles during construction have been calculated based on fuel consumption estimated for each vehicle type using CARB's EMFAC2021. Fuel consumption factors and energy use calculations are shown in Attachment A of Appendix B, *Air Quality and Greenhouse Gas Emissions Technical Data*.

Summaries of the total estimated Project construction energy use requirements for diesel fuel and gasoline are presented in Attachment A of Appendix B, *Air Quality and Greenhouse Gas Emissions Technical Data*, as well as below in Table 4.6-5a under the Impact 4.6-1 discussion.

Operational Energy Estimates

Operational energy usage from the Project would occur at the Rodeo Site and the Marine Terminal and along rail lines, roadways, and ship traffic lanes leading to and from the Project. Existing operations at the Carbon Plant and the Santa Maria Site would permanently cease, and upon completion of demolition activities, energy consumption at the Carbon Plant, Santa Maria Site, and along the Pipeline Sites would be eliminated. In addition, operations of the adjacent third-party plant operator Air Liquide, which supplies hydrogen for the refinery operations, may indirectly increase due to the Project.

Stationary Source Energy Usage

Stationary sources at the Project would consume less electricity and natural gas than under baseline conditions (see Table 4.6-5b).

On-Road Vehicle Fuel Usage

On-road vehicles coming to the Rodeo Site consist of heavy-duty diesel trucks and light-duty worker vehicles. Fuel usage from truck traffic is summarized in Attachment A of Appendix B, *Air Quality and Greenhouse Gas Emissions Technical Data*. All trucks were assumed to be diesel fueled. Diesel use rates were calculated based on expected truck traffic related to refinery deliveries and waste by-products, expected trip lengths within California, and fuel efficiency rates as discussed above.

The Carbon Plant and Santa Maria Site had truck traffic related to their operations during the baseline. Because these facilities would be removed as a result of the Project, the fuel consumption related to these activities would permanently cease.

Passenger vehicles are not expected to change as a result of the Project because the number of workers would not change at the Rodeo Site. Therefore, there is no change energy use from passenger vehicles as a result of the Project.

Marine Vessel Fuel Usage

Marine sources at the Rodeo Site consist of tugs, barges, ATBs, and tanker vessels moving feedstock and product through the Marine Terminal. Fuel usage from shipping traffic at Rodeo Site is summarized in Attachment A of Appendix B, *Air Quality and Greenhouse Gas Emissions Technical Data*. All fuel is assumed to be diesel fueled (most vessel traffic actually uses heavier distillates such as marine diesel oil, rather than on-road diesel, but the assumption of diesel simplifies calculations and does not affect conclusions with respect to energy). Diesel use rates were calculated based on expected shipping calls, trip lengths within the San Francisco Bay, and fuel efficiency rates based on CARB guidance for ocean going vessels and harbor craft (CARB 2011). Vessel traffic is forecasted to increase during the Project, as

noted in Chapter 3, *Project Description*, and Section 3.7, *Project Operation*; therefore, fuel consumption related to marine vessel traffic is expected to increase.[38]

Rail Fuel Usage

Rail sources at the Rodeo Site consist of linehaul locomotive moving butane railcars at the Rodeo Site during the baseline, and linehaul locomotives moving feedstock rail cars during the Project. For the baseline, fuel consumption estimates are based on 2019 actual destination and counts of railcars to/from the Rodeo Site across California. For the Project, although the number of linehaul movements is expected to remain the same, an increase in rail cars is expected, from 4.7 railcars per day in 2019 to 16 railcars per day during the Project. In addition, the Project fuel consumption calculations conservatively assume that all railcars would move along the longest route from the Rodeo Site (California southern route) as future railcar origin information is not available at this time.

The Carbon Plant and Santa Maria Site had rail operations during the baseline. Because the Project would remove these facilities, the fuel consumption related to these activities would permanently cease.

Fuel usage from rail is summarized in Attachment A of Appendix B, *Air Quality and Greenhouse Gas Emissions Technical Data*. All fuel from rail operations is assumed to be diesel fueled. Diesel use rates were calculated based on yearly linehaul movements at each site, expected trip lengths, and gallons per ton-mile efficiency rates.

Summaries of the total estimated CEQA Baseline and Project operational energy use requirements for electricity, natural gas, diesel fuel, and gasoline are presented in Attachments A and B of Appendix B, *Air Quality and Greenhouse Gas Emissions Technical Data*, as well as in Table 4.6-5a under the Impact 4.6-1 discussion.

4.6.7 Direct and Indirect Impacts of the Proposed Project

Table 4.6-4 presents a summary of the potential energy impacts, as well as significance determinations for each impact.

Table 4.6-4. Summary of Impacts

Impact	Significance Determination		
	LTS	LTSM	SU
Impact 4.6-1. Construction and operation of the Project would not result in potentially significant environmental impact due to the wasteful, inefficient, and/or unnecessary use of energy.			
Rodeo Refinery			
All Phases	✓		
Santa Maria and Pipeline Sites			
Construction/Demolition	✓		
Operation and Maintenance	✓		

[38] The increase in Project vessel traffic, which will all occur at the Marine Terminal, would be partially offset by a decrease in vessel traffic related to petroleum coke shipments from the Port of Richmond, California. To be conservative, this decrease is not taken into consideration in the calculations. These latter-described vessel trips would no longer occur because petroleum coke would no longer be produced at the Rodeo Site; therefore, petroleum coke shipments would permanently cease.

Impact	Significance Determination		
	LTS	LTSM	SU
Impact 4.6-2. Construction and operation of the Project would not conflict with or obstruct adopted energy conservation plans or violate energy efficiency standards.			
Rodeo Refinery			
All Phases	✓		
Santa Maria and Pipeline Sites			
Construction/Demolition	✓		
Operation and Maintenance	✓		

NOTES: LTS = Less than Significant, no mitigation proposed
LTSM = Less than Significant impact with mitigation
SU = Significant and Unavoidable

IMPACT 4.6-1

a. Would the Project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

Construction/Demolition: Less Than Significant, No Mitigation Proposed

Construction of the Project would consume fuels (primarily gasoline and diesel) for the operation of construction equipment and vehicles to perform a variety of activities, including demolition, excavation, hauling, paving, and vendor and construction worker travel (Table 4.6-5a).

Energy consumption would occur over two years and would fluctuate depending on the type of construction activity underway during any particular time period. Construction is expected to take place over a 21-month period. Gasoline and diesel fuel would be the primary energy source for vehicles driven by construction crews and to power the large trucks used to deliver and retrieve construction equipment, materials, and debris. During construction, a period of increased marine vessel traffic related to the shutdown of the Pipeline Sites is expected; therefore, incremental additional fuel use from concurrent Marine Terminal traffic is counted toward the Rodeo Site construction total.

Project Construction/Demolition Energy Consumption

The Project's construction/demolition energy consumption is summarized in Table 4.6-5a.

Table 4.6-5a. Project Construction Energy Resource Use

Source Category	Rodeo Site Construction	Carbon Plant Demo	Santa Maria Site Demolition and Pipeline Site Decommissioning	Project Total
Total Construction Period (months)	21	3	9	n/a
Diesel Fuel (gallon/yr)				
Concurrent marine traffic increase	261,656	0	0	261,656
Off Road	206,661	11,654	77,764	296,079
On-road	709,365	5,011	2,618	716,994
Gasoline Fuel (gallon/yr)				
On-road	202,183	356	3,878	206,417
Total Diesel Consumption	**1,177,683**	**16,665**	**80,382**	**1,274,729**
Total Gasoline	**202,183**	**356**	**3,878**	**206,417**

Rodeo Refinery

The Project would involve construction and demolition activities at the Rodeo Site and Carbon Plant as described in Chapter 3, *Project Description*, Section 3.10, *Overall Project Construction/Demolition Phase*, that would occur in phases over a period of approximately 21 months and are assumed to begin as early as the first quarter of 2022. A later start date would result in lower energy usage because statistically newer, more fuel-efficient equipment and vehicles would be used. All demolition and construction associated with the Rodeo Site and Carbon Plant would occur within facility boundaries (except for one laydown area) and would be conducted in accordance with established procedures and BMPs and with applicable regulations and permits. Soil and construction debris generated by construction activities would be either re-used onsite or transported offsite for recycling or disposal as appropriate. Scrap metal would be hauled away to an offsite recycling facility.

Construction and demolition activities would involve diesel-powered heavy equipment such as loaders, excavators, cranes, and concrete trucks, and lighter-duty equipment such as welders and air compressors, some of which would also be diesel-powered. Construction would employ up to 500 workers at a time who would commute daily to and from the construction site mostly by means of gasoline-powered private passenger vehicles and light trucks; the construction workforce is expected to be drawn from the greater East Bay region, within a one-hour commute distance. Hauling trucks will travel a minimum daily of 10 round trips and a maximum daily of 165 round trips during the construction and site preparation phase, tentatively from mid-2022 through mid-2023.

Transitional Phase

The Construction/Demolition Phase includes a 7-month period within the overall schedule, during which there would be an increase in deliveries and processing of crude oil and gas oil feedstocks by marine vessels, resulting in increased vessel traffic at the Marine Terminal compared to baseline conditions. During the Project Transitional Phase, marine vessel calls would be more frequent than under baseline conditions, approximately 96 tankers and 92 ATB barges; however, this condition would be temporary.

Santa Maria Site

Decommissioning and demolition activities at the Santa Maria site (collectively, “construction activities”) would involve use of off-road construction equipment and on-road vehicles that consume diesel and gasoline fuel. Demolition and materials removal would occur over an estimated one-year period. Following decommissioning and demolition of the Santa Maria site, energy consumption would permanently cease. There are no future plans for this site.

Pipeline Sites

Decommissioning (as construction) activities at the Pipeline Sites in San Luis Obispo County, Santa Barbara County, and the San Joaquin Valley would involve use of some off-road construction equipment and on-road vehicles that that consume diesel and gasoline fuel. The Pipeline Sites would involve only cleaning-out and decommissioning activities without extensive use of heavy equipment. Construction would occur over an estimated one-year period and energy usage would be essentially de minimis compared to statewide energy usage as described below. Following decommissioning of the pipeline sites, emissions would permanently cease. There are no future plans for these sites.

Construction/Demolition Significance Discussion

Appendix F of the CEQA Guidelines provides guidance for evaluating whether a project would result in the wasteful, inefficient, or unnecessary consumption of fuel or energy. The Appendix F factors guide the following evaluation of the energy impacts of the Project relative to this significance criterion.

Total gasoline and diesel fuel usage by the transportation sector in California was expected to be 14.8 billion gallons and 4.5 billion gallons, respectively, in 2019 (CARB 2020). Project construction

fuel usage would, therefore, represent 0.041 percent of the state's transportation sector diesel fuel usage and 0.001 percent of the state's transportation sector gasoline usage, which would be considered de minimis.

Grid-sourced electric power usage associated with Project demolition and construction activities would be intermittent and likely negligible, given construction equipment are largely diesel-powered.

The energy estimates in this evaluation include fuels used for construction of the Project, including that related to increased marine traffic during the Transitional Phase. As shown in Table 4.6-5a, the amounts of diesel and gasoline consumed during the construction phases of the Project would be minimal, particularly in the context of total statewide consumption.

Off-road construction equipment and on-road vehicles (e.g., trucks) also consume fuel while idling. The Project would be compliant with the CARB's Airborne Toxics Control Measure to limit diesel-fueled commercial motor vehicle idling to 5 minutes. Consistent with BAAQMD's Basic Construction Mitigation Measures, signs would be posted at the Project sites to remind operators/drivers of the 5-minute idling limit.

Therefore, construction and demolition activities would be less than significant, and no mitigation is required with respect to the wasteful, inefficient, or unnecessary consumption of fuel or energy,

Operation and Maintenance (Less Than Significant, No Mitigation Proposed)

Rodeo Refinery

At the Rodeo Site, new operational units would be installed, and existing units will be idled or become non-operational, particularly the existing crude processing units, as described in Chapter 3, *Project Description*. Renewable feedstocks for the Project would arrive primarily by tanker, barge, and railcar. Future vessel traffic would be greater during the Project than under baseline conditions, and the mixture of vessel sizes and types would likely be different than under baseline conditions. Rail transport fuel use would increase due to higher numbers of railcars than under the baseline. Truck traffic to the Rodeo Site would decrease. Because the Project would demolish the Carbon Plant, there would be no further operational energy usage there.

Santa Maria Site and Pipeline Sites

The Project would eliminate operations of the Santa Maria Site and Pipeline Sites.

Project Operational Energy Consumption

The Project's operational energy consumption relative to the CEQA baseline is summarized in Table 4.6-5b.

Table 4.6-5b. Operational Energy Usage

Energy Use Type	CEQA Baseline (2019)	Project Operations	Change from CEQA Baseline
Electricity Consumption (MWh) – rounded to the nearest 100 MWh			
Rodeo Site	502,300	499,800	-2,500
Carbon Plant Site (Export to PG&E of 103,200 MWh in 2019)	17,700	0	-17,700
Rodeo Refinery Total	*520,000*	*499,800*	*-20,200*
Santa Maria Site	41,700	0	-41,700
Pipeline Sites	20,200	0	-20,200

Energy Use Type	CEQA Baseline (2019)	Project Operations	Change from CEQA Baseline
Electricity Imported (MWh) to Rodeo Site – rounded to the nearest 100 MWh			
From PG&E	69,800	58,400	-11,400
From Air Liquide	25,800	34,500	8,800
Electricity Consumption (MWh) – rounded to the nearest 100 MWh			
Rodeo Site	502,300	499,800	-2,500
Carbon Plant Site (Export to PG&E of 103,200 MWh in 2019)	17,700	0	-17,700
Rodeo Refinery Total	*520,000*	*499,800*	*-20,200*
Santa Maria Site	41,700	0	-41,700
Pipeline Sites	20,200	0	-20,200
Electricity Imported (MWh) to Rodeo Site – rounded to the nearest 100 MWh			
From PG&E	69,800	58,400	-11,400
From Air Liquide	25,800	34,500	8,800
Natural Gas Purchases (MMBtu/yr)			
Rodeo Site	8,404,700	1,608,200	-6,796,500
Carbon Plant Site	302,300	0	-302,300
Rodeo Refinery Total	*8,707,000*	*1,608,200*	*-7,098,800*
Santa Maria Site	825,400	0	-825,400
Pipeline Sites	337,200	0	-337,200
Mobile Source Fuel Consumption (gallons of diesel/yr)			
Trucks at Rodeo Site	460,700	285,700	-175,100
Marine at Rodeo Site	1,237,200	2,110,000	872,800
Rail at Rodeo Site	109,300	791,200	681,900
Rail at Carbon Plant	23,000	0	-23,000
Rodeo Refinery Total	1,830,200	3,186,900	1,356,600
Rail at Santa Maria Site	16,800	0	-16,800
Trucks at Santa Maria Site	265,200	0	-265,200
Total Electricity (MWh/yr)	**677,500**	**592,700**	**-84,800**
Total Natural Gas (MMBtu/yr)	**9,869,600**	**1,608,400**	**-8,261,200**
Total Diesel (gal/yr)	2,112,300	3,186,900	1,074,700

NOTES: MMBtu = million British thermal unit; MWh = megawatt-hour

The Carbon Plant would be demolished and would no longer produce electricity under the Project.

Gasoline is not included because operation of the Project would not change quantities from baseline; gasoline usage is due to worker commutes, which would not change at the Rodeo Site.

Positive values indicate an increase in energy usage relative to CEQA Baseline, while negative values indicate a decrease in energy usage.

The Rodeo Site will be greatly decreasing natural gas purchases as indicated above. Air Liquide will be increasing natural gas purchases to provide hydrogen for the Project (approximate increase of 4,439,100 MMBtu/yr above baseline).

Increase in marine fuel consumption during the Project is related to an expected increase in vessel traffic. Increase in rail related fuel consumption during the Project is related to increased rail cars per day and the conservative assumption of longest route. Because Project-specific railcar origin information is not known at this time, it is assumed all rail activity will occur on the longest travel route for linehaul movements, that is, the CA Southern Route. More information in Attachment A of Appendix B, *Air Quality and Greenhouse Gas Emissions Data*.

During the Project, the Rodeo Site would be expected to consume approximately 500,000 MWh of electricity and approximately 1,608,000 MMBtu of purchased natural gas, which is less energy than under baseline conditions. In addition, most of the electricity to be used at the Rodeo Site would still be produced onsite at the existing Steam Power Plant (approximately 407,000 MWh in 2019) and the remainder would be provided by Air Liquide and PG&E, as shown in Table 4.6-5b. Because of an overall reduction in fuel gas (RFG and natural gas) requirements, natural gas purchased from PG&E will be reduced, as shown in Table 4.6-5b.

The consumption of diesel fuel at the Rodeo Site would increase due to increases in marine vessel and rail traffic. These would be partially offset by the discontinuance of truck traffic at the Rodeo Site and the Santa Maria Site, and rail traffic at the Carbon Plant and Santa Maria Site. The consumption of gasoline, which is attributable to worker vehicles, would not change because employment at the Rodeo Site would not change.

Stationary sources at the Santa Maria Site and the Pipeline Sites would permanently cease consumption of energy during the Project due to the closure of those facilities.

Operation and Maintenance Significance Discussion

Appendix F of the CEQA Guidelines provides guidance for evaluating whether a project would result in the wasteful, inefficient, or unnecessary consumption of fuel or energy. The Appendix F factors guide the following evaluation of the energy impacts of the Project relative to this significance criterion.

Operation of the Project as a whole would result in decreases in the consumption of electricity, relative to the baseline, primarily as a result of the closure of the Santa Maria Site. Due to the closure of the Carbon Plant cogeneration system, the Carbon Plant site would no longer export electricity to PG&E. The Rodeo Site would continue to import electricity from PG&E, subject to availability of other electricity sources, such as Air Liquide, including renewable sources.

In 2019, the total generated electricity for California was 277,704 GWh (CEC 2020a), approximately 430,000 times the Project's total consumption, and consumers in Contra Costa County used 9,639 GWh (CEC 2020c), approximately 150 times the Project's consumption. Of the 499,800 MWh of electricity required by the Project at the Rodeo site, 406,800 MWh would be produced onsite. Because over 80 percent of the electricity required at the Rodeo site would be generated onsite, it would not represent a demand on regional electrical supply. Based on a comparison to the state-wide and Contra Costa County annual energy demand and the projected demand growth rate, the Project-related electricity consumption would not cause adverse effects on local and regional energy supplies or require additional generation capacity beyond the state-wide planned increase to accommodate projected energy demand growth.

Consumption of natural gas from the Project as a whole would decline substantially from baseline conditions. State-wide natural gas consumption in 2019 was approximately 1,315,800,000 MMBtu, and Contra Costa County natural gas demand was 120,504,539 MMBtu in 2019 (CEC 2020d). The Project's consumption of natural gas, 1,608,400 MMBtu/year, would represent 0.12 percent of statewide and 1.33 percent of Contra Costa County consumption (where all of the Project's consumption would occur). Accordingly, the Project's estimated natural gas consumption rate would not be substantial compared to the 2019 state-wide and countywide consumption, and would therefore not cause adverse effects on energy supplies.

The Project's consumption of diesel fuel would be 1,075,300 gallons per year above baseline levels due to expected marine traffic increase during the Project. The increase in consumption of 1,075,300 diesel gallons per year above baseline would represent 0.04 percent of the 4.5 billion gallons of diesel fuel consumed statewide.

The Project's use of electricity, natural gas, and diesel fuel would be minimal relative to total state and regional supplies, and would therefore have no adverse effect on energy resources or represent wasteful, inefficient, or unnecessary use of energy. PG&E has indicated that it has planned for future increases in demand for electricity and natural gas and will be able to meet those demands (PG&E 2020b). Furthermore, the Project would create renewable fuels that would contribute to the LCFS requirements and would continue to contribute to the state and region's supplies of energy in the form of transportation and heating fuels. Impacts related to the use of energy in Project operation would be less than significant and no mitigation is required with respect to the wasteful, inefficient, or unnecessary consumption of fuel or energy.

Construction and operation of the Project would not result in the wasteful, inefficient, or unnecessary consumption of energy resources, and impacts would be less than significant, and no mitigation is required.

Mitigation Measure: **None Required**

IMPACT 4.6-2

b. Would the Project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

Construction/Demolition: Less Than Significant, No Mitigation Proposed

Rodeo Refinery

Project construction would require use of on-road trucks for soil and debris hauling and material deliveries, and off-road equipment such as excavators, cranes, forklifts, and pavers. The Project would comply with state and local requirements designed to minimize idling and associated emissions, which also minimizes use of fuel. In accordance with BAAQMD's Basic Construction Mitigation Measures, idling times for heavy duty trucks and vehicles shall be minimized by turning off the engine or reducing idling to a maximum of 5 minutes (BAAQMD 2017). In accordance with CARB emissions standards, all construction equipment with a model year of 2012 or later would comply with the engine standards of 13 California Code of Regulations Section 2449. The Project would comply with existing energy standards, including state and local standards designed to minimize use of fuel in construction vehicles. Therefore, construction and operation of the Project would not conflict with or obstruct adopted energy conservation plans or violate energy efficiency standards. The impact would be less than significant and no mitigation is required.

Santa Maria Site

As with the Rodeo Refinery, demolition activities at the Santa Maria Site would be required to implement construction best management practices of the San Luis Obispo County APCD Project and CARB. Compliance with these measures designed to minimize emissions is expected to result in a less-than-significant impact.

Pipeline Sites

The Pipeline Sites would be decommissioned, which would not require any construction or demolition activities that could create a conflict with or obstruction of adopted energy conservation plans or violate energy efficiency standards. The impact would be less than significant and no mitigation is required.

Operation and Maintenance: Less Than Significant, No Mitigation Proposed

Rodeo Refinery

Operation of the Project would comply with all federal and state regulations and policies regarding energy efficiency. The Project would be consistent with the Energy Policy Act of 2005, the CEC's Integrated Energy Policy, AB 1007, CARB's Mobile Source Strategy, and the Contra Costa General Plan because by providing renewable fuels it would help businesses, government entities, and consumers to reduce reliance on non-renewable energy sources and promote the use of renewable fuels. Furthermore, the Project converts the existing Rodeo Refinery from refining crude oil and petroleum-based feedstocks to refining renewable feedstocks. As noted in Appendix F to the CEQA Guidelines, the "goal of conserving energy implies the wise and efficient use of energy" and may be achieved through various means, including "decreasing reliance on fossil fuels" and "increasing reliance on renewable energy sources." Thus, the very nature of the Project serves to achieve the goal of conserving energy, resulting in the wise and efficient use of energy.

In addition, the Project would generate transportation fuel that is designed to meet the requirements of the LCFS. The LCFS sets CI benchmarks for transportation fuels, which reduce over time, and the program supports the diversification of the fuel pool in California not only to reduce GHG emissions, but to reduce petroleum dependency. The Project's participation in the LCFS program further supports energy conservation. Therefore, the impact would be less than significant and no mitigation is required.

Santa Maria Site

Any potential future development of the Santa Maria Site, and the associated level of required remediation, is speculative at this time, and would be a separate project and evaluated in a separate CEQA process by San Luis Obispo County. However, it is expected that San Luis Obispo County would require compliance with all federal and state regulations and policies regarding energy efficiency for any new development. Therefore, the Project would not conflict with or obstruct any federal or state energy conservation plans or violate any energy efficiency standards. The impact would be less than significant, and no mitigation is required.

Pipeline Sites

Operation and maintenance at the Pipeline Sites would discontinue with implementation of the Project since the pipelines would be decommissioned, which would reduce energy consumption, (or potentially sold, which would not change the baseline condition. Therefore, the Project would not conflict with or obstruct any federal or state energy conservation plans or violate any energy efficiency standards. The impact would be less than significant, and no mitigation is required.

Mitigation Measure: **None Required**

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4.7 Geology and Soils

4.7.1 Introduction

This section identifies and evaluates potential impacts related to geology and soils that could result from the Project. Discussed are the physical and regulatory settings, the baseline for determining environmental impacts, the significance criteria used for determining environmental impacts, and potential impacts associated with Project construction and demolition, the transitional phase, and operation and maintenance at the Rodeo Refinery. The Santa Maria Site is addressed to the extent information is available and at a qualitative level of discussion.

The Project also includes the Pipeline Sites—four regional pipelines serving the Santa Maria Site and the Rodeo Refinery. The Santa Maria Site is connected to the Rodeo Refinery by approximately 200 miles of subterranean pipeline, crossing San Luis Obispo, Santa Barbara, Kern, Kings, Fresno, Merced, Stanislaus, San Joaquin, Alameda, and Contra Costa Counties. Phillips 66 proposes to empty and clean the pipelines at existing maintenance access points and to decommission or sell them; they would not be excavated as part of this Project. No physical changes would occur. Therefore, the Pipeline Sites are not further addressed in this section.

4.7.2 Environmental Setting

4.7.2.1 Regional Geology

Contra Costa County

The Rodeo Refinery, including the Carbon Plant, is located in northern Contra Costa County along the southeastern edge of San Pablo Bay. Geologically, this region of California is characterized by a series of northwest-trending mountains and valleys controlled by tectonic folding and faulting. The region has undergone a complex geologic history of folding, faulting, uplift, sedimentation, volcanism, and erosion.

Geologic units of the region consist primarily of sedimentary rocks, occasional volcanic rocks, and alluvial deposits. Regional basement rocks consist of the highly-deformed Great Valley Sequence, which include massive beds of marine sandstone intermixed with siltstone and shale, and marine sandstone and shale overlain by softer non-marine units. Bedrock in the general vicinity of the Rodeo Refinery is classified as San Pablo Group sedimentary rocks of the Neroly and Cierbo Formations, which consist of Miocene-age (approximately 23.7 to 5.3 million years ago) marine sandstones interbedded with siltstone, mudstone, and shale (Graymer et al. 1994). Generally, native bedrock is closer to the ground surface in sloped and hilly areas of the region, whereas artificial fill material underlies most flat areas, and thickens substantially along the shoreline of San Pablo Bay at and near the Rodeo Refinery. Unconsolidated alluvial deposits, artificial fill, and estuarine deposits underlie the marginal areas along the San Pablo Bay, Carquinez Straight, and Suisun Bay. Landslides in the region occur in weak, easily weathered bedrock on relatively steep slopes.

San Luis Obispo County

The regional geologic structure surrounding and including the Santa Maria Valley area is complex, as it lies within the structural influence of both the California Coast Ranges and the Transverse Ranges of southern California. The Project site is located in the Santa Maria Valley, at the southwestern edge of the Nipomo Mesa. The Nipomo Mesa and Santa Maria Valley comprise a structural and topographic basin bounded by the Casmalia and Solomon Hills on the south, Pacific Ocean on the west, Edna Hills and Newsom Ridge on the north-northeast, and San Rafael Mountains on the east-southeast. The regional geologic structure is extremely, as it lies within the structural influence of both the California Coast Ranges and the Transverse Ranges of southern California. Older rocks exposed in the bordering ranges are at considerable depth beneath Tertiary and Quaternary rocks. The Tertiary rocks form a series of

west-trending folds. Of these folds, the northern-most forms the basin beneath the Santa Maria and Sisquoc valleys (San Luis Obispo 2014; Worts 1951).

4.7.2.2 Regional Faults and Seismicity

Ground movement during an earthquake can vary depending on the overall magnitude, distance to the fault, focus of earthquake energy, and type of geologic material. The composition of underlying soils, even those relatively distant from faults, can intensify ground shaking. Areas that are underlain by bedrock tend to experience less ground shaking than those underlain by unconsolidated sediments such as artificial fill. For this reason, earthquake intensities can be measured in several ways. The two most common are the intensity (the Richter magnitude) and the observed effects (the Modified Mercalli intensity scale) at a given locality. A less frequently used but still common measure is the Moment Magnitude, which is related to the physical characteristics of a fault including the rigidity of the rock, the size of fault rupture, and movement or displacement across a fault (California Geological Survey [CGS] 2002). Richter magnitude is a measure of the size of an earthquake as recorded by a seismograph at the location of the instrument. Richter magnitudes vary logarithmically, with each whole number step representing a ten-fold increase in the amplitude of the recorded seismic waves.

The Modified Mercalli intensity scale (see Table 4.7-1) is commonly used to measure earthquake damage due to ground shaking. The Modified Mercalli intensity scale values for intensity range from I (earthquake not felt) to XII (damage nearly total); intensities ranging from IV to X could cause moderate to significant structural damage.[39] The intensity of an earthquake will vary over the region of a fault and generally decrease with distance from the epicenter of the earthquake.

In addition, state regulations establish regulatory zones (known as Earthquake Fault Zones or Alquist-Priolo Zones) around the surface traces of active faults. Those relevant to the Project are identified below.

Contra Costa County

The San Francisco Bay Area region contains both active and potentially active faults, and is considered a region of high seismic activity.[40] The USGS Working Group on California Earthquake Probabilities has evaluated the probability of one or more earthquakes of Richter magnitude (M) 6.7 or higher occurring in the San Francisco Bay Area within the next 30 years. The result of the evaluation indicated a 72 percent likelihood that such an earthquake event would occur in the Bay Area between 2014 and 2044 (Field et al. 2015).

The region is situated on a plate boundary marked by the San Andreas Fault System, which consists of several northwest-trending active and potentially active faults, as shown on Figure 4.7-1. In the Bay Area, movement along this plate boundary is distributed across a complex system of strike-slip, right-lateral, parallel and sub-parallel faults. These faults include the San Andreas, Hayward, Rodgers Creek-Healdsburg, Concord-Green Valley, Greenville-Marsh Creek, Calaveras, and West Napa.

Alquist-Priolo fault zones within 10 miles of the Rodeo Refinery include the Hayward Fault, Concord Fault, Rodgers Creek Fault, and the West Napa Fault. A description of the fault locations is included in Table 4.7-2.

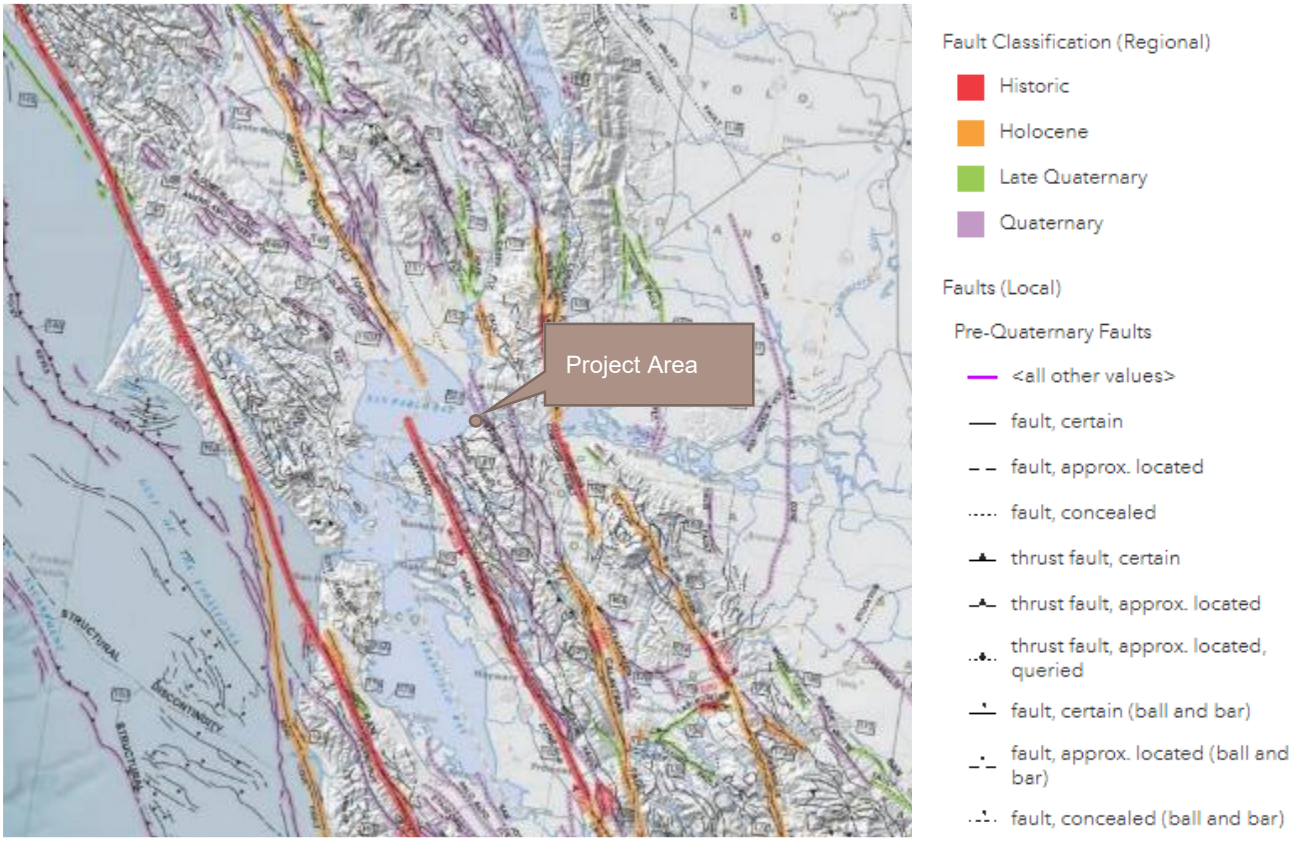
[39] The damage level represents the estimated overall level of damage that will occur for various Modified Mercalli intensity levels. The damage, however, will not be uniform. Not all buildings perform identically in an earthquake. The age, material, type, method of construction, size, and shape of a building all affect its performance.

[40] An “active” fault is defined by the State of California as a fault that has had surface displacement within Holocene time (approximately the last 11,000 years). A “potentially active” fault is defined as a fault that has shown evidence of surface displacement during the Quaternary (last 1.6 million years) unless direct geologic evidence demonstrates inactivity for all of the Holocene or longer. This definition does not, of course, mean that faults lacking evidence of surface displacement are necessarily inactive. “Sufficiently active” is also used to describe a fault if there is some evidence that Holocene displacement occurred on one or more of its segments or branches (Hart 2007).

San Luis Obispo County

Major active or potentially active faults in the region include the Hosgri, Orcutt-Casmalia, Wilmar Avenue, and Oceano faults. These faults have the potential to generate the greatest strong ground motion in the region; the Orcutt-Casmalia and Hosgri faults have maximum credible earthquakes of magnitude 6.9 and 7.2, respectively (San Luis Obispo County 2014). Other faults in the region include the Los Osos and Lion's Head faults (Dames & Moore 1990).

No Alquist-Priolo fault zones are located within 10 miles of the Santa Maria. The closest Alquist-Priolo Fault Zone to the site is the Los Osos Fault Zone, located near the City of San Luis Obispo, approximately 17 miles to the north-northwest.



Source: CGS (2010)

Figure 4.7-1. Active and Potentially Active Bay Area Earthquake Faults

4.7.2.3 Regional Paleontology

Paleontological resources are the fossilized remains of plants and animals, including vertebrates (animals with backbones), invertebrates (e.g., starfish, clams, ammonites, and marine coral), and fossils of microscopic plants and animals (microfossils). Paleontological resources are most commonly found in undisturbed sedimentary bedrock formations. Artificial fills, which represent disturbed, reworked, and transported materials, would not contain unique or significant paleontological resources.

The Society of Vertebrate Paleontology (SVP) (1995) has established guidelines for the identification, assessment, and mitigation of adverse impacts on nonrenewable paleontological resources. The SVP has helped define the value of paleontological resources and, in particular, indicates that geologic units of high paleontological potential are those from which vertebrate or significant invertebrate or plant fossils have been recovered in the past (i.e., are represented in institutional collections). The sensitivity of an

area with respect to paleontological resources hinges on its geologic setting and whether significant fossils have been discovered in the area or in similar geologic units.

Contra Costa County

A search of the paleontological locality database of the University of California, Museum of Paleontology was conducted to identify vertebrate fossil localities within Contra Costa County (UCMP 2012). The records search did not identify existing fossil localities that directly underlie the Rodeo Refinery. The records search revealed 16 marine and non-marine vertebrate fossil localities that were discovered in the broader region of the San Pablo Group formations. Fossils include extinct genera of horses, cloven-hooved mammals, hares and rabbits, and an extinct genus of elephant. In accordance with SVP criteria, the San Pablo Group formations have a high paleontological potential because vertebrate fossils have been recovered from the formation in the past. All other soils on the site, including artificial fills and geologically recent residuum/alluvium, have a low paleontological potential.

San Luis Obispo County

According to Carson et al. (2020), the general area of the Santa Maria Site contains some formations with moderate to high paleontological potential. These are chiefly Pleistocene alluvial deposits containing a variety of vertebrate fossils and Pliocene-era rocks that have yielded marine mammal and other vertebrate and invertebrate fossils. Most of the area in the immediate vicinity of the Santa Maria Site, however, is characterized by late Holocene streambed, flood plain, and sand dune deposits with little or no paleontological potential.

4.7.2.4 Local Setting

Geology and Soils – Rodeo Refinery

Hillsides in the active area of the Rodeo Refinery have been subjected to extensive cut-and-fill modifications during construction activities from the 1950s and earlier to the present in order to form level areas for the construction of tanks and refining equipment. Subsurface conditions at the Rodeo Refinery generally consist of varying thicknesses of artificial fill materials and native soil over weathered sedimentary rocks. Geotechnical studies confirm that the active refinery components are underlain by an average of 15 feet of artificial fill (i.e., non-native, heterogeneous mixtures of clay, sand, and gravel), which has been graded to a level surface, removing the natural topography of the area (Geomatrix 2002). Native soils, where still present, are fine-textured silt, clay, and sand mixtures that cover underlying bedrock in a thin mantle. Bedrock outcropping is also overlaid by artificial levee fill that resulted from the past cut and fill activities. Areas mapped as artificial levee fill are noted as largely consisting of dumped, uncompacted material when created prior to 1965 (Helley and Graymer 1997). A preliminary geotechnical engineering study performed in 2002 evaluated subsurface conditions at the Rodeo Refinery (Contra Costa County 2003). The investigation determined that the majority of the site is underlain by the Neroly Formation at various depths, which is overlain by unconsolidated native soils and artificial fill. In general, bedrock would be expected to be deeper heading toward the bay shoreline.

Geology and Soils – Santa Maria Site

The Santa Maria Site is located in the Santa Maria Valley, at the southwestern edge of the Nipomo Mesa. The Nipomo Mesa and Santa Maria Valley comprise a structural and topographic basin bounded by the Casmalia and Solomon Hills on the south, the Pacific Ocean on the west, the Edna Hills and Newsom Ridge on the north-northeast, and the San Rafael Mountains on the east-southeast (San Luis Obispo County 2015). Underlying sediments consist primarily of poorly-graded late Quaternary, wind-blown dune sands with limited thin interbeds of silt and clay. These deposits are in turn underlain by late Quaternary

alluvium, Plio-Pleistocene sediments, and/or Pliocene and Miocene age sedimentary rocks (Dames & Moore 1990; Earth Systems Pacific 2008a, 2008b).

Table 4.7-1. Modified Mercalli Intensity Scale

Intensity Value	Intensity Description	Average Peak Ground Acceleration[a]
I	Not felt except by a very few persons under especially favorable circumstances.	< 0.0017 g
II	Felt only by a few persons at rest, especially on upper floors on buildings. Delicately suspended objects may swing.	0.0017–0.014 g
III	Felt noticeably indoors, especially on upper floors of buildings, but many people do not recognize it as an earthquake. Standing motor cars may rock slightly, vibration similar to a passing truck. Duration estimated.	0.0017–0.014 g
IV	During the day felt indoors by many, outdoors by few. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.	0.014–0.039 g
V	Felt by nearly everyone, many awakened. Some dishes and windows broken; a few instances of cracked plaster; unstable objects overturned. Disturbances of trees, poles may be noticed. Pendulum clocks may stop.	0.035–0.092 g
VI	Felt by all, many frightened and run outdoors. Some heavy furniture moved; and fallen plaster or damaged chimneys. Damage slight.	0.092–0.18 g
VII	Everybody runs outdoors. Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable in poorly built or badly designed structures; some chimneys broken. Noticed by persons driving motor cars.	0.18–0.34 g
VIII	Damage slight in specially designed structures; considerable in ordinary substantial buildings, with partial collapse; great in poorly built structures. Panel walls thrown out of frame structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned. Sand and mud ejected in small amounts. Changes in well water. Persons driving motor cars disturbed.	0.34–0.65 g
IX	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb; great in substantial buildings, with partial collapse. Buildings shifted off foundations. Ground cracked conspicuously. Underground pipes broken.	0.65–1.24 g
X	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations; ground badly cracked. Rails bent. Landslides considerable from riverbanks and steep slopes. Shifted sand and mud. Water splashed (slopped) over banks.	> 1.24 g
XI	Few, if any, (masonry) structures remain standing. Bridges destroyed. Broad fissures in ground. Underground pipelines completely out of service. Earth slumps and land slips in soft ground. Rails bent greatly.	> 1.24 g
XII	Damage total. Practically all works of construction are damaged greatly or destroyed. Waves seen on ground surface. Lines of sight and level are distorted. Objects are thrown upward into the air.	> 1.24 g

Source: ABAG (2003); USGS (2011)

Notes:

[a] Value is expressed as a fraction of the acceleration due to gravity (g). Gravity (g) is 9.8 meters per second squared. 1.0 g of acceleration is a rate of increase in speed equivalent to a car traveling 328 feet from rest in 4.5 seconds.

Table 4.7-2. Active Faults In the Project Site Vicinity

Fault	Location and Direction from Project Site	Recency of Movement	Fault Classification[a]	Historical Seismicity[b]	Maximum Moment Magnitude Earthquake (mw)[c]
Hayward	7 miles southwest	Pre-Historic (possible 1836; 1868 ruptures) Holocene	Active	M 6.8, 1868 Many <M 4.5	7.1
West Napa	8 miles north	Holocene	Active	Not Available	6.5
Concord-Green Valley	9 miles east	Historic (1955) Holocene	Active	Historic active creep	6.9
Rodgers Creek	12 miles northwest	Historic Holocene	Active	M 6.7, 1898 M 5.6, 5.7, 1969	7.0
Pleasanton	22 miles southeast	Holocene	Active	Not Applicable	5.5
San Andreas	25 miles west	Historic (1906; 1989 ruptures)	Active	M 7.1, 1989 M 8.25, 1906 M 7.0, 1838 Many <M 6	7.9
Calaveras (northern)	25 miles southeast	Historic (1861 rupture) Holocene	Active	M 5.6-M 6.4, 1861 M 4 to M 4.5 swarms 1970, 1990	6.8
Marsh Creek-Greenville	28 miles southeast	Historic (1980 rupture) Holocene	Active	M 5.6 1980	6.9

Source: Jennings and Bryant (2010); Hart (2007)

Notes:

[a] An "active" fault is defined by the State of California as a fault that has had surface displacement within Holocene time (approximately the last 11,000 years). A "potentially active" fault is defined as a fault that has shown evidence of surface displacement during the Quaternary (last 1.6 million years) unless direct geologic evidence demonstrates inactivity for all of the Holocene or longer. This definition does not, of course, mean that faults lacking evidence of surface displacement are necessarily inactive. "Sufficiently active" is also used to describe a fault if there is some evidence that Holocene displacement occurred on one or more of its segments or branches (Hart 2007).

[b] Richter magnitude (M) and year for recent and/or large events. The Richter magnitude scale reflects the maximum amplitude of a particular type of seismic wave.

[c] Moment magnitude is related to the physical size of a fault rupture and movement across a fault. Moment magnitude provides a physically meaningful measure of the size of a faulting event (CGS 2002). The Maximum Moment Magnitude Earthquake, derived from the joint CGS/USGS Probabilistic Seismic Hazard Assessment for the State of California (Peterson et al. 1996).

Faults and Seismicity – Rodeo Refinery

There are no known active faults traversing the Rodeo Refinery. The closest active fault to the Rodeo Refinery is the Hayward fault, located approximately 7 miles southwest. The Hayward Fault Zone is the southern extension of a fracture zone that includes the Rodgers Creek fault (north of San Pablo Bay), the Healdsburg fault (Sonoma County), and the Mayacama fault (Mendocino County). The Hayward fault trends to the northwest within the East Bay, extending from San Pablo Bay in Richmond, 60 miles south to San Jose, where it converges with the Calaveras fault, a similar type of fault that extends north to Suisun Bay. Historically, the Hayward fault generated two sizable earthquakes, both in the 1800s. The USGS Working Group on California Earthquake Probabilities includes the Hayward–Rodgers Creek fault systems in the list of those faults that have the highest probability of generating earthquakes of M 6.7 and greater sometime over the next 30 years (Field et al. 2015).

Other nearby potentially active faults include the Franklin and Southampton faults, although the California Geological Survey (CGS, formerly California Division of Mines and Geology) does not consider the Franklin or Southampton faults to be active, nor are they zoned under the Alquist-Priolo Act as Earthquake Hazard Zones (Hart 2007). The Franklin fault, located 1 mile east of the Rodeo Refinery, extends southwest of Walnut Creek to an inferred terminal point located near the town of Selby along the south shore of the Carquinez Strait. The maximum credible earthquake for the Franklin fault has been estimated to be M 6.5 (Geomatrix 1992 as referenced in Contra Costa County 2003). The Southampton fault, located approximately 2.5 miles east of the refinery, extends northwest across the Carquinez Strait near the town of Port Costa to an inferred terminal point in the low-lying hills east of the city of Vallejo. The maximum credible earthquake for the Southampton fault has been estimated to be M 6.25 (Geomatrix 1992 as referenced in Contra Costa County 2003).

Faults and Seismicity – Santa Maria Site

The Santa Maria Site is located in a geologically complex and seismically active region that is subject to earthquakes and potentially strong ground shaking (San Luis Obispo County 2015). Earthquakes up to magnitude 4.0 commonly occur throughout the region and available historical and instrumental data indicate at least 10 magnitude 5 to 5.5 earthquakes have occurred in the onshore and offshore areas of the site region since 1902. In addition to these local earthquakes, the 1927 Lompoc earthquake (M 7.0), located offshore of Point Arguello, and the 1857 Fort Tejon earthquake (M 7.9), located on the San Andreas Fault, generated significant strong ground motion at the site. More recently, the 2003 San Simeon earthquake (M 6.6) generated strong ground motion in the Project area (USGS 2008).

4.7.2.5 Seismic Hazards

Seismic hazards include ground shaking, liquefaction, lateral spreading, differential settlement, landsliding, and inundation by encroaching waves (tsunami and seiches).

Ground Shaking – Rodeo Refinery

The severity of ground shaking at the Rodeo Refinery resulting from a specific earthquake would depend on the characteristics of the generating fault, distance to the energy source, the magnitude of the event, and the site-specific geologic conditions. The areas of the site directly underlain by bedrock would likely experience less severe ground shaking than those underlain by artificial fill or native soils. According to the CGS probabilistic seismic hazard map, peak ground acceleration[41] (PGA) at the Project site could reach or exceed 0.47 *g* (CGS 2013). A probabilistic seismic hazard map[42] is a map that shows the hazard from earthquakes that geologists and seismologists agree could occur. It is "probabilistic" in the sense that the analysis takes into consideration the uncertainties in the size and location of earthquakes and the resulting ground motions that can affect a particular site. By comparison, the PGAs recorded in San Francisco and Oakland during the 1989 moment magnitude 6.9 Loma Prieta earthquake were approximately 0.3 *g*. However, the recording sites were located over 40 miles from the earthquake epicenter. Ground accelerations within the Loma Prieta epicenter region were 0.7 *g* (CGS 1990). The

[41] Ground accelerations are expressed in terms of *g*, which is equal to the acceleration of gravity, or approximately 32.2 feet per second squared. An object that accelerates at 1 *g* for one second will reach a speed of 32.2 feet per second and cover a distance of 16.1 feet.

[42] The maps are typically expressed in terms of probability of exceeding a certain ground motion. For example, the maps showing 10 percent probability of exceedance in 50 years depict an annual probability of 1 in 475 of being exceeded each year. This level of ground shaking has been used for designing buildings in high seismic areas. These maps show ground motions that geologists and seismologists do not think would be exceeded in the next 50 years; in fact, there is a 90 percent chance that these ground motions would not be exceeded. This probability level allows engineers to design buildings for larger ground motions than geologists and seismologists think would occur during a 50-year interval, which makes buildings safer than if they were only designed for the ground motions that are expected to occur in the next 50 years. Seismic shaking maps are prepared using consensus information on historical earthquakes and faults. These levels of ground shaking are used primarily for formulating building codes and for designing buildings. The maps can also be used for estimating potential economic losses and preparing for emergency response (Peterson et al. 1999).

Rodeo Refinery, which is approximately 75 miles from the epicenter, experienced only 0.1 *g* (Contra Costa County 1994).

Ground Shaking – Santa Maria Site

The predicted PGA at the Santa Maria Site in San Luis Obispo County for a seismic event with a return period of 144 years or less is 0.15 *g* (San Luis Obispo County 2015). That PGA would cause ground shaking corresponding to a Modified Mercalli Intensity VI event, which could result in light damage to infrastructure such as roads, bridges, and pipelines.

Liquefaction

Liquefaction is the sudden temporary loss of shear strength in saturated granular sediments (typically, sands) subjected to ground shaking. It generally occurs when seismically-induced ground shaking causes the pressure of the water between the granules to increase to a point equal to the pressure of the soil overburden. When this occurs, the soil can move like a fluid, hence the term liquefaction. Liquefaction can cause foundation failure of buildings and other facilities due to the reduction of foundation bearing strength. The potential for liquefaction depends on the duration and intensity of earthquake shaking, particle size distribution of the soil, density of the soil, and elevation of the groundwater. Areas at risk due to the effects of liquefaction are typified by a high groundwater table and underlying loose to medium-density granular sediments, particularly younger alluvium and artificial fill.

Rodeo Refinery

Fill and native sediments encountered beneath the Rodeo Refinery during previous geotechnical investigations were predominantly stiff clayey sands and sandy clays with gravel, although layers of loose sands and sandy gravels were present. Shallow groundwater within the upper 50 feet below ground surface was encountered in some borings (Geomatrix 2002 as referenced in Contra Costa County 2003). Previous geologic investigations at the Rodeo Refinery have noted that areas underlain by shallow bedrock are generally not at risk for liquefaction (Contra Costa County 1994). According to the ABAG Liquefaction Susceptibility Map, the majority of the Rodeo Refinery is mapped as having a very low risk of liquefaction (ABAG 2018). The exception is the western shoreline area, where the railcar loading rack and tanker dock components of the Rodeo Refinery are located; that area is characterized as an area of very high liquefaction susceptibility (ABAG 2018).

Santa Maria Site

The Safety Element of the San Luis Obispo County General Plan indicates that locally shallow groundwater and sandy soils have created a moderate potential for liquefaction in the vicinity of the Santa Maria Site (San Luis Obispo County 1999). Site investigations at the Santa Maria Site itself have suggested that groundwater is deeper than approximately 20 feet below the ground surface and that the sands underlying the facility are sufficiently dense to prevent liquefaction at levels of seismically induced ground motion from a large earthquake. However, a recent analysis concluded that shallow groundwater and sandy soils also create a moderate potential for liquefaction at the Santa Maria Site (San Luis Obispo County 2015).

Differential Settlement

Earthquake shaking can produce compaction and densification of dry, uniformly graded, granular, and loose soil material. The amount of compaction across an area can vary due to differences in soil types, producing differential settlement. Artificial fill may also be susceptible to differential settlement. Differential settlement can affect existing and proposed foundations, slabs, and pavements, but the potential for differential settlement is normally accounted for in facility design and construction.

Rodeo Refinery

Geotechnical information from the Rodeo Refinery indicates that differential settlement could occur in some situations (Geomatrix 2002 as referenced in Contra Costa County 2003).

Santa Maria

Shallow groundwater and sandy soils create a moderate potential for liquefaction at the Project Site. Water levels measured in borings drilled at the Project Site, in combination with the proximity of the site to the Oso Flaco Creek floodplain to the south, indicates that high groundwater levels may be seasonally high or under other high water table conditions. Lateral spreading and seismically induced settlement typically occur in association with liquefaction (San Luis Obispo County 2014). Safety Element Map 3 of the San Luis Obispo County General Plan shows the Santa Maria Site as an area with moderate potential for seismic related settlement (San Luis Obispo County 2015).

4.7.2.6 Other Geologic Hazards

Expansive Soil

Expansive soils are fine-grained clay sediments that exhibit a “shrink-swell” behavior in which cyclic changes in volume (expansion and contraction) occur from alternate wetting and drying. Damage to structures on expansive soils may result over an extended period of time, and are manifested as cracking, settlement, and uplift of foundations, paved roads and streets, and concrete slabs.

Rodeo Refinery

According to the engineering study for a previous project at the Rodeo Refinery, existing near-surface soils at several locations have moderate to high expansion potentials (Contra Costa County 2003). The potential for damage from such conditions has been minimized by appropriate soil and foundation engineering during the construction of the existing refinery structures.

Santa Maria Site

Soils at the Santa Maria Site consists of dune sand. Therefore, the likelihood of the presence of expansive soils is low.

Soil Erosion

Soil erosion is the process whereby soil materials are worn away and transported to another area by wind or water. Excessive soil erosion can eventually lead to damage of building foundations and other improvements. Rates of erosion can vary depending on the soil material and structure, soil placement, and human activity, and erosion is most likely on sloped areas with exposed soil, especially when unnatural slopes are created by cut and fill activities.

Rodeo Refinery and Santa Maria Site

Both the Rodeo Refinery and Santa Maria Site have been extensively graded and covered with concrete, structures, asphalt, or vegetation. The soil erosion potential is very low at both sites.

Landslides

A landslide or slope failure is a mass of rock, soil, and debris displaced downslope by sliding, flowing, or falling. Landslides are dependent on a number of factors, including slope, geology, amount of rainfall, excavation, and seismic activity. Steep slopes and downslope creep of surface materials characterize landslide-susceptible areas.

Rodeo Refinery

The Rodeo Refinery is constructed on a hillside that was historically altered to create flat, terraced building pads. Although regional geologic mapping identified fill within the Rodeo Refinery as being uncompacted, site-specific mapping has not identified landslide prone materials (Contra Costa County 1994).

Santa Maria Site

The Santa Maria Site is located on undulating dune topography, with elevations ranging from approximately 50 to 180 feet above mean sea level (San Luis Obispo County 2015). Slope gradients are predominantly gentle, with localized steep slopes up to 30 feet high where the topography has been modified by grading. Santa Maria Site is constructed on land with gentle slopes (San Luis Obispo County 2015) that would have little or no susceptibility to landsliding.

Natural Settlement

Natural settlement typically occurs in unconsolidated deposits, such as artificial fill and the estuarine deposits locally referred to as Bay Mud, over time as a result of increased foundation loads and vibrations from overlying structures. Natural settlement may affect foundations, slabs, and pavements.

Rodeo Refinery

Geotechnical studies conducted for a previous project at the Rodeo Refinery indicated that areas of the site were susceptible to 1 inch of settlement, depending upon foundation design (Geomatrix 2002 as referenced in Contra Costa County 2003).

Santa Maria Site

Shallow groundwater and sandy soils create a moderate potential for liquefaction at the Project Site. Water levels measured in borings drilled at the Project Site, in combination with the proximity of the site to the Oso Flaco Creek floodplain to the south, indicates that high groundwater levels may be seasonally high or under other high water table conditions. Safety Element Map 3 of the San Luis Obispo County General Plan shows the Santa Maria Site as an area with moderate potential for settlement (San Luis Obispo County 2015).

Paleontology

Rodeo Refinery

Hillsides in the developed area of the Rodeo Refinery have been subjected to extensive cut-and-fill excavation during past construction activities. Grading and fill took place in the 1950s and earlier to form level areas for the construction of tanks and refining equipment. Subsurface conditions generally consist of varying thicknesses of artificial fill materials and native soil over weathered sedimentary rocks. Paleontological resources are most commonly found in undisturbed sedimentary bedrock formations. Artificial fills would not contain unique or significant paleontological resources: any fossils originally present would likely have been damaged or destroyed beyond recognition, and most modern artificial fills are imported from younger unconsolidated alluvium that is usually too young to have fossilized the remains of organisms.

Santa Maria Site

There are no known paleontological resources or unique geologic formations or sites located within the Santa Maria Site (San Luis Obispo County 2015).

4.7.2.7 Regulatory Setting

Federal Regulations

Earthquake Hazards Reduction Act

The Earthquake Hazards Reduction Act was enacted in 1997 to "reduce the risks to life and property from future earthquakes in the United States through the establishment and maintenance of an effective earthquake hazards and reduction program." To accomplish this, the Act established the National Earthquake Hazards Reduction Program (NEHRP). This program was significantly amended in November 1990 to refine the description of agency responsibilities, program goals, and objectives.

The NEHRP's mission includes improved understanding, characterization, and prediction of hazards and vulnerabilities; improvement of building codes and land use practices; risk reduction through post-earthquake investigations and education; development and improvement of design and construction techniques; improvement of mitigation capacity; and accelerated application of research results. The NEHRP designates the Federal Emergency Management Agency (FEMA) as the lead agency of the program and assigns it with several planning, coordinating, and reporting responsibilities. Programs under NEHRP help inform and guide planning and building code requirements such as emergency evacuation responsibilities and seismic code standards.

Occupational Safety and Health Administration Regulations

Excavation and trenching are among the most hazardous construction activities. The Occupational Safety and Health Administration's (OSHA's) Excavation and Trenching standard (29 CFR Section 1926.650) covers requirements for excavation and trenching operations. OSHA requires that all excavations in which employees could potentially be exposed to cave-ins be protected by sloping or benching the sides of the excavation, supporting the sides of the excavation, or placing a shield between the side of the excavation and the work area.

State Regulations

California Building Code

The California Building Code (CBC) has been codified in the as CCR Title 24, Part 2. Title 24 is administered by the California Building Standards Commission, which by law is responsible for coordinating and centralizing all building standards. The purpose of the CBC is to establish minimum standards to safeguard the public health, safety, and general welfare through structural strength, means of egress facilities, and general stability by regulating and controlling the design, construction, quality of materials, use and occupancy, location, and maintenance of all building and structures within its jurisdiction. The provisions of the CBC apply to the construction, alteration, movement, replacement, and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures throughout California.

The earthquake design requirements take into account the occupancy category of the structure, site class, soil classifications, and various seismic coefficients, CBC Chapter 16, Section 1613, provides earthquake loading specifications for every structure, and portion thereof, including nonstructural components that are permanently attached to structures and their supports and attachments, which shall be designed and constructed to resist the effects of earthquake motions in accordance with ASCE 7-05.

CBC Chapter 18 covers the requirements of geotechnical investigations (Section 1803), excavation, grading, and fills (Section 1804), load-bearing of soils (1805), as well as foundations (Section 1808), shallow foundations (Section 1809), and deep foundations (Section 1810). Chapter 18 also describes analysis of expansive soils slope instability, liquefaction, and surface rupture attributable to faulting or lateral spreading. It also addresses measures to be considered in structural design to minimize potential hazards.

Chapter 33 of the California Building Code contains specific requirements pertaining to site demolition, excavation, and construction to protect people and property from hazards associated with excavation cave-ins and falling debris or construction materials. Chapter 70 of the California Building Code regulates grading activities, including drainage and erosion control. Construction activities are subject to occupational safety standards for excavation, shoring, and trenching, as specified in California Occupational Health and Safety Administration (CCR Title 8) and in Section A33 of the California Building Code.

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act, passed in 1990, addresses non-surface fault rupture earthquake hazards, including liquefaction and seismically induced landslides. Under this Act, seismic hazard zones are mapped by the State Geologist to assist local governments in land use planning. Section 2691(c) of the Act states that "it is necessary to identify and map seismic hazard zones in order for cities and counties to adequately prepare the safety element of their general plans and to encourage land use management policies and regulations to reduce and mitigate those hazards to protect public health and safety." Section 2697(a) of the Act states that "cities and counties shall require, prior to the approval of a project located in a seismic hazard zone, a geotechnical report defining and delineating any seismic hazard."

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act was passed in 1972 to mitigate the hazard of surface faulting to structures used for human occupancy. The main purpose of the Act is to prevent the construction of buildings used for human occupancy on top of active faults. The Act only addresses the hazard of surface fault rupture and is not directed toward other earthquake hazards, such as ground shaking or landslides. The law requires the State Geologist to establish regulatory zones (known as Earthquake Fault Zones or Alquist-Priolo Zones) around the surface traces of active faults, and to issue appropriate maps. A trace is a line on the earth's surface defining a fault. Wherever an active fault exists, if it has the potential for surface rupture, a structure for human occupancy cannot be placed over the fault and must be a minimum distance from the fault (generally 50 feet). An active fault, for the purposes of the Alquist-Priolo Act, is one that has ruptured in the last 11,000 years. Maps are then distributed to all affected cities, counties, and state agencies for their use in planning and controlling new or renewed construction. Generally, construction within 50 feet of an active fault zone is prohibited.

State Water Resources Control Board Construction General Permit

The California Construction Storm Water Permit (Construction General Permit),[43] adopted by the SWRCB, regulates construction activities that include clearing, grading, and excavation resulting in soil disturbance of at least one acre of total land area. The Construction General Permit authorizes the discharge of storm water to surface waters from construction activities. It prohibits the discharge of materials other than storm water and authorized non-storm water discharges and all discharges that contain a hazardous substance in excess of reportable quantities established at 40 CFR Section 117.3 or 40 CFR Section 302.4 unless a separate NPDES Permit has been issued to regulate those discharges.

The Construction General Permit requires that all developers of land where construction activities will occur over more than 1 acre do the following:

- Complete a Risk Assessment to determine pollution prevention requirements pursuant to the three Risk Levels established in the General Permit;
- Eliminate or reduce non-storm water discharges to storm sewer systems and other waters of the Nation;

[43] *General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities,* Order No. 2009-0009-DWQ, as amended by Order No. 2010-0014-DWQ and 2012-0006-DWQ, National Pollutant Discharge Elimination System No. CAS000002.

- Develop and implement a Storm Water Pollution Prevention Plan (SWPPP), which specifies BMPs that would reduce pollution in storm water discharges to the Best Available Technology Economically Achievable/Best Conventional Pollutant Control Technology standards; and
- Perform inspections and maintenance of all BMPs.

Typical BMPs contained in SWPPPs are designed to minimize erosion during construction, stabilize construction areas, control sediment, control pollutants from construction materials, and address post construction runoff quantity (volume) and quality (treatment). The SWPPP must also include a discussion of the program to inspect and maintain all BMPs.

Local Regulations

Contra Costa County General Plan

Contra Costa County has established goals, policies, and programs in regard to geologic hazards. These are outlined in the Conservation and Safety Elements of the county general plan (Contra Costa County 2010). The policies and programs that may be directly applicable to the Project are as follows:

- **Policy 10-4:** In areas prone to severe levels of damage from ground shaking (i.e., Zone IV on map 10-4 of the general plan), where the risks to life and investments are sufficiently high, geologic-seismic and soils studies shall be required as a precondition for authorizing public or private construction.
- **Policy 10-5:** Staff review of application for development permits and other entitlements, and review of applications to other agencies that are referred to the County, shall include appropriate recommendations for seismic strengthening and detailing to meet the latest adopted seismic design criteria.
- **Policy 10-9:** In areas susceptible to high damage from ground shaking (i.e., Zone IV on map 10-4 of the general plan), geologic-seismic and soils studies shall be required prior to authorization of major land developments and significant structures (public or private).
- **Policy 10-10:** Policies regarding liquefaction shall apply to other ground failures which might result from ground shaking, but which are not subject to such well-defined field and laboratory analysis.
- **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.
- **Policy 10-21:** Approvals to allow for the construction of public and private development projects in areas of high liquefaction potential shall be contingent upon geologic and engineering studies which define and delineate potentially hazardous geologic and/or soils conditions, recommend means of mitigating these adverse conditions, and on proper implementation of the mitigation measures.
- **Policy 10-27:** Soil and geological reports shall be subject to the review and approval of the County Planning Geologist.
  - **Implementation Measure 10-d:** Through the environmental review process, require geologic, seismic, and/or soils studies as necessary to evaluate proposed development in areas subject to ground shaking, fault displacement, or liquefaction.

San Luis Obispo County General Plan

The Safety Element of the San Luis Obispo County General Plan provides measures for evaluation of geologic hazards and geotechnical requirements related to new construction to reduce the potential for loss of life and reduce the amount of property damage including:

- **Policy S-18 Fault Rupture Hazards:** Locate new development away from active and potentially active faults to reduce damage from fault rupture. Fault studies may need to include mapping and exploration beyond project limits to provide a relatively accurate assessment of a fault's activity. The County will enforce applicable regulations of the Alquist-Priolo Earthquake Fault Zoning Act pertaining to fault zones to avoid development on active faults.
  - **Implementation Measure Standard S-49:** The County will continue to enforce elements of the general plan, based on the Alquist-Priolo Earthquake Fault Zoning Act, that require geologic studies to be performed so that habitable structures and essential facilities will be sited away from active and potentially active faults.
- **Policy S-19 Reduce Seismic Hazards:** The County will enforce applicable building codes relating to the seismic design of structures to reduce the potential for loss of life and reduce the amount of property damage.
  - **Implementation Measure Program S-50:** Enforce applicable building code regulations pertaining to the design of structures and grading relative to seismic hazards.
  - **Implementation Measure Program S-51:** Adopt new Uniform Building Code requirements, when necessary, to promote the use of updated design standards.
  - **Implementation Measure Program S-52:** Encourage investigations to improve the existing characterizations of faults in areas of existing or proposed development, and their potential to generate damaging earthquakes, for the purpose of assisting in the design of structures to resist seismic loads. Implement appropriate design standards and building codes that address local seismic conditions
- **Policy S-20 Liquefaction and Seismic Settlement:** The County will require design professionals to evaluate the potential for liquefaction or seismic settlement to impact structures in accordance with the currently adopted Uniform Building Code.
  - **Implementation Measure Standard S-53:** Amend the Land Use Element/LCP as needed to incorporate medium to high liquefaction hazard areas identified in the Technical Background Report within the Geologic Study Area by combining designations.
  - **Implementation Measure Standard S-54:** The County will enforce current building code requirements that require the potential for liquefaction to be addressed in the design of structures.
  - **Implementation Measure Standard S-55:** The County will require geotechnical studies to be performed for habitable or important structures (as defined by the building code) sited in areas having moderate to high liquefaction potential as defined in Table 4-15 of the Technical Background Report. The geotechnical study should evaluate the potential for liquefaction and/or seismic related settlement to impact the development, and mitigation to reduce these potential impacts, if needed.
- **Policy S-21 Slope Instability:** The County acknowledges that areas of known landslide activity are generally not suitable for residential development. The County will avoid development in areas of known slope instability or high landslide risk when possible, and continue to encourage

that developments on sloping ground use design and construction techniques appropriate for those areas.

- **Implementation Measure Standard S-56:** For developments in areas of known slope instability, landslides, or slopes steeper than 20 percent, the stability of slopes shall be addressed by registered professionals practicing in their respective fields of expertise. For subdivisions, such studies should be performed prior to delineating lot lines and building envelopes.
- **Implementation Measure Standard S-57:** New development will not be permitted in areas of known landslide activity unless development plans indicate that the hazard can be reduced to a less-than-significant level prior to beginning development.

4.7.3 Significance Criteria

Based on CEQA Guidelines Appendix G, a project would cause adverse impacts related to geology and soils if it would:

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

b. 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 California Department of Conservation, Division of Mines and Geology Special Publication 42;

c. Strong seismic ground shaking;

d. Seismic-related ground failure, including liquefaction;

e. Landslides;

f. Result in substantial soil erosion or the loss of topsoil;

g. 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 onsite or offsite landslides, lateral spreading, subsidence, liquefaction or collapse;

h. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (International Conference of Building Officials 1994), creating substantial risks to life or property;

i. Have soils incapable of adequately supporting the use of septic tanks or alternative waste disposal systems where sewers are not available for the disposal of wastewater; or

j. Directly or indirectly destroy a unique paleontological resource or site or unique geological feature.

4.7.4 CEQA Baseline

Baseline conditions reflect the 2019 operation and maintenance of the Rodeo Refinery and Santa Maria Site as petroleum refineries, including operation and maintenance activities. The baseline setting also includes the applicable regulatory framework to protect environmental resources, which are described above.

4.7.5 Approach to Analysis

Continuing operation and maintenance of the Rodeo Refinery does not involve any new activities that could expose personnel to risks associated with geology and soils. Therefore, operation and maintenance impacts associated with the Rodeo Refinery are not further addressed, and the focus of analysis is on construction of new facilities and demolition impacts.

The transitional phase of the Project does not involve activities that would be affected by risks associated with geology and soils above that identified for construction/demolition impacts. Therefore, the transitional phase is not further addressed.

4.7.6 Discussion of No Geology and Soils Impacts

Review and comparison of the setting circumstances and proposed Project characteristics with the significance criteria stated above, clearly indicate that no impacts would be associated with criteria a.-i. and a.-iv., e, and f. The following discusses the reasoning to support this conclusion.

a. Expose people or structures to 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; and

The closest active fault to the Rodeo Refinery is the Hayward fault, located approximately 7 miles to the southwest. The Concord/Green Valley Fault is located approximately 8 miles to the northeast. The Rodeo Refinery is located between these two active, Alquist-Priolo zoned faults, but is far enough away from each one to not be included within either Alquist-Priolo zone. Although fault rupture is not necessarily limited to areas that coincide with the mapped fault trace, the site is sufficiently far enough away from the nearest active fault to be considered not at risk of fault rupture. Therefore, no impacts would occur related to exposure of people to increased risk due to ground rupture during construction/demolition and operation and maintenance. The Contra Costa County General Plan characterizes the Rodeo Refinery as primarily Lowest Damage Susceptibility except for some isolated areas near the bay which have Moderate Damage Susceptibility from seismic ground response.

No active or potentially active faults underlie the Santa Maria Site. The closest Alquist-Priolo Fault Zone to the site is the Los Osos Fault Zone, located near the City of San Luis Obispo, approximately 17 miles to the north-northwest. This is considered far enough away that to be not at risk for surface fault rupture. Therefore demolition of the Santa Maria Site would not expose people or structures to increased risk due to ground rupture, and no impact would occur.

iv. Landslides

The Rodeo Refinery is constructed on flat, terraced building pads. Site-specific mapping has not identified landslide prone materials, and the specific Project component sites are relatively flat. The Santa Maria Site is constructed on flat or gently rolling topography that is not at risk of landslides, and no landslide-prone conditions have been identified on the site. No activities would take place that could expose people or structures to increased risk of landslide at the Rodeo Refinery or Santa Maria Site. Therefore, no impacts would occur related to landslides.

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.

The Project does not include septic tanks or alternative wastewater disposal systems at either the Rodeo Refinery or Santa Maria Site. Control of wastewater is through the existing wastewater collection, treatment, and disposal systems at the Rodeo Refinery. Such systems would be removed as part of demolition of the Santa Maria Site. Therefore, no impact would occur related to the use of septic tanks for alternative wastewater disposal systems.

f. Directly or indirectly destroy a unique paleontological resource or site or unique geological feature.

The Rodeo Refinery and Santa Maria Site are intensively-developed industrial facilities that have been extensively graded and excavated over the past century. The Project would involve construction and demolition at the Rodeo Refinery and Santa Maria Site. No construction would take place on soils or rock formations with a paleontological potential per SVP guidelines. Therefore, there is no potential for encountering in-situ paleontological resources or unique geological formations, and no impact would occur.

4.7.7 Direct and Indirect Impacts of the Proposed Project

Direct impacts result from land modification directly and immediately caused by the construction, operation, or maintenance of a facility. Indirect impacts also occur as a result of a specific project, but do not result from intentional ground disturbance. Common indirect impacts include erosion, vibration, unauthorized artifact collecting, and vandalism. The proposed Project entails ground disturbance construction and demolition activities at the Rodeo Refinery and Santa Maria Site. Review and comparison of the setting circumstances and proposed Project characteristics with the significance criteria above, indicate potential impacts associated with criteria a (ii and iii), b, c, and d. The following discusses these potential impacts.

Table 4.7-3 presents a summary of the potential [env. resource] impacts, as well as significance determinations for each impact.

Table 4.7-3. Summary of Impacts

Impact	Significance Determination		
	LTS	LTSM	SU
Impact 4.7-1. Strong Seismic Shaking			
Rodeo Refinery and Santa Maria Site			
Construction/Demolition Including Transitional Phase[a]		✓	
Rodeo Refinery			
Operation and Maintenance		✓	
Impact 4.7-2. Soil Erosion or loss of top soil			
Rodeo Refinery and Santa Maria Site			
Construction/Demolition Including Transitional Phase[a]	✓		
Impact 4.7-3. Seismic-related ground failure, including liquefaction			
Rodeo Refinery and Santa Maria Site			
Construction/Demolition Including Transitional Phase[a]	✓		
Impact 4.7-4. Located on expansive Soils			
Rodeo Refinery and Santa Maria Site			
Construction/Demolition Including Transitional Phase[a]	✓		

Notes: LTS = Less than significant, no mitigation proposed
LTSM = Less-than-significant impact with mitigation
SU = Significant and unavoidable

[a] Transitional phase applies only to Rodeo Refinery

IMPACT 4.7-1

a. Would the proposed project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:

ii. Strong seismic ground shaking.

Construction/Demolition, Operation and Maintenance: Less-than-Significant Impact with Mitigation

Rodeo Refinery

Strong ground shaking from earthquakes generated by active faults in the Bay Area is a potential hazard to the Project at the Rodeo Facility. During the life of the Project, the Rodeo Facility is likely to be subjected to at least one moderate to severe earthquake that would cause strong ground shaking. According to USGS, the area will likely experience at least one major earthquake (i.e., greater than M 6.7) within the next 30 years. The intensity of such an event would depend on the causative fault and the distance to the epicenter, the moment magnitude, and the duration of shaking. The closest active fault to the Rodeo Refinery is the Hayward fault. Potential damage at the Rodeo Refinery from a significant earthquake on the Hayward fault could include broken piping, piping supports, damaged tanks, and stressed support bolts, but the overall direct damage has been predicted to be minimal, according to a planning study conducted by the California Geologic Survey (formerly California Department of Conservation, Division of Mines and Geology [1987]). Damage at refineries located east of the Hayward fault, as is the Rodeo Refinery, would reportedly be less severe than those west of the Hayward fault (California Department of Conservation, Division of Mines and Geology 1987). Damage from a significant earthquake on Rodgers Creek fault is predicted to be similar to that of the Hayward fault with only minimal direct damage, considering the vast number of structures, tanks, and pipelines associated with a refinery (California Department of Conservation, Division of Mines and Geology 1994).

Refineries are complex facilities and are, in general, conservatively designed and constructed. They consist not only of conventional buildings, but also structures that are unique to the petroleum refinery process. Over time, refineries undergo modifications and additions. Each phase of modification may be constructed by different groups and may occur over many years. Because seismic design standards have changed considerably over the last several decades, the seismic resistance of a given refinery may vary with the age of construction, with the newest structures and process equipment expected to perform best.

Foundation and structural designs that can withstand the level of ground shaking that could occur at the Project Site are in common use today. In accordance with the CBC, project equipment would be designed, at minimum, to withstand the ground acceleration that has a 10 percent probability of being exceeded in 50 years.[44] With foundation and structural design in accordance with the current CBC standards, seismic shaking should not result in significant structural damage to the Rodeo Facility. Seismic design consistent with current professional engineering and refinery industry standards would be employed in the proposed construction for resistance to strong ground shaking, especially for lateral forces. In the course of the final facility design, the project engineering geologist or geotechnical engineer may provide additional foundation design recommendations based on the ground conditions at the Rodeo Refinery. These recommendations would become part of the Project specifications.

Appropriate grading and design, in accordance with the CBC requirements and local planning and building department requirements, would be used to reduce the secondary effects of ground shaking on structures and infrastructure. Any fill materials would be appropriately compacted and engineered

[44] CGS peak ground accelerations for the region encompassing the refinery are estimated to reach or exceed 0.46 g for firm rock conditions to 0.53 g for alluvium conditions (CGS 2003).

as directed by the California certified engineering geologist or geotechnical engineer assigned to the Project.

A design-level geotechnical investigation is required for each Project component site area. Each investigation would include an analysis of expected ground motions at the site from known active faults. The analyses would be in accordance with applicable County ordinances and policies and consistent with the most recent version of the CBC, which requires structural design that can accommodate ground accelerations expected from known active faults. The investigations would determine final design parameters for the earthwork, foundations, foundation slabs, and any surrounding related improvements (e.g., utilities, roadways, parking lots and sidewalks). The investigations would be reviewed and approved by a certified engineering geologist or geotechnical engineer.

Implementation of Mitigation Measure GEO-1, which addresses the above-referenced requirements, would reduce impacts to less than significant.

Mitigation Measure GEO-1: Comply with Geotechnical Report

Phillips 66 shall comply with and implement all of the following measures designed to reduce potential substantial adverse effects resulting from strong seismic ground shaking:

- A California licensed geotechnical engineer or engineering geologist shall perform a comprehensive geotechnical investigation of all Project facilities at least 45 days prior to issuance of a grading or building permit. The investigation will be based on adequate subsurface exploration, laboratory testing of selected samples, and engineering/geologic analysis of the data gathered. The information shall be compiled and presented as a geotechnical report that provides an evaluation of potential seismic and geologic hazards, including secondary seismic ground failures, and other geologic hazards, such as landslides, expansive and corrosive soils, and provides current CBC seismic design parameters, along with providing specific standards and criteria for site grading, drainage, berm, and foundation design. The report shall be submitted with the current review fee to the County Peer-Review Geologist for review and approval.
- For construction requiring excavations, such as foundations, appropriate support and protection measures shall be implemented to maintain the stability of excavations and to protect construction worker safety. Where excavations are adjacent to existing structures, utilities, or other features that may be adversely affected by potential ground movements, bracing, underpinning, or other methods of support for the affected facilities shall be implemented.
- Recommendations in the approved geotechnical report shall be incorporated into the design and construction specifications and shall be implemented during build-out of the Project.
- The Project geotechnical engineer shall provide observation and testing services during grading and foundation-related work, and shall submit a grading completion report to the County prior to requesting the final inspection. This report shall provide full documentation of the geotechnical monitoring services provided during construction, including the testing results of the American Society for Testing and Materials. The Final Grading Report shall also certify compliance of the as-built Project with the recommendations in the approved geotechnical report.

IMPACT 4.7-2

b. Would the proposed project result in substantial soil erosion or the loss of topsoil.

Construction/Demolition: Less Than Significant, No Mitigation Proposed

Construction of the Project, including during the transitional phase, would require earthwork and grading, which would expose soil and potentially subject it to wind and water erosion. The extent of erosion that could occur would vary depending on soil type, slope steepness and stability, vegetation/cover, and weather conditions.

Rodeo Refinery

Previous work at the Rodeo Refinery indicates that soils at the site are susceptible to erosion. Water- and wind-induced erosion could occur during the construction phase of the Project when concrete and asphalt are removed and soils are stockpiled and exposed.

Santa Maria Site

Demolition activities at the Santa Maria Site would remove concrete, asphalt, and other ground cover, and would involve a certain amount of excavation. These activities would expose soils that are susceptible to erosion to the potential effects of wind and rain.

The Project is required by County ordinance (San Luis Obispo County Chapter 23.05, Contra Costa County Chapter 716-8) as well as through the NPDES General Construction Permit administered by the state to establish erosion control measures for construction activities. The Erosion Control Plan would include, at a minimum, the following requirements:

- Excavation and grading activities would be scheduled for the dry season (April 15 to October 15) to the extent possible. This would reduce the chance of severe erosion from intense rainfall and surface runoff, as well as the potential for soil saturation.
- Temporary erosion control measures would be provided until re-vegetation is established or impervious surfaces (e.g., asphalt, concrete) are added.
- After completion of grading, erosion protection would be provided on all cut-and-fill slopes.
- Erosion control BMPs selected and implemented for the proposed Project would be in place and operational prior to the onset of major earthwork on the site.

Implementation of the Erosion Control Plan and required BMPs as part of the NPDES General Construction Permit would minimize erosion impacts during construction and reduce the potential impacts to less than significant.

Mitigation Measure: **None Required**

IMPACT 4.7-3

a. Would the proposed project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:

iii. Seismic-related ground failure, including liquefaction

c. Would the proposed project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in onsite or offsite landslide, lateral spreading, subsidence, liquefaction or collapse.

Construction/Demolition: Less Than Significant, No Mitigation Proposed

Rodeo Refinery

As discussed above in Impact 4.7-1, a design-level geotechnical investigation would be performed for each Project component site area. Each investigation would include an analysis of the underlying soil properties including the potential for instability, subsidence, liquefaction, or collapse. In the course of final design, the area of the proposed railcar loading rack at the Rodeo Site would be explored by advancing geotechnical borings and/or cone penetration test soundings. The cone penetration tests would provide a nearly continuous profile of soil behavior and engineering characteristics from the ground surface through potentially liquefiable soils until rock or other hard material that is encountered. The cone penetration test soundings would be performed in accordance with the standards of the American Society for Testing and Materials.

Data from the boring and/or cone penetration tests, together with data from existing borings near the site, would be analyzed to evaluate the risk and the consequences of liquefaction. Dynamic stresses induced by earthquake shaking would be estimated and compared to the stresses required to cause liquefaction of the soils beneath the site. The geotechnical report will summarize the liquefaction analysis and provide additional engineering and construction design measures, if needed, to reduce the risk of damage to the proposed improvements from liquefaction.

The analyses would be in accordance with current engineering standards that would effectively mitigate unstable soils. The investigations would determine final design parameters for the earthwork, foundations, foundation slabs, and any surrounding related improvements such as utilities, roadways, parking lots, and sidewalks. The investigations would be prepared by a California registered geotechnical engineer or engineering geologist. The report would be submitted to the Contra Costa County, Department of Conservation and Development, Building Inspection Division for review and approval by engineering staff prior to issuance of construction permits. Therefore, with the application of current required geotechnical design criteria, impacts associated with unstable geologic units or materials would be less than significant.

Santa Maria Site

Activities at the Santa Maria Site would not place structures on soils susceptible to spreading, subsidence, liquefaction, or collapse. Therefore, impacts related to unstable geological conditions would be less than significant.

Mitigation Measure: **None Required**

IMPACT 4.7-4

d. Would the proposed project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (International Conference of Building Officials 1994), creating substantial risks to life or property.

Construction/Demolition: Less Than Significant, No Mitigation Proposed

Rodeo Refinery

The effects of expansive soils could damage foundations of aboveground structures, specifically the proposed PTU at the Rodeo Facility. The expansion and contraction could exert enough pressure on a structure to result in cracking, settlement, and uplift. As stated above, each of the Project components would receive a site-specific geotechnical investigation. As part of these investigations, standard to current engineering practices and required under CBC, each site would be evaluated for potential expansive soils. The final geotechnical report for each site would include recommendations to mitigate any potential hazards associated with expansive soils, if any are present. Therefore, the application of current required geotechnical design criteria would reduce the impact associated with the potential presence of expansive soils to less than significant.

Natural settlement typically occurs in unconsolidated deposits, over time, as a result of increased foundation loads from overlying structures. Differential settlement would be a concern in areas that have been filled with unengineered fill. As discussed above, geotechnical recommendations would include measures such as the proper compaction of subsurface materials and installation of an adequate foundation necessary to minimize potential foundation or structural damage associated with settlement. As discussed earlier, Phillips 66 would be required to submit a design-level geotechnical report to the County in order to obtain grading and building permits. This report would include estimated excavation and fill volumes, compaction standards and methods, and foundation specifications. Compliance with the compaction standards of the American Society for Testing and Materials, the Contra Costa County grading ordinance, and a structural foundation design that incorporates modern engineering standards and that is compliant with the CBC, would ensure that potential settlement hazards-related impacts would be less than significant.

Santa Maria Site

The Santa Maria Site is mapped as Quaternary Dune sands, which are not likely to be expansive as expansive soils typically contain significant amounts of clay. However, the Project would involve demolition activities, and not place any new structures at the Santa Maria Site. Therefore, there would be no risks to life or property associated with the presence of expansive soils at the Santa Maria Site. Impacts would be less than significant.

Mitigation Measure: **None Required**

4.7.8 References

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4.8 Greenhouse Gas Emissions

4.8.1 Introduction

This section establishes the existing conditions and identifies and evaluates potential impacts related to GHG emissions that could result from both stationary and mobile sources. Discussed are the physical and regulatory settings, the baseline for determining environmental impacts, the significance criteria used for determining environmental impacts, and potential impacts associated with Project construction and demolition, the transitional phase, and operation and maintenance at the Rodeo Refinery. The Santa Maria Site and Pipeline Sites are addressed to the extent information is available and at a qualitative level of discussion.

4.8.2 Environmental Setting

The setting section describes the physical and regulatory setting of the Project. The physical setting describes conditions and operations in 2019, which is the CEQA baseline for this analysis except for marine transportation, for which the baseline is an average of the years 2017–2019 (see Section 3.13, *CEQA Baseline*, for a detailed explanation of the CEQA baseline). As described in Chapter 3, *Project Description*, the Project sites include the Rodeo Refinery in northwestern Contra Costa County, consisting of the Rodeo Site and Carbon Plant Site, the Santa Maria Site in San Luis Obispo County, and four pipeline systems that collect crude oil for the Santa Maria Site and deliver semi-refined feedstock to the Rodeo Refinery (referred to hereafter as the Pipeline Sites).

4.8.2.1 Background on Greenhouse Gases and Climate Change

Gases that trap heat in the atmosphere are called GHGs. GHGs allow sunlight to enter the atmosphere, but trap a portion of the outward-bound infrared radiation, which warms the atmosphere. The process is analogous to the effect horticultural greenhouses have in raising the internal temperature, hence the term GHGs. Both natural processes and human activities emit GHGs. The principal GHGs are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), sulfur hexafluoride (SF_6), perfluorocarbons (PFCs), hydrofluorocarbons (HFCs) and nitrogen trifluoride (NF_3). CO_2 is the reference gas for estimating GHG emissions, and is assigned a Global Warming Potential (GWP) of 1 (unity), where all other GHGs have GWPs greater than 1 as a measure of relative potency.

To account for the GWP of different GHGs, emissions are normally quantified and reported as carbon dioxide equivalents (CO_2e), which for mixtures is the summation of the products of each component GHG times its GWP. For example, SF_6 is commonly used in the electric utility industry as an insulating gas in power distribution switch gear, circuit breakers, and other high voltage equipment. SF_6, while comprising a small fraction of the total GHGs emitted annually world-wide, is a much more potent GHG with a current GWP of 23,500 (IPCC 2015), or 23,500 times that of CO_2. Mass emissions of GHGs and CO_2e are quantified in units of million British thermal units (MMBtu) and million metric tons (MMT).[45] Thus, for example, 1 kilogram of SF_6 leaked from high voltage switch gear would be equivalent to 23.5 metric tons (MT) of CO_2 emitted from fuel combustion.

GWP ratios are provided by the IPCC. Historically, GHG emission inventories were calculated using ratios from the IPCC's Second Assessment Report, published in 1996. The IPCC has since updated the ratios based on the latest science in its Fourth Assessment Report and Fifth Assessment Report, published in 2007 (IPCC 2007) and 2014, respectively (IPCC 2015). The CARB uses the Fourth Assessment Report ratios for the statewide GHG emissions inventory (CARB 2019a) and in the current Climate Change

[45] The term metric ton (or MT) is commonly used in the United States to refer to the metric system unit tonnes, which is defined as a mass equal to 1,000 kilograms. A metric ton is approximately 1.1023 short tons or 2,204.6 pounds. The unit MMT refers to one million metric tons, or 1,102,300 short tons.

Scoping Plan (CARB 2017). Compounds that are regulated as GHGs and part of the Project's inventory are discussed below.

Carbon Dioxide

In the atmosphere, carbon generally exists in its oxidized form, as CO_2. Natural sources of CO_2 include the respiration (breathing) of humans, animals, and plants, volcanic outgassing, decomposition of organic matter, and evaporation from the oceans. Anthropogenic (human-caused) sources of CO_2 include the combustion of fossil fuels and wood, waste incineration, mineral production, and deforestation. CO_2 accounted for approximately 83 percent of anthropogenic GHG emissions (CO_2e) in California in 2016. The reference GWP for CO_2 is 1 (unity).

Methane

CH_4 is produced when organic matter decomposes in environments lacking sufficient oxygen. Natural sources include wetlands, termites, and oceans. Enteric fermentation accounts for the majority of anthropogenic CH_4 emissions in California and in the United States as a whole (CARB 2020a; USEPA 2021). The GWP of CH_4 is considered by the State of California to be approximately 25 times that of CO_2 as averaged over a 100-year timescale (IPCC 2007). On this timescale, CH_4 accounted for approximately 9 percent of anthropogenic GHG emissions (CO_2e) in California in 2017 (CARB 2019b). However, since CH_4 breaks down (oxidizes) rapidly into CO_2 and water vapor once in the atmosphere, there is growing recognition among climate scientists that a 20-year time horizon is more relevant. The 20-year GWP of CH_4 is between 84 and 87 times greater than that of CO_2 (USEPA 2020). That means CH_4 is a much larger contributor to California's anthropogenic GHG emissions over the shorter time frame of 20 years.

Nitrous Oxide

N_2O is produced naturally by a wide variety of biological sources, particularly microbial action in soils and water. Tropical soils and oceans account for the majority of natural source emissions. In combination with NO and NO_2, N_2O is a byproduct of the reaction that occurs between nitrogen and oxygen during fuel combustion. Both mobile and stationary combustion emit N_2O, and the quantity emitted varies according to the type of fuel, technology, and pollution control device used, as well as maintenance and operating practices. Agricultural soil management and fossil fuel combustion are the primary sources of anthropogenic N_2O emissions in California. N_2O has a GWP of approximately 298 (IPCC 2007) and its emissions accounted for approximately 3 percent of anthropogenic GHG emissions (CO_2e) in California in 2016.

Some of the potential effects of global warming in California may include increases in extreme heat, wildfires, drought, extreme storms, coastal flooding, and erosion, and reductions in the Sierra Nevada springtime snowpack (CARB 2014). Globally, climate change has the potential to impact numerous environmental resources through potential, though uncertain, impacts related to future air temperatures and precipitation patterns. The projected effects of global warming on weather and climate are likely to vary regionally, but are expected to include the following direct effects (IPCC 2007):

- Higher maximum temperatures and more hot days over nearly all land areas;
- Higher minimum temperatures, fewer cold days and frost days over nearly all land areas;
- Reduced diurnal temperature range over most land areas;
- Increase of heat index over land areas; and
- More intense precipitation events.

Also, there are many possible secondary effects that are projected to result from global warming, including global rise in sea level, ocean acidification by carbonic acid, impacts to agriculture, changes in disease vectors, and changes in habitat and biodiversity.

4.8.2.2 Regional Setting

The CARB compiles GHG inventories for the State of California. Based on the 2018 GHG inventory data (i.e., the latest year for which data are available from the CARB), California emitted 424 MMT CO_2e, including emissions resulting from imported electrical power (CARB 2020b). Between 1990 and 2017, the population of California grew by approximately 9.4 million (from 29.8 to 39.9 million) (California Department of Finance 2018) representing an increase of approximately 31 percent from 1990 population levels. In addition, the California economy, measured as gross state product, grew from $773 billion in 1990 to $2.62 trillion in 2016 representing an increase of approximately 239 percent (just over three times the 1990 gross state product) (California Department of Finance 2018). Despite the population and economic growth, the CARB's 2020 statewide inventory indicates that California's net GHG emissions in 2018 were just below 1990 levels, which is the 2020 GHG reduction target codified in California Health and Safety Code, Division 25.5, also known as The Global Warming Solutions Act of 2006 (AB 32). Table 4.8-1, State of California GHG Emissions, identifies, quantifies, and compares statewide anthropogenic GHG emissions and sinks (e.g., carbon sequestration due to forest growth) in 1990 and 2018. As shown in the table, the transportation sector is the largest contributor to statewide GHG emissions at approximately 40 percent in 2017.

Table 4.8-1. State of California GHG Emissions as CO_2e

Category	1990 GHG Emissions Using IPCC SAR (MMT CO_2e)	Approximate Percent of Total 1990 Emissions	2018 GHG Emissions Using IPCC AR4 (MMT CO_2e)	Approximate Percent of Total 2018 Emissions
Transportation	150.7	35%	169.5	40%
Electric Power	110.6	26%	63.1	15%
Commercial Fuel Use	14.4	3%	15.6	4%
Residential	29.7	7%	25.7	6%
Industrial	103.0	24%	89.2	21%
Recycling and Waste[a]	–	–	9.1	2%
High GWP/Non-Specified[b]	1.3	<1%	20.4	5%
Agriculture/Forestry	23.6	6%	32.5	8%
Forestry Sinks	-6.7	-2%	– [c]	–
Net Total (IPCC SAR)	**426.6**	**100%**	–	–
Net Total (IPCC AR4)[d]	**431.0**		**424.0**	

Sources: CARB 2007, 2021

Notes:

[a.] Included in other categories for the 1990 emissions inventory.

[b.] High GWP gases are not specifically called out in the 1990 emissions inventory.

[c.] Revised methodology under development (not reported for 2017).

[d.] CARB revised the state's 1990 level GHG emissions using GWPs from the IPCC AR4 (IPCC 2007)
IPCC SAR: IPCC Second Assessment Report
IPCC AR4: IPCC Fourth Assessment Report

In 2015, Contra Costa County developed and approved a CAP (Contra Costa County 2015). As part of that process, they developed a 2013 emission inventory of all activities within unincorporated areas of Contra Costa County, which totaled 18.3 MMT CO_2e. In 2019, Contra Costa County developed a second interim 2017 GHG emission inventory (Contra Costa County 2019) that totaled 19.1 MMT CO_2e. Contra Costa County is home to some of the largest GHG-emitting stationary source facilities in the Bay Area

and the state of California. Stationary sources are non-moving, fixed-site producers of GHG emissions such as power plants, chemical plants, oil refineries, manufacturing facilities, and other industrial facilities. Emissions from stationary source facilities (petroleum refineries, power plants, chemical manufacturing plants and wastewater treatment plants) and from the energy used by those facilities and other major industrial sites accounted for 93 percent of all emissions within the unincorporated county in the baseline year of 2005, 92 percent in 2013 and 94 percent in 2017. In 2017, outside of stationary sources, the transportation sector is the greatest contributor generating approximately 45 percent of these non-stationary emissions while residential energy accounts for 21 percent and nonresidential energy accounts for 10 percent. The remainder is made up of solid waste and landfill, off-road equipment, water and wastewater treatment and agricultural uses.

4.8.2.3 Project Setting

As discussed in Chapter 3, *Project Description*, the Rodeo Refinery (which includes the Rodeo Site and the Carbon Plant) consists of process, storage, and support facilities that produce a variety of petroleum-based products (mainly fuels) and by-products from crude oil and other petroleum-based feedstocks. The Rodeo Refinery receives crude oil and other feedstocks via pipeline from the Santa Maria Site and elsewhere in California and via tanker vessels and barges from domestic and foreign sources. The refinery produces steam, fuel gas, and electricity for use in the refining process, and purchases electricity, water, and natural gas. The Rodeo Refinery includes a Cogeneration Steam Power Plant containing gas turbines that generate steam and up to 50 MW of electricity for refinery use; a butane storage and railcar loading facility near the Marine Terminal; a wastewater treatment facility (U100); a vapor recovery system; a hydrogen generator; and the Carbon Plant that upgrades the petroleum coke by-product. The refinery's products are transported out of the refinery by vessel, pipeline, truck, and rail.

Baseline annual GHG emissions for all sources except marine vessels at the Rodeo Refinery were based on actual activity during 2019 as reported by Phillips 66. Emissions from heavy-duty truck trips moving feedstocks and product to and from the Rodeo Refinery were calculated based on truck trips for 2019. Emissions from rail locomotives moving railcars to and from the butane loading rack at the Rodeo Refinery and moving petroleum coke from the Carbon Plant were calculated based on railcar movement data for 2019. Truck and rail emissions include all travel within the boundaries of the BAAQMD. Details of the data and assumptions used to calculate emissions are provided in Section 4.8.7, *Analysis*, below, and Attachment B in the Air Quality Technical Report available in Appendix B (Ramboll 2021).

For marine vessels, i.e., ocean-going vessels like tankers and ATBs, assist tugs, and pull tugs moving tank barges, emissions were calculated using the average annual activity from 2017 through 2019. Vessel emissions include hoteling at the wharf or at anchor, and vessel maneuvering and transit between the wharf or anchorage area out to the Pilot Buoy located approximately 9 nautical miles (10.4 statute miles) west of the Golden Gate.

Baseline GHG emissions for the Rodeo Refinery (Table 4.8-2) were approximately 1,397,000 MT CO_2e, and totaled 2,352,000 MT CO_2e when including 2019 emissions from the Santa Maria Site. However, to use a more conservative baseline, Project emissions are compared against the 2019 emissions within the BAAQMD only (i.e., the Rodeo Site and Carbon Plant); for informational purposes the statewide evaluation is also shown (covering Rodeo Site, Carbon Plant, and the Santa Maria Site). Over 98 percent of GHG emissions in 2019 were from stationary sources, 91 percent from the Rodeo Refinery and Air Liquide Plant combined, and 7 percent from the Santa Maria Site and Pipeline Sites. The remaining 2 percent of emissions were from mobile sources and from electricity purchases at the Rodeo Refinery and the Santa Maria Site.

Table 4.8-2. Baseline Annual GHG Emissions (2019)[1]

Source Category	Baseline Emissions (metric tons/yr)			
	CO_2	CH_4	N_2O	CO_2e
Rodeo Refinery				
Ocean-going Vessels and Harbor Craft	15,137	0.15	0.93	15,418
Trucks	4,466	0.02	0.70	4,676
Rail	1,373	0.11	0.03	1,386
Facility Operations	1,333,341	91.96	11.74	1,338,911
Electricity	9,160	1.30	0.28	9,270
Rodeo Refinery Total	1,363,477	94	14	1,396,661
Air Liquide H_2 Plant	801,794	--	--	801,794
Santa Maria Site and Pipeline Sites				
Trucks	2,565	0.01	0.40	2,686
Rail	177	0.01	0.00	179
Facility Operations	171,765	17.30	1.43	172,571
Electricity	5,328	0.76	0.16	5,392
Total Statewide	2,345,107	111.62	15.68	2,352,284
Total within BAAQMD	2,165,272	93.54	13.69	2,171,455

1. 2019 is the CEQA baseline for this analysis for all sources except ocean-going vessels and harbor craft. For vessel emissions, an average of 2017 through 2019 was used.
Rodeo Refinery includes emissions from Rodeo Site and Carbon Plant Site
Air Liquide CO_2e emissions assumed to be entirely CO_2 as the breakdown for CH_4 and N_2O is not available.
Facility emissions GHG reporting for 2019 is based on 21 GWP for CH_4 and a 310 GWP for N_2O. It is expected to change to 25 and 298 respectively for reporting years 2021 and forward.

4.8.2.4 Regulatory Setting

Federal

The USEPA began to regulate GHGs under the CAA in 2009 and has adopted the following two final rules regulating GHGs from industrial facilities.

40 CFR Part 98. Mandatory Reporting of Greenhouse Gases Rule.

On October 30, 2009, the USEPA published a rule for the mandatory reporting of GHGs from large GHG emissions sources in the United States. Implementation of 40 CFR Part 98 is referred to as the Greenhouse Gas Reporting Program. In general, this rule requires mandatory reporting of GHG emissions for facilities that emit more than 25,000 MT of CO_2e emissions per year (USEPA 2014a). Facilities, such as petroleum refineries, are subject to the regulation regardless of the quantity of GHG emissions. Phillips 66 currently reports Rodeo Refinery GHG emissions as required by this regulation. For reporting purposes the GHG emissions from the Carbon Plant are included in the refinery report.

40 CFR Part 52. Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule.

The USEPA has mandated that Title V requirements apply to facilities whose stationary source CO_2e emissions exceed 100,000 short tons per year (USEPA 2014b). In addition, at a facility that currently emits 100,000 short tons per year of CO_2e, Prevention of Significant Deterioration (PSD) applies to

projects that increase GHG emissions by 75,000 short tons of CO_2e. The Project would not trigger PSD for CO_2e emissions under this regulation.

Federal Vehicle Emission Standards

In 1975, Congress enacted the Energy Policy and Conservation Act, which established the first fuel economy standards for on-road motor vehicles in the United States. Pursuant to the act, the USEPA and NHTSA are responsible for establishing additional vehicle standards. In August 2012, standards were adopted for model year 2017 through 2025 for passenger cars and light-duty trucks. According to the 2012 standards, by 2025, vehicles are required to achieve both 54.5 mpg (if GHG reductions are achieved exclusively through fuel economy improvements) and 163 grams of CO_2 per mile. According to the USEPA, a model year 2025 vehicle would emit one-half of the GHG emissions from a model year 2010 vehicle (USEPA 2012). Notably, the State of California harmonized its vehicle efficiency standards through 2025 with the federal standards through the Advanced Clean Cars Program.

On April 16, 2018, the USEPA completed its Mid-Term Evaluation of the GHG emissions standards and withdrew its prior determination that the standards are achievable.

In 2019, the USEPA issued a final rule, known as the SAFE Rule, which established new fuel economy standards for light-duty vehicle fleets for the years 2021–2026 and rescinded the California waiver under the federal CAA allowing California to issue its own motor vehicle emission standards for GHGs. The SAFE Rule was judicially challenged. In April 2021, the United States under the Biden Administration, through separate but related USEPA and NHTSA actions, took the first steps toward reconsidering and withdrawing the SAFE Rule.

State

The State of California has begun to regulate GHG emissions through legislation, rules, and EOs, described further below.

California Environmental Quality Act and Senate Bill 97

Under CEQA, lead agencies are required to disclose the reasonably foreseeable adverse environmental effects of projects they are considering for approval. SB 97, signed in August 2007, acknowledges that climate change is a prominent environmental issue requiring analysis under CEQA. This bill directed the Governor's Office of Planning and Research (OPR) to prepare, develop, and transmit to the California Natural Resources Agency guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions, as required by CEQA, no later than July 1, 2009. The State CEQA Guidelines amendments provide guidance to public agencies regarding the analysis and mitigation of the effects of GHG emissions in draft CEQA documents. The amendments became effective March 18, 2010.

The State CEQA Guidelines are embodied in the CCR, Public Resources Code, Division 13, starting with Section 21000. Section 15064.4 of the 2019 State CEQA Guidelines specifically addresses the significance of GHG emissions, requiring a lead agency to make a "good-faith effort" to "describe, calculate or estimate" GHG emissions in CEQA environmental documents (California Natural Resources Agency 2018). Section 15064.4 further states that the analysis of GHG impacts should include consideration of (1) the extent to which the project may increase or reduce GHG emissions, (2) whether the project GHG emissions would exceed a threshold of significance that the lead agency determines applies to the project, and (3) the extent to which the project would comply with "regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions (see, e.g., section 15183.5(b))."

The CEQA Guidelines do not require or recommend a specific analytical methodology or provide quantitative criteria for determining the significance of GHG emissions, nor do they set a numerical threshold of significance for GHG emissions. Section 15064.7(c) clarifies that "when adopting or using

thresholds of significance, a lead agency may consider thresholds of significance previously adopted or recommended by other public agencies or recommended by experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence." When GHG emissions are found to be significant, State CEQA Guidelines Section 15126.4(c) includes the following direction on measures to mitigate GHG emissions:

> *Consistent with Section 15126.4(a), lead agencies shall consider feasible means, supported by substantial evidence and subject to monitoring or reporting, of mitigating the significant effects of GHG emissions. Measures to mitigate the significant effects of GHG emissions may include, among others:*
>
> - *Measures in an existing plan or mitigation program for the reduction of emissions that are required as part of the lead agency's decision;*
> - *Reductions in emissions resulting from a project through implementation of project features, project design, or other measures;*
> - *Offsite measures, including offsets that are not otherwise required, to mitigate a project's emissions;*
> - *Measures that sequester GHGs; and*
> - *In the case of the adoption of a plan, such as a general plan, long range development plan, or plans for the reduction of GHG emissions, mitigation may include the identification of specific measures that may be implemented on a project-by project basis. Mitigation may also include the incorporation of specific measures or policies found in an adopted ordinance or regulation that reduces the cumulative effect of emissions.*

Executive Order S-3-05

In 2005, in recognition of California's vulnerability to the effects of climate change, Governor Arnold Schwarzenegger issued EO S-3-05, which set forth a series of target dates by which statewide emissions of GHGs would be progressively reduced, as follows:

- By 2010, reduce GHG emissions to 2000 levels;
- By 2020, reduce GHG emissions to 1990 levels; and
- By 2050, reduce GHG emissions to 80 percent below 1990 levels.

Executive Order S-1-07

EO S-1-07, which was signed by Governor Schwarzenegger in 2007, proclaims that the transportation sector is the main source of GHG emissions in California, generating more than 40 percent of statewide emissions. The order acknowledged California's dependence on a single type of transportation fuel, and stated, "diversification of the sources of transportation fuel will help protect our jobs and economy from the consequences of oil price shocks" and "alternative fuels can provide economic development opportunities and reduce emissions of GHGs, criteria pollutants and toxic air contaminants." It establishes a goal to reduce the CI of transportation fuels sold in California by at least 10 percent by 2020, and directed that an LCFS be established for California. This order also directs the CARB to determine whether this LCFS could be adopted as a discrete early-action measure as part of the effort to meet the mandates in AB 32. The CARB approved the proposed regulation to implement the LCFS in 2009.

Executive Orders S-14-08 and S-21-09

In November 2008, Governor Schwarzenegger signed EO S-14-08, which expanded the state's RPS to 33 percent renewable power by 2020. In September 2009, Governor Schwarzenegger continued California's commitment to the RPS by signing EO S-21-09, which directs the CARB under its AB 32 authority to enact regulations to help the state meet its RPS goal of 33 percent renewable energy by 2020.

Executive Order S-13-08

On November 14, 2008, Governor Schwarzenegger signed EO S-13-08. The order called on state agencies to develop California's first strategy to identify and prepare for expected climate impacts. As a result, the 2009 California Climate Adaptation Strategy report was developed to summarize the best-known science on climate change impacts in the state to assess vulnerability and outline possible solutions that can be implemented within and across state agencies to promote resiliency. The state has also developed an Adaptation Planning Guide (California Emergency Management Agency 2012) to provide a decision-making framework intended for use by local and regional stakeholders to aid in the interpretation of climate science and to develop a systematic rationale for reducing risks caused or exacerbated by climate change. The state's third major assessment on climate change explores local and statewide vulnerabilities to climate change, highlighting opportunities for taking concrete actions to reduce climate-change impacts.

Executive Order B-30-15

On April 29, 2015, Governor Brown signed EO-B-30-15 that directed the following:

- Established a new interim statewide reduction target to reduce GHG emissions to 40 percent below 1990 levels by 2030.
- Ordered all state agencies with jurisdiction over sources of GHG emissions to implement measures to achieve reductions of GHG emissions to meet the 2030 and 2050 reduction targets.
- Directed the CARB to update the Climate Change Scoping Plan to express the 2030 target in terms of MMT CO_2e.

Executive Order B-55-18

On September 10, 2018, Governor Brown signed EO B-55-18, committing California to total, economy-wide carbon neutrality by 2045. EO B-55-18 directs the CARB to work with relevant state agencies to develop a framework to implement and accounting that tracks progress toward this goal.

Executive Order N-79-20

In EO N-79-20, Governor Newsom states that "clean renewable fuels play a role as California transitions to a decarbonized transportation sector." EO N-79-20 directs as follows: "[T]o support the transition away from fossil fuels consistent with the goals established in this Order and California's goal to achieve carbon neutrality by no later than 2045, the California Environmental Protection Agency (CalEPA) and the California Natural Resources Agency, in consultation with other state, local and federal agencies, shall expedite regulatory processes to repurpose and transition upstream and downstream oil production facilities ..." The Governor's EO also directs the CARB to "develop and propose strategies to continue the State's current efforts to reduce the CI of fuels beyond 2030 with consideration of the full life cycle of carbon."

Assembly Bill 1493

In 2002, Governor Gray Davis signed AB 1493. AB 1493 requires that the CARB develop and adopt, by January 1, 2005, regulations that achieve "the maximum feasible reduction of GHGs emitted by passenger vehicles and light-duty trucks and other vehicles determined by CARB to be vehicles whose primary use is noncommercial personal transportation in the State."

To meet the requirements of AB 1493, in 2004 the CARB approved amendments to the CCR, adding GHG emissions standards to California's existing standards for motor vehicle emissions. All mobile sources are required to comply with these regulations as they are phased in from 2009 through 2016.

Because the Pavley standards (named for the bill's author, State Senator Fran Pavley) would impose stricter standards than those under the CAA, California applied to the USEPA for a waiver under the CAA. In 2008, the USEPA denied the application. In 2009, however, the USEPA granted the waiver. The waiver has been extended consistently since 2009; however, in 2019, the USEPA issued a final rule, known as the SAFE Rule, that established new fuel economy standards for light-duty vehicle fleets for the years 2021–2026 and rescinded the California waiver under the federal CAA allowing California to issue its own motor vehicle emission standards for GHGs. The SAFE Rule was judicially challenged. In April 2021, the United States under the Biden Administration, through separate but related USEPA and NHTSA actions, took the first steps toward reconsidering and withdrawing the SAFE Rule.

Because the outcomes of pending litigation and the new rulemaking actions under the Biden Administration are speculative, this analysis conservatively (in terms of presuming the stricter regulatory regime as the outcome) assumes that the USEPA's 2012 CAFE standards will be the regulatory regime going forward, as well as the state's waiver under those standards, and applies those standards, as opposed to relying on speculative future standards.

Assembly Bill 32 – California Global Warming Solutions Act

In September 2006, Governor Arnold Schwarzenegger signed the California Global Warming Solutions Act (AB 32). AB 32 (California Health and Safety Code, Division 25.5) establishes regulatory, reporting, and market mechanisms to achieve quantifiable reductions in GHG emissions and establishes a cap on statewide GHG emissions. AB 32 requires that statewide GHG emissions be reduced to 1990 levels by 2020. This reduction will be accomplished by enforcing a statewide cap on GHG emissions that will be phased in starting in 2012. To effectively implement the cap, AB 32 directs the CARB to develop and implement regulations to reduce statewide GHG emissions from stationary sources. AB 32 specifies that regulations adopted in response to AB 1493 should be used to address GHG emissions from vehicles. However, AB 32 also includes language stating that if the AB 1493 regulations cannot be implemented, then the CARB should develop new regulations to control vehicle GHG emissions under the authorization of AB 32.

In 2016, SB 32 and its companion bill AB 197 amended California Health and Safety Code Division 25.5 and established a new GHG reduction target of 40 percent below 1990 levels by 2030 and included provisions to ensure the benefits of state climate policies reach into disadvantaged communities.

Climate Change Scoping Plan

A specific requirement of AB 32 was to prepare a Climate Change Scoping Plan for achieving the maximum technologically feasible and cost-effective GHG emission reduction by 2020. The CARB developed and approved the initial scoping plan in 2008 (2008 Scoping Plan), outlining the regulations, market-based approaches, voluntary measures, policies, and other emission reduction programs that would be needed to meet the 2020 statewide GHG emission limit and initiate the transformations needed to achieve the state's long-range climate objectives (CARB 2009a, 2009b).

The 2008 Scoping Plan recommendations for reducing GHG emissions to 1990 levels by 2020 included developing a Cap-and-Trade program, and adopting and implementing measures pursuant to existing laws and policies, including the LCFS. The 2008 Scoping Plan indicated that recommended actions could have the effect of reducing 2020 "business as usual" GHG emissions of 596 MMT CO_2e to 422 MMT CO_2e, with capped sectors accounting for approximately 85 percent of the GHG emissions.

The First Update to the 2008 Scoping Plan (2014 Scoping Plan Update) was approved by the CARB in May 2014, and it acknowledged progress to date, stating: "California is on track to meet the near-term 2020 greenhouse gas limit and is well positioned to maintain and continue reductions beyond 2020 as required by AB 32." (CARB 2014, p. ES2). The 2014 Scoping Plan Update noted that California's GHG policies, including Cap-and-Trade and the LCFS are predicted to reduce GHG emissions by 30 percent from current levels in 2020 and by about 50 percent in 2035. The 2014 Scoping Plan Update built upon the 2008 Scoping Plan with new strategies and recommendations, including the expansion of the Cap-and-Trade program to transportation fuel suppliers (CARB 2014, p. 79).

The CARB approved the 2017 Climate Change Scoping Plan Update (2017 Scoping Plan Update) in December 2017. The 2017 Scoping Plan Update outlines the proposed framework of action for achieving the 2030 GHG target of 40 percent reduction in GHG emissions relative to 1990 levels (CARB 2017). The 2017 Scoping Plan Update identifies key sectors of the state's implementation strategy, which includes improvements in low carbon energy, industry, transportation sustainability, natural and working lands, waste management, and water. Through a combination of data synthesis and modeling, the CARB determined that the target statewide 2030 emissions limit is 260 MMT CO_2e, and that further commitments will need to be made to achieve an additional reduction of 50 MMT CO_2e beyond current policies and programs.

Regarding transportation sustainability, the 2017 Scoping Plan Update recognized the success of the LCFS, stating: "Innovative alternative fuel producers and oil companies are bringing more low carbon fuels to market than required by the Low Carbon Fuel Standard" (CARB 2017, p. ES8). The 2017 Update also states: "In fact, renewable fuels in the heavy-duty vehicle sector are displacing diesel fossil fuel as quickly as renewable power is replacing fossil fuels on the electricity grid" (CARB 2017, p. ES8). The 2017 Update urges increased efforts for ZEVs and "increasing the use of clean, low carbon fuels where zero-emission options are not yet available" (CARB 2017, p. ES8).

The 2017 Scoping Plan Update supports an expansion of the Cap-and-Trade program to meet the aggressive 2030 GHG emissions goal and ensure achievement of the 2030 limit set forth by EO B-30-15. The 2017 Scoping Plan Update's strategy for meeting the state's 2030 GHG target incorporates the full range of legislative actions and state-developed plans that have relevance to the year 2030, including the following, described elsewhere in this section:

- Extending the LCFS beyond 2020 and increasing the CI-reduction requirement to at least 18 percent by 2030;
- SB 350, which increase RPS to 50 percent and requires a doubling of energy efficiency for existing buildings by 2030;
- The 2016 Mobile Source Strategy is estimated to reduce emissions from mobile sources including an 80-percent reduction in smog-forming emissions and a 45-percent reduction in diesel particulate matter from 2016 level in the South Coast Air Basin, a 45-percent reduction in GHG emissions, and a 50-percent reduction in the consumption of petroleum-based fuels;
- The California Sustainable Freight Action Plan to improve freight efficiency and transition to zero emission freight handling technologies (described in more detail below);

- SB 1383, which requires a 50-percent reduction in anthropogenic black carbon and a 40-percent reduction in hydrofluorocarbon and CH_4 emissions below 2013 levels by 2030; and
- AB 398, which extends the State Cap-and-Trade Program through 2030.

In the 2017 Scoping Plan Update, the CARB recommends statewide targets of no more than 6 MT CO_2e per capita by 2030 and no more than 2 MT CO_2e per capita by 2050. The CARB acknowledges that because the statewide per capita targets are based on the statewide GHG emissions inventory that includes all emissions sectors in the state, and provides guidance to local jurisdictions for local planning and permitting, recognizing that "the decision to follow this guidance is voluntary" (CARB 2017, p. 99). The new strategies or recommendations included in the 2017 Scoping Plan Update that are relevant to the Project include the extension of the LCFS, the 2016 Mobile Source Strategy and the extension of the Cap-and-Trade Program.

Low Carbon Fuel Standard

The LCFS is designed to encourage the production and use of lower-carbon and renewable alternative transportation fuels in California and therefore, to reduce GHG emissions and decrease petroleum dependence in the transportation sector. The LCFS provides a flexible framework that uses market mechanisms to incentivize the introduction of lower carbon fuels. The regulation establishes annual CI performance standards or "benchmarks" that reduce over time. One standard is established for gasoline and the alternative fuels that can replace it. A second similar standard is set for diesel fuel and its replacements. "CI takes into account the GHG emissions associated with all the steps of producing, transporting, and consuming a fuel—also known as a complete life cycle of that fuel" (CARB 2020c, p. 5). The LCFS allows the market to determine which mix of fuels will be used to meet the CI benchmarks (CARB 2020c, p. 5).

Fuels with a CI below the benchmark generate credits, while fuels with a CI above the benchmark generate deficits. Credits may also be generated by ZEV infrastructure (e.g., electric charging and hydrogen fueling) and other qualifying projects including "emission-reducing actions at refineries and crude oil production and transportation facilities" (CARB 2020c, p. 11). Credits and deficits are denominated in metric tons of GHG emissions. Providers of transportation fuels must demonstrate that the mix of fuels they supply for use in California meets the LCFS CI benchmarks for each annual compliance period. A deficit generator meets its compliance obligation by ensuring that the amount of credits it earns or otherwise acquires from another party is equal to, or greater than, the deficits it has incurred.

The LCFS baseline fuels are (1) reformulated gasoline mixed with corn-derived ethanol at 10 percent by volume, and (2) low sulfur diesel fuel. The lower carbon fuels may be ethanol, biodiesel, renewable diesel or blends of these fuels with gasoline or diesel as appropriate. Compressed natural gas, biogas and liquefied natural gas are also low carbon fuels. Hydrogen and electricity are also low carbon energy sources for vehicles and result in significant reductions of GHGs when used in fuel cell or electric vehicles due to vehicle power train efficiency improvements over conventionally fueled vehicles. As such, these fuels are included in the LCFS as low CI options. Other fuels may be used to meet the standards and are subject to meeting existing requirements.

The CI benchmark standards had a "back-loaded" trajectory for 2010 through 2020 to reach a 10 percent overall CI reduction. There are more reductions required in the last five years, than in the first five years, to allow for the development of advanced fuels and vehicles. This approach also allowed excess credits to be generated early in the program which are then available for use in the more stringent future years.

In September 2018, the CARB extended the LCFS program to 2030, making significant changes to the design and implementation of the program including a doubling of the CI reduction to 20 percent by 2030. The extension also added new crediting opportunities to promote ZEV adoption, alternative jet fuel, carbon capture and sequestration, and advanced technologies to achieve deep decarbonization in the

transportation sector. It is anticipated that compliance with the LCFS will be based on a combination of strategies involving lower carbon fuels and more efficient, advanced-technology vehicles.

California Cap-and-Trade Program

Initially authorized by the California Global Warming Solutions Act of 2006 (AB 32), and extended through the year 2030 with the passage of AB 398 (California Legislative Council Bureau 2017), the California Cap-and-Trade Program is a core strategy that the state is using to meet its GHG reduction targets for 2020 and 2030, and ultimately achieve an 80 percent reduction from 1990 levels by 2050. The CARB designed and adopted the California Cap-and-Trade Program to reduce GHG emissions from "covered entities" (e.g., electricity generation, petroleum refining, cement production, and large industrial facilities that emit more than 25,000 MT CO_2e per year), setting a firm cap on statewide GHG emissions and employing market mechanisms to achieve reductions. Under the Cap-and-Trade Program, an overall limit is established for GHG emissions from capped sectors. The statewide cap for GHG emissions from the capped sectors commenced in 2013. The cap declines over time. Facilities subject to the cap can trade permits to emit GHGs.

Up to 8 percent of a covered entity's compliance obligation can be met using carbon offset credits, which are created through the development of projects, such as renewable energy generation or carbon sequestration projects, that achieve a reduction of emissions or an increase in the removal of carbon from the atmosphere from activities not otherwise regulated, covered under the cap, or resulting from government incentives. Offsets are verified reductions of emissions whose ownership can be transferred to others. As required by AB 32, any reduction of GHG emissions used for compliance purposes must be real, permanent, quantifiable, verifiable, enforceable, and additional. Offsets used to meet regulatory requirements must be quantified according to CARB-adopted methodologies, and the CARB must adopt a regulation to verify and enforce the reductions. The criteria developed will ensure that the reductions are quantified accurately and are not double counted within the system (CARB 2009a).

If California's direct regulatory measures reduce GHG emissions more than expected, the Cap-and-Trade Program will be responsible for relatively fewer emissions reductions. If California's direct regulatory measures reduce GHG emissions less than expected, the Cap-and-Trade Program will require relatively more emissions reductions. In other words, the Cap-and-Trade Program can be adaptively managed by the state to ensure achievement of California's 2020 and 2030 GHG emissions reduction mandates, depending on whether other regulatory measures are more or less effective than anticipated.

2016 Mobile Source Strategy

Mobile sources are responsible for approximately 50 percent of the state's GHG emissions. The CARB's Mobile Source Strategy 2016 outlines "a mobile source strategy that simultaneously meets air quality standards, achieves GHG emission reduction targets, decreases toxics health risk, and reduces petroleum consumption from transportation emissions over the next fifteen years" (CARB 2016, p. 5).

The Mobile Source Strategy 2016 identifies strategies for transportation infrastructure and vehicles, and includes objectives for transportation fuels. For passenger vehicles, the Mobile Source Strategy 2016 notes that a "large portion of the liquid fuels for combustion engine vehicles will also need to be sourced from renewable feedstock" (CARB 2016, p. 7). For heavy-duty vehicles, the strategy "calls for internal combustion engine technology that is effectively 90 percent cleaner than today's current standards, with clean, renewable fuels comprising half the fuels burned" (CARB 2016, p. 7).

The Mobile Source Strategy 2016 includes a section on the "Importance of Renewable Fuels." One of the opportunities to meet the state's goal to reduce petroleum use "is for fuel providers to sell diesel with incrementally higher blends of advanced renewable fuels, which will support the Low Carbon Fuel Standard and ensure sufficient volumes of advanced renewable fuels are available." The Mobile Source Strategy 2016 states: "Because the mobile sector will continue operating on internal combustion engines for some

time, it is critical that the fuels consumed in these vehicles contribute to the emission reductions needed to meet our 2031 air quality and 2030 climate and petroleum reductions goals" (CARB 2016, p. 152).

California Mandatory Reporting of Greenhouse Gas Emissions

The CARB originally developed this reporting regulation pursuant to the California Global Warming Solutions Act of 2006 (AB 32). The Board adopted this reporting regulation in December 2007, and adopted additional modifications in December 2010, September 2012, October 2013, September 2014, July 2017 and lastly in March 2019. The data submitted by reporters under the reporting regulation allow to track the emissions from reporting entities over time, demonstrating the progress in reducing GHG emissions. The approved amendments clarify existing calculation and reporting requirements, ensure full accounting of emissions from electricity imports, and support the Cap-and-Trade program.

California Sustainable Freight Action Plan

California Sustainable Freight Action Plan, available since July 2016, includes strategies to improve freight efficiency and transition to zero emission freight handling technologies. It includes goals to achieve 25-percent improvement of freight system efficiency by 2030, to deploy over 100,000 freight vehicles and equipment capable of zero emission operation by 2030, and maximize near-zero emission freight vehicles and equipment powered by renewable energy by 2030 (Brown 2016). In addition, from one of the plan goals, the At-Berth Regulation was amended on December 30, 2020, expanding its requirements to include auto carriers (roll-on/roll-off vessels) and tanker ships to control hoteling emissions at-berth starting in 2027 at Northern California terminals. Even though this regulation is meant to curtail local criteria pollutant emissions, it may have some co-benefits for reducing GHGs if controlled in conjunction with renewable-based electricity.

Regional

Bay Area Air Quality Management District Clean Air Plan

The BAAQMD and other air districts prepare clean air plans in accordance with the state and federal CAAs. On April 19, 2017, the BAAQMD Board of Directors adopted the Final 2017 Clean Air Plan (Spare the Air, Cool the Climate), an update to the 2010 Clean Air Plan (BAAQMD 2010). The Final 2017 Clean Air Plan is a comprehensive plan that focuses on the closely related goals of protecting public health and protecting the climate. Consistent with the state's GHG reduction targets, the plan lays the groundwork for a long-term effort to reduce Bay Area GHG emissions 40 percent below 1990 levels by 2030 and 80 percent below 1990 levels by 2050 (BAAQMD 2017a).

The Final 2017 Clean Air Plan includes a wide range of proposed control measures to reduce combustion-related activities, decrease fossil fuel combustion, improve energy efficiency, and decrease emissions of potent GHGs. The plan contains 85 measures to address reduction of GHGs and several criteria air pollutants and air toxics. The control measures are categorized based on the economic sector framework including stationary sources, transportation, energy, buildings, agriculture, natural and working lands, waste management, and water measures.

The Final 2017 Clean Air Plan also includes a Refinery Emissions Reduction Strategy, consisting of at least 12 control measures designed to reduce refinery GHGs and other criteria pollutant emissions. Among the components of this strategy is a reduction in criteria air pollutant emissions by 20 percent from oil refineries, as well as a 20 percent reduction in health risk to local communities, which should show some co-benefits for GHGs.

The Final 2017 Clean Air Plan also references need for renewable fuels, and states the following:

> *Oil Companies Will Transform to Clean Energy Companies. By 2050, Bay Area industries will need to be powered by renewable electricity wherever feasible with renewable fuels making up the difference, the carbon-intensity of products manufactured in the region will need to be greatly reduced, and a significant percentage of the light-duty vehicle fleet will be hybrid electric or fully battery-powered. In response to decreasing demand for gasoline and diesel, oil companies will need to reorient their focus to the production of renewable energy and biofuels, while perhaps continuing to provide hard-to-replace or specialty fuels (e.g., jet fuel)* (BAAQMD 2017a, p. 10).

BAAQMD CEQA Air Quality Guidelines

The BAAQMD CEQA Air Quality Guidelines were prepared to assist in the evaluation of air quality impacts of projects and plans proposed within the Bay Area. The guidelines provide recommended procedures for evaluating potential air impacts during the environmental review process, consistent with CEQA requirements, and include recommended thresholds of significance, mitigation measures, and background air quality information. The guidelines also include recommended assessment methodologies for air toxics, odors, and GHG emissions. In June 2010, the BAAQMD's Board of Directors adopted CEQA thresholds of significance and an update of the CEQA Guidelines, which included significance thresholds for GHG emissions based on the emission reduction goals for 2020 articulated by the State Legislature in AB 32. Permitted stationary source emissions of GHGs are subject to a 10,000-MT-per-year significance threshold. This is based upon a determination that approximately 95 percent of all GHG emissions from new permit applications for stationary sources in the San Francisco Bay Area would be captured by this threshold. In May 2017, the BAAQMD published a new version of the Guidelines, which included no changes to the quantitative GHG thresholds, but presented them as guidance and recommended that lead agencies consider the information to develop their own thresholds of significance (BAAQMD 2017b).

Contra Costa County General Plan

As of March 2021, Contra Costa County is in the process of updating its general plan, referred to as Envision Contra Costa 2040. The Conservation Element of the existing general plan contains an air quality resources discussion (Section 8.14 of the general plan) that identifies general goals and policies designed to address air pollution. The goals and policies tend to focus on improvements to the transportation system, reducing long-distance commuting, encouraging and supporting non-auto transportation, and reducing future land use conflicts related to air pollution (Contra Costa County 2010). Although Section 8.14 of the general plan appears to be geared toward criteria pollutants, such as ozone and particulate matter, implementation of the stated goals and policies also benefit efforts to reduce GHG emissions.

Contra Costa County Climate Action Plan

In May 2005, the Board of Supervisors convened department heads in a Climate Change Working Group to identify existing county activities and policies that could potentially reduce GHG emissions. The Climate Change Working Group comprises the Agricultural Commissioner, the Director of Conservation and Development and the Deputy Director of the Building Inspection Division, General Services, Health Services, and Public Works. In February 2007, the Board of Supervisors approved a resolution to join Local Governments for Sustainability and to conduct a GHG emissions inventory of Contra Costa County's countywide and municipal emissions. In December 2008, the Contra Costa County Municipal CAP was adopted specifically for the county's municipal operations.

In December 2015, the County Department of Conservation and Development completed and released a CAP (Contra Costa County 2015). The CAP identifies specific measures on how the county can achieve a GHG reduction target of 15 percent below baseline levels by the year 2020. The CAP also lays the

groundwork for achieving long-term state GHG reduction goals for 2035. The CAP is intended to meet the expectations of the BAAQMD as a Qualified GHG Reduction Strategy. The CAP contains a development checklist to be used to evaluate a project's consistency. Acknowledging that local governments have little influence or control over energy use at or emissions from large stationary sources, the CAP excluded their emissions from its purview, instead citing California's "cap-and-trade" program as designed to reduce those emissions (Contra Costa County 2015).

4.8.3 Significance Criteria

Based on CEQA Guidelines Sections 15064.4 and 15064.7(c), as well as Appendix G, a project would cause adverse impacts associated with GHG emissions if it would:

a. Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; or

b. Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

Appendix G of the CEQA Guidelines encourages lead agencies to rely on the specialized air quality expertise of regional air agencies such as the BAAQMD. The BAAQMD presents its thresholds of significance along with methods for evaluating compliance in its CEQA Guidelines (BAAQMD 2017b). The BAAQMD's threshold of significance for evaluating the significance of GHGs from industrial sources is quantitative:

- *Will the project result in more than 10,000 MT of CO_2e per year?*

This is based upon a determination that approximately 95 percent of all GHG emissions from new permit applications for stationary sources in the San Francisco Bay Area would be captured by this threshold. The BAAQMD determined that project emissions below this level "would not be expected to substantially conflict with existing California legislation adopted to reduce statewide GHG emissions needed to move us toward climate stabilization" (BAAQMD 2017b).

The BAAQMD does not provide a quantitative significance threshold for GHG emissions from construction. The BAAQMD recommends that the determination of significance be based on meeting AB 32 reduction goals. It also identifies specific BMPs, including: using alternative fueled (e.g., biodiesel, electric) construction vehicles/equipment of at least 15 percent of the fleet; using local building materials of at least 10 percent; and recycling or reusing at least 50 percent of construction waste or demolition materials. The BAAQMD also identifies that sources of construction-related GHG emissions include exhaust and recommends that the same exhaust-related measures provided for criteria air pollutants should be followed to reduce construction related GHG emissions. These measures principally include: reduced consumption of diesel fuel (i.e., reduced idling times) and reduction of construction waste (i.e., recycling or reusing construction waste and demolition materials).

The measures identified by the BAAQMD are consistent with Climate Change Scoping Plan measures to reduce GHG emissions. Moreover, in the absence of a quantitative significance threshold for construction, the significance threshold for annual operational GHG emissions for stationary sources, 10,000 MT of CO_2e per year, is also applied to assess the significance of annual construction GHG emissions. Unlike operational emissions, construction emissions do not occur continuously over the lifetime of a project. Rather, construction emissions are temporary emissions that are spread over the construction period. Thus, the application of the operational GHG emissions significance threshold for construction emissions is conservative because they are limited in duration.

4.8.4 CEQA Baseline

Baseline conditions reflect the 2019 operation and maintenance of the Rodeo Refinery and Santa Maria Site as petroleum refineries, including operation and maintenance activities. The baseline setting also includes the applicable regulatory framework to protect environmental resources, which are described above.

4.8.4.1 Approach to Analysis

GHG emissions related to the Project are evaluated statewide pursuant to CEQA guidelines. Nevertheless, GHG emissions for the different Project sites are described below. Details of input data, calculations, and assumptions used to determine construction emissions and Project-related emissions for the rail operations, truck operations, marine operations and electrical usage, can be found in Attachment A of Appendix B, *Air Quality and Greenhouse Gas Emissions Technical Data*. For details on emissions related to facility stationary sources, refer to Attachment B of the same report.

Construction GHGs Estimates

Construction of the Project would include the repurposing of the existing refinery equipment, adding new equipment to the Rodeo Site, demolition of the Santa Maria Site, decommissioning of Pipeline Sites and demolition of the Carbon Plant.

Rodeo Refinery Construction and Demolition

The Project would involve construction and demolition activities at the Rodeo Site as described in Section 3.12, *Site-Specific Construction and Demolition*, that would occur in phases over a period of approximately 21 months and is assumed to begin as early as the first quarter of 2022. All demolition and construction associated with the Rodeo Refinery would occur within its boundaries (except for one laydown area). All demolition and construction would be conducted in accordance with established procedures and BMPs and with applicable regulations and permits. Soil and construction debris generated by construction activities would be either re-used onsite or transported offsite for recycling or disposal as appropriate.

Construction and demolition activities would involve diesel-powered off-road construction equipment such as loaders, earthmovers, cranes, and concrete trucks, and lighter-duty equipment such as welders and compressors, some of which would also be diesel-powered. The use of diesel-powered off-road construction equipment and on-road trucks would result in emissions of GHGs from engine exhaust during the construction period. Construction would employ up to 500 workers at a time who would commute daily to and from the construction site mostly by means of private gasoline passenger vehicles; the construction workforce is expected to be drawn from the greater East Bay region, within a one-hour commute distance. Hauling trucks trips would range from a daily minimum of 10 round trips to a daily maximum of 165 round trips during the construction period. During construction, a period of increased vessel traffic would occur, and therefore, concurrent emissions from incremental vessel traffic are counted toward the Rodeo Site construction total.

Annual construction-related GHG exhaust emissions that would result from the proposed construction and demolition activities at the Rodeo Site, demolition of the Carbon Plant Site are summarized in Section 4.8.5, *Direct and Indirect Impacts of the Proposed Project*.

Santa Maria Site and Pipeline Sites

Demolition activities at the Santa Maria site would involve use of off-road construction equipment and on-road vehicles which produce GHG emissions. Emissions from these activities were calculated using emission factors from CalEEMod and activity estimates from Phillips 66. Demolition at the Santa Maria Site was assumed, for purposes of emissions calculations only, to occur over a 1-year period.

In addition, emissions associated with removal of material from tanks and segments of pipeline connecting the Santa Maria Site and the Rodeo Refinery (i.e., Pipeline Sites) are included in the construction activity emissions estimates shown in Section 4.8.5, *Direct and Indirect Impacts of the Proposed Project*.

Operational GHGs Estimates

Operational emissions from the Project would occur at the Rodeo Site and the Marine Terminal and along rail lines, roadways, and ship traffic lanes leading to and from the Project. Existing operations at the Carbon Plant and the Santa Maria Site would cease, and upon completion of demolition activities, GHG emissions at the Carbon Plant, Santa Maria Site, and along the Pipeline Sites would be eliminated. In addition, operations of the adjacent third-party plant operator Air Liquide, which supplies hydrogen for the refinery operations, may indirectly increase due to the Project and therefore, its emissions are included in the evaluation against significance criteria. For analysis purposes only, the emissions were calculated assuming Project operations would commence in 2024. Annual emissions from operation of the Project are summarized in Section 4.8.5, *Direct and Indirect Impacts of the Proposed Project*.

Stationary Sources

Implementation of the Project would result in both increases and decreases in GHG emissions from the new or changed Project components at the Rodeo Refinery, and result in an overall net decrease in GHG emissions for stationary sources. Changes to individual units and processes are summarized in Chapter 3, *Project Description*. The Project includes the cessation of operations at the Carbon Plant and of the crude handling units, sulfur recovery unit, reformer, and isomerization unit. As a result of the Project, several process units would become idle (i.e., not operational) and therefore no longer produce emissions; however, the current emissions analysis is conservatively not taking credit for idle units and assumes 2019 emissions remain constant for units for which the permit is maintained. Even with GHG emissions from idled units included in the Project total, GHG emissions from stationary sources from the Project would generate fewer GHG emissions than during the 2019 baseline. Detailed emissions associated with each of these process units can be found in Attachment B of Appendix B, *Air Quality and Greenhouse Gas Emissions Technical Data*.

On-Road Vehicles

On-road vehicles coming to the Rodeo Site consist of heavy-duty diesel trucks and light duty worker vehicles. Truck related activity including roundtrips and mileage data are summarized in Attachment A of Appendix B, *Air Quality and Greenhouse Gas Emissions Technical Data*. All trucks were assumed to be diesel fueled. GHG emissions from diesel engines were calculated based on expected truck traffic related to refinery deliveries and waste by-products, expected trip lengths within California, and emission rates. Passenger vehicles are not expected to change as a result of the Project because the number of workers would not change with the Project. Therefore, GHG emissions from passenger vehicles are not estimated (although one can reasonably assume that future and ongoing passenger vehicle fleet turnover results in a net reduction of GHG emissions from passenger vehicles due to the more stringent CAFE standards imposed on newer passenger vehicle fleets).

The Carbon Plant and Santa Maria Site existing conditions include truck traffic related to their operation. Because these facilities would be removed as a result of the Project, the GHG emissions related to these activities would cease. Overall, truck emissions are expected to decrease due to reduced truck traffic during the operation of the Project.

Marine Traffic

Marine sources at the Rodeo Site consist of tugs, barges, ATBs, and tanker vessels moving feedstock and product through the Marine Terminal. Emissions related to marine traffic result from vessel engine exhaust during hoteling at-berth, transit across the San Francisco Bay, and anchorage events throughout the year. More details on vessel emissions inputs and assumptions are included in Attachment A of Appendix B, *Air Quality and Greenhouse Gas Emissions Technical Data*. Vessel traffic, based on the 3-year baseline average of 2017 through 2019, consisted of 80 tankers and 90 barges, and is expected to increase to an estimated 201 tankers and 161 barges at full operation, resulting in an increase in marine vessel GHG emissions. In addition, visits of large tankers (Panamax, Suezmax) as compared to the baseline would be reduced during the Project, and the change in vessel mix from the baseline would likely result in lower emissions on an individual-call basis. Overall, however, it is expected that marine vessel annual mass GHG emissions would increase during operation of the Project due to increased vessel traffic.

Rail Operations

GHG emissions from rail is summarized in Attachment A of Appendix B, *Air Quality and Greenhouse Gas Emissions Technical Data*. Rail emissions were calculated based on yearly linehaul movements at each site, expected trips by California rail route, and gallons per ton-mile emission rates.

Rail sources at the Rodeo Site consist of linehaul locomotive moving butane railcars during the baseline, and linehaul locomotives moving feedstock railcars during the Project. For the baseline, GHG emission estimates are based on 2019 actual destination and counts of railcars to/from Rodeo Site across California. For the Project, the number of linehaul movements is expected to remain the same, but the number of railcars is expected to increase from 4.7 railcars per day in 2019 to a maximum of 16 railcars per day during the Project, resulting in an increase in emissions related to increased annual ton-miles. The Carbon Plant and Santa Maria Site had rail operations during the 2019 baseline. Because the Project would remove those facilities, GHG emissions related to these activities would cease.

Indirect Emissions from Electricity Consumption

The main source of electricity at the Rodeo Site is the Cogeneration Plant with some fractional supply of electricity from the PG&E grid. The Carbon Plant also produces surplus electricity for use in its coking process and export to PG&E, therefore making the Rodeo Refinery in 2019 a net exporter of electricity. The Santa Maria Site is a net consumer of electricity under existing conditions. Operation of the Project would result in decreases in the consumption of electricity, relative to the baseline, primarily as a result of the closure of the Santa Maria Site and the reduced energy demands of the Project's refining process. However, due to the closure of the Carbon Plant, the Project would become a net importer of electricity from PG&E, rather than a next exporter to PG&E. GHG emissions related to electricity generated onsite are captured under stationary source/facility emissions; however, indirect emissions from electricity purchases are calculated from electrical megawatt-hours consumption along with USEPA Emissions and Generation Resource Integrated Database emission factors, which are site specific. Details on emissions from indirect electricity consumption are summarized in Attachment A of Appendix B, *Air Quality and Greenhouse Gas Emissions Technical Data*.

4.8.5 Direct and Indirect Impacts of the Proposed Project

Table 4.8-3 presents a summary of the potential GHG emissions impacts, as well as significance determinations for each impact.

Table 4.8-3. Summary of Impacts

Impact	Significance Determination		
	LTS	LTSM	SU
Impact 4.8-1. Construction of the Project would not result in emissions of GHG that could contribute to global climate change.			
Rodeo Refinery and Santa Maria			
Construction/Demolition Including Transitional Phase[a]	✓		
Impact 4.8-2. Project operations would decrease emissions of GHG that could contribute to global climate change.			
Rodeo Refinery, Santa Maria Site and Pipeline Sites			
Operation and Maintenance	✓		
Impact 4.8-3. GHG emissions associated with the Project would not conflict with GHG reduction plans and policies.			
Rodeo Refinery and Santa Maria Site			
Construction/Demolition, Including Transitional Phase[a]	✓		
Rodeo Refinery, Santa Maria Site and Pipeline Sites			
Operation and Maintenance	✓		

Notes: LTS = Less than significant, no mitigation proposed
LTSM = Less-than-significant impact with mitigation
SU = Significant and unavoidable

[a] Transitional phase applies only to Rodeo Refinery

IMPACT 4.8-1

a. Would the Project generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?

Construction of the Project would not result in emissions of GHGs that could contribute to global climate change.

Construction/Demolition: Less Than Significant, No Mitigation Proposed

Construction of the Project would occur over a period of approximately 21 months. It is estimated that several pieces of off-road equipment, including pile drivers, tractors, graders, dozers, scrapers, and water trucks, would be required between 1 and 8 hours per day, depending on the specific equipment type and construction activity, to construct the Project features at the Rodeo Site and to demolish the Carbon Plant and the Santa Maria Site.

In addition to the off-road equipment, on-road truck trips would be required to deliver/remove materials and equipment to the construction sites as well as to transport workers to and from the construction sites. A 7-month period of increased vessel traffic to the Marine Terminal would occur during the Transitional Phase of construction, and those incremental marine vessel emissions are counted toward the Rodeo Site construction total during the year in which the 7-month period occurs.

Yearly estimates of Project construction CO_2e emissions are listed in Table 4.8-4. Total construction GHG emissions amortized over a 30-year period (assumed life of the Project) would represent approximately 481 MT per year of CO_2e. The BAAQMD CEQA Guidelines do not have thresholds of significance for GHG emissions during construction. However, the San Luis Obispo County APCD, where the Santa Maria Site is located, evaluates construction GHG emissions based on amortized construction estimates combined with annual operational emissions. The net Project operational emissions (Project minus baseline) combined with the amortized construction emissions is compared

to operational thresholds of 10,000 MT for projects involving stationary sources. The net Project emissions reduction of 24,077 MT (Table 4.8-5) plus amortized construction GHG emissions of 481 MT results in a GHG reduction, which is are below the 10,000 MT thresholds. Therefore, the impact associated with GHG emissions generated during construction would be less than significant.

Table 4.8-4. Statewide Project Construction GHG Emissions (2019)

Phases/Project Components	Annual Emissions (metric tons/yr)			
	CO_2	CH_4	N_2O	CO_2e
2022[a]				
Construction at Rodeo Site				
OFFROAD	725	0.029	0.006	728
ONROAD	6,618	0.017	0.907	6,889
Year 1 Total	**7,343**	**0.046**	**0.913**	**7,617**
2023[a]				
Construction at Rodeo Site				
OFFROAD	985	0.040	0.008	989
ONROAD	1,833	0.008	0.190	1,890
Marine terminal increased traffic[a]	2,902	0.027	0.189	2,915
Santa Maria Site Shutdown and Demolition				
Decommissioning and Demolition	855	0.227	0.000	860
Carbon Plant Demolition				
OFFROAD	108	0.030	0	109
ONROAD	49	0.002	0	49
Year 2 Total	**6,732**	**0.333**	**0.387**	**6,812**
Total Amortized Construction Emissions (over 30 years)	**470**	**0.013**	**0.043**	**481**

Notes:

[a] Construction would not take place at the Marine Terminal; however, concurrent with the Project construction period, Marine Terminal traffic would increase above baseline due to shutdown of Pipelines Sites for a 7-month period, and therefore, related emissions from incremental vessel activity is conservatively included as part of the construction period total emissions.

[b] Construction years only represent the earliest time when activities could start. More specific timing will be determined at a later date.

Pursuant to air quality mitigation (Mitigation Measure AQ-2), the Project would require construction contractors to implement the applicable basic control measures from the Air District (BAAQMD 2017b), which may have some co-benefits for GHGs, further decreasing emissions. These include:

- Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure, CCR Title 13, Section 2485). Clear signage shall be provided for construction workers at all access points.
- All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications.
- All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.

Rodeo Refinery and Carbon Plant

The Project would involve construction and demolition activities at the Rodeo Refinery and Carbon Plant as described in Project Description Section 3.10, *Overall Project Construction/Demolition Phase*, that that would occur in phases over a period of approximately 21 months and are assumed to begin as early as the first quarter of 2022. A later start date would result in lower construction emissions because statistically newer, more fuel-efficient equipment and vehicles would be used. All demolition and construction associated with the Rodeo Refinery and Carbon Plant would occur within facility boundaries (except for one laydown area) and would be conducted in accordance with established procedures and BMPs and with applicable regulations and permits. Soil and construction debris generated by construction activities would be either re-used onsite or transported offsite for recycling or disposal as appropriate. Scrap metal would be hauled away to an offsite recycling facility.

Construction and demolition activities would involve diesel-powered heavy equipment such as loaders, excavators, cranes, and concrete trucks, and lighter-duty equipment such as welders and air compressors, some of which would also be diesel-powered. The use of diesel-powered off-road construction equipment and on-road heavy-duty trucks would result in emissions of GHGs from engine exhaust comprising mainly CO_2, CH_4, and N_2O. Construction would employ up to 500 workers at a time who would commute daily to and from the construction site mostly by means of gasoline-powered private passenger vehicles and light-duty trucks; the construction workforce is expected to be drawn from the greater East Bay region, within a one-hour commute distance. Hauling trucks would travel a minimum daily of 10 round trips and a maximum daily of 165 round trips during the construction and site preparation phase tentatively from May 2022 through June 2023.

Annual construction-related GHG emissions that would result from the proposed construction and demolition activities at the Rodeo Refinery are shown in Table 4.8-4.

Project construction exhaust GHG emissions for activities at the Rodeo Refinery and Carbon Plant were found to be less than significant under the BAAQMD 10,000 MT CO_2e per year threshold for industrial sources, including those related to background Marine Terminal incremental traffic during construction period (Transitional Phase).

Transitional Phase

The Construction/Demolition Phase includes a 7-month period within the overall schedule, during which there would be an increase in deliveries and processing of crude oil and gas oil feedstocks by vessels, resulting in increased vessel traffic at the Marine Terminal compared to baseline conditions. During the Transitional Phase, vessel calls would be more frequent than under baseline conditions, approximately 96 tankers and 92 ATBs; however, this condition would be temporary. These vessels would produce exhaust emission GHGs including CO_2, CH_4, and N_2O; however, aggregated GHG emissions would nevertheless be under the BAAQMD 10,000 MT CO_2e per year threshold for industrial sources.

Santa Maria Site

Decommissioning and demolition activities at the Santa Maria site (collectively, “construction activities”) would involve use of off-road construction equipment and on-road vehicles that produce exhaust emission GHGs including CO_2, CH_4, and N_2O. Construction would occur over an estimated 1-year period assumed for purposes of emissions calculations. Following decommissioning and demolition of the Santa Maria site, emissions would permanently cease. There are no future plans for this site.

Because aggregated GHG emissions from Project construction would be below the BAAQMD 10,000 MT CO_2e per year threshold for industrial sources, the impact would be less than significant, and no mitigation would be required.

Pipeline Sites

The pipeline sites would involve only cleaning-out and abandoning in-place activities without extensive use of heavy equipment and on road vehicles. Construction would occur over an estimated 1-year period and GHG emissions would be essentially *de minimis* compared to construction activities elsewhere. Following decommissioning and decommissioning of the pipeline sites, emissions would permanently cease. There are no future plans for these sites.

Impact Summary

On a statewide basis, impacts from decommissioning and demolition of the Santa Maria site (as construction activities) in San Luis Obispo County would be additive with impacts in Contra Costa County and de minimis impacts from decommissioning and decommissioning of the Pipeline Site in multiple counties would be additive with impacts in Contra Costa County. Because aggregated GHG emissions from Project construction would be below the BAAQMD 10,000 MT CO_2e per year threshold for industrial sources, the impact would be less than significant, and no mitigation would be required.

Aggregated construction/demolition and Transitional Phase GHG impacts across Contra Costa County, San Luis Obispo County, Santa Barbara County, and the San Joaquin Valley would be below the BAAQMD 10,000 MT CO_2e per year threshold for industrial sources. Thus, the impact would be Less than Significant, and no mitigation would be required.

Mitigation Measure: **None Required**

IMPACT 4.8-2

Project operations would decrease emissions of GHGs that could contribute to global climate change.

Operation and Maintenance: Less Than Significant, No Mitigation Proposed

Rodeo Refinery

As part of the Project, new operational units would be installed, and existing units would be idled or become non-operational, particularly the existing crude processing units, described in Chapter 3, *Project Description*. Renewable feedstocks for the Project would arrive primarily by tanker, barge, and railcar. Future vessel traffic would be greater during the Project than under baseline conditions, and the mixture of vessel sizes and types would likely be different than under baseline conditions. For the Project, the rail emissions would increase due to higher numbers of railcars than under the baseline. Because the Project would demolish the Carbon Plant, there would be no operational GHG emissions at that facility. The Project would also eliminate GHG emissions from operation of the Santa Maria Site and Pipeline Sites.

Project GHG emission increases and reductions are summarized in Table 4.8-5. Relative to baseline emissions, the Project would result in decreases in annual GHG emissions and therefore have a beneficial impact with regard to GHG emissions. The CEQA impact evaluation in Table 4.8-5 does not include the Santa Maria and Pipeline GHG reductions and therefore underestimates the GHG decrease when compared to the actual decrease of GHG emissions that would occur statewide due to the Project. Project emissions changes statewide are included for informational purposes.

Table 4.8-5. Total Annual Project Operational GHG Emissions

Source	Emissions (metric tons/yr)			
	CO_2	CH_4	N_2O	CO_2e
Rodeo Renewed Project Emissions				
Ocean Going Vessels and Harbor Craft	26,195	0.28	1.53	26,657
Rail	8,119	0.64	0.20	8,195
Trucks	2,720	0.00	0.43	2,847
Facility Stationary Sources	1,069,772	84.51	10.79	1,075,100
Electricity	1,180	0.41	0.09	2,889
Total Operational	**1,109,661**	**85.84**	**13.04**	**1,115,689**
Air Liquide H_2 Plant	1,031,689	--	--	1,031,689
Total Operational with Air Liquide	**2,141,350**	**85.84**	**13.04**	**2,147,378**
CEQA Impact Evaluation				
Baseline Emissions within BAAQMD	2,165,272	93.54	13.69	2,171,455
Project Minus CEQA Baseline				-24,077
Significance Threshold				10,000
Exceeds Threshold?				No
Statewide Impact Evaluation (Informational only)				
Baseline Emissions Statewide	2,345,107	112	16	2,352,284
Project Minus Statewide Baseline				-204,905

Notes: Rodeo Refinery includes emissions from Rodeo Site and Carbon Plant.
Facility emissions GHG reporting for 2019 is based on 21 GWP for CH_4 and a 310 GWP for N_2O. Based on CARB reporting, it is expected to change to 25 and 298 respectively for reporting years 2021 and forward. Therefore, Project facility emissions are based on 25 GWP for CH_4 and a 298 GWP for N_2O.
The GHG emissions for the Air Liquide hydrogen plant are not reduced to reflect the offset provisions of the Settlement Agreement between ConocoPhillips Company and the Attorney General of California, dated September 10, 2007, and amended May 25, 2010.
Air Liquide CO_2e emissions assumed to be entirely CO_2 as breakdown for CH_4 and N_2O is not available.

Impact Summary

Because the estimated GHG operational emissions are below the threshold, the impact associated with operational GHG emissions from the Project would be less than significant.

Mitigation Measure: None Required

IMPACT 4.8-3

b. Would the Project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHG?

GHG emissions associated with the Project would not conflict with GHG reduction plans and policies.

Project Operations: Less Than Significant, No Mitigation Proposed

The Project was evaluated for consistency with the following plans, policies, and regulations, which are described in Section 4.8.2.4, *Regulatory Setting*:

- AB 32 (California Global Warming Solutions Act of 2006), SB 32/AB 197/AB 398, including:
  - Climate Change Scoping Plan
  - Mandatory GHG emissions reporting regulations
  - LCFS
  - California Cap-and-Trade program
  - Mobile Source Strategy
- BAAQMD Clean Air Plan
- Contra Costa County General Plan
- Contra Costa County CAP
- EO S-3-05.

Assembly Bill 32 and Subsequent Legislation

The key measure of AB 32 and related subsequent legislation (SB 32 and AB 197) is the requirement to reduce statewide GHG emissions to 1990 levels by 2020 and to 40 percent below 1990 levels by 2030. Although this legislation is not directly applicable to project-level CEQA analyses, the Project would be consistent with this mandate to reduce GHG emissions by maintaining no net increase in GHG emissions as a result of the Project.

AB 32 also required the adoption of discrete Early Action Items (CARB 2007), which resulted in the development of the LCFS, the SmartWay Truck Efficiency Regulation, and the Goods Movement Emission Reduction Program's VSR, among other things. Further, AB 32 required the development of a Climate Change Scoping Plan for achieving the necessary GHG reductions in a technologically and economically feasible manner, the adoption of a mandatory GHG emissions reporting regulation, and the establishment of a market-based declining emission limit program (i.e., the Cap-and-Trade program). In 2017, AB 398 directed the CARB to update the Climate Change Scoping Plan and to extend the life of the Cap-and-Trade program through 2030.

Climate Change Scoping Plan

The 2008 Scoping Plan and its 2014 and 2017 updates provide direction to reduce GHG emissions to the levels mandated by state legislation and several state EOs. The 2017 Scoping Plan Update evaluates key sectors, and relevant to the Project are both "Industry" and "Transportation Sustainability." In the discussion for Industry, the 2017 Scoping Plan Update recognizes the need to support California's economy, and the reduction of GHG emissions in industry is to be coupled with support for "a resilient and robust economy with a strong job force." "Policies to address GHG emissions reductions must continue to balance the State's economic well-being with making progress toward achievement of statewide limits" (CARB 2017, pp. 69-70). The 2017 Update discusses the importance of the Cap-and-Trade Program to achieve GHG reductions in the Industry sector, and

identified the implementation of the Cap-and-Trade Program as a "Sector Measure" (CARB 2017, pp. 71-72). Among the goals listed for the Industry sector are:

- Reduce fossil fuel use.
- Promote and support industry that provides products and clean technology needed to achieve the state's climate goals.
- Support a resilient low carbon economy and strong job force.

With respect to the Transportation Sustainability sector, the 2017 Update discusses reductions in the vehicle miles traveled, vehicle technology goals, clean fuel goals and sustainability freight goals, stating "most of the GHG reductions from the transportation sector in this Scoping Plan will come from technologies and low carbon fuels" (CARB 2017, p. 75). Listed among the ongoing measures are to continue "LCFS activities . . ." and "to develop and commercialize clean transportation fuels…"

The Project would advance the objectives of the 2017 Scoping Plan Update as it transforms an oil and gas refinery to one that produces renewable fuels, and although it would continue to provide gasoline and gasoline blendstocks to meet regional demand, the facility would cease to refine crude oil feedstocks. The Project would also result in the shutdown of the Santa Maria Refinery and the Carbon Plant. The Project would reduce GHG emissions overall even without accounting for the Santa Maria shutdown, and its production of renewable fuels is expressly supported by the Climate Change Scoping Plan. Importantly, as described below in the discussion of LCFS, the use of renewable fuels with their associated lower CI also reduces GHG emissions. The Project would repurpose an existing industrial site for renewable fuels technology and production, keeping an important segment of the clean fuels industry in California. Further, the Project would maintain jobs at the Rodeo Site, thereby supporting a strong work force while reducing GHG emissions.

In addition to the Discrete Early Actions described in section above, additional specific measures discussed in the Climate Change Scoping Plan that may be relevant to the Project include the Energy Efficiency and Co-Benefits Assessment of Large Industrial Sources, GHG Leak Reduction from Oil and Gas Transmission, Goods Movement Vessel Speed Reduction Program, Heavy Duty Truck GHG Regulation (SmartWay), Refinery Flare Recovery Process Improvements, and Removal of Methane Exemption from Existing Refinery Regulations. The Rodeo Refinery is subject to the Regulation for Energy Efficiency and Co-Benefits Audits of Large Industrial Facilities and submitted the required one-time fuel and energy assessment report to the CARB in 2011.

For non-stationary sources such as trucks, the Heavy Duty Truck GHG Regulation (Smartway) applies to vehicle manufacturers. While the Rodeo Refinery is not a regulated entity under this regulation, the heavy-duty truck fleet used by P66 contractors reflect the GHG emission limits required by the regulation. As of March 2021, a statewide VSR program is still under development by the CARB. In addition, the Ocean-Going Vessels At-Berth Regulation Amendments, developed from the California Sustainable Freight Action Plan, aim to control hoteling emissions from tankers starting in 2027. The CARB is preparing an interim evaluation scheduled in 2022 to assess progress in control technologies and infrastructure improvements. The current analysis is not taking credit for potential emission reductions from implementation of this rule given the uncertainty surrounding the available emission control technologies for tankers at this time. However, as with the other regulations under the Climate Change Scoping Plan, the Project would comply with any regulations developed under for VSR and the at-berth rule.

The Refinery Flare Recovery Process Improvements measure and Removal of Methane Exemption from Existing Refinery Regulations measure were both proposed in the Climate Change Scoping Plan; however, the CARB has yet to move forward with the development of these measures. As described in the Climate Change Scoping Plan, the first measure would limit GHG emissions from refinery flares, while the second measure would remove the current fugitive CH_4 exemption that is

present in the VOC regulations of most air districts, including the BAAQMD (BAAQMD 1994). As with the other local regulations, the Project would comply with any applicable regulations developed under these Climate Change Scoping Plan measures.

Overall, the Project would not conflict with the 2008 Scoping Plan or the 2014 and 2017 updates because the Project would achieve a no net increase in GHG emissions and would advance the goals and objectives of the Climate Change Scoping Plan as a whole. Further, the Project would continue to comply with applicable regulations enacted as directed by the Climate Change Scoping Plan.

Mandatory GHG Emissions Reporting Regulations: The State of California and federal mandatory GHG emissions reporting regulations require facilities exceeding a specified threshold of GHG emissions to report their emission inventories. Both regulations require reporting of emissions from stationary combustion and process emissions sources. This does not include non-stationary combustion sources such as from shipping, rail, and trucking or indirect emissions from water and electricity usage. Further, the state regulation requires emissions reports to be verified by a third party. The Rodeo Refinery complies with these regulations by submitting the required emission inventories reports to the CARB and the USEPA each year and obtaining the required verifications, and the Project would also comply.

Low Carbon Fuel Standard

The LCFS is a market-based program to encourage the production of lower CI transportation fuels, and providers of transportation fuels in California are subject to its requirements, including Phillips 66 and the Project. The CI benchmarks are reduced annually, with a mandate to reduce CI of the transportation fuel pool by 20 percent by 2030. The CI takes into account the life cycle GHG emissions associated with each fuel type.

The Project would cease refining crude oil feedstocks and process renewable feedstocks to generate transportation fuels that have lower CIs than the gasoline or diesel LCFS baseline fuels. By providing renewable fuel to the supply pool, the Project would support the overall objectives of the LCFS to increase the availability of lower carbon fuels and to lower the CI of the overall transportation fuel pool. The Project would also help businesses, government entities, and consumers to reduce reliance on non-renewable energy sources and promote the use of renewable fuels. The renewable fuels produced by the Project would generate credits under the LCFS program.

As mentioned above, the life cycle GHG emissions for the fuels is taken into account for the LCFS program. For example, the GHG life cycle for renewable diesel produced from used cooking oil includes an evaluation of GHG emissions from collection and transport, oil filtration/rendering, additional transport, biorefining, further transport, and the tailpipe emissions from its use in cars and trucks (CARB 2020c, p. 19). Based upon life cycle analysis, the CARB has determined that the life cycle GHG emissions for renewable fuels is lower than that for baseline gasoline or diesel. Thus, Phillips 66's participation in the LCFS program through the Project further demonstrates that the Project's GHG emissions from transportation fuels would be reduced. Therefore, the Project would be consistent with California's LCFS goals.

California Cap-and-Trade Program

The California Cap-and-Trade program imposes a "cap" on total GHG emissions from covered entities, with the quantity of emissions allowed under the cap decreasing each year to ultimately reach the legislative mandates to reduce statewide GHG emissions to 1990 levels by 2020 and to 40 percent below 1990 levels by 2030. The Rodeo Refinery is a covered entity and has been subject to the program since the program began January 1, 2013.

As stated in the Climate Change Scoping Plan, the "Cap-and-Trade Program is fundamental to meeting California's long-range climate targets at low cost" (CARB 2017, p. ES16). The GHG emissions covered by the Cap-and-Trade program total 80 percent of all GHG emissions in California. The program

"guarantees GHG emissions reductions through a strict overall emissions limit that decreases each year, while trading provides businesses with flexibility in their approach to reducing emissions." The Cap-and-Trade program also generates revenue, and the 2017 Scoping Plan Update reported that approximately $5 billion had been appropriated to reduce GHG emissions. The Project would be consistent with the goals of the regulation because it would reduce GHG emissions.

2016 Mobile Source Strategy

With the production of renewable transportation fuels, the Project would also support the goals of the 2016 Mobile Source Strategy by increasing the supply of renewable fuels to be used by both passenger vehicles and heavy-duty vehicles (CARB 2016, p. 7). The Project's participation in the LCFS program also supports the objectives of the 2016 Mobile Source Strategy and contributes to the emission reductions needed to meet GHG reduction goals (CARB 2016, p. 152). Thus, the Project would be consistent with the provisions of the 2016 Mobile Source Strategy.

BAAQMD Clean Air Plan

There are multiple proposed measures in the Final 2017 Clean Air Plan that apply to a wide range of stationary source facilities, shown in Table 2.8-4. Most of these proposed measures are based on existing local rules applicable to refinery or industrial sources that the BAAQMD is looking to update or amend. Consistent with current operations, the Project would comply with all local air district regulations. In addition, climate goals of the Final 2017 Clean Air Plan include reducing Bay Area GHG emissions 40 percent below 1990 levels by 2030, and 80 percent below 1990 levels by 2050. The Project is expected to have net reductions of GHG emissions from its operations compared to its baseline and therefore would not add GHG emissions to the statewide and air district inventory. Accordingly, the Project would not conflict or obstruct the implementation of the BAAQMD's Final 2017 Clean Air Plan.

Contra Costa County General Plan

The Contra Costa County General Plan does not include specific goals related to GHGs or climate change; however, it includes the following Air Resources Goals within its Conservation Element (Section 4.18 of the General Plan) that may generate co-benefits for GHG reductions:

- **Goal 8-AA.** To meet Federal Air Quality Standards for all air pollutants.
- **Goal 8-AB.** To continue to support Federal, State and regional efforts to reduce air pollution in order to protect human and environmental health.
- **Goal 8-AD.** To reduce the percentage of Average Daily Traffic trips occurring at peak hours.

The Rodeo Refinery complies with all federal, state, and local air quality regulations and standards, and the Project would continue to do so. In addition, the Project would result in no net increase of GHG emissions, consistent with goal 8-AB. Finally, the Project would also result in a large decrease of truck traffic and, thus, GHGs associated with such trips. Therefore, the Project would not impede the goals of the general plan.

Contra Costa County Climate Action Plan

The Contra Costa County CAP contains a checklist of measures to be assessed for applicability for a given development project as a tool to determine consistency. The items in this checklist are generally directed to residential, commercial, or industrial land use development projects and would not apply to process changes at an industrial facility. Therefore, the Project would not conflict with the goals of the plan.

Executive Order S-3-05

As discussed previously, EO S-3-05 establishes the goal of reducing GHG emissions to 2000 levels by 2010, to 1990 levels by 2020, and to 80 percent below 1990 levels by 2050. The reduction in 2020 is incorporated into AB 32 goals, but the 2050 goals are exclusive to the EO. The text of EO S-3-05 does not explain how the targets should be applied to individual development projects. At this time no specific strategies have been identified to reach the 2050 goal. Nevertheless, the Project would achieve no net increase in GHG emissions from the baseline and would, therefore, be consistent with S-3-05.

Impact Summary

In summary, implementation of the Project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing emissions of GHGs, and impacts would be less than significant.

Mitigation Measure: **None Required**

4.8.6 Sea Level Rise

4.8.6.1 Existing Global Sea Level Rise

The IPCC has determined emissions of GHGs in excess of natural ambient concentrations are responsible for intensifying the greenhouse effect and leading to a trend of unnatural global warming. Human-induced global warming has already caused observed changes in sea level rise, which has exacerbated coastal erosion. Global mean sea level has risen about 8–9 inches since 1880, with about a third of that occurring within the last two and a half decades. In 2019, global mean sea level was 3.4 inches above the 1993 average—the highest annual average in the satellite record (1993-present). Global warming beyond the present day will further exacerbate ongoing sea level rise (IPCC 2019).

4.8.6.2 Projected Global Sea Level Rise

Federal Projections

At the request of the United States Climate Change Science Program, NOAA scientists conducted a review of the research on global sea level rise projections to evaluate climate change effects. NOAA developed four GHG emissions scenarios based on varying combinations of economic, technological, demographic, policy, and institutional futures. Based on projected future emissions and concentrations, the scenarios represent a broad range of sea level projections to 2100 (NOAA Fisheries 2021a).

The NOAA study concluded that even with lowest possible GHG emission pathways, global mean sea level would rise at least 8 inches above 1992 levels by 2100. With high rates of emissions, sea level rise would be much higher, but would be unlikely to exceed the highest projection of 6.6 feet higher than 1992 levels. Both the low-end and high-end projections were revised upward in 2017 following a review by the US Interagency Sea Level Rise Taskforce. Based on their new scenarios, global sea level is very likely to rise at least 12 inches above 2000 levels by 2100 even on a low-emissions pathway. Further, for future pathways with the highest GHG emissions, sea level rise could be as high as 8.2 feet above 2000 levels by 2100 (NOAA Fisheries 2021b).

State Projections

EO S-13-08 directs the California Natural Resources Agency, in coordination with other state agencies and the National Academy of Sciences, to assess sea level rise for the Pacific Coast and create official sea level rise estimates for state agencies in California, Oregon, and Washington. The assessment and official estimates are provided within *State of California Sea-Level Rise Guidance Document: 2018 Update* (OPC Guidance). The OPC Guidance document offers a series of projections for the state using a set of probability distributions. The projections are measured by emissions, time, and risk aversion. For 2050, the

sea level rise projections are all still considered to be in a high emissions timeframe and range from 1.1 feet as the low risk, 1.9 feet as the medium-high risk, and 2.7 feet as the extreme risk (OPC 2018).

The OPC Guidance document contains eight recommendations for incorporating sea level rise into planning:

- Prioritize social equity, environmental justice, and the needs of vulnerable communities;
- Prioritize protection of coastal habitats and public access;
- Consider the unique characteristics, constraints, and values of existing water-dependent infrastructure, ports, and public trust uses;
- Consider episodic increases in sea level rise caused by storms and other extreme events;
- Coordinate and collaborate with local, state, and federal agencies when selecting sea level rise projections, and where feasible, use consistent sea level rise projections across multiagency planning and regulatory decisions;
- Consider local conditions to inform decision making;
- Include adaptive capacity in design and planning; and
- Assessment of risk and adaptation planning should be conducted at the community and regional levels.

The guidance document is expected to be updated regularly, to keep pace with scientific advances associated with sea level rise.

4.8.6.3 Sea Level Rise in the Project Vicinity

Data collected from tidal gages and new satellite-based sensors indicate sea level rise is already affecting much of California's coastal region, including the San Francisco Bay and its upper estuary (NOAA Fisheries 2021c). As seas have risen, high tides are reaching higher and extending further inland than in the past. Low-lying shoreline development, including infrastructure, housing, and other land uses, is at increased risk of flooding due to sea level rise (NOAA Fisheries 2021c).

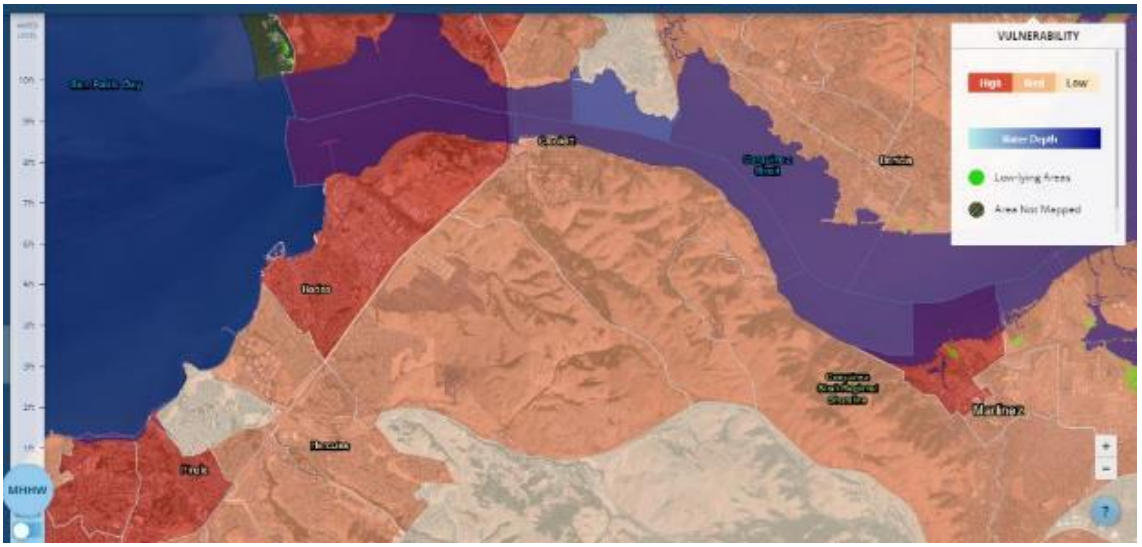
There are several coastal flood hazards affecting existing water levels along the Contra Costa County shoreline (Contra Costa County 2016). As stated in *Adapting to Rising Tides, Contra Costa County Sea Level Rise Vulnerability Report,* the following may increase due to sea level rise and other climate-change-induced changes to atmospheric-oceanic processes:

- **Daily tidal inundation:** As sea levels rise, the elevation of the mean higher water mark (MHHW) will continually increase. Without action, this increase in elevation will result in increased permanent future inundation of low-lying areas.
- **Annual high tide inundation (King Tides):** King Tides result in temporary inundation, particularly associated with nuisance flooding, such as inundation of low-lying roads, boardwalks, and waterfront promenades. Typical King Tides raise coastal waters approximately 14 inches above MHHW. In the winter (December, January, and February), King Tides may be exacerbated by winter storms, making these events more dramatic. Without protective action, this regular, predictable flooding will occur more frequently and affect larger areas as seas rise.
- **Extreme high tide inundation (storm surge):** Depending on the type and intensity of cause(s), extreme tides range from 12 inches above MHHW (1-year extreme tide) to 41 inches above MHHW (100-year extreme tides) or higher. One such event occurred on December 11, 2014, when Bay waters rose 18 inches above predicted tide levels due to coastal storm conditions during a heavy rain event.

- **Weather and weather cycles:** Climate change may affect the frequency and/or intensity of coastal storms, El Niño cycles, and related processes. During El Niño winters, atmospheric and oceanographic conditions in the Pacific Ocean produce severe winter storms that impact Bay shorelines. No clear consensus has emerged about these changes, but a commonly identified trend is a tendency toward increased elevation of snowpack and correspondingly more precipitation falling in Delta watersheds as rain. This trend may increase the frequency of higher Delta flows into the Bay.
- **Waves:** Large waves, whether generated within the Bay or by large Pacific storms, can damage unprotected shorelines and drive floodwaters even higher. Typical impacts include damage to coastal structures such as levees, docks and piers, wharves, and revetments; backshore inundation due to wave overtopping of structures; and erosion of natural shorelines.
- **Precipitation combined with high tides:** When large rainfall events occur with particularly high tides, coastal waters can impede the drainage of rivers, creeks, and stormwater systems to the Bay, resulting in inland flooding during storms. Typical impacts during high or extreme tides include failure of storm drainage infrastructure, drainage restrictions through outfalls, backup of floodwaters into low-lying areas during precipitation events, road closures, and neighborhood flooding.

Rodeo Refinery

According to NOAA, by looking at the intersection of potential sea level rise and vulnerable Census tracts, one can get an idea of how populations are vulnerable to sea level rise (NOAA Fisheries 2021c). NOAA overlaid social and economic data that depicts sea level rise based on a Social Vulnerability To Environmental Hazards Index[46] (University of South Carolina 2014), which shows areas of high human vulnerability to hazards based on population attributes from Census tracks (e.g., age and poverty) and the built environment. Dark red indicates areas having a high vulnerability, and the lighter reds indicate decreasing vulnerability. As shown on Figure 4.8-1 the Rodeo Refinery and surrounding area is located in a “high risk” area.



Source: NOAA 2021c

Figure 4.8-1. Areas of Vulnerability to Sea Level Rise in Vicinity of Rodeo Refinery

[46] The Vulnerability Index is a tool for policy makers and practitioners to graphically illustrate the geographic variation in social vulnerability. It shows where there is uneven capacity for preparedness and response and where resources might be used most effectively to reduce the pre-existing vulnerability. The index synthesizes 29 socioeconomic variables, which the research literature suggests contribute to reduction in a community’s ability to prepare for, respond to, and recover from hazards. Data sources primarily include those from the US Census Bureau.

In 2021, Phillips 66 submitted a *Long-Term Flood Protection Report* produced by Trihydro Corporation (Trihydro). As stated in the report, the *Contra Costa County Adapting to Rising Tides Program* (see additional discussion under State and Local Policy Framework), developed 10 individual sets of inundation maps ranging from 12 to 108 inches of sea level rise, representing combinations of 0 to 66 inches of sea level rise with extreme tide events (i.e., 1-year to 100-year flood events). As displayed below, the Sea Level Rise and Extreme Tides Matrix for Contra Costa County shows the relationship between each scenario and different combinations of sea level rise with extreme tides (Trihydro 2021).

Sea Level Rise Scenario	Daily Tide	Extreme Tide (Storm Surge)						
	+SLR (in)	1yr	2yr	5yr	10yr	25yr	50yr	100yr
		Water Level above MHHW (in)						
Existing Conditions	0	14	18	23	27	32	36	41
MHHW + 6″	6	20	24	29	33	38	42	47
MHHW + 12″	12	26	30	35	39	44	48	53
MHHW + 18″	18	32	36	41	45	50	54	59
MHHW + 24″	24	38	42	47	51	56	60	65
MHHW + 30″	30	44	48	53	57	62	66	71
MHHW + 36″	36	50	54	59	63	68	72	77
MHHW + 42″	42	56	60	65	69	74	78	83
MHHW + 48″	48	62	66	71	75	80	84	89
MHHW + 52″	52	66	70	75	79	84	88	93
MHHW + 54″	54	68	72	77	81	86	90	95
MHHW + 60″	60	74	78	83	87	92	96	101
MHHW + 66″	66	80	84	89	93	98	102	107

In = inch(es)
MHHW = Mean Higher High Water
SLR = sea level rise
yr = year(s)

Based on this matrix, Trihydro determined the best fit scenario for the projected sea level rise of 2.7 feet (approximately 32 inches) at the Rodeo Refinery corresponds to MHHW + 36 inches (boxed in black above). While the OPC Guidance estimates sea level rise closer to 32 inches, this specific value was not available in the mapping created by the *Contra Costa County Adapting to Rising Tides Program*. Therefore, the next highest sea level rise with an associated mapping, i.e. 36 inches, was evaluated instead. Additionally, this assessment evaluated the flooding that may occur due to a sea level rise of 36 inches combined with a 100-year flood event, or MHHW + 77 inches (boxed in black above). Areas identified as at risk for inundation by 36 inches of sea level rise and 36 inches of sea level rise combined with a100-year storm event (i.e., 77 inches of sea level rise) are presented on [Figures 4.8-2 through 4.8-7], which have been reproduced from the analysis done by Trihydro.

4.8.6.4 Regulatory Setting

Federal Policy Framework

There are several federal programs, rules and regulations related to regulating GHGs from industrial facilities and motorized vehicles. Refer to the discussion under Section 4.8.2.4, *Regulatory Setting,* for detailed information.

State and Local Policy Framework

The State of California regulates GHG emissions through legislation, rules, and EOs, as described in Section 4.8.2.4, *Regulatory Setting*. These 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.

4.8.6.5 San Francisco Bay Regional Water Quality Control Board

The San Francisco Bay RWQCB issued an order to refineries in the region requiring *Submittal of Information on Climate Change Adaptation* (RWQCB 2021). The following provides a summary of the Order (refer to Appendix D-1 for the complete order):

- **Vulnerability Assessment**. Assess the vulnerability of the facility's wastewater and stormwater collection, treatment, and discharge systems to the following: (1) sea level rise, (2) groundwater rise, (3) changing climate and weather, and (4) power outages and wildfires.
- **Adaptation Strategies**. Based on the vulnerabilities of the facility's wastewater and stormwater collection, treatment, and discharge systems, identify mitigation and control measures needed to maintain, protect, and improve the Discharger's wastewater infrastructure under existing and possible future conditions. The assessment will include (1) regional collaboration, (2) time-critical measures, (3) design modifications and improvements, and (4) emergency response planning.

In addition, as necessary Phillips 66 must update the contingency plan, spill prevention plan, operation and maintenance manual, and wastewater facilities status report as required by their NPDES permits to reflect their responses to this letter. This information will inform permit reissuance, and prevention of facility operations disruptions by existing and future climate conditions.

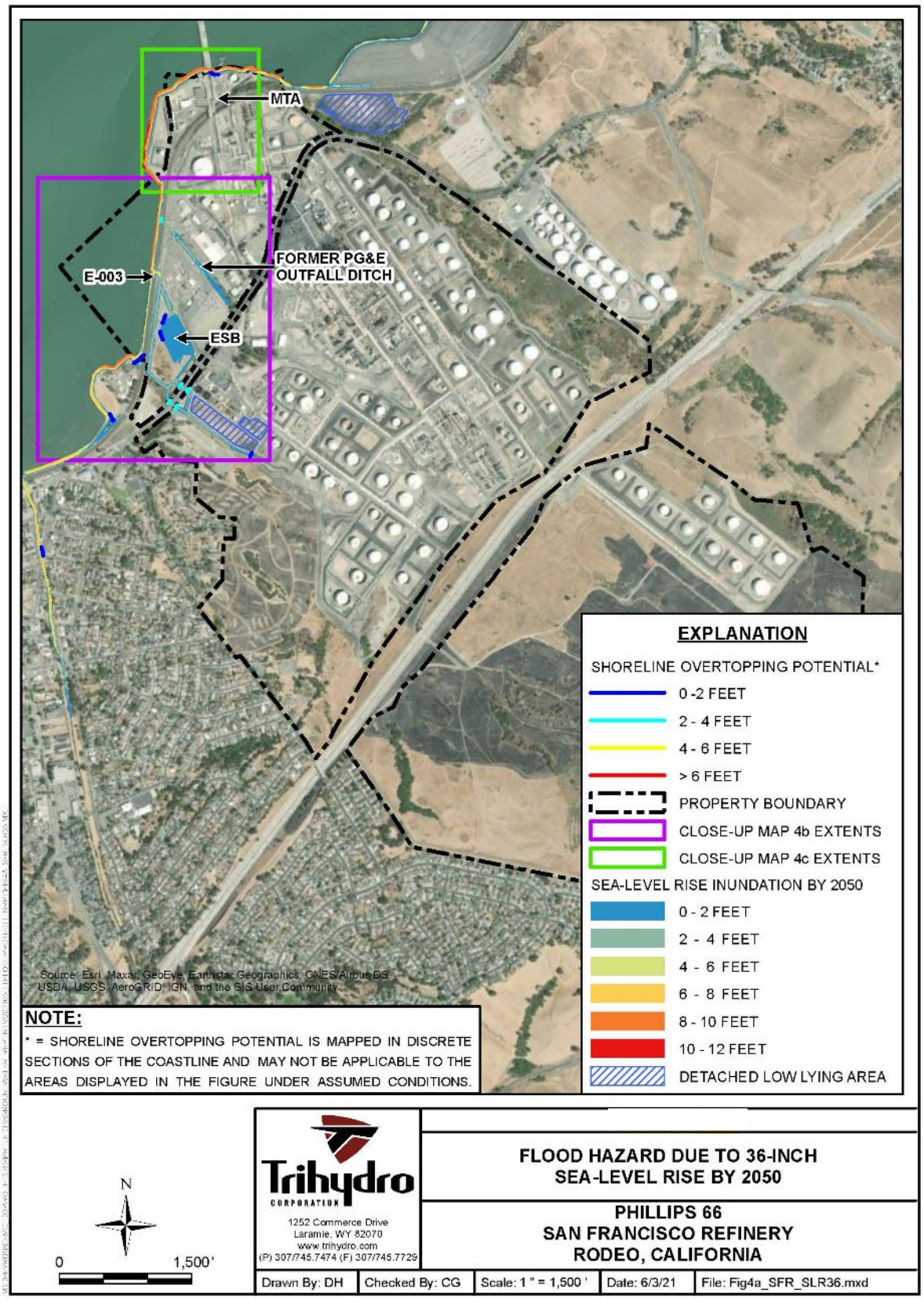


Figure 4.8-2. Flood Hazard due to 36-inch Sea-Level Rise by 2050

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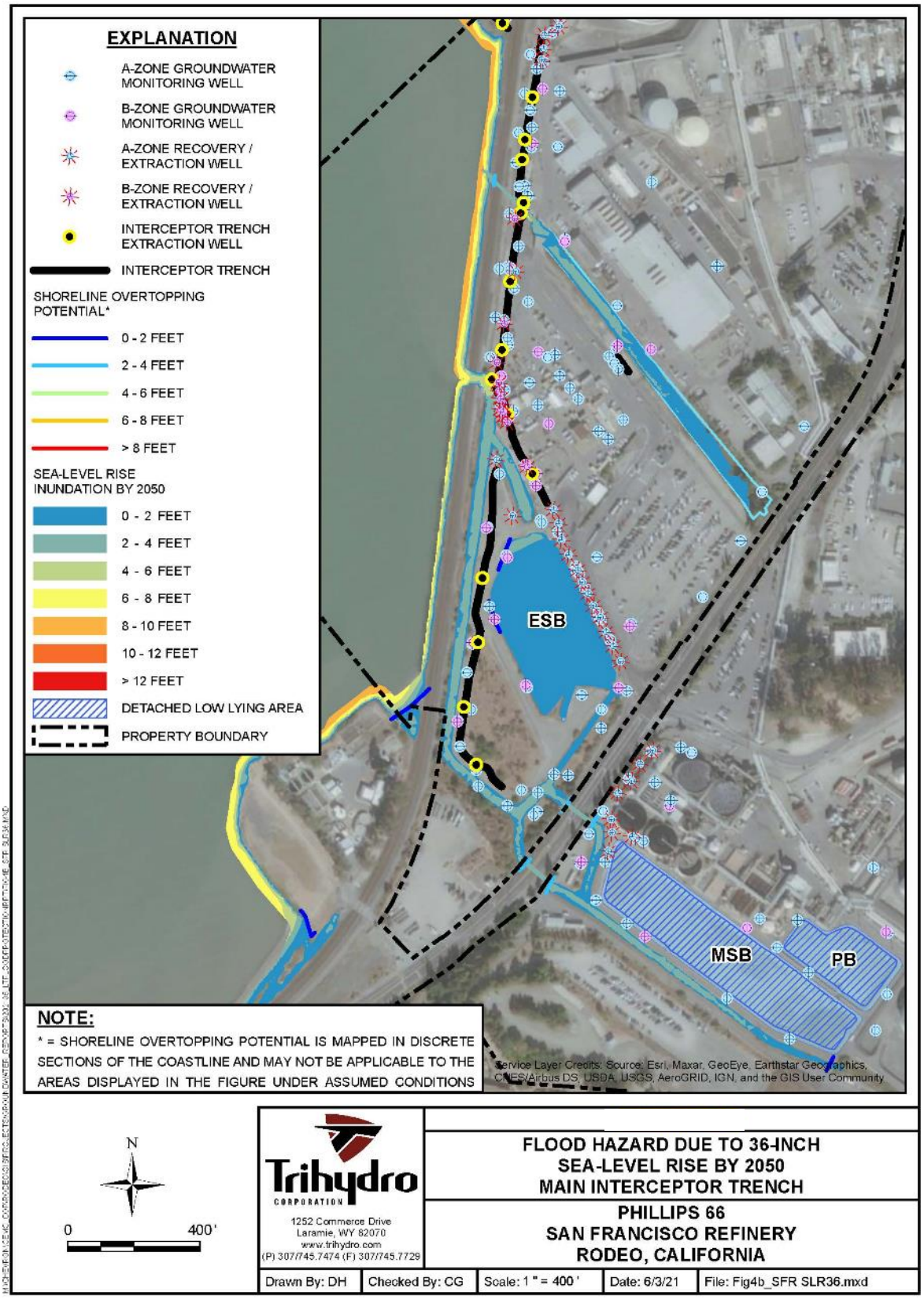

Figure 4.8-3. Flood Hazard due to 36-inch Sea-Level Rise by 2050 – Main Interceptor Trench

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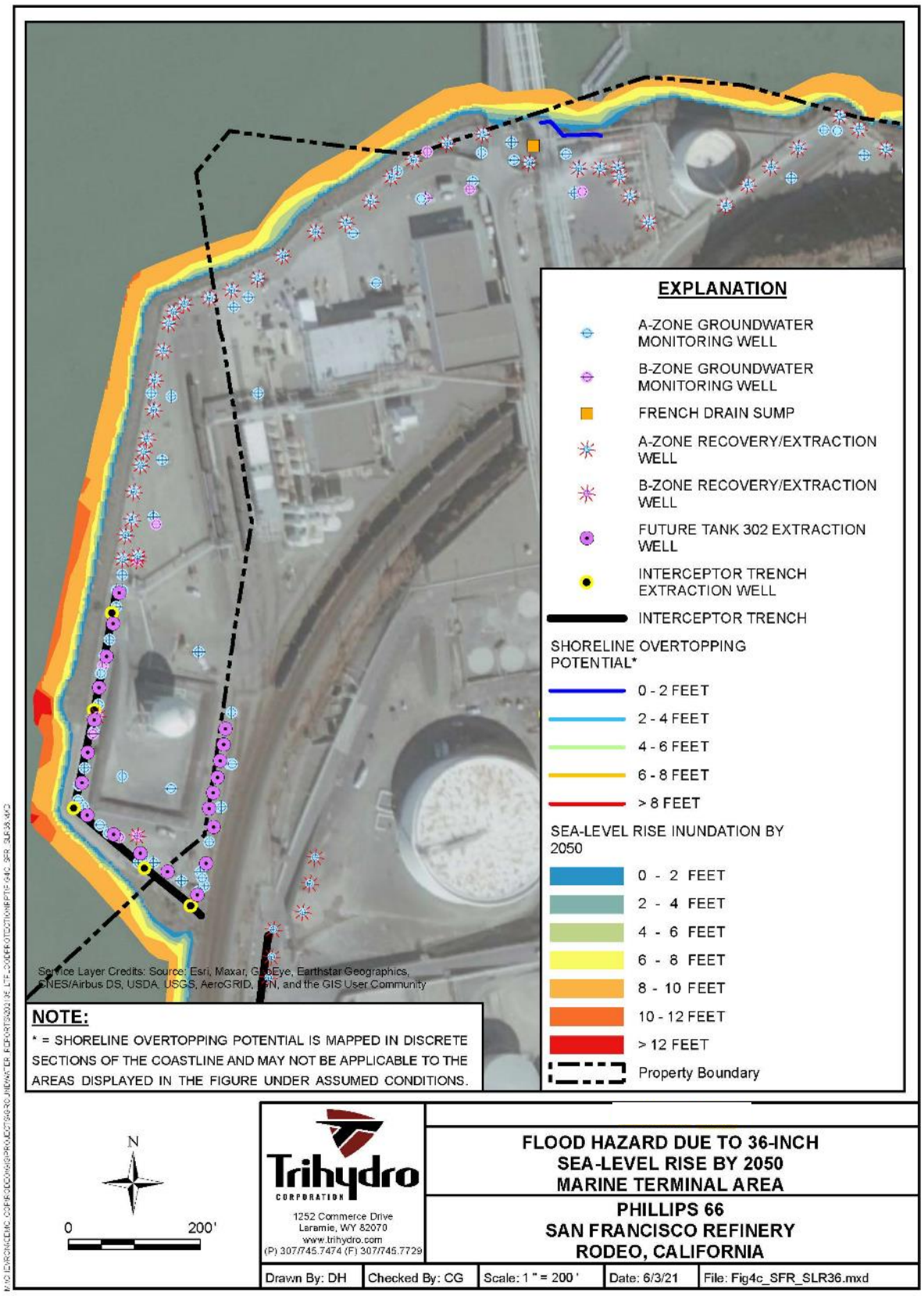

Figure 4.8-4. Flood Hazard due to 36-inch Sea-Level Rise by 2050 – Marine Terminal

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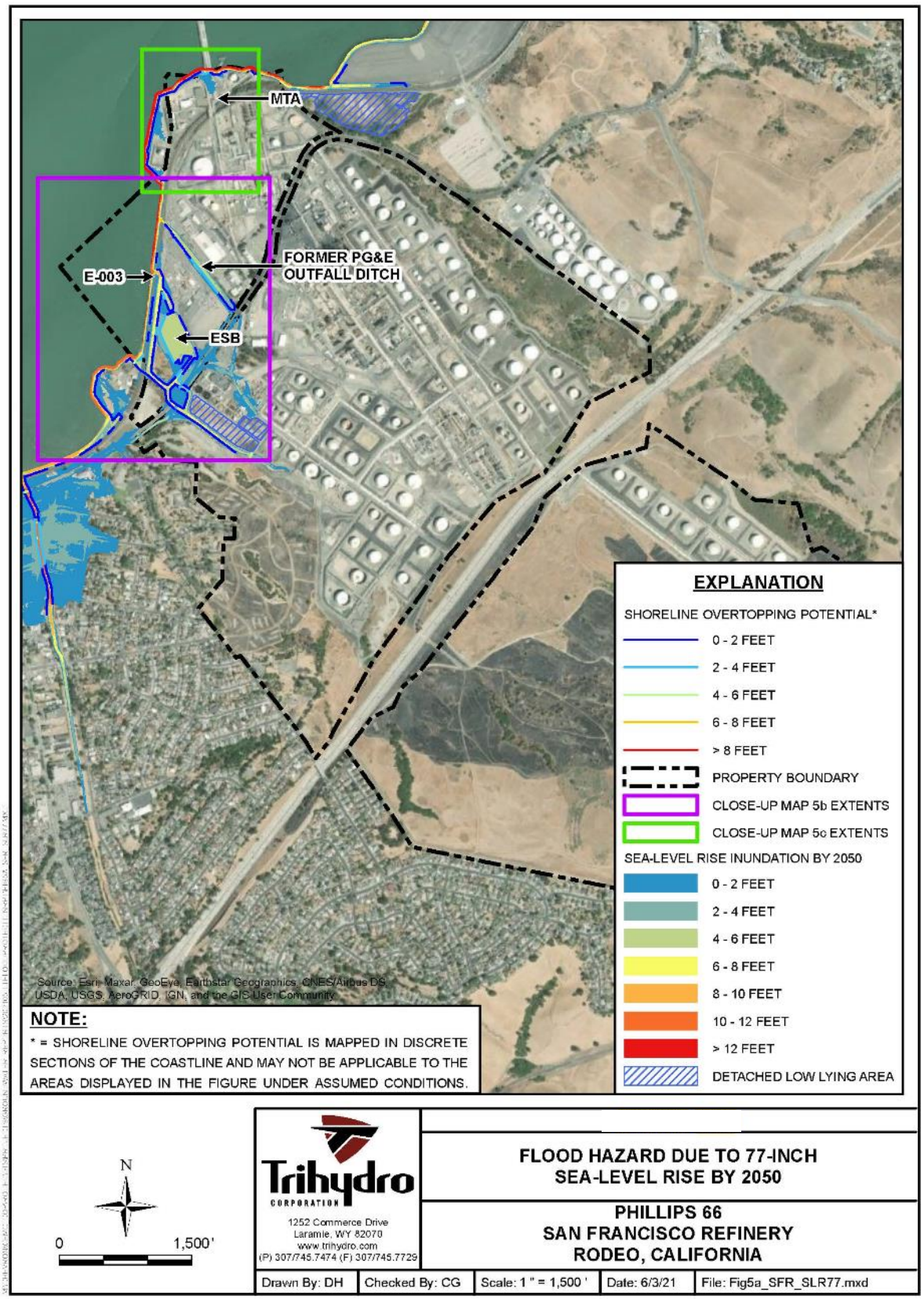

Figure 4.8-5. Flood Hazard due to 77-inch Sea-Level Rise by 2050

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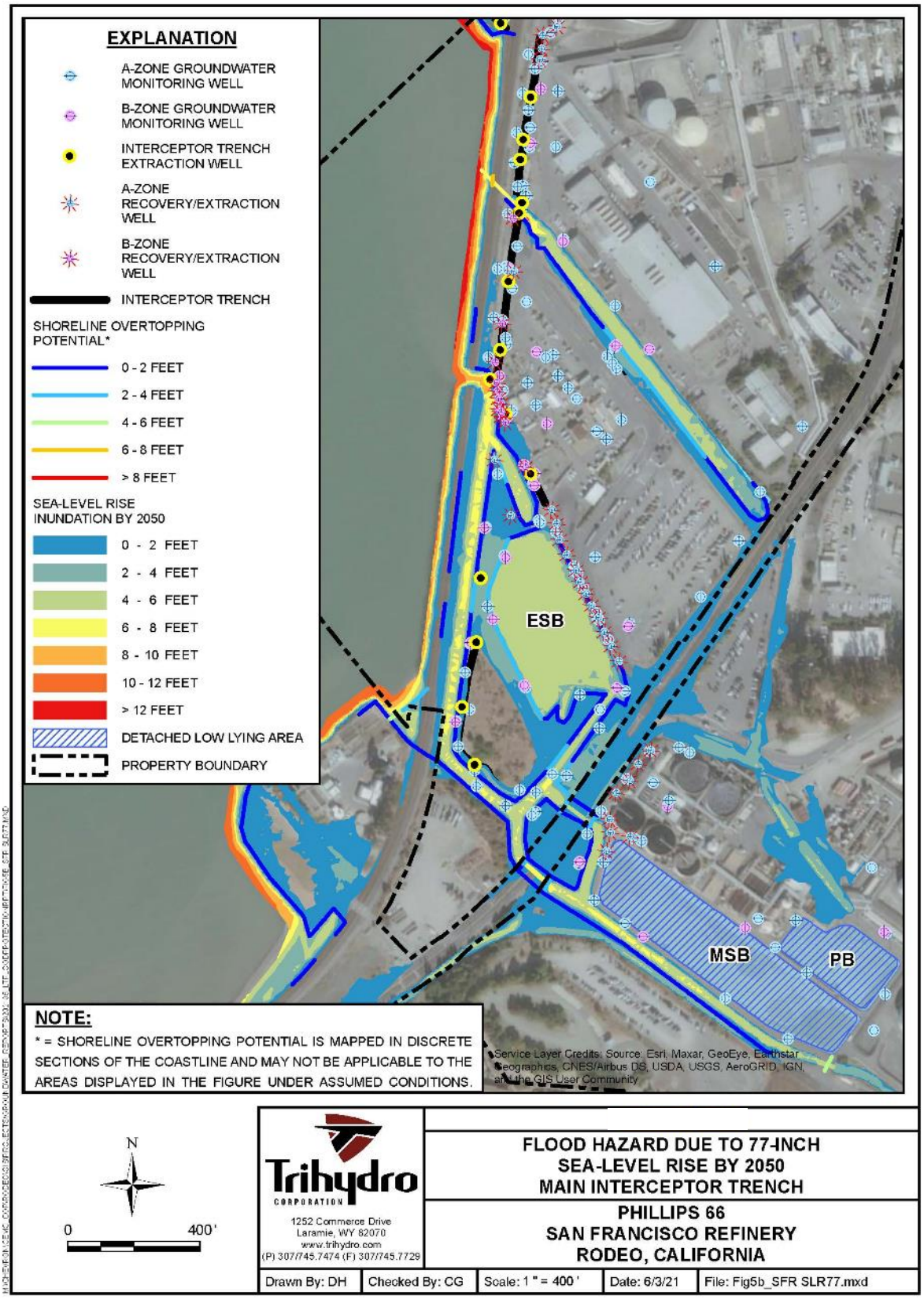

Figure 4.8-6. Flood Hazard due to 77-inch Sea-Level Rise by 2050 – Main Interceptor Trench

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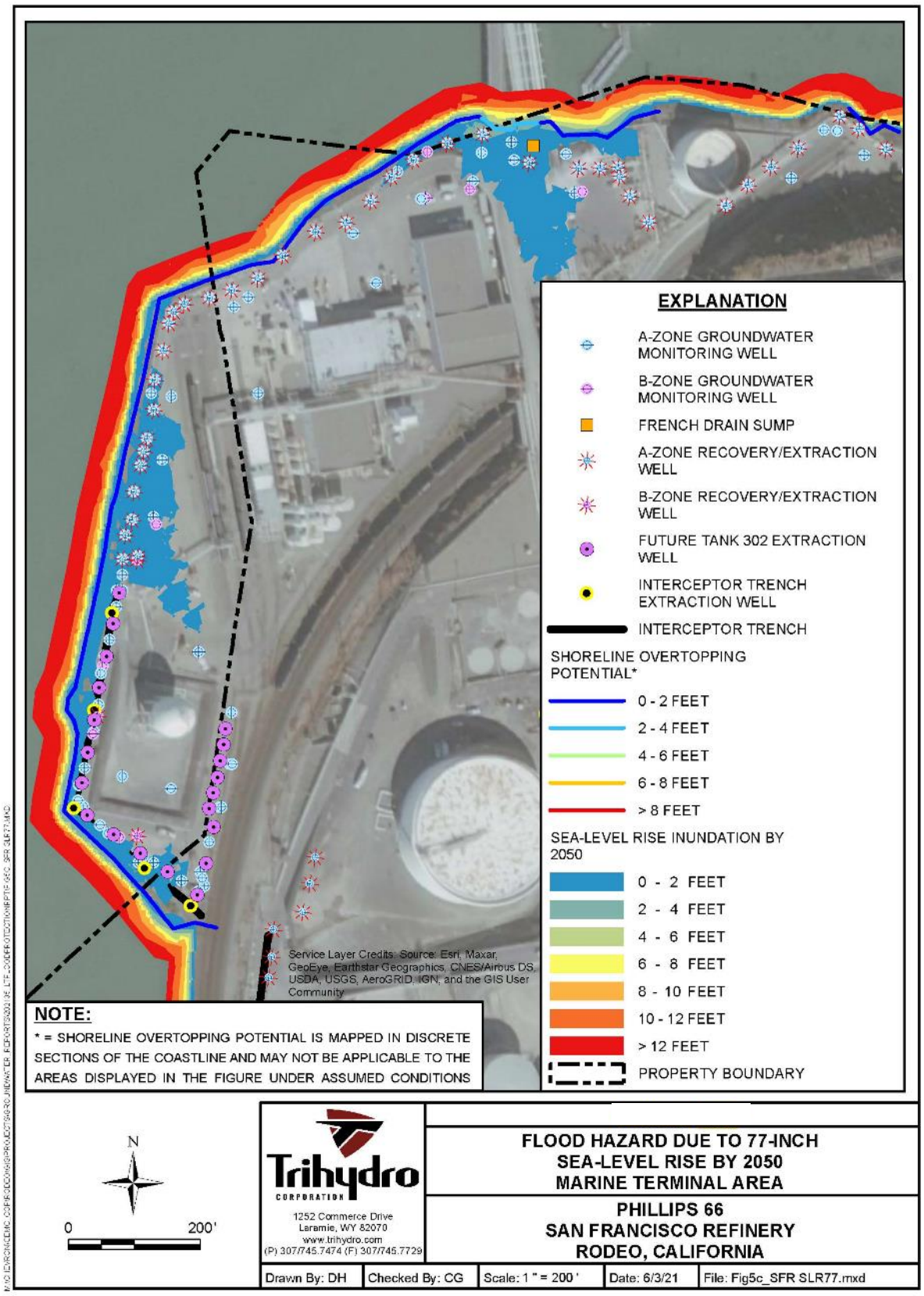

Figure 4.8-7. Flood Hazard due to 77-inch Sea-Level Rise by 2050 – Marine Terminal

4.8.6.6 Contra Costa County Adapting to Rising Tides Program

The *Contra Costa County Adapting to Rising Tides Program*, led by the BCDC, provides support, guidance, tools, and information to help agencies and organizations understand, communicate, and begin to address complex climate change issues. The Adapting to Rising Tides Program helps to identify and assess the community assets and natural resources that are most at risk to climate impacts, in particular, sea level rise and storm surge (Contra Costa County 2016).

Methodology

As stated in the Contra Costa County Sea Level Rise Vulnerability Report (Contra Costa County 2016), industrial sites face a variety of vulnerabilities to sea level rise, both directly to their facilities as well as offsite issues that can impact their operations. Because heavy industrial land uses need large amounts of land, have specific operational facility needs, and are dependent on fixed infrastructure for goods movement (e.g., marine terminals, pipelines and rail lines), these land uses can be difficult, if not impossible, to relocate. This infrastructure and associated facilities that have at- or below-grade entrances or sensitive equipment will be especially vulnerable if exposed to salt water. Many industrial land uses rely on offsite utilities connections (e.g., power, telecommunications, water supply, and wastewater treatment or discharge), and to roads, rail lines, pipelines and airports that may be vulnerable to sea level rise impacts. Finally, many industrial land uses generate or store hazardous substances that could have public health or environmental impacts if released into groundwater or surface waters.

The California Coastal Commission recommends 3.5 feet as the minimum sea level rise target by 2050 for planning purposes (Trihydro 2021). The target of 3.5 feet applies a safety factor to the OPC Guidance sea level rise estimates stated previously. The CalEPA, including the SWRCB, have also endorsed this minimum 3.5 feet sea level rise for climate change planning.

Two areas are relevant to the discussion of potential environmental effects related to climate change and sea level rise:

- Would the proposed project contribute to the adverse effects of climate change (e.g., GHG emissions) and, therefore, sea level rise?
- Would the proposed project be adversely affected by the environmental changes projected to result from climate change (e.g., sea level rise)?

4.8.7 Analysis

4.8.7.1 Project Operational Effects on Climate Change and Sea Level Rise

The stationary and mobile sources used in Project activities would emit GHGs; however, these emissions would comprise a small fraction of the Bay Area, California, and US GHG inventories, and the Project would reduce GHG emissions over the long-term. This fact precludes any meaningful analysis of quantitative effects that Project operations may specifically have on climate or sea level. However, a qualitative analysis based on available information is provided below.

The Project would repurpose an existing industrial site for renewable fuels technology and production, keeping an important segment of the clean fuels industry in California. Although it would continue to provide gasoline and gasoline blendstocks to meet regional demand, the facility would cease to refine crude oil feedstocks. The renewable fuels produced by the Project would have lower CI than the gasoline or diesel LCFS baseline fuels. The Project would also, via the increased supply and availability of those fuels, allow consumers to reduce reliance on non-renewable energy sources and promote the use of renewable fuels. Project GHG emission increases and reductions are summarized in Table 4.8-5. Relative to baseline emissions, the Project would result in a net reduction of GHG emissions. Table 4.8-5 does not include the Santa Maria and Pipeline GHG reductions and therefore underestimates the GHG

decrease when compared to the actual decrease that would occur statewide due to the Project. In addition, the Project would not conflict with any climate action plans and general plan, or with any local regulations adopted with the intent to reduce GHG emissions. Therefore the Project would not contribute to sea level rise.

4.8.7.2 Effects of Sea Level Rise on the Project

In response to the San Francisco Bay RWQCB Order (RWQCB 2021), Phillips 66 prepared a *Long-Term Flood Protection Report* (Trihydro 2021). The report updated the 2016 version, with the following objectives:

- Assess the current flood risk at the San Francisco Refinery using FEMA Maps.
- Assess the projected flood risk due to sea-level rise at the Rodeo Refinery using Adapting to Rising Tides Bay Area Sea-Level Rise Maps from the BCDC.
- Following the assessment, provide recommendations to address any areas currently at risk of inundation and areas that may become at risk of inundation following sea-level rise.

As stated previously, a minimum 3.5 feet sea level rise for climate change has been adopted by state and local agencies for planning purposes. When comparing the 3 feet to 4 feet of sea level rise, there is little additional flooding at the Rodeo Refinery. As presented on Figures 4.8-2 through 4.8-7, areas within the Rodeo Refinery are considered at risk for inundation by 36 inches of sea level rise and 36 inches of sea level rise combined with a 100-year storm event (i.e., 77 inches of sea-level rise).

The increased inundation is mostly seen around the Effluent Safety Basin, where the effect is minimal flooding of the surrounding monitoring wells. The affected wells are included in the assessment of 77 inches of sea level rise and therefore will be managed by Phillips 66 (Trihydro 2021). Because the increased flooding from 3 feet to 4 feet is considered minimal, it is assumed that the 36 inches (3 feet) of sea level rise and 77 inches (6.4 feet) have covered the potential areas that could be affected by 3.5 feet of sea level rise.

This combined analysis shows that while flooding in the near-term due to a 100-year storm surge may be minimal, flooding due to sea level rise could affect low-lying areas adjacent to the coastline. However, there is no substantial flooding at 36 inches of sea level rise, but with 36 inches of sea level rise plus a 100-year storm surge, there is potential for these areas to become inundated to an average depth of 2 feet (Trihydro 2021).

Sea level rise could also result in a net increase in groundwater levels, which could influence the Rodeo Refinery extraction system's ability to create a hydraulic gradient at the perimeter of the Bay and increase saltwater intrusion to perimeter aquifers. However, most of the remediation system extraction pumps operate based on groundwater level set-points and have the capability to process and treat saline waters. In addition, an increase in flow from the remediation systems to the wastewater treatment plant is not expected to substantially affect the wastewater treatment plant. Extraction wells are also fitted with water-tight seals to limit potential inundation of floodwater to the groundwater wells (Triyhdro 2021).

Currently, no Rodeo Refinery capital construction activities are planned for at risk locations; however, future activities will incorporate flood mitigation design, as appropriate and required by the San Francisco Bay RWQCB. To continue monitoring sea level rise and to mitigate potential impacts, the Trihydro report identified the following actions to be completed over the next five years at the Rodeo Refinery. For a discussion of specific facilities and actions refer to the Trihydro report (Appendix D-2):

- Perform an elevation survey of monitoring wells where elevation data are not available (i.e., ground surface elevation);

- Conduct a conditions survey of monitoring wells under risk of future flood damage that may be required to establish adequate waterproofing as defined by the Department of Water Resources;
- Catalogue required modifications and repairs for monitoring wells, as warranted, and develop subsequent work plans to address these needs;
- Continue to update sea level rise data and maps from BCDC accredited sources and reassess areas of risk;
- Continue to assess requirement for increased extraction rate at the shoreline extraction wells and interceptor trench due to increased groundwater elevations due to sea level rise;
- Evaluate need to replace extraction pumps with higher capacity pumps if groundwater extraction rates cannot maintain desired groundwater drawdown (hydraulic control) due to groundwater level rise; and
- Include updated tidal data to assess the efficiency of the existing outfall system and evaluate whether structural updates are required.

Current available information indicates there is no substantial flooding risk at 36 inches of sea level rise, but with 36 inches of sea level rise plus a 100-year storm surge, there is potential for these areas to become inundated to an average depth of 2 feet. However, with implementation of recommendations listed above, which must meet the requirements of the San Francisco Bay RWQCB, potential effects of sea level rise on the Rodeo Refinery, including facilities included in the proposed Project, would be minimized.

In addition, the San Francisco Bay RWQCB requires Phillips 66 to update the Rodeo Refinery's contingency plan, spill prevention plan, operation and maintenance manual, and wastewater facilities status report as required by their NPDES permits to reflect their responses to the San Francisco Bay RWQCB Order. This information will inform permit reissuance, and prevention of facility operations disruptions by existing and future climate conditions.

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4.9 Hazards and Hazardous Materials

4.9.1 Introduction

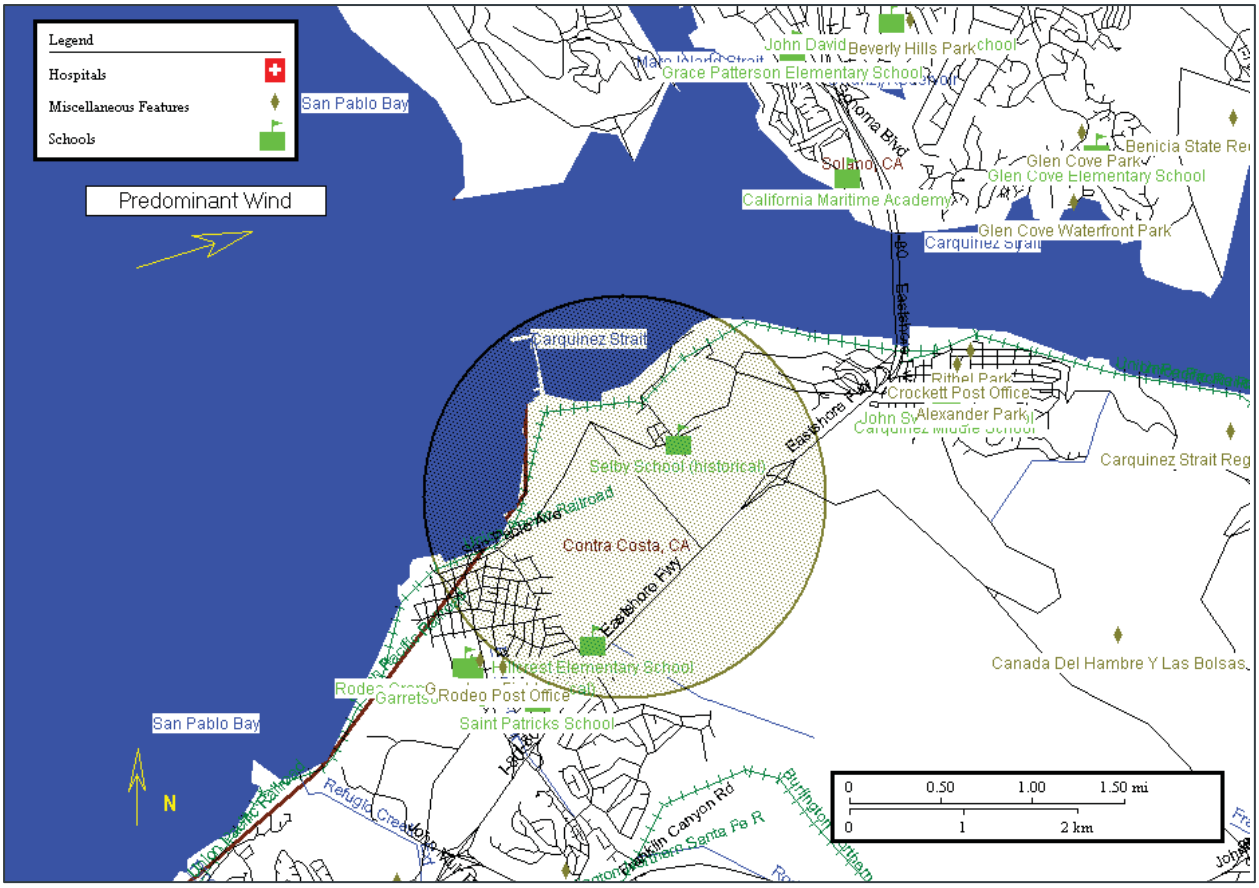
The section includes discussion of the physical and regulatory setting, the baseline for determining environmental impacts, the significance criteria used for determining environmental impacts, and potential hazards and hazardous materials impacts associated with construction/demolition, transitional and the operation and maintenance phases of the Project. The analysis addresses potential impacts resulting from physical changes and process changes in hazardous materials use, storage, disposal and transport, including operational and feedstock changes, at the Rodeo Refinery, the Marine Terminal, the Santa Maria Site, and Pipeline Sites and along transportation route locations. The Santa Maria Site and the Pipeline Sites are addressed to the extent information is available and at a qualitative level of discussion.

4.9.2 Environmental Setting

The environmental setting is the conditions during the baseline period. This includes the storage and use of hazardous materials at the refinery site, including the Marine Terminal as well as the transportation of material into and out of the refinery, and the Santa Maria Site and the Pipeline Sites. These are discussed below.

4.9.2.1 Rodeo Refinery and Transportation Methods

The Rodeo Refinery is located in unincorporated northwestern Contra Costa County, adjacent to the community of Rodeo. The site's current primary land use is heavy industrial, specifically, bulk petroleum processing and storage. Buffer zones have been established around the Rodeo Site, which is the active refinery where hazardous substances or processes such as storage tanks and hydrogen generators are located. The Rodeo Site is bounded on the northeast and southeast by undeveloped open space and industrial uses. The southwest edge of the Rodeo Site is a 300- to 600-foot undeveloped area that is maintained as a buffer between the Rodeo Refinery and the Bayo Vista residential area of Rodeo. The Bayo Vista area contains the sensitive receptor nearest to the Rodeo Site—a day care center. The Bayo Vista Head Start Center is approximately 1,110 feet from the closest Refinery tank, 0.75 mile from the railcar loading facility, 0.85 miles from the Marine Terminal and no schools are within 0.5 mile of the Rodeo Refinery. The Rodeo Refinery is located approximately 11 miles from Buchanan Field Airport, which is east–southeast in the city of Concord and 12 miles from the Napa County Airport, which is the north in Napa County. Figure 4.9-1 presents the sensitive receptors identified within a 1-mile radius of the Rodeo Refinery (CalARP 2019).



Source: *CalARP 2019, Appendix F*

Notes: Hillcrest Elementary School was closed in 2004, and the students were relocated to Rodeo Hills Elementary. Phillips 66 purchased the abandoned school property and demolished the buildings to create a larger buffer zone. Phillips 66 purchased the site of the Selby School in 2005 and relocated the occupant John Swett Unified School Administrative Offices to downtown Rodeo.

Figure 4.9-1. Sensitive Receptor Maps – Rodeo Refinery

Rodeo Refinery Hazards

Hazardous materials currently used at the Rodeo Refinery consist of those common to petrochemical operations, such as petroleum hydrocarbons, sulfur and sulfur compounds, hydrogen, aqueous ammonia, and organic gases. These substances can cause fires, explosions, and toxic exposure. Explosions at refineries can occur if flammable vapors and gases are ignited or when a flammable substance is released at high temperatures, usually under elevated pressure. Refinery explosions can include a vapor cloud explosion and a boiling liquid–expanding vapor explosion, both of which are very rare events. Impacts of an explosion are expressed in terms of a sudden increase in pressure above ambient pressure, resulting from a blast or shock wave, and explosions at refineries have caused damage, primarily broken windows, in nearby neighborhoods. A more common event would be a flash fire in which ignition occurs before mixing with atmospheric air. This type of fire does not result in explosions that could cause damaging overpressure. Refinery fires generally pose little risk to the public when buffer zones are incorporated in to the design, mainly because they are typically confined to the vicinity of the equipment from which the flammable release occurs.

Hazardous materials used or previously used in the design, construction, and operation of facilities at the Rodeo Refinery may include asbestos and lead-based paint. These materials could be encountered during demolition activities associated with the Project.

Many of the substances used or produced during the refining process, including ammonia and various sulfur compounds (including hydrogen sulfide), have some degree of toxicity to humans. Others, notably hydrogen and the various petroleum-based liquids and gases used and produced by the refinery, are flammable or explosive. The facility also produces hazardous wastes in the form of spent catalysts and sludges.

The Rodeo Refinery has been operating at its current location since 1896. Historical leaks and spills have contributed to subsurface soil and groundwater contamination that can negatively affect soil and groundwater quality. As a result, the Rodeo Refinery is on the Government Code Section 65962.5 of the Resource Conservation and Recovery Information System list of hazardous waste generators (also known as the Cortese List).

Wastes generated at the Rodeo Refinery are handled, stored, and disposed of in accordance with applicable regulations. Hazardous wastes are manifested and shipped to approved permitted facilities. The Rodeo Refinery generates approximately 30 tons of non-Resource Conservation and Recovery Act (RCRA) hazardous waste (e.g., oily trash, sand blast grit), over the period between turnarounds (approximately 2 to 3 years). The Rodeo Refinery also generates approximately 800,000 pounds of spent nickel/molybdenum catalyst and 30,000 pounds of spent cobalt/molybdenum catalyst every 30 to 36 months (the useful life of the material). These materials are considered hazardous under RCRA. However, the spent catalyst is sent offsite where it is processed to reclaim and regenerate the material, so it is not considered a waste.

All storm-water falling within Refinery tank, process, or piping containment areas, or spills in these areas, is collected for treatment in the process sewer, and is fully treated before discharge to San Pablo Bay. All oils are separated and skimmed during the process. The Refinery has three points of water effluent discharge into San Pablo Bay. The outfalls are observed both by the operators several times during every eight-hour shift, and by oil-on-water monitoring devices that alarm to the operator whenever an oil sheen is present. The water is also tested daily, weekly, and monthly as prescribed by the NPDES permit.

Transportation Hazards

In addition to hazards from onsite refinery incidents involving hazardous materials or processes, operations at the Rodeo Refinery creates potential hazards from the transportation of hazardous substances, including feedstocks, process chemicals, and products. Feedstocks are transported to the refinery by tankers and barges (crude oil, feedstocks, and gasoline blendstocks), pipelines (crude oil and petroleum feedstocks), and trucks (process chemicals, small quantities of transmix[47]). Products, byproducts, and wastes leave the Rodeo Refinery by tankers and barges (refined products), pipelines (fuels), rail (butane and petroleum coke), and trucks (spent catalyst and various wastes, some of which are hazardous). Each of these are discussed below.

Marine Terminal Tanker and Barge Transport

A variety of commercial, military and public vessels enter and operate within the Bay. Many vessels such as ferries and tugs remain entirely within the Bay. Container ships, oil tankers and bulk carriers account for the greatest percentage of ship arrivals; however, a broad range of cargo transits the region every year. Other categories of ships include vehicle carriers, break bulk, chemical tankers and passenger ships. Occasionally, surface combatants, submarines and naval auxiliaries such as oil tankers and supply

[47] Transmix is the portion of the pipeline flow that is diverted to a separate tank to avoid contamination between two dissimilar product batches.

ships transit the Bay. Public vessels often encountered on the Bay include those of the USCG, USACE, NOAA, and Military Sealift Command (Harbor Safety Committee 2019).

The Bay Area has five refineries, eight ports, 14 marine oil terminals, and other terminal facilities. It is noted that the Marathon Refinery in the Martinez/Concord area of Contra Costa County is currently not refining, pending review of a proposed renewable fuels land use project. Table 4.9-1 presents USACE data on inbound vessel visits to the Bay Area over the last 5 years.

Table 4.9-1 Vessel Trips Inbound San Francisco Bay

	Self-Propelled			Non-Self Propelled		
Year	Dry Cargo	Tanker	Tow Tug	Dry Cargo	Tanker	Totals
2015	2,073	756	249	7	299	3,384
2016	2,339	758	185	12	251	3,545
2017	2,308	881	150	6	217	3,562
2018	2,298	831	168	7	235	3,539
2019	2,150	873	177	5	239	3,444

Source: USACE 2021, San Francisco Bay Entrance, Upbound traffic, trips and drafts of vessels, foreign and domestic combined.

Total petroleum cargo transfer operations in the Bay area are tabulated by the Harbor Safety Committee reports (Harbor Safety Committee 2019) and total 92 million barrels of materials loaded and 250 million barrels discharged in 2019, with the largest amounts for loading being attributable to gasoline and diesel (56 percent) and for discharge being crude oil (60 percent).

Ferry service and recreational and fishing boat traffic also occur in the San Francisco Bay. The Bay Area ferry system makes over 85,000 trips annually (Harbor Safety Committee 2019). High-speed commuter ferries frequently operate in the Central Bay, South Bay, and San Pablo Bay, with high concentrations around the San Francisco Ferry Building on San Francisco's north shore, where most Central Bay routes terminate. Many ferries also operate between San Francisco's north shore, Alcatraz, and Sausalito/Tiburon. These ferries do not run along charted routes. The San Francisco Harbor Safety Committee, in conjunction with the USCG, has established a recommended Ferry Traffic Routing Protocol for: (1) the area surrounding the Ferry Building terminal along the waterfront of San Francisco, (2) the waters of Central Bay, and (3) the waters of San Pablo Bay. The protocol is intended to increase safety in the area by reducing traffic conflicts.

In 2010, San Francisco Environment (2012) identified 71 marinas in seven Bay Area counties, including Alameda (23), Contra Costa (9), Marin (17), San Francisco (8), San Mateo (8), Solano (4), and Sonoma (2). In 2012, there were approximately 20,000 boat berths around the Bay Area (Harbor Safety Committee 2019), with two-thirds of these located in the Central Bay. In addition, numerous boat ramps and launches encourage use of the bay by both smaller motorized vessels and non-motorized vessels (e.g., canoes, kayaks, windsurfers, and paddleboards). While only a small percentage of boat owners and renters are on the bay at any given time, sunny weekends may bring thousands of pleasure boat users on the bay's waterways.

Risks associated with vessel transportation of liquid bulk fall into two classes: in-transit risks from accidents such as collisions, allisions, and groundings while on the way to or from marine oil terminals, and at-berth risks from spills during cargo transfer operations. An analysis of historical in-transit accident rates, adjusted for double-hull and double-bottom technology, found an accident rate for in-transit within San Francisco Bay that would release a spill of more than 100 gallons to be approximately 0.8 per million tanker vessel calls and 5 per million barge calls (Acutech 2021; USDOT 1991). The USDOT analysis was prepared to evaluate the then-proposed Vessel Traffic Services that is now, albeit with substantial

improvements from the original plan (Acutech 2021), a fixture of all major US port complexes, including San Francisco Bay. Examples of large vessel spills include the following:

- In 1971, a collision of the *Oregon Standard* and the *Arizona Standard* under the Golden Gate Bridge occurred in heavy fog and resulted in a spill of approximately 27,600 barrels of bunker heavy fuel oil. Spilled oil impacted the outer coast to the north as far as Double Point (north of Point Reyes Bird Observatory) in Marin County, and to the south near San Gregorio Beach in San Mateo County, as well as San Francisco Bay. This incident prompted the legislation that established the modern Vessel Traffic Service (VTS); see Section 4.9.2.9, *Marine Vessel Traffic Control System*, for more detail on the VTS).
- In 1984, the chemical tanker Puerto Rican experienced an explosion in a void space surrounding a cargo tank while the vessel was in open waters about 8 miles west of the Golden Gate Bridge. The accident resulted in injury to crew members and the release of over 30,000 barrels of lubricating oil and fuel oil, impacting the Farallon Islands, Point Reyes, and Bodega Bay.
- In 2007, a container ship, the Cosco Busan, struck the San Francisco-Oakland Bay Bridge and released almost 1,400 barrels of fuel oil into the water. Oil contamination occurred on the waterfront in the San Francisco Bay, and several beaches in San Francisco and in Marin County were closed due to the oil.
- In 2009, the Dubai Star, spilled 10 bbls of fuel oil off Alameda during refueling.

Container ships are not subject to the requirement for double-hulled construction that govern tank vessels. In the case of the Rodeo Refinery, no in-transit accidents resulting in spills occurred in the baseline period (2017–2019).

The Harbor Safety Committee compiles statistics related to oil spills in the Bay Area. Based on Harbor Safety Committee statistics, in 2019 there were an average of 122 oil spills per year attributable to US commercial vessels and 62 per year attributable to foreign freight vessels. At the Marine Terminal, most of the tankers and barges transporting crude oil, feedstocks, and products to and from the Rodeo Refinery originate outside the Bay area. Tankers are generally self-propelled marine vessels and barges are propelled by tugs (towing or pulling). To access the Rodeo Refinery, tankers and barges come into the approaches to the Golden Gate, pick up a pilot and tug escort approximately 9 miles west of the Golden Gate, transit through the Golden Gate, proceed north via marked navigational channels to San Pablo Bay, and proceed northeast through San Pablo Bay to the Marine Terminal. Vessels larger than barges must have a pilot and from one to three escort tugboats, depending on vessel size, all the way through the transit. Barges have their own tugboats providing propulsion, but the larger ATBs are required by the Rodeo Refinery's operating procedures to also have an escort tug.

To maximize navigational safety, vessels are required to use specific travel lanes both inside and outside the bay. Outside the Golden Gate, vessels are not required to travel at low speeds, but there is a voluntary seasonal VSR request for vessels 3,000 gross registered tons or larger to reduce speed limit of 10 knots as requested by the USCG (a branch of the Department of Homeland Security) with support from the NOAA and Marine Exchange that went into effect May 1, 2021, for areas off of San Francisco. All transits by vessels 300 gross registered tons or larger are analyzed by NOAA via ATS data provided by the USCG to assess the industry's cooperation. Phillips 66's records indicate that tankers and barges calling the Rodeo Refinery are requested to observe this limit up until they near the Marine Terminal and slow to maneuver into the berth.

Under baseline conditions (2017–2019), an average of 80 tankers and 90 barges per year called at the Marine Terminal, or approximately 3 vessels per week. The tankers ranged in size from vessels of less than 10,000 deadweight tons (approximately 50,000 barrels of crude oil) to Suezmax vessels (120,000 to 200,000 deadweight tons, or approximately 600,000 to 1,000,000 barrels of crude oil). Over half of the tankers calling at the Marine Terminal are "Handymax" size (20,000 to 60,000 deadweight tons). Many of

the barges are ATGs or integrated tug-barges, a configuration in which the tugboat fits into an indentation in the barge's stern in a semi-permanent association and pushes it from behind. This configuration is substantially safer than towing from in front at the end of a cable. Most other barges are pushed from behind but are not actually integrated into a fixed association. Barges vary widely in capacity; the most common size calling at the Rodeo Refinery has a capacity of approximately 30,000 barrels, but barges up to a 150,000-barrel capacity have called at the Marine Terminal. Barges are typically used for coastwise service, for example from the Bay Area to Puget Sound or Southern California rather than transoceanic voyages (for example, in 2019, approximately two-thirds of cargo vessel arrivals at the Golden Gate were from other US West Coast ports [Marine Exchange 2020]).

Only two documented at-berth releases have happened at the Marine Terminal over the last 10 years: in September 2017, a cargo transfer line leaked less than 1 barrel (25 gallons) of light gas oil into the bay and in January 2018, a small sheen on the water next to the Marine Terminal was cleaned up with sorbent pads and a sorbent boom. Neither incident resulted in reported adverse effects on human health or the environment. Another spill may have occurred in September 2016; in that incident, an oil sheen on San Pablo Bay, observed approximately 2 miles downriver from the Marine Terminal where the tanker Yamuna Spirit was unloading, prompted a response by the appropriate agencies. An investigation ruled out the Marine Terminal and the Rodeo Refinery as the source, but a laboratory analysis indicated that the spilled material was chemically identical to the Yamuna Spirit's crude oil cargo.

Acutech (2021) calculated that the probability of an accident that would cause a spill of more than 100 gallons involving in-transit vessels at baseline activity levels is approximately once every 1,927 years.

For spills that could occur at the Marine Terminal, the California State Land Commission (CSLC) EIRs for the Amorco Marine Terminal (CLSC 2014) and the Avon Marine Terminal (CSLC 2015) used historical releases in the CSLC database of marine terminals and estimated the release frequency for a marine terminal release of 3.0 spills every 1,000 vessel calls. The largest recorded spill from a tank vessel or marine oil terminal since 1992, the year the CSLC began collecting these data, was 26 barrels (1,092 gallons). The CSLC additionally utilized worldwide data to estimate the rate of larger spills as very few larger spills have occurred at marine terminals in the San Francisco Bay. Using the calculations presented in the CSLC EIRs, the rate for any sized spill at the Marine Terminal during the baseline period would be about once every 1.96 years, and the rate for spills greater than 100 gallons during the baseline period would be once every 14 years and the rate for spills greater than 1,000 gallons would be once every 39 years. The frequencies for larger spills, as applied to the Marine Terminal, are very conservative because the spill data used for larger spills are for all marine oil terminals, many of which are not, or were not, designed and operated in accordance with the safeguards that the Marine Terminal would have in compliance with MOTEMS. However, as noted above, there have been possibly three oil spills at the Marine Terminal over the last 10 years, or a rate of once every 3.3 years, which is similar to the rate calculated by using the CSLC approach.

Truck Transport

The transportation of hazardous substances poses a potential for hazardous materials releases and subsequent fires or explosions. In general, the greater the vehicle miles traveled, the greater the potential for an accident. Statistical accident frequency varies depending relative accident potential for the travel route. The size of a potential release is related to the maximum volume of a hazardous substance that can be released in a single accident, should an accident occur, and the type of failure of the containment structure, e.g., rupture or leak. The potential consequences of the accident are related to the size of the release, the population density at the location of the accident, the physical and chemical properties of the hazardous material, and the local meteorological conditions at the time of the accident.

Factors affecting truck transportation accidents include the type of roadway; presence of road hazards; vehicle type; maintenance and physical condition; and driver training. Accident rates are defined in terms of accidents per million miles traveled.

Every time hazardous materials are moved from the site of generation, there are opportunities for accidental releases. The US DOT) conducted a study on hazardous materials and non-hazardous materials truck shipment accidents and incidents. The Federal Motor Carrier Safety Administration compared hazardous materials truck shipment accidents and incidents to non-hazardous materials truck shipment accidents and incidents (Federal Motor Carrier Safety Administration 2001). The estimated accident rate for trucks (shipping non-hazardous materials) was 0.73 accident per million miles traveled. The average accident rate for trucks transporting hazardous materials (all hazard classes) was estimated to be 0.32 accident per million miles traveled (Federal Motor Carrier Safety Administration 2001).

Truck transportation hazards arise principally from the risk of accidents, such as collisions and overturning, that release cargo and fuel into the environment. As described in Section 3.7, *Project Operation*, in baseline year 2019, truck traffic associated with the Rodeo Refinery totaled 40,213 round trips. Over 80 percent of that traffic consisted of trailer trucks moving petroleum coke to the Carbon Plant and outside the Rodeo Refinery, specifically with 36 percent conveying raw petroleum coke from the Rodeo Refinery to the Carbon Plant and 44 percent consisting of petroleum coke deliveries outside the Rodeo Refinery. To some extent, that traffic is internal to the Rodeo Refinery, but coke trucks do use Cummings Skyway and State Route 4 to access the Carbon Plant. Other truck traffic in 2019 consisted of approximately 7,500 trucks bringing various materials, some of them hazardous, into the refinery and transporting wastes, some hazardous, out of the refinery. These trucks used local roadways, including San Pablo Avenue, the Cummings Skyway, State Route 4, and Willow Avenue, and I-80.

Rail Transport

Train accident reports reported to the Federal Railroad Administration identify the causes and contributing factors causing the accident. Rail accidents can stem from human errors (e.g., switching, coupling, transloading, speeding); equipment failures (e.g., crossing guard failures, leaking valve, coupling failure, broken rails, brake failure, corrosion, etc.); system or procedural failures (e.g., interim storage on holding track, routing, emergency response, maintenance, circuitous routing); and external events (vandalism, at-grade crossing, flood, earthquake, fire, bridge failure).

Federal Railroad Administration regulations on reporting railroad accidents/incidents are found primarily in 49 CFR Part 225. The purpose of the regulations is to provide the Federal Railroad Administration with accurate information concerning the hazards that exist on the nation's railroads. The Federal Railroad Administration uses this information for regulatory and enforcement purposes, and for determining comparative trends of railroad safety. These regulations preempt states from prescribing accident/incident reporting requirements. The Federal Railroad Administration compiles data on railroad-related accidents, injuries and fatalities to depict the nature and cause of rail-related accidents and improve safety.

Based on the train accident train accident data reported in the United States, and California between 2011 and 2020, the train accident rate was 2.9 accidents per million miles traveled over the 10-year period from January 2011 to December 2020. Of the hazmat releases in California, only three accidents involving releases of hazardous materials occurred between 2011 and 2020.

Rail transport under baseline conditions consists of daily arrivals and departures of tank cars for the refinery's butane product. As described in Section 3.7, *Project Operation*, rail traffic at the Rodeo Refinery during the baseline year 2019 consisted of one linehaul locomotive visit per day moving 4.7 cars, on average, at the butane facility and approximately three linehaul visits per week, on average, to the Carbon Plant moving an average of 2.3 cars, on average, for each visit.

The hazards of rail transport arise primarily from derailments of railcars. These derailments can cause the railcars to rupture and release their contents. Compared to trucks, railcars carry larger quantities of material (30,000 gallons is a typical tank car size), and derailments of railcars carrying hazardous materials can cause incidents with significant local consequences, such as the derailment and explosion of a train of tank cars carrying petroleum crude oil in Lac Mégantic, Canada, in 2013. Rail transportation of hazardous

materials is heavily regulated by a number of federal and state agencies, which specify cargo packaging and manifesting requirements, railcar construction standards, and railroad operating procedures.

Pipeline Transport

The USDOT Pipeline and Hazardous Material Safety Administration (PHMSA), keeps detailed pipeline incident and mileage reports to chart fatalities, injuries, property damage, and loss of product resulting from pipeline incidents. Pipeline accident events, referred to as "significant incidents" by the PHMSA, include all incidents reported by a pipeline operator when any of the following conditions are met: (1) fatality or injury requiring in-patient hospitalization (also referred to as a "serious incident"); (2) $50,000 or more in total costs; (3) highly volatile liquid releases of five barrels or more or other liquid releases of 50 barrels or more; and/or (4) liquid releases resulting in an unintentional fire or explosion.

The 10 year (2010 to 2019) listing of hazardous liquid pipeline accidents in California averaged 21 accidents per year for onshore hazardous liquid pipelines, including crude oil and petroleum products, in California. The PHMSA data show that over a 10-year period (2010–2019), none of the incidents resulted in fatalities or serious injuries. Approximately 80 percent of the hazardous materials that were spilled was crude oil, with 83 percent of the barrels lost being crude oil. According to the USDOT Incident and Mileage Reports, California contains 6,525 miles of hazardous liquid pipelines, transporting primarily crude oil and petroleum products.

Four regional pipelines serving the Santa Maria Site and the Rodeo Refinery. The Santa Maria Site is connected to the Rodeo Refinery by approximately 200 miles of subterranean pipeline (Figure 3-5), designated Line 400 and Line 200. Line 400 runs north and east from the Santa Maria Site through the Coastal Range of central California in San Luis Obispo and Kern Counties to connect with Line 200 north of McKittrick. Line 200 runs northwest up the west side of the San Joaquin Valley. Over the past 10 years, Phillips 66 has had no occurrence of "significant incidents" (CalARP 2019).

Pipeline transport of petroleum products has a strong safety record: in the period from 2001 to 2020, nearly 5 billion barrels of crude oil were transported through the 4,000 miles of crude oil pipelines in California, with an average of fewer than five significant pipeline incidents per year (PHMSA 2021). No one was fatally injured and only one injury required hospitalization in those incidents. Baseline transportation of fuels are tabulated in Table 3-2 and described in Section 3.4.2, *Existing Rodeo Refinery*.

4.9.2.2 Santa Maria Site

The Santa Maria Site is located in southern San Luis Obispo County near the community of Nipomo and the city of Arroyo Grande. The vicinity consists largely of open space and agricultural lands; the closest residences to the site are approximately 0.25 mile to the northeast, and no other sensitive receptors (schools, etc.) are located within 0.5 mile of the facility. The Santa Maria Site processes petroleum crude oil, and the hazards and hazardous substances associated with its operation are similar to those of the Rodeo Refinery, without the processing of lighter end materials (butane) or products (gasoline, diesel). The facility receives crude oil by pipeline and truck and ships partially refined feedstock by pipeline and petroleum coke byproduct by rail. Crude oil and products are stored in tanks onsite. The Santa Maria Site is in the SWRCB's GeoTracker database because of an ongoing site cleanup assessment and interim remedial action involving subsurface hydrocarbon contamination.

The nearest public airfield is the Oceano County Airport, located approximately 3 miles from the Santa Maria Site. The San Luis Obispo County Regional Airport is located approximately 10 miles north of the site, and the Santa Maria Public Airport is located approximately 9 miles southeast of the site.

4.9.2.3 Pipeline Sites

The Pipeline Sites are located in a variety of land uses in a number of counties (i.e., San Luis Obispo, Santa Barbara, Kern, Kings, Madera, Merced, Stanislaus, San Joaquin and Contra Costa). Pipeline access points are generally in sparsely populated areas. The pipelines themselves are underground; they cross numerous streams, small rivers, and transportation infrastructure but do not traverse dense population centers. None of the Pipeline Sites are within 0.25 mile of a school. Three of the Pipeline Sites are located within 2 miles of airports—Orcutt Pump Station (Santa Maria Public Airport), Midway Pump Station (Taft Airport), and Patterson Pump Station (NASA Crows Landing Airport and Test Facility).

As described above, pipeline transport has a strong safety record. Over the past 10 years, Phillips 66 has not experienced any significant incidents associated with the transport of crude oil and refined petroleum products.

4.9.2.4 Existing Phillips 66 Safety Management Systems

The Rodeo Refinery and the Santa Maria Site store and process, and the Pipeline Sites transport materials that are classified as acutely toxic and flammable and could pose hazards during process upset conditions. Historically, the petroleum industry has addressed concerns about potential catastrophic accidents by developing design standards intended to minimize both the likelihood of these events and their consequences. In recent years, federal and state regulations have taken an increasingly active role in requiring facilities to assess and document these risks and to take further action to reduce them.

Emergency Response Plan

Phillips 66 has emergency response plans to ensure that in the event of a fire, hazardous material release, medical emergency, or rescue situation, refinery and pipeline personnel would be able to respond to the emergency quickly and effectively to minimize personal injuries, environmental damage, and/or property damage. The emergency response plan describes the responsibilities of all facility personnel and defines the types of actions that personnel with different levels of training may take in response to an emergency. Furthermore, the emergency response plan describes and defines the chain of command to be followed by personnel in an emergency. The primary responsibility for implementing the emergency response plan rests with Phillips 66, not with an outside agency.

Emergency Response Capabilities

Emergency response teams at each refinery are trained and equipped to respond to fires, rescues, hazardous material releases, and other emergencies. To maintain readiness, emergency response teams participate in monthly meetings and regular response drills. These teams are managed to ensure that the emergency response plan is implemented and followed in the preparation for, and response to, plant emergencies.

In the event of a release of hazardous materials, the nature, source, amount, and affected area of the release are identified and the potential impacts to human health and the environment are assessed. It is the responsibility of Phillips 66 to notify local authorities, as needed, and regulatory agencies, as required by law and the Contra Costa County General Plan. The General Plan requires that all facilities adopt an emergency response plan that includes immediate notification of the public.

Numerous Phillips 66 facilities, including the Rodeo Refinery, are members of mutual aid organizations under which facilities with emergency response capabilities agree to assist each other.

Design

As industrial facilities that handle hazardous chemicals, the Rodeo and Santa Maria Refineries must be constructed and operated in accordance with certain codes and standards that are enforced via administrative mechanisms such as internal audits, design reviews, and building inspections. Some of the main design standards include the American Petroleum Institute's (API's) Recommended Practice 750, Codes of Management Practices of the Chemical Manufacturers, the American National Standards Institute's B31.1: Power Piping and B13.3: Petroleum Refinery Piping, National Fire Prevention Association 30, and the Uniform Building Codes.

Inspections

To ensure integrity, safety and regulatory compliance, the Rodeo and Santa Maria Refineries have various inspection programs, implemented by the Engineering Inspection Department using techniques recognized and accepted by the petroleum industry. In addition, the operations, maintenance, and staff departments conduct various safety and regulatory compliance inspections and audits.

The engineering inspection program uses visual and non-destructive testing methods to inspect affected equipment for damage and deterioration. The program requires written records for all inspections of affected equipment. It covers a variety of plant equipment including tanks, pressure vessels, piping, relief valves, and other related components. The program provides for a planned inspection of new equipment prior to acceptance by Phillips 66 and of existing onsite equipment.

Training

Phillips 66 conducts a safety-training program for employees working at the Rodeo and Santa Maria Refineries and the Pipeline Sites. New employees are given safety training, and employees receive annual refresher training, as required, in the following areas:

- Injury reporting procedures;
- Emergency reporting and notification procedures;
- Safety hazard reporting procedures;
- Use of personal protective equipment;
- Location and use of respiratory equipment;
- Location and use of fire hoses and hand-held fire extinguishers;
- Safety procedures to be used in the event of a release or potential release of a hazardous material;
- Chemicals and wastes present at the facility and their associated hazards;
- Information labels, forms, and Safety Data Sheets;
- Proper methods of handling hazardous materials;
- Reporting of adverse health and environmental effects;
- Use, capabilities, and locations of emergency response equipment and supplies;
- The facility's emergency response plan;
- Procedures for the control of a toxic and hazardous materials release;
- Procedures for coordinating with emergency response organizations; and
- Federal OSHA HAZWOPER training.

In addition to safety training, operator-training programs are conducted at the Rodeo Refinery, Santa Maria Site, and Pipeline Sites to ensure operator competence. The program provides training in policies and procedures, safety and health hazards, and task specific procedures and practices. All operator trainees must successfully complete a basic training program prior to working as an operator. The program includes basic training in the areas of distillation, refining, chemistry, physics, environmental screening, maintenance, instrumentation, and specific safety hazards. After completing the basic training program, a trainee is assigned to an operating area, and the process foreman continues the instruction of the trainee. When new equipment or processes are installed, the process foreman conducts training sessions similar to those given to operator trainees to familiarize trainees with new equipment and/or processes. Training records are maintained for all operators.

4.9.2.5 Process Safety Management and Management of Change

To comply with the Process Safety Management requirements, Phillips 66 has established procedures for the MOC. The purpose of these procedures is to ensure that changes to process chemicals, technology, equipment, facilities, or critical procedures do not cause plant facilities to be operated outside their design limits or introduce new hazards to plant operations. Applicable requirements of the MOC may include an environmental review, health and safety/loss control review, process hazards analysis, project field safety check, HAZCOM Review/Safety Data Sheet[48] update, new or revised procedures, operator training, operating manual update, maintenance records update, equipment inspection update, process flow diagram update, piping and instrumentation diagram update, electrical drawing update, instrument loop sheet update, or other requirements deemed necessary by the reviewing engineers.

4.9.2.6 Risk Management Plan

Phillips 66 operates under the USEPA RMP rule, CalARP Program, and the Contra Costa County ISO. The Rodeo and Santa Maria Refineries maintain RMPs that includes three main components: (1) hazard assessment; (2) release prevention planning; and (3) emergency response planning. The RMPs are updated when there are changes that would affect the use or storage of acutely hazardous substances. A detailed hazards and operability study of the changed components is carried out prior to startup of new equipment or processes such as would be part of the Project. Upon completion of the Project, the HMBP, which provides input to the RMP, would be updated and the RMP scenarios would be reviewed for potential change as a result of Project implementation and transition from conventional refining operations to an operation using non-hazardous feedstocks and producing non-toxic renewable fuels.

4.9.2.7 Marine Oil Terminal Engineering and Maintenance Standards

The Marine Terminal operates as a MOTEMS-compliant facility, meaning that its construction, materials, equipment, and operating procedures meet the standards for marine terminals established by CSLC. The operating procedures are set forth in the *Phillips 66 Rodeo Marine Terminal Handbook*, which was revised and updated in 2016. This document is intended to ensure that vessels using the Marine Terminal to load or offload liquid bulk cargos (e.g., crude oil, gasoline, blendstocks) are aware of and comply with the appropriate safety procedures and with the federal, state, and local rules and regulations governing the handling of such cargos. The handbook describes the marine terminal facilities and then specifies the operating procedures that vessels must follow as they approach, dock at, load/unload at, and depart from the Marine Terminal.

[48] The Federal Emergency Planning & Community Right-To-Know Act 312 requires businesses have available Safety Data Sheet and must submit hazardous chemical inventory forms to the State Emergency Response Commission, Local Emergency Preparedness Committee, and local fire department annually.

The handbook also describes tidal current conditions in the vicinity of the Marine Terminal and recommends traffic patterns, berthing maneuvers and approach speeds, and vessel draft guidelines to provide guidance on approaching and berthing. This guidance supplements the knowledge that the port pilot, which every ship calling the Rodeo Refinery is required to have, brings to the operation. The handbook requires all vessels to use tug escorts to comply with Office of Spill Prevention and Response (OSPR) regulations and specifies the minimum power and class requirements of the tugboats used for different sizes of vessels. For example, the largest class of tanker vessel (143,000 to 200,000 deadweight tons) must use three Class A+ tractor tugboats, the smallest (30,000 deadweight tons or less) must use two Class B twin-screw tugboats.

The handbook sets out the requirements for safe mooring of different sizes of vessels, specifying the number, placement, and strength of mooring lines, and provides example schematic drawings of safe mooring configurations. The fire extinguisher and monitoring systems at the Marine Terminal are detailed and emergency evacuation routes described. The handbook also specifies the requirements for cargo and ballast tank testing, venting, and inert gassing, and for the various regulatory reports. The handbook prohibits cleaning non-crude tanks when at dock. Cargo loading/unloading procedures in terms of personnel requirements, system pressures, ship-to-dock communications, and vapor recovery, and the specific wind conditions that require shutdown of transfer operations, are also specified.

Finally, the handbook describes the pollution control equipment available at the Marine Terminal, including the 2,800-foot-long containment boom, boom boat, and associated response gear, and outlines its capabilities. The handbook also assigns roles in the event of a spill (the terminal would be responsible for initial response and mobilizing outside resources, the vessel for a series of notifications) and specifies the various agencies that would be notified and could become involved in the response.

The MOTEMS apply to all existing and new marine oil terminals in California, and include criteria for audit, maintenance, inspection, structural and seismic analysis and design; mooring and berthing; geotechnical considerations (including site-specific assessment); and analysis and review of the fire, piping, mechanical, and electrical systems. The Marine Terminal is required to comply with the MOTEMS, which became effective on February 6, 2006.

4.9.2.8 Marine Response Capabilities

All marine terminals and all vessels calling at the Marine Terminal are required to have oil spill response plans and a prescribed level of initial response capability. The USCG and the CDFW's Office of Spill Prevention and Response (OSPR) have created the OSRO classification program so that facility and tank vessel operators can contract with and list an OSRO in their response plans, in lieu of providing extensive lists of response resources, to show that the listed organization can meet the response requirements. Phillips 66 contracts with MSRC to serve as the primary OSRO in its Oil Spill Response Plan for offshore, onshore, and shallow-water response services. MSRC has an extensive inventory of response equipment located throughout the Bay Area, with the closest locations to the Marine Terminal being at Benicia (6.2 miles), Vallejo (4.4 miles) and Martinez (7.2 miles). Equipment located at these three locations is listed in Table 4.9-2.

Table 4.9-2 Marine Spill Response Corporation Response Equipment

Location	Equipment
Benicia	• Warehouse with equipment • Main Equipment: • Mini Spoiler I Support Vessel • Mini Spoiler II Support Vessel • Munson I Support Vessel • Munson II Support Vessel • 2 Shallow Water Push Boats (28' Munson) • 2 x 1,800 Feet 10" Curtain Internal Foam Boom • 2 x Marco I Skimmer 3,588 bbl/day
Martinez	• Sentinel Response Vessel • Raider II Support Vessel • Raider IV Support Vessel • 1 Marco III Skimmer 6,150 bbl/day • 2 x 1,500 Feet 18" Curtain Internal Foam Boom
Vallejo	• Spill Chaser Fast Response Vessel (FRV) • Work Boat Global Boom Barge • Raider I workboat • Raider III workboat • Shallow Water Barge, 400 bbl storage • 6,400 Feet 18" Curtain Internal Foam Boom • 2,000 Feet 18" Curtain Internal Foam Boom • 2 x 1,000 Feet 18" Curtain Internal Foam Boom • 40 Feet Tapered Fence Boom • 2 LORI Brush Pack Skimmers 5,000 bbl/day • 1 GT-185 Skimmer (with Adapter) 1,371 bbl/day • 60 Feet 20" Curtain Internal Foam Boom

Source: MSRC 2021

Methods used for detection of submerged oil include vessel-mounted bottom or side scan sonar, divers with cameras, remotely operated vehicles with cameras, aircraft, and photo bathymetry (photographic mapping of subsurface details). Other methods include diaper drops, where sorbents (often disposable diapers) wrapped around a lead ball are bounced on the bottom and then checked for the presence of oil; dragnet, where a seine net or chain-link fence is fitted with sorbent materials and towed through the water; and snare drops, where sorbents are attached to a line or chain, submerged, anchored, and later raised to surface. The purpose of these drops is to locate and track oil movement on the bottom.

Containment methods for submerged oil include a bottom boom (a-weighted boom placed on the bottom); bubble curtains (massive amounts of bubbles released from a perforated manifold on the bottom that contain oil through turbulence caused by their rising action); water jets (nozzles placed above the surface of the water impinging on the water's surface, thus containing the oil); and a Jackson net (a boom-type device consisting of a double layer of knotless net, with an impermeable plastic membrane between layers fastened at the top and bottom that supports tension lines). The OSROs have access to the specialized equipment needed for a submerged oil spill.

The USCG requires that marine terminals must be able to respond to a small (50 barrels) spill with the following equipment:

- 1,000 feet of containment boom and a means of deploying it within 1 hour;
- oil recovery devices within 2 hours; and
- oil storage capacity for recovered oily material.

Phillips Oil Spill Response Plan has been certified by the USCG and OSPR as meeting these requirements. The OSRP contains estimates of the worst-case discharge, the average most probable discharge and the maximum most probable discharge. The worst-case discharge from the Marine Terminal is based on 33 CFR Part 154 definition, which is defined as releases from Marine Terminal piping only (not the tanker or barge). The worst-case discharge is defined as 3,976 barrels, with an average and maximum most probable discharges of 40 and 397 barrels, respectively. For response planning purposes, the worst-case discharge that Phillips 66 is required to plan for is a release from the refinery tanks potentially releasing 297,000 barrels to the marine environment.

Because the refinery has a worst-case discharge volume of 297,000 barrels of oil, Phillips 66 response capabilities under the plan are for spills up to 297,000 barrels, which is a much larger spill than has occurred within the Bay since at least 1971. The Oil Pollution Act of 1990 was enacted, in part, to ensure that shippers and oil companies pay the costs of spills that occur. It also established a $1 billion Oil Spill Liability Trust Fund, funded by a tax on crude oil received at refineries. The State of California also requires businesses that handle a petroleum product to file for a Certificate of Financial Responsibility, in which they must demonstrate to the state in some manner (e.g. insurance, letter of credit) that they have the financial wherewithal to respond to and cleanup a worst-case spill.

4.9.2.9 Marine Vessel Traffic Control System

The USCG has established a TSS off the entrance to San Francisco Bay. It includes three directed-traffic areas, each with one-way inbound and outbound traffic lanes separated by defined separation zones, and a Precautionary Area. The TSS is recommended for use by vessels approaching or departing the San Francisco Bay, but is not necessarily intended for tugs, tows, or other small vessels that traditionally operate outside the usual steamer lanes or close to shore. The TSS has been adopted by the International Maritime Organization.

The USCG established the VTS in San Francisco Bay in 1972, under legislation prompted by the *Oregon Standard*/*Arizona Standard* collision at the Golden Gate (USCG 2021). Prior to that incident, the San Francisco VTS (the first in the United States) was a voluntary program based on a Coast Guard radar system. Among other provisions, the legislation authorized the Coast Guard to establish a formal VTS system, which was also done at other ports. The system was reduced in the late 1980s in response to budget cuts, but re-activated in the early 1990s in response to the 1989 *Exxon Valdez* incident. Additional legislation in response to that incident authorized the Coast Guard to make participation in the VTS mandatory for specific classes of commercial vessels, especially tankers. The VTS has been continually updated over the years with new technology and improved operating procedures, and now incorporates, among other features, satellite navigation, real-time meteorological and oceanographic sensing systems, and vessel location transponders, as described in subsequent subsections.

The USCG operates the San Francisco VTS and monitors nearly 400 vessel movements per day. The region is considered a difficult navigation area because of its high-traffic density, frequent episodes of fog, and challenging navigational hazards. The VTS for the San Francisco Bay region has six components: (1) automatic identification system, (2) radar and visual surveillance, (3) VHF communications network, (4) a position reporting system, (5) traffic schemes within the San Francisco Bay, and (6) a 24-hour center that is staffed with specially trained vessel traffic-control specialists.

The VTS area is divided into two sectors—offshore and inshore. The offshore sector consists of the ocean waters within a 38-nautical-mile radius of Mount Tamalpais, excluding the offshore Precautionary Area. The inshore sector consists of the waters of the offshore Precautionary Area eastward to San Francisco Bay and its tributaries extending inland to the ports of Stockton, Sacramento, and Redwood City. In sum, the geographic area served by the VTS includes San Francisco Bay, its seaward approaches, and its tributaries as far as Stockton and Sacramento.

There are seven Regulated Navigation Areas (RNAs) in the San Francisco Bay. These RNAs were established in 1993 by the USCG with input from the Harbor Safety Committee, and are based on the voluntary traffic-routing measures that were previously in existence. The RNAs are codified in 46 CFR Section 165.1116. RNAs organize traffic-flow patterns to reduce vessel congestion where maneuvering room is limited; reduce meeting, crossing, and overtaking situations between large vessels in constricted channels; and limit vessel speed. All vessels weighing 1,600 gross tons or more, and tugs with a tow of 1,600 gross tons or more (referred to herein as large vessels) navigating in the RNAs are required by the regulations to (1) not exceed a speed of 15 knots through the water; and (2) have engine(s) ready for immediate maneuver, and operate engine(s) in a control mode and on fuel that will allow for an immediate response to any engine order by the Captain.

Position Reporting, Communication, and Surveillance

The USCG VTS at Yerba Buena Island is the communications center for the TSS. The TSS was extensively upgraded in 1997. The upgraded system includes state-of-the-art computer-digitized radar displays shown on electronic charts. The new system automated many of the controller's duties, allowing more time for monitoring traffic. There are three classes of VTS user—passenger vessels, power-driven vessels, and towing vessels. There are four report types that may be required of each. In general, communications with VTS are brief, succinct, and to the point. Power-driven vessels over 40 meters in length are required to call VTS 15 minutes prior to entering a VTS area, when getting underway, at certain specified points, when there are changes to the sailing plan, and when leaving the VTS area.

Pilotage

Pilotage in and out of the San Francisco Bay and adjacent to the waterways is compulsory for all vessels of foreign registry and United States vessels under enrollment not having a federally licensed pilot on board. The San Francisco Bar Pilots provide pilotage to ports in San Francisco Bay and to ports on all tributaries to the bay. Pilots board the vessels in the Pilot Boarding Area outside the Golden Gate entrance, and then pilot the vessels to their destinations. Pilots normally leave the vessels after docking, and reboard the vessels when they are ready to leave and pilot them to sea or other destinations within the Bay Area.

Physical Oceanographic Real Time System

The Physical Oceanographic Real Time System (PORTS) is designed to provide real-time information to mariners, oil spill response teams, coastal resource managers, and others about San Francisco Bay's water levels, currents, salinity, and winds. NOAA's National Ocean Service, OSPR, US Geological Survey, local community, and Marine Exchange of the San Francisco Bay operate PORTS as a partnership to provide service to those who must make operational decisions based on oceanographic and meteorological conditions in the bay. Instruments are deployed at strategic locations in the San Francisco Bay to collect and provide data at critical locations and to allow nowcasting and forecasting using a mathematical model of the bay's oceanographic processes. Data from these sensors are fed to a central data-collection point; raw data from the sensors are integrated and synthesized into information and analysis products, including graphical displays of PORTS data. These displays are available over the Internet and through a voice response system. Station 9415141 at Davis Point (at the Marine Terminal) is the nearest PORTS to the Marine Terminal (NOAA 2021a).

4.9.2.10 Factors Affecting Vessel Traffic Safety

This section summarizes environmental conditions described in the USCG Pilot, Volume 7, 53th Edition, 2021 (NOAA 2021b); the San Francisco, San Pablo, and Suisun Bays Harbor Safety Plan Year 2019 (Harbor Safety Committee 2019); and San Francisco Bay Pilots (2021) Operations Guidelines for the Movement of Vessels on San Francisco Bay and Tributaries (SFBP 2021) that could have an impact on vessel safety in the Bay Area.

Winds

San Francisco Bay Area weather is seasonably variable. Winter is the season with the most significant seas, both in terms of locally driven wind waves and open-ocean swells that are generated by long fetches of strong winds over the eastern Pacific. Winter winds from November to February shift frequently and have a wide range of speeds depending on the procession of offshore high- and low-pressure systems. Spring tends to be the windiest season, with average speeds in the San Francisco Bay of 6 to 12 nautical miles per hour (knots), with wind speeds of 17 to 28 knots up to 40 percent of the time. Summer winds are the most constant and predictable. Wind speed can affect track keeping and mooring operations and can cause strain on mooring lines during transfer operations.

Fog

Fog is a well-known problem in the Bay Area, particularly around the entrance to the San Francisco Bay (known as the Golden Gate). It is most common during the summer, occasional during fall and winter, and infrequent during spring. The long-term fluctuations are not predictable, but daily and seasonal cycles generally come at expected intervals. The foggiest months are usually July and August, while June is the least foggy. Under normal summer conditions, a sheet of fog appears in the early forenoon and becomes more formidable as the day wears on. This type of fog is normally referred to as sea fog. Fog signals in the Golden Gate operate 15 to 25 percent of the time during August. Another type of fog, referred to as Tule fog, forms in low, damp places such as the Sacramento-San Joaquin River Delta, and is most prevalent in late December and January. This type of fog tends to drift seaward through the Carquinez Strait and other gaps in the Berkeley Hills. Fog signals tend to operate 10 to 20 percent of the time during these months. The reduced visibility caused by fog can increase the potential for collisions and allisions.

Currents

The currents at the entrance to the San Francisco Bay are variable and uncertain, and at times attain considerable velocity. The ebb current has been observed to reach a velocity of over 6.5 knots. Immediately outside the San Francisco Bar, a horseshoe shaped area of shallow water that begins north of the Golden Gate in Marin County, runs out approximately 5 miles, and curves back to shore just south of the Golden Gate; this area of water has a slight current to the north and west known as the Coast Eddy Current. The currents that have the greatest effect on navigation in the bay and out through the Golden Gate are tidal in nature (i.e., due to the tide rushing in and out of the San Francisco Bay). Currents can affect track keeping, mooring operations, and oil spill response operations.

Tides

Tides in the San Francisco Bay Area are mixed. Usually, two cycles of high and low tides occur daily, but with inequality of the heights of the two. Occasionally, the tidal cycle will become diurnal (only one cycle of tide in a day). Depths in the San Francisco Bay are based on the MLLW level, which is the average height of the lower of the two daily low tides. The mean range of the tide at the Golden Gate is 4.1 feet, with a diurnal range of 5.8 feet. During the periodic maximum tidal variations, the range may reach as much as 9 feet and have lowest low waters 2.4 feet below MLLW datum. Tides affect water depth, which in turn can have potential impacts by groundings. In addition, tidal action has an impact on currents in the San Francisco Bay.

Water Depths

Water depths in the San Francisco Bay are generally shallow and subject to silting from river runoff and dredge spoil recirculation. Therefore, channel depths must be regularly maintained, and shoaling—the deposition of silt and sand that decreases water depth—must be prevented to accommodate deeper-draft vessels. The USACE attempts to maintain the depth of the main ship channel from the Pacific Ocean into the San Francisco Bay at 55 feet; however, the continual siltation results in actual main-channel depths ranging between 49 and 55 feet. Deep-draft vessels in the San Francisco Bay must carefully navigate many of the main shipping channels because channel depths in some areas are barely sufficient for navigation by some modern larger vessels, depending upon how deeply laden the vessel is. While the USACE surveys specific areas of concern on a frequent basis, recent survey charts may not show all seabed obstructions or shallow areas due to highly mobile bottoms (due to localized shoaling). In addition, recent observations indicate that manmade channels may influence tidal currents to a greater degree than earlier anticipated. Water depth impacts under keel clearance, and groundings are a potential impact.

4.9.2.11 Regulatory Setting

The existing regulatory setting reflects the governing of hazardous materials transport, storage, and use at the Rodeo Refinery, Santa Maria Site, and Pipeline Sites, as well as federal, state, and local regulations governing process safety.

Conventional refinery operations involve the processing and handling of substances that are classified as combustible and/or flammable, with the potential for fires and explosions, and also involve the processing and handling of substances that are acutely toxic with the potential of releasing toxic vapors. Refinery processes are, therefore, subject to regulations and safety management programs to prevent and mitigate potential accidents. In addition, refinery operations generate hazardous wastes that are subject to regulations and programs covering their safe storage and disposal.

Because of the hazards presented by the use, storage, transportation, and disposal of hazardous materials in industrial oil refining operations, including those relating to accidental release or upset conditions, an extensive body of laws and regulations has developed to minimize risk and mitigate harm in the event of incidents. Numerous federal, state, and county laws, regulations, guidelines, and policies focus on reducing the risks from the hazards associated with the transport, storage, and refining of petroleum and petroleum products, some of which include the following:

- USDOT railroad safety regulations, hazardous materials regulations, and pipeline safety regulations;
- OSHA worker safety rules;
- USEPA Accidental Release Prevention/RMP rule, Spill Prevention, Control and Countermeasures rule, and community right-to-know regulations;
- Federal CWA, as enforced by the USEPA;
- California Porter-Cologne Water Quality Control Act and related California Administrative Code sections administered by the California SWRCB and the San Francisco Bay RWQCB;
- CalARP Program;
- California Division of Occupational Safety and Health (Cal/OSHA) Injury and Illness Prevention Program and worker safety and communication regulations;
- CPUC’s railroad safety rules;
- California pipeline safety regulations;
- California EPA, Department of Toxic Substances Control (DTSC) hazardous waste management regulations;

- CSLC's MOTEMS;
- San Luis Obispo County General Plan Safety Element;
- Contra Costa County's ISO; and
- Permitting requirements, which must be fulfilled prior to development, are enforced by Contra Costa County, San Luis Obispo County, and other counties through which the pipelines pass.

These regulations and others and existing compliance programs and plans in place at the Rodeo Refinery and governing the Santa Maria Site and Pipeline Sites are described in more detail below. The Project would transition the Rodeo Refinery from conventional refining operations to an operation using non-hazardous feedstocks and producing non-toxic renewable fuels. Generally, these renewable feedstocks are not identified as marine pollutants by the US Department of Transportation (USDOT, Title 49 Part 171), the United Nations, or the International Maritime Organization, which regulate the movement of materials throughout the world. However, although these feedstocks may not be classified as *pollutants*, the USEPA "*found that a worst-case discharge or substantial threat of discharge of animal fats and vegetable oils to navigable waters, adjoining shorelines, or the exclusive economic zone could reasonably be expected to cause substantial harm to the environment, including wildlife that may be killed by the discharge*" (40 CFR Part 112). See Section 4.4, *Biological Resources*, for additional information. To the extent that Project operation would not involve some of the activities and hazardous materials associated with conventional refinery operations, some of these regulations would likely not apply to the Project.

Federal Authority

USEPA

Accidental Release Prevention

The USEPA's Accidental Release Prevention/RMP rule, CalARP Program, and Cal/OSHA Process Safety Management (PSM) standard require that facilities assess the potential for accidental releases of toxic, reactive, flammable, or explosive chemicals and that programs be established to minimize the frequency and extent of accidental releases. The RMP and CalARP regulations are geared toward offsite consequences to protect the general public. PSM is geared toward workplace and employee safety. Enforcement of CalARP regulations is assigned to the Certified Unified Program Agencies (CUPA).

Crude oil is not a regulated substance under the federal USEPA Accidental Release Prevention/RMP Rule. Crude oil can contain hydrogen sulfide (H_2S), which can be captured by the RMP rule. However, the threshold determination for hydrogen sulfide in 40 CFR Section 68.115(b) is 1 percent by weight. Crude oil containing less than 1 percent hydrogen sulfide is not captured under the RMP Rule. Pursuant to the Cal/OSHA PSM Standard, crude oil is not classified as an acutely hazardous material in the CCR Title 8, Section 5189.

Oil Spill Prevention

The USEPA has established oil pollution prevention regulations (40 CFR Part 112) to implement the Oil Pollution Act of 1990. A central feature of these regulations is the requirement that operators of oil facilities, such as refineries, pipelines, and petroleum storage and distribution facilities, prepare and implement a facility-specific SPCC Plan. The plan must be certified, reviewed at least every 5 years, and revised as needed to reflect facility changes. A large or complex facility such as the Rodeo Refinery is required to have SPCC Plans for each of its operational elements, such as loading racks, storage tanks, marine terminal, and internal pipelines.

10 CFR Parts 51, 52, 70, and 71 – PSD and Title V Permitting Programs

On June 23, 2014, the US Supreme Court issued its decision in *Utility Air Regulatory Group v. EPA* (No. 12-1146). The Court ruled that the USEPA may not treat GHGs as air pollutants for purposes of determining whether a source is a major source required to obtain a PSD or Title V permit. The Court also stated that PSD permits that are otherwise required (based on emissions of criteria pollutants, such as nitrogen oxides and sulfur oxides) may continue to require limitations on GHGs emissions based on the application of BACT. USEPA is currently evaluating the implications of the Court's decision and awaiting further action by the US Courts. As the USEPA gains a better understanding of the full impact of the decision on PSD and Title V permitting regulations, it will provide relevant guidance and information on GHG permitting requirements (USEPA 2014).

US Coast Guard

The USCG is the lead federal agency for response to oil spills on navigable waters. Facilities are required to submit plans to the USCG for spill planning and response. The SPCC Plan must be reviewed by facility management at least every 5 years and revised as needed to reflect facility changes. The USEPA retains enforcement responsibility for the SPCC Rule. The SPCC Plan also outlines the monitoring and reporting requirements and actions that must be performed in the event of a spill. The CSLC, through its OSPR, is the state lead agency in cooperation with CDFW. The OSPR has the public trustee and custodial responsibilities of CDFW for protecting, managing and restoring the state's fish, wildlife, and plants. OSPR coordinates federal, state, and local oil spill response organizations. Key activities include coordinating response drills; ensuring the preparation and maintenance of contingency plans for geographic areas, industries, and individual facilities, such as marine oil terminals; coordinating with harbor safety committees; coordinating oil spill response and cleanup; and investigating oil spills.

With respect to marine vessel transport, the USCG enforces federal hazardous materials transportation laws, including the Water Pollution Control Act, the Act to Prevent Pollution from Ships (33 United States Code [USC] 1901 et seq.), and the Oil Pollution Act of 1990 (33 USC 2701 et seq.). These laws require the USCG's involvement in and responsibility for a variety of maritime-related issues, including vessel traffic services at major ports, harbor safety committees, port security, vessel and facility monitoring, and oil spill prevention and cleanup. The USCG requires the submission of vessel response plans for planning and responding to potential spills of fuel and cargo. Vessel response plans are required to plan for a worst-case discharge defined as the discharge in adverse weather conditions of a vessel's entire fuel or cargo oil (33 USC § 1321(j)(5)).

Homeland Security

Under the federal Facility Security Rule (33 CFR Part 105), the USCG oversees the development and implementation of security measures at marine terminals and on vessels. Vessels and facilities must conduct security assessments and must submit a Vessel Security Plan or Facility Security Plan to USCG for approval.

Federal Department of Transportation

The USDOT establishes and enforces standards for transporting hazardous materials. Pertinent provisions governing rail transport are found in 49 CFR Parts 174, 176, and 179. Part 174, *Carriage by Rail*, specifies the handling, loading, and unloading requirements for the safe transport and shipping of hazardous materials and the requirement that qualified personnel must perform these tasks. This part also addresses correctly placarding railcars to indicate the hazard classifications of the materials and the segregation of incompatible materials. Part 176, *Carriage by Vessel*, provides further details on vessel carriage requirements for different classes of hazardous materials, including flammable gases, liquids, and solids, or oxidizing materials, with requirements for the position of those railcars on the train relative to the locomotives and other types of railcars. Part 179, *Specifications for Tank Cars*, provides design

requirements for rail tank cars used to transport hazardous materials, including tank mounting, welding certification, pressure relief devices, protection of fittings, loading/unloading valve requirements, coupler vertical restraints systems, tank-head puncture-resistance systems, and thermal protection systems.

In response to the 2013 Lac-Mégantic derailment and fire involving tank cars carrying crude oil and other incidents, the Federal Railway Administration, PHMSA, and the National Transportation Safety Board have issued a number of emergency orders, new rules, and safety advisories and recommendations (described in detail in USDOT et al. 2015). These safety advisories and recommendations have addressed, among other issues, requirements related to the transport of Bakken crude oil, appropriate shipping classification of hazardous cargo, railcar structural standards, increased support for local first responders and operational procedures for trains hauling flammable liquids (including lower speeds, improved braking techniques, and improved train routing). In 2015, PHMSA issued new rules for high-hazard flammable trains (49 CFR Section 174.310) that incorporated most of these issues; the rules were last amended in 2019.

In addition to hazardous material transport, USDOT has established general railroad safety regulations (49 CFR Parts 200–299) that address safety standards for track (including bridges), train control systems, locomotives and rolling stock, signaling systems, road/railroad crossings, train and track workers, accident reporting, and various other aspects of railroad operation.

The Pipeline Safety Law (49 USC Section 60101 et seq.) establishes oversight over pipeline transportation of hazardous materials. Under 49 CFR Parts 190–199, the Pipeline and Hazardous Materials Safety Administration promulgates and enforces pipeline safety regulations. These govern, among other issues, the pipeline transportation of hazardous liquids, gases, and other flammable, corrosive, and toxic materials. The Liquid Pipeline Integrity Management Program (49 CFR 195.450 et seq.) requires pipeline operators to assess, repair, and maintain hazardous liquid pipelines in high consequence areas such as population centers, drinking water resources, and ecologically sensitive areas.

Resource Conservation and Recovery Act

The RCRA established a “cradle-to-grave” regulatory program governing the generation, transportation, treatment, storage, and disposal of hazardous waste. Under RCRA, individual states may implement their own hazardous waste programs in lieu of RCRA as long as the state program is at least as stringent as federal RCRA requirements.

Emergency Planning and Community Right-to-Know Act

The objective of the Emergency Planning and Community Right-to-Know Act is to (1) allow state and local planning for chemical emergencies, (2) provide for notification of emergency releases of chemicals, and (3) address communities' right-to-know about toxic and hazardous chemicals. Section 302 of the Act requires facilities to notify the State Emergency Response Commission and any Local Emergency Response Committees of the presence of any "extremely hazardous substance" (the list of such substances is in 40 CFR Part 355) if it has such a substance in excess of the substance's threshold planning quantity and directs the facility to appoint an emergency response coordinator. Implementation of the Emergency Planning and Community Right-to-Know Act has been delegated to the State of California. The California Emergency Management Agency requires businesses to develop an HMBP if they handle (including storage) hazardous materials in quantities equal to or greater than 55 gallons, 500 pounds, or 200 cubic feet of gas or extremely hazardous substances above the threshold planning quantity. The Plan includes inventories of hazardous materials, an emergency plan, and implements a training program for employees. This plan is required to be submitted to the CUPA, which oversee multiple regulatory programs, for use by state and local emergency response agencies.

Federal OSHA Regulations

The OSHA regulations, intended to create a safe workplace, are found at 29 CFR Part 1910, Subpart H, and include procedures and standards for safe handling, storage, operation, remediation, and emergency response activities involving hazardous materials and waste. Pertinent sections of Subpart H include § 1910.106 (Flammable and Combustible Liquids) and § 1910.120 (Hazardous Waste Operations and Emergency Response).

The Hazardous Waste Operations and Emergency Response regulations contain requirements for worker training programs, medical surveillance for workers engaging in the handling of hazardous materials or wastes, and waste site emergency and remediation planning for those who are engaged in specific clean-up, corrective action, hazardous material handling, and emergency response activities as specified by §§ 1910.120(a)(1)(i-v) and 1926.65(a)(1)(i-v).

29 CFR Part 1910.119 Process Safety Management (PSM), addresses requirements for preventing or minimizing the consequences of catastrophic releases of toxic, reactive, flammable, or explosive chemicals that may result in toxic, fire or explosion hazards. The PSM applies to all industries except retail facilities, oil or gas well drilling or servicing operations, and normally unoccupied remote facilities. In each industry, PSM applies to any of more than 130 specific toxic and reactive chemicals onsite in one location; it also includes flammable liquids and gases in quantities of 10,000 pounds or more. PSM clarifies the responsibilities of employers and contractors involved in work that affects or takes place near covered processes to ensure that the safety of both plant and contractor employees is considered. The standard also mandates written operating procedures; employee training; pre-startup safety reviews; evaluation of mechanical integrity of critical equipment; written procedures for managing change; incident investigation; emergency planning and response; and compliance audits.

Emergency Action Plans (29 CFR Section 1910.38) require that facilities have an emergency action plan to ensure the safe response to emergencies. The purpose of an emergency action plan is to facilitate and organize employer and employee actions during workplace emergencies.

State Authority

California Accidental Release Prevention Program

California replaced the Risk Management and Prevention Program with the CalARP Program on January 1, 1997. The CalARP Program is very similar to the USEPA's Risk Management Program with the following differences:

- The list of toxic chemicals is larger—276 vs. 77
- The threshold quantities of the chemicals is smaller (e.g., chlorine federal threshold quantity is 2,500 pounds vs. California's threshold quantity of 100 pounds); the lower threshold quantities result in hydrogen sulfide and ammonia being listed as regulated substances at the Rodeo Refinery
- Requires an external events analysis be performed, including a seismic analysis
- More interaction with the public and agencies, including an RMP.

Contra Costa Health Services Hazardous Materials Programs administers the CalARP Program and ISO by Contra Costa County and the City of Richmond. Six full-time engineers are required by the CalARP Program and the county’s ISO to perform the following:

- Review the Risk Management and Safety Plans, document the review, and determine when the plans are complete

- Audit the facilities that are subject to the CalARP Program as well as the ISO at least once every 3 years and document the results of each audit
- Follow-up with recommended action items associated with RMP and Safety Plan reviews and audits to verify that potential problems are adequately addressed
- Review Major Chemical Accidents or Releases Root Cause Analyses and incident investigation reports that are submitted to Contra Costa Health Services
- Assist with incident investigations including a root cause analysis for Major Chemical Accidents or Releases
- Perform incident investigations including root cause analysis for selected Major Chemical Accidents or Releases
- Perform hazard scoring for development projects associated with land use applications
- Participate in unannounced inspections of industrial facilities.

California Hazardous Materials Business Plan

The purpose of the HMBP program is to prevent or minimize harm to public health and the environment from a release or threatened release of a hazardous material. By submitting an HMBP, emergency responders can effectively protect the public. The HMBP also satisfies the federal Emergency Planning and Community Right-to-Know Act, which was created in 1986 to help communities plan for chemical-related emergencies.

Meeting this federal requirement is achieved through compliance with the HMBP program (California Health and Safety Code sec 25504 (a–c)). HMBPs describe hazardous materials inventory, storage container types and locations, emergency response and evacuation procedures, and employee hazardous materials training program. Enforcement of hazardous materials management rules and the HMBP program is assigned to the CUPA, the agency certified by the California Secretary of Environmental Protection to implement the Unified Hazardous Waste and Hazardous Materials Management Regulatory Program specified in Health and Safety Code Chapter 6.11, *California Department of Toxic Substances Control*.

In California, the DTSC regulates the generation, transportation, treatment, storage, and disposal of hazardous waste. The hazardous waste regulations establish criteria for identifying, packaging, and labeling hazardous wastes; dictate the management of hazardous waste; establish permit requirements for hazardous waste treatment, storage, disposal, and transportation; and identify hazardous wastes that cannot be disposed of in landfills. These regulations also require hazardous waste generators to prepare a Hazardous Waste Contingency Plan that describe hazardous waste storage and secondary containment facilities, emergency response and evacuation procedures, and employee hazardous waste training program. While DTSC generally retains authority, day-to-day enforcement of hazardous waste management rules is delegated to the CUPA.

The DTSC is responsible for regulating management of hazardous waste and correction of releases of hazardous constituents to the environment. DTSC promulgates rules and regulations, but enforcement of compliance with California hazardous waste management regulations is delegated to local agencies. The CUPA is the local agency having jurisdiction over compliance with California hazardous waste management regulations. DTSC retains the authority to intercede in hazardous waste management issues, permitting for hazardous waste treatment, storage and disposal, and review and approval of corrective action planning activity at hazardous waste contaminated sites.

California Fire Code and National Fire Protection Association

The Rodeo Refinery and the Santa Maria Site are required to comply with the California Fire Code and National Fire Protection Association (NFPA) codes that address requirements for flammable and combustible liquid and compressed gas storage, including pressure vessel installation, water mains, foam fire protection systems, and water supply reliability requirements. The Contra Costa County Fire Protection District has local jurisdiction over proper implementation of fire code requirements at the Rodeo Refinery; CAL FIRE/San Luis Obispo County Fire Department has jurisdiction at the Santa Maria Site.

California Division of Occupational Safety and Health

Occupational safety standards exist in federal and state laws to minimize worker safety risks from both physical and chemical hazards in the work place. Cal/OSHA and the federal OSHA are the agencies responsible for ensuring worker safety in the workplace.

Cal/OSHA assumes primary responsibility for developing and enforcing standards for safe workplaces and work practices within the state. Cal/OSHA's PSM standard is discussed above in the Accidental Release Prevention subsection. Storage tank dikes and bulk storage tanks are examples of confined spaces. Worker entry into confined spaces must be performed in accordance with OSHA confined space procedures, including training for participants, planning, provisions for access/egress, monitoring, and supervision. Storage tank demolition, repair, and installation require hot work (e.g., cutting torches, welding, and grinding). Hot work within the refinery environment must be performed under the facility hot work program that is designed in accordance with OSHA requirements and industry guidelines. At sites known to have hazardous materials present (e.g., hydrocarbons, lead-based paint, asbestos, and contaminated soil), a site safety plan must be prepared to protect workers. The site safety plan establishes policies and procedures to protect workers and the public from exposure to known and potential hazards.

The Rodeo Refinery is subject to CCR Title 8, Section 5189.1, Process Safety Management for Petroleum Refineries, of Cal/OSHA's General Industry Safety Orders, which is more stringent than and supersedes federal OSHA's Process Safety Management of Highly Hazardous Chemicals standard (29 CFR Section 1910.119).

California State Lands Commission

The CSLC developed Marine Oil Terminal Engineering and Maintenance Standards (MOTEMS) to establish standards for the design, construction, and maintenance of marine oil terminal berthing and cargo loading/unloading facilities. MOTEMS is intended to minimize the possibility of accidents at marine oil terminals during extreme weather events and seismic activity that would lead to releases of petroleum substances to the environment. Existing facilities are required to retrofit or rebuild as necessary to meet MOTEMS, which the Marine Terminal has completed, and the terminal will continue to comply with MOTEMS requirements.

California Emergency Management Agency

California has developed an emergency response plan to coordinate emergency services provided by federal, state, and local government and private agencies. Emergency response plans include responding to hazardous materials incidents, responding to intentional acts of destruction, and developing a downstream evacuation plan for areas within the potential inundation area. The plan is administered by the California Emergency Management Agency, which coordinates the responses of other agencies, including the CalEPA, California Highway Patrol, CDFW, RWQCB, and local fire departments.

California Aboveground Petroleum Storage Act

The California Aboveground Petroleum Storage Act (Health and Safety Code Chapter 6.67, Section 25270) establishes standards for aboveground petroleum storage tanks. The local CUPA is responsible for administering the program. The CUPA is required to conduct tank facility inspections at least every 3 years. The California Fish and Game Code Sections 5650 et seq. provide general law regarding water pollution prohibitions and both criminal and civil penalties on discharges of petroleum and other deleterious materials entering California waters. The CDFW's wardens enforce these sections. Further, California Water Code Section 13272 requires that any entity responsible for discharging any oil or petroleum product into California waters must notify the Office of Emergency Services, and stipulates that failure to comply is a misdemeanor. All OSPR regulations are found in CCR Title 14. Regulations promulgated by the CSLC are found in CCR Title 2 and Title 24.

Local Authority

In the case of the proposed Project, the relevant CUPA for the Rodeo Refinery is Contra Costa County Health Services, and for the Santa Maria Refinery, the CUPAs are San Luis Obispo County Environmental Health Services and the City of San Luis Obispo Fire Department. The relevant CUPAs for the Pipeline Sites are Santa Barbara County Environmental Health, Kern County Environmental Health Services Department, Fresno County Environmental Health Services Department and the Stanislaus County Department of Environmental Resources.

Airports and Air Hazards

Airport Influence Areas are used in land use planning to identify areas commonly overflown by aircraft as they approach and depart an airport, or as they fly within established airport traffic patterns. The Rodeo Refinery is located approximately 11 miles to the east–southeast of Buchanan Field Airport in the city of Concord and 12 miles to the north of Napa County Airport in Napa County. The nearest public airfield is the Oceano County Airport, located approximately 3 miles from the Santa Maria Refinery. The San Luis Obispo County Regional Airport is located approximately 10 miles north of the Santa Maria and the Santa Maria Public Airport is located approximately 9 miles southeast. Three of the Pipeline Sites are within 2 miles of airports: Orcutt Pump Station (Santa Maria Public Airport), Midway Pump Station (Taft Airport), and Patterson Pump Station (NASA Crows Landing Airport and Test Facility).

Bay Conservation and Development Commission Policies Applicable to Navigational Safety and Oil Spill Prevention

The BCDC comprises 27 appointees from local governments and state/federal agencies and administers the California Coastal Act (which implements the federal Coastal Zone Management Act) in the San Francisco Bay Area. The following BCDC findings and policies are applicable to navigational safety and spill prevention.

Findings:

1. San Francisco Bay's location and unique geographical features create an attractive and important area for water-related industries. These industries rely on shipping for import, export, and domestic distribution of petroleum products and other goods. Providing for safe navigation greatly enhances the region's water-related industries.
2. Mariners operating in the San Francisco Bay face difficult challenges such as increasing vessel traffic, physically restricted shipping lanes, frequent shoaling, rapid weather changes, fog, strong currents, and physical obstructions.
3. Marine accidents that result in spills of hazardous materials, such as oil, can adversely affect a variety of San Francisco Bay resources, including wildlife habitats, water quality, commercial and

recreational fishing, recreation areas, businesses, and personal property. Strong currents and tides can cause spills to reach sensitive resources in a very short time. Spills of petroleum products in San Francisco Bay can devastate resident and migratory bird populations.

4. San Francisco Bay has an outstanding navigational safety record because many state, federal and international agencies; organizations; and businesses involved with maritime shipping actively participate in programs to improve safe navigation and prevent marine accidents that could result in spills of hazardous materials, such as oil. The Harbor Safety Committee of the San Francisco Bay Region, composed of representatives from the maritime community, port authorities, pilots, tug operators, OSPR, USCG, petroleum and shipping industries, and others with expertise in shipping and navigation, meets regularly to develop additional strategies to further safe navigation and oil spill prevention.
5. The USCG, which is empowered by federal law to meet its strategic goals of navigational safety and the protection of natural resources, uses its expertise and authority to regulate bridges and aids to navigation.
6. San Francisco Bay is spanned by a number of bridges; some of these are fixed bridges tall enough to safely allow ship traffic under parts of their spans. In addition, drawbridges are located at the Carquinez Strait and Oakland Estuary. Bridges over navigable waterways may be equipped with fenders, navigation lights, clearance gauges, water level gauges, sound devices or radio beacons, all of which improve navigational safety and help prevent spills of hazardous materials, such as oil.
7. No pollution incidents have occurred in the San Francisco Bay area attributable to improper bridge location, pier placement, navigational lighting, clearance gauges, protection systems or drawspan operation. The USCG coordinates navigational and operational requirements on all bridge projects to ensure safety is maintained. Existing and proposed bridges are carefully evaluated for their ability to meet the reasonable needs of navigation prior to receiving a federal permit. Drawbridges operate under carefully tailored regulations to ensure safety and operational transportation needs are met.
8. The waters of San Francisco Bay are marked with a system of markers, such as buoys and beacons, to assist navigation. These navigation aids provide a substantial safety and environmental benefit by helping prevent navigation accidents that could spill hazardous materials, such as oil.
9. Some physical obstructions located near shipping lanes or water transit routes, such as underwater rocks, can be navigation hazards for some types of vessels and can increase risk of spills of hazardous materials, such as oil.
10. Because of the changing marine conditions in San Francisco Bay, safe navigation is highly dependent upon accurate reports on the winds, tides, and currents. The Physical Oceanographic Real Time System efficiently provides information on currents, water level, salinity, and other marine weather conditions to mariners and oil spill response organizations.
11. Communication is essential for safe navigation in heavily used port areas. USCG Vessel Traffic Service, San Francisco, plays a vital role by promoting safe and orderly vessel traffic within San Francisco Bay through radio communications.
12. Oil spill contingency plans and appropriate, easily accessible and strategically located spill response equipment are important parts of effective oil spill response strategies for San Francisco Bay. Marine facilities used for exploring, drilling, producing, storing, handling, transferring, processing, refining or transporting oil and are located in or near marine waters, as defined in the Lempert-Keene-Seastrand Oil Spill Prevention and Response Act, are required to have oil spill contingency plans.

Policies:

1. Physical obstructions to safe navigation, as identified by the USCG and the Harbor Safety Committee of the San Francisco Bay Region, should be removed to the maximum extent feasible when their removal would contribute to navigational safety and would not create significant adverse environmental impacts. Removal of obstructions should ensure that any detriments arising from a significant alteration of San Francisco Bay habitats are clearly outweighed by the public and environmental benefits of reducing the risk to human safety or the risk of spills of hazardous materials, such as oil.
2. The BCDC should ensure that marine facility projects are in compliance with oil spill contingency plan requirements of OSPR, USCG, and other appropriate organizations.
3. To ensure navigational safety and help prevent accidents that could spill hazardous materials, such as oil, the BCDC should encourage major marine facility owners and operators, USACE, and NOAA to conduct frequent, up-to-date surveys of major shipping channels, turning basins and berths used by deep draft vessels and oil barges. Additionally, the frequent, up-to-date surveys should be quickly provided to the masters and pilots of USCG Vessel Traffic Service, San Francisco.

Contra Costa County General Plan

The Safety Element (Section 10) of the Contra Costa County General Plan contains relevant goals and policies regarding hazardous materials and fire protection. The hazardous materials goal is to provide public protection from hazards associated with the use, transport, treatment and disposal of hazardous substances and is supported by policies that require appropriate storage and containment of hazardous substances. Fire protection goals are intended to provide public protection services in a disaster (Contra Costa County 2010).

The Contra Costa County Health Services, as the CUPA, oversees the regulatory programs for HMBPs, aboveground storage tanks, underground storage tanks, hazardous waste generators, as well as facility inspections and permitting related to CalARP Program.

Contra Costa County has adopted the Contra Costa County Hazardous Materials Area Plan, which outlines the procedures that county regulatory and response agencies will use to coordinate management, monitoring, containment, and removal of hazardous materials in the event of an accidental release (Contra Costa County 2016). The purpose of the HMBP Program (Health and Safety Code Sections 25500−25520; CCR Title 19, Sections 2729−2732) is to prevent or minimize the damage to public health and safety and the environment from a release or threatened release of hazardous materials and also to satisfy community right-to-know laws. The program requires facilities that handle hazardous materials in quantities equal to or greater than 55 gallons of a liquid, 500 pounds of a solid, 200 cubic feet of compressed gas, or extremely hazardous substances above the threshold planning quantity (40 CFR Part 355 Appendix A) to prepare and submit to the local CUPA an HMBP that contains:

- A hazardous materials inventory,
- Site maps,
- Emergency Response Contingency Plans, and
- Employee Training Plan.

The CUPA verifies the information included in the HMBP and provides it to agencies responsible for the protection of public health and safety and the environment. These agencies may include fire departments, hazardous materials response teams, and local environmental regulatory groups.

The public also has a right to review most of this information, subject to legal protection of certain confidential and trade secret information. Businesses must amend the HMBP and submit to Contra Costa Health Services, Hazardous Materials Programs, within 30 days if there is:

- A 100 percent or more increase in the quantity of the previously disclosed amount,
- Any handling of a previously undisclosed hazardous material in a reportable quantity,
- A change of business address,
- A change of business ownership,
- A change of business name, or
- A significant change in business operations affecting handling of hazardous materials.

Additionally, the Contra Costa Health Services, Hazardous Materials Programs, is required by statute to establish an area plan for emergency response to a release or threatened release of a hazardous material within its jurisdiction (Health and Safety Code Section 25503(c)). The Contra Costa County Hazardous Materials Area Plan describes the overall hazardous materials emergency response organization within Contra Costa County (Contra Costa Health Services 2009).

Contra Costa County Industrial Safety Ordinance

Because incidents have occurred at industrial facilities in Contra Costa County since the adoption of state and federal safety programs, the Contra Costa County adopted Ordinance No. 98-48 and amendments, the ISO, as Regulation 450-8 of the County Code of Regulations to "supplement the requirements of California Health and Safety Code…concerning hazardous materials management by enacting measures to prevent and reduce the probability of accidental releases of regulated substances that have the potential to cause significant harm to the public health and to increase participation by industry and the public to improve accident prevention" (Contra Costa Health Services 2021) The ordinance expands on the CalARP Program requirements and requires reviews, inspections, and audits that supplement existing federal and state safety programs and the imposition of additional safety measures to protect public health from accidental releases.

The facilities that are subject to the ISO are in the unincorporated areas of Contra Costa County, must be a chemical facility or a petroleum refinery and a Program Level 3 facility under the CalARP Program. The ISO expands on the CalARP Program by requiring the following:

- The whole facility is covered, not just process(es) that have a regulated substance over a threshold quantity
- A Safety Plan, which is a public document, is required to be submitted to Contra Costa Health Services
- A Human Factors Program is required for the following elements: Process Hazard Analysis, Operating Procedures, Incident Investigation, training employees on the basics of the human factors and on the facility's human factors program, and managing change to the emergency response and operations organizations
- The facility is required to perform a root cause analysis as part of their incident investigations for Major Chemical Accidents or Releases and to submit a root cause analysis report to Contra Costa Health Services
- Contra Costa County can do its own incident investigation, including a root cause analysis Inherently Safer Technologies and Systems are to be considered
- Public Meetings are required.

The Rodeo Refinery is one of six facilities are covered by Contra Cost County's ISO**.**

Contra Costa County Fire Prevention District

The local Fire District administers approvals under the California Health and Safety Code and the 2007 California Fire Code (with reference to the Uniform Fire Code) for any development or project that involves flammable liquid storage. Pursuant California Fire Code 3404.2, Phillips 66 must submit final plans and specifications for the storage tanks to the Fire District for review and approval prior to construction. Acceptance testing must be performed on fire protection systems pursuant to NFPA 24 (fire water) and NFPA 11 (foam systems) prior to operation of the tanks pursuant to California Fire Code 508.1.

Contra Costa Health Services Hazardous Materials Incident Notification Policy

This Contra Costa Health Services' Hazardous Materials Incident Notification Policy promotes prompt and accurate reporting in the event of a release of hazardous materials that may impact the environment or community. It also enables Contra Costa County to undertake measures to mitigate any such impact including dispatching emergency response teams, assessing the extent of the risk of a release, determining whether to activate the Community Warning System, and responding to public and media inquiries.

San Luis Obispo County General Plan

The Energy Element and Conservation and Open Space Element of the San Luis Obispo County General Plan contain a goal of protecting public health, safety, and environment and several policies that promote the stated goal. The applicable policies include the following:

- **Policy 56:** Encourage existing and proposed facilities to focus on measures and procedures that prevent oil, gas, and other toxic releases into the environment. This policy is to ensure that facilities: (1) take measures to prevent releases and spills; (2) prepare for responding to a spill or release; and (3) provide for the protection of sensitive resources. A review of a facility's spill response plan, or reports from other agencies, should be completed to monitor compliance.
- **Policy 64, Guideline 64.1**: To reduce the possibility of injury to the public, facility employees, or the environment, the applicant shall submit an emergency response plan which details response procedures for incidents that may affect human health and safety or the environment. The plan shall be based on the results of the comprehensive risk analysis. In the case of a facility modification, the existing response plan shall be evaluated by the safety review committee and revisions made as recommended.

Flammable and Combustible Liquid Storage Coastal Zone Land Use Ordinance Section 23.06.126

This ordinance includes requirements for flammable and combustible liquid storage relating to applicability, permit requirements, limitation on use, limitation on quantity, setbacks, and the inclusion of CAL FIRE recommendations, as applicable. Without approval through a development plan, aboveground storage limits are 20,000 gallons for combustible liquids and 2,000 gallons for flammable liquids.

Industry Standards

In addition to regulatory requirements, equipment and structures used in the oil industry are designed in accordance with industry standards and best engineering practices (e.g., National Fire Prevention Association, American Society of Mechanical Engineers, and API). For example, the American Society of Mechanical Engineers' standards specify design requirements for numerous systems, including pipelines, valves, and tanks. API Standard 650 is the current standard for the design of welded tanks for oil storage, and API Standard 653 sets standards for inspection, repair, alteration, and reconstruction of storage tanks. These standards include measures to prevent accidental releases, incorporate safety and back-up measures or features to reduce risk in the event of an emergency, and set inspection frequencies.

API Standard 2015 sets the industry standards for safe entry and cleaning of petroleum storage tanks, and API Recommended Practice 2016 is a supplemental document with guideline and procedures for safe entry and cleaning of petroleum storage tanks. The NFPA's design requirements address flammable and combustible liquids (NFPA 30), fire extinguishing systems (e.g., NFPA 11, 12, 15), and the National Electrical Code (NFPA 70).

4.9.3 Significance Criteria

Based on CEQA Guidelines Appendix G, a project would cause adverse impacts related to hazards and hazardous materials if it would:

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/or 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 0.25 mile of an existing or proposed school;

d. Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 (Cortese List) and, as a result, would create a significant hazard to the public or the environment;

e. For a project located an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area;

f. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan;

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

4.9.4 CEQA Baseline

Baseline conditions reflect the 2019 operation and maintenance of the Rodeo Refinery and Santa Maria Site as petroleum refineries, including operation and maintenance activities. The baseline setting also includes the applicable regulatory framework to protect environmental resources, which are described above. The CEQA baseline for analysis of marine transportation, the baseline is an average of the years 2017–2019.

Appendix G of the RMP includes the list of Highly Hazardous Materials present in existing process units of the Rodeo Refinery, including the chemical name and chemical location, and is representative of existing baseline conditions for hazardous materials for which proposed Project conditions are compared. Crude oil containing less than 1 percent hydrogen sulfide is not a regulated substance under the federal USEPA Accidental Release Prevention/RMP Rule. Pursuant to the Cal/OSHA PSM Standard, crude oil is not classified as an acutely hazardous material in the CCR Title 8, Section 5189 and is therefore not addressed in the RMP. However, crude oil is included in the HMBP listing of materials at the site and, as crude oil could spill and ignite, producing thermal impacts, it is also included as part of the baseline hazards at the refinery site.

The baseline for the Santa Maria Site and the Pipeline Sites are those activities and hazardous material inventories occurring at those sites in 2019.

4.9.5 Approach to Analysis

Under the proposed Project, the Rodeo Refinery and its associated materials transportation systems would handle, store, and process flammable materials and acutely hazardous materials. Accidents related to these materials can result in public exposure to heat radiation from a fire, blast overpressure from an explosion, or airborne exposure to acutely hazardous materials. Releases at these facilities can also impact environmental receptors such as the marine environment. These hazards can result from accidents at the Rodeo Refinery or during transportation of hazardous materials to and from the refinery.

The assessment of impacts related to operational safety and risk of accidents is different from the analysis of impacts in other resource areas because no impact would occur unless there is an accident. Therefore, the expected probability of accidents is factored into the analysis. Furthermore, even the occurrence of an accident does not necessarily mean significant impacts would result. Whether or not a significant impact may be expected depends on the magnitude of the accident, and as the magnitude of a given potential accident scenario increases, the probability of that accident scenario occurring generally decreases. Thus, the operational safety/risk-of-accidents impact analysis considers both probability and potential consequences of reasonably foreseeable upset scenarios, including (1) spills that can potentially impact the environment and (2) incidents that can potentially impact the safety of the public.

4.9.5.1 Spills

A spill involving renewable feedstocks or fuel, in and of itself, is not an environmental impact. Environmental impacts would occur if a spill or release affects environmental resources or public safety. This operational safety/risk-of-accidents analysis addresses the expected probability of oil spill accidents both in-transit and while at the Marine Terminal, the extent of areas that may be impacted by such spills, and the potential for significant hazards to the public. The extent of areas that may be affected by oil spills into the marine environment is evaluated using results from oil spill trajectory modeling conducted using the TAPII model. How a spill specifically impacts environmental resources is addressed in other resource sections of this EIR, as applicable.

The consequence of a spill depends on the size of the spill; the effectiveness of the response effort; and the biological, commercial fishery, shoreline, and other resources affected by the spill. A spill of 1 gallon or less into the marine environment would result in an adverse impact that most likely can be mitigated and controlled by response efforts, while a large spill of 1,000 barrels (42,000 gallons) into the marine environment, for example, most likely would result in a significant, adverse impact that would have residual effects after mitigation. The impacts of spills between 1 gallon and 42,000 gallons depend on the effectiveness of response efforts and the resources impacted. Impacts could be limited by spill response to a less than significant level for smaller spills, and even some larger spills depending on the location and the response efforts, that can be contained during first-response efforts without lasting impacts to sensitive resources; however, impacts from larger spills or spills affecting sensitive resources could be significant and adverse even considering response capabilities. Spills that occur into the Rodeo Refinery area would generally be contained and processed through the treatment systems and would not affect the marine environment.

For spills, the approach taken to determining significance is the same as the CSLC used in the Amorco and Avon EIRs (CSLC 2014, 2015). The analysis evaluates the probability of Project related accidents and compares the probability of a release under the Project to the baseline operations. Generally, if the Project would introduce marine vessels at a higher frequency than the baseline operations, then the risk of accidents that could result in spills into the marine environment, which could produce significant and adverse impacts, is considered to increase. Any increase in risk is considered to be a significant impact. For impacts to public safety, if the hazards to the public increase, then a significant impact could occur.

Releases of materials to the environment can also cause impacts to biological resources, including smothering and/or toxic effects. See Section 4.4, *Biological Resources*.

4.9.5.2 Public Safety

Fires, which are caused by ignition of flammable materials, can result in public exposure to heat radiation (USEPA 2009) and smoke. Heat decreases rapidly with distance from the flame. In many cases, fires are confined to the vicinity of the equipment from which the flammable release would occur. Explosions can occur if flammable vapors and gases are ignited or when a flammable substance is released at high temperatures, and usually under elevated pressure (Center for Chemical Process Safety 2010). Impacts of an explosion are expressed in terms of a sudden increase in pressure above ambient pressure, resulting from a blast or shock wave. A vapor cloud explosion occurs when a flammable gas is mixed with air and then encounters an ignition source. Vapor cloud explosions are very rare because they require that sufficient air is available and combined with the flammable gas before ignition, thus resulting in an explosive mixture. Instead, a more common event would be a flash fire in which ignition occurs before mixing with atmospheric air. Flash fires do not result in an explosion that could cause damaging overpressure. A boiling liquid-expanding vapor explosion, or BLEVE, would occur when a confined flammable material vessel ruptures from excess pressure because of heating. The result is a rapid expansion of the material as it is exposed to ambient pressure and subsequent ignition of the released liquid aerosol and vapors. Such an event can occur if an external fire engulfs a vessel containing a flammable liquid. Boiling liquid-expanding vapor explosions are also very rare (USEPA 2009).

Airborne exposure can occur with a release of a substance from a facility that is acutely hazardous, such as ammonia (NH_3), hydrogen sulfide (H_2S), sulfur dioxide (SO_2), or any harmful byproducts in smoke that may occur from a fire (USEPA 2009). A release can be a threat if a harmful concentration of the gas reaches offsite receptors.

Hazardous materials used or previously used in the design, construction, and operation of facilities under the existing land use may include asbestos and lead-based paint. A review of the California Department of Conservation, Division of Mines and Geology (2020) guide map shows that the Project area is not near mapped locations of ultramafic rocks.

For impacts to public safety at the Refinery, Marine Terminal, Santa Maria or Pipeline Sites, the approach involves examining the potential hazards produced by the inventory of hazardous materials and comparing the baseline with the Project level of hazardous materials use and storage. Increases in hazardous materials inventories that could affect the public, or a shift in the locations of hazardous material storage closer to public receptors, would constitute an increase in the hazards at Project sites and would be considered a potentially significant impact.

For transportation and associated impacts to public receptors if a release occurs, an increase in the truck, pipeline or rail transportation of similarly hazardous materials to the baseline or an increase in the toxicity or flammability of transported materials over the baseline could generate a significant hazard. The following sections discuss the potential impacts of the Santa Maria and Pipeline Sites, the Refinery, the Marine Terminal and transportation activities (rail, truck and pipeline) for the construction phase, the transitional phase and the operations and maintenance phase.

4.9.6 Discussion of No Hazards and Hazardous Material Emissions Impacts

Comparison of the baseline and the Project's characteristics with the significance criteria stated above show that no impacts would occur associated with the following criteria:

a. Would the Project create a significant hazard to the public or the environment through the routine transport, use or disposal of hazardous materials?

Santa Maria Site, Pipeline Sites and Carbon Plant—Transitional, Operation and Maintenance

The Santa Maria Site and Carbon Plant would be demolished so no routine operation and maintenance activities would occur that would involve the transport, use or disposal of hazardous materials during the transitional or operation phases. At the Pipeline Sites, once cleaned and retired-

in-place no routine operation and maintenance would occur, with exception of periodic inspection which would not involve an increase in routine transport, use or disposal of hazardous materials. Therefore, no potential impacts would be associated with the routine use or disposal of hazardous materials at the Santa Maria and Pipeline Sites or the Carbon Plant portion of the Refinery associated with transition, operation and maintenance.

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;

Santa Maria Site, Pipeline Sites and Carbon Plant—Transitional, Operation and Maintenance

For the Santa Maria and Pipeline Sites and the Carbon Plant, no operational activity would occur as these facilities would be removed or non-operational. Existing truck traffic transporting crude oil into and sulfur and petroleum coke out of the Santa Maria Site and existing pipeline transport of crude oil and partially refined product would cease. Therefore, no impacts would be associated with releases of hazardous materials resulting from upset or accident at those sites during the transitional or operation phases.

c. Would the Project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school?

Rodeo Refinery and Marine Terminal – All Phases

The Project would be entirely constructed within the Rodeo Refinery, although demolition activities would take place at the Carbon Plant Site, which is outside the Rodeo Site. The Rodeo Refinery includes buffer zones that have been established around the Rodeo Site, which is the active refinery where hazardous substances or processes such as storage tanks and hydrogen generators are located. The Rodeo Site is bounded on the northeast and southeast by undeveloped open space and industrial uses. The southwest edge of the Rodeo Site is a 300- to 600-foot undeveloped area that is maintained as a buffer between the Rodeo Refinery and the Bayo Vista residential area of Rodeo. The Bayo Vista area contains a day care center, which is the nearest sensitive receptor to the Rodeo Site. The Bayo Vista Child Development Center is approximately 0.75 mile from the railcar loading facility and 0.85 mile from the Marine Terminal. No existing or proposed schools are located within 0.25 mile of the Rodeo Site or the Carbon Plant Site; therefore, no hazardous materials would be handled within 0.25 mile of an existing school. Therefore, no impact would occur.

Santa Maria Site – All Phases

The Santa Maria Site is located in southern San Luis Obispo County near the community of Nipomo and the city of Arroyo Grande. The vicinity consists largely of open space and agricultural lands; the closest residences to the site are approximately 0.25 mile to the northeast, and no sensitive receptors are located within 0.5 mile of the facility. No existing or proposed schools are located within 0.25 mile of the Santa Maria Site; therefore, no hazardous materials would be handled within 0.25 mile of an existing school, and this sensitive receptor would not be impacted during the transitional phase. Therefore, no impact would occur.

Pipeline Sites

The Pipeline Sites are located in a variety of land uses in several counties (San Luis Obispo, Santa Barbara, Kern, Kings, Madera, Merced, Stanislaus, San Joaquin and Contra Costa). Pipeline access points are generally in sparsely populated areas. The pipelines themselves are underground; they cross numerous streams, small rivers, and transportation infrastructure but do not traverse dense population centers. As the Pipeline Sites would be abandoned, no hazardous materials would be handled within the Pipeline Sites and therefore no hazardous materials would be handled within 0.25 mile of an existing school. Therefore, no impact would occur.

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

Pipeline Sites

The Pipeline Sites are located in a variety of land uses in a number of counties (i.e., San Luis Obispo, Santa Barbara, Kern, Kings, Madera, Merced, Stanislaus, San Joaquin and Contra Costa). There could be sites listed on the Cortese List immediately adjacent to various portions of the Pipeline Sites. Pipeline access points are primarily located in sparsely populated areas. The pipelines themselves are underground. Activities associated with the Project at the Pipeline Sites (i.e., cleaning the pipelines and taking them out of service and abandoning in place) would be essentially the same as the existing periodic pipeline maintenance activities. No excavation or modifications would occur. Therefore, no impact would occur during construction, including transitional, as well as operation and maintenance.

Santa Maria Site—Operation and Maintenance

During the transitional and operation and maintenance phases, the Santa Maria Refinery would be non-operational and would therefore not create a significant hazard to the public or the environment due to contamination. Therefore, no impact would occur.

e. For a Project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the Project result in a safety hazard or excessive noise for people residing near or working in the Project area?

Rodeo Refinery and Marine Terminal—All Phases

There is no airport land use plan that includes the Rodeo Refinery, and no public airports or public use airports are located within 2 miles of the site. Accordingly, the Project would not affect airports or airport land use plans during construction/demolition, and because of its location, the Project would not expose people residing near or working in the Project area to a safety hazard or excessive noise from air traffic during construction/demolition, transitional or operational phases. No impact would occur.

Santa Maria Site—All Phases

There is no airport land use plan that includes the Santa Maria Site and there are no public airports or public use airports within 2 miles of the site. Accordingly, the Project would pose no effects to airports or airport land use plans during construction/demolition and because of its location, the Project would not expose people residing near or working in the Project area to a safety hazard or excessive noise from air traffic during construction/demolition, and no hazardous materials would be handled because the Santa Maria Site would be removed as part of the construction phase. No impact would occur.

Pipeline Sites

Three of the Pipeline Sites are within 2 miles of public use airports, but the Project activities of cleaning the pipelines and taking them out of service would be essentially the same as periodic pipeline maintenance activities and would not interfere with airport activities. Accordingly, the Project would not affect airports or airport land use plans, and because of its location, the Project would not expose people residing near or working in the Project area to a safety hazard or excessive noise during operation and maintenance. The Pipeline Sites would not handle hazardous materials as part of the operational phase. No impact would occur.

f. Would the Project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan;

Santa Maria Site

During the operation and maintenance phases, the Santa Maria Refinery would be non-operational and would therefore not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. Therefore, no impact would occur.

Pipeline Sites

The Pipeline Sites are located in a variety of land uses in a number of counties (i.e., San Luis Obispo, Santa Barbara, Kern, Kings, Madera, Merced, Stanislaus, San Joaquin and Contra Costa). The efforts need to abandon and clean the pipelines would be similar to maintenance operations on the pipeline sites and would therefore not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. Therefore, no impact would occur.

g. Would the Project expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildfire?

Santa Maria Site

The San Luis Obispo County Fire Department and CAL FIRE have jurisdiction at the Santa Maria Site. As described in Section 4.15, *Wildfire*, the Santa Maria Site is not located in an area rated by the CAL FIRE as a *very high fire hazard severity zone*. Because the facility would be demolished, the Project would not place any new elements that would expose people or structures to risk of wildfires. Accordingly, there would be no potential to expose people or structures to risk of wildfire at the Santa Maria Site.

Pipeline Sites

Because the Pipelines would be cleaned out and abandoned in place, the Project would not include any new elements that would expose people or structures to risk of wildfires and Project elements would occur in developed areas that do not pose substantial risk of wildfires. Accordingly, there would be no potential to expose people or structures to risk of wildfire at the Pipeline Sites.

4.9.7 Direct and Indirect Impacts of the Proposed Project

Table 4.9-3 presents a summary of the potential hazards and hazardous materials emissions impacts, as well as determination of significance for each impact.

Table 4.9-3. Summary of Impacts

Impact	Significance Determination		
	LTS	LTSM	SU
Impact 4.9-1: Would the Project create a significant hazard to the public or the environment through the routine transport, use or disposal of hazardous materials?			
Rodeo Refinery, Santa Maria Site, Pipeline Sites			
Construction/Demolition	✓		
Rodeo Refinery			
Transitional Phase, Operation and Maintenance			
Rodeo Refinery	✓		
Marine Terminal	✓		
Transportation	✓		

Impact	Significance Determination		
	LTS	LTSM	SU
Impact 4.9-2: 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			
Rodeo Refinery, Santa Maria Site, Pipeline Sites			
Construction/Demolition	✓		
Rodeo Refinery–Transitional Phase, Operation and Maintenance			
Rodeo Refinery	✓		
Marine Terminal (spills)			✓
Marine Terminal (public safety)	✓		
Transportation	✓		
Impact 4.9-3: Would the Project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5, and as a result, would it create a significant hazard to the public or the environment?			
Rodeo Refinery and Santa Maria Site			
All Phases[a]	✓		
Impact 4.9-4: Would the Project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?			
Rodeo Refinery and Santa Maria Site			
Construction/Demolition	✓		
Rodeo Refinery–Transitional Phase, Operation and Maintenance			
Rodeo Refinery	✓		
Marine Terminal	✓		
Transportation	✓		
Impact 4.9-5: Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?			
Rodeo Refinery and Santa Maria Site			
Construction/Demolition	✓		
Rodeo Refinery–Transitional Phase, Operation and Maintenance			
Rodeo Refinery	✓		
Marine Terminal	✓		
Transportation	✓		

Notes: LTS = Less than significant, no mitigation proposed
LTSM = Less-than-significant impact with mitigation
SU = Significant and unavoidable

[a] Transitional phase applies only to Rodeo Refinery

IMPACT 4.9-1

a. Would the Project create a significant hazard to the public or the environment through the routine transport, use or disposal of hazardous materials?

Construction: Less Than Significant, No Mitigation Proposed

All Locations

Construction activities would occur at the Rodeo Refinery and at the Santa Maria Site. During normal construction activities, potentially hazardous materials, such as diesel fuel, lubricating oils and other materials associated with construction equipment would be contained within tanks and construction equipment. Normal operations would not include the accidental releases of materials (see Impact 4.9-2 below for accidental releases). Therefore, potential impacts associated with the routine use of hazardous materials at the Project locations would be less than significant.

Mitigation Measure: **None Required**

Transitional Phase, Operation and Maintenance: Less Than Significant, No Mitigation Proposed

Rodeo Refinery—Marine Terminal, Transportation

The renewable, non-hazardous feedstocks, raw materials, wastes and products that would be used and produced at the Rodeo Refinery, the Marine Terminal and along the transportation routes (truck, rail and pipeline) would be contained within vessels and piping and would not be released to the environmental as part of normal operations (see Impact 4.9-2 below for accidental releases). At the Rodeo Refinery, feedstock would be pumped into existing storage tanks prior to the manufacturing process. The feedstocks would be used in closed processes to produce liquid transportation fuels, and the liquid transportation fuels would be stored in tanks prior to being transported from the Rodeo Refinery. Hazardous chemicals would be handled and stored as they are under baseline conditions, in accordance with applicable regulations and industry BMPs. Accordingly, the renewable feedstocks, blending components, and liquid transportation fuels would not come into contact with the public or the environment during routine use. Therefore, potential impacts associated with the routine use of hazardous materials at the Rodeo Refinery and transportation routes would be less than significant.

Mitigation Measure: **None Required**

IMPACT 4.9-2

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;

Construction/Demolition: Less Than Significant, No Mitigation Proposed

Rodeo Refinery

Construction of the PTU and associated infrastructure at the Rodeo Site and demolition of existing equipment and facilities at the Carbon Plant Site would involve the use of hazardous materials and would generate a variety of hazardous wastes that would require disposal. Construction would require decommissioning and removal of existing equipment and associated structures, modifications to existing equipment and piping, and construction and installation of new process equipment and piping systems. It is anticipated that most debris and equipment that is removed during construction and demolition activity would be decontaminated onsite so that it can be disposed of as non-hazardous waste. Any hazardous waste that is generated through the decontamination process would be managed, stored, and disposed of in accordance with applicable laws on hazardous waste and hazardous materials contained in the HMBP program overseen by the CUPA.

Hazardous materials used during construction and demolition would include fuels and lubricants for diesel-powered equipment and flammable gasses for cutting torches. These substances would be managed in accordance with applicable hazardous materials regulations, as implemented by the CUPAs in Contra Costa County (for the Rodeo Refinery) and San Luis Obispo County (for the Santa Maria Site) and specified in construction documents (Construction Safety Plan) and permits issued for the Project. Implementation of the appropriate containment and BMP procedures would minimize the potential for releases involving hazardous materials, and the potential for hazards to the public or the environment.

Demolition of the storage tanks at the Rodeo Site and of the entire Carbon Plant could generate soils contaminated with petroleum-based substances, asbestos-containing materials, lead-based paint, and, potentially, small quantities of other hazardous wastes such as catalysts and heavy metals. If uncontrolled, these substances could be released, posing a hazard to people and the environment. However, hazardous wastes are subject to substantial regulatory controls that specify requirements for the safe handling, transport and disposal of hazardous wastes. These requirements would form part of the construction and demolition contracts. Contaminated soils would be disposed of at licensed landfills, and asbestos-containing materials, lead-based paint, and other hazardous materials would be abated by contractors licensed to handle hazardous waste. These contractors would dispose of them in approved hazardous waste handling facilities. Oil-bearing materials would be processed into refined products and non-hazardous wastewater by the Rodeo Refinery (prior to its demolition).

Excavation would be required to install new foundations for process and other support equipment. Clean excavated soil would be combined with clean onsite stockpiles. Excavated soil would be tested in accordance with state and federal regulations for waste characterization. Excavated soil that exceeds applicable waste characterization thresholds would be disposed offsite at licensed waste disposal facilities based on its characteristics. Non-hazardous soil would be used onsite as fill as appropriate.

Implementing the appropriate disposal procedures would minimize the potential for releases or accidents involving hazardous wastes and thus of hazards to the public or the environment. The impacts of construction and demolition activities at the Rodeo Refinery, including the Carbon Plant would be less than significant.

Santa Maria Site

Demolition of existing equipment and facilities at the Santa Maria Site would involve the use of hazardous materials and would generate a variety of hazardous wastes. Hazardous materials used during demolition would include fuels and lubricants for diesel-powered equipment and flammable gasses for cutting torches. These substances would be managed in accordance with applicable hazardous materials regulations, as implemented by the CUPAs in Contra Costa County and San Luis Obispo County and specified in construction documents (Construction Safety Plan) and permits issued for the Project. Implementation of the appropriate containment and use procedures would minimize the potential for releases or accidents involving hazardous materials and thus of hazards to the public or the environment.

Demolition of the storage tanks at the Santa Maria Site could generate soils contaminated with petroleum-based substances, asbestos-containing materials, lead-based paint, and, potentially, small quantities of other hazardous wastes such as catalysts and heavy metals. If uncontrolled, these substances could be released to pose a hazard to people and the environment. However, hazardous wastes are subject to substantial regulatory controls that specify requirements for the safe transport and disposal of hazardous wastes. These requirements would form part of the construction and demolition contracts.

Contaminated soils would be disposed of at licensed landfills, and asbestos-containing materials, lead-based paint, and other hazardous materials would be abated by contractors licensed to handle hazardous waste, and these contractors would dispose of them in approved hazardous waste handling facilities. Oil-bearing materials would be processed into refined products and non-hazardous wastewater at the Santa Maria Site (prior to its demolition). Implementing the appropriate disposal procedures would minimize the potential for releases or accidents involving hazardous wastes and thus of hazards to the public or the environment.

Therefore, upset and accident conditions involving the release of hazardous materials during construction and demolition activities resulting from the use, transport, and disposal of hazardous materials and wastes would be less than significant and no mitigation is required.

Pipeline Sites

Hazardous materials, including fuels and lubricants for diesel-powered equipment and flammable gasses for cutting torches, would be used to clean the Pipeline Sites. These substances would be managed in accordance with applicable hazardous materials regulations, as implemented by the CUPAs in Contra Costa County, San Luis Obispo County and other jurisdictions, and specified in construction documents and permits issued for the Project. Implementing the appropriate containment and use procedures would minimize the potential for releases or accidents involving hazardous materials and thus of hazards to the public or the environment.

Cleaning the Pipeline Sites would generate oily wastewater, which, if uncontrolled, would be released and would pose a hazard to people and the environment. However, hazardous wastes are subject to substantial regulatory controls that specify requirements for the safe transport and disposal of hazardous wastes. These requirements would form part of the construction and demolition contracts. Implementing the appropriate disposal procedures would minimize potential for releases or accidents involving hazardous materials and thus of hazards to the public or the environment. Therefore, impacts would be less than significant and no mitigation is required.

Transitional Phase—Marine Terminal Spill Impacts: Significant and Unavoidable

Rodeo Refinery—Marine Terminal (spills)

During the 7-month transitional phase, the Project would involve a temporary increase in vessel activity. To procure alternative crude oil feedstock during the transitional phase, the Rodeo Refinery may temporarily increase deliveries of crude oil and gas oil feedstocks by tanker or barge, resulting in an increased rate of vessel calls to the Marine Terminal, compared to baseline conditions. The estimated vessel traffic during this period is shown in Table 4.9-4.

Table 4.9-4 Marine Terminal Traffic and Crude/Gas Oil Deliveries during Transitional Phase

Activity	Baseline Annual Period	Transitional Phase 7-month Period
Crude and Gas Oil Received through Marine Terminal (barrels/day 12-month average)	35,000	85,000
Pipeline Crude Received (barrels/day 12-month average)	70,000	0
Tanker Vessels (calls)	80	96
Barges (calls)	90	92

Source: Acutech 2021

Notes: For baseline, total tanker and barge calls are per year. For the transitional phase, calls are total calls over the 7-month period.

This temporary increase of crude and gas oil feedstocks at the Marine Terminal would not increase the amount of crude and gas oil that can be processed at the Rodeo Refinery, but it would shift the source of these materials from the Pipeline Sites to the Marine Terminal. In 2019, the Rodeo Refinery processed approximately 105,000 bpd of crude oil and gas oil (approximately 70,000 of which arrived via Line 200 and 35,000 of which arrived via the Marine Terminal). Crude oil and gas oil deliveries via the Marine Terminal during the transitional period would peak at up to 85,000 bpd (12-month rolling average), which would temporarily exceed the current BAAQMD Title V permit limit of 51,182 bpd (12-month rolling average), for which a permit will be acquired.[49] Once the Project is completed (estimated to be in early 2024), all transitional deliveries of crude oil and gas oil would cease, and the deliveries of renewable feedstock by vessel would commence.

During the transitional phase, additional vessel traffic arriving at the Marine Terminal would increase from 80 tankers and 90 barges annually as part of the baseline, or about 3.3 vessels calls per week, to an estimated 96 tankers and 92 barges over the 7-month transitional period, or about 6.7 calls per week, with a total number of vessel calls over the transitional period producing an increase of approximately 10 percent over the baseline entire-year vessel calls. This would produce a spill frequency of an in-transit spill of once every 1,076 years and a spill at the Marine Terminal of about once every year (note this is on an annualized basis utilizing the rate of vessel calls over the 7-month period).

As detailed under “Operation and Maintenance” impacts of marine vessel spills below, with increased vessel traffic, the frequency of a potential spill during the transitional period would increase over the baseline, and impacts that could occur during the transitional phase would be significant and unavoidable.

Transitional Phase: Less Than Significant, No Mitigation Proposed

Rodeo Refinery—Marine Terminal (Public Safety)

During the 7-month transitional phase, deliveries and processing of crude oil and gas oil feedstocks by tanker vessel would increase, resulting in increased vessel traffic at the Marine Terminal compared to baseline conditions. Vessel transportation would occur in two phases. During transition, marine vessels could bring more crude oil to the Rodeo Refinery through the Marine Terminal than under baseline conditions. Vessel transportation of refined products (gasoline, diesel, gas oil, and jet fuel) and of gasoline blendstocks would continue, but in different amounts than under baseline conditions (see Table 3-2). Marine vessel traffic would increase from baseline conditions (from 170 per year to 188 vessels over the 7-month transitional period). However, there would not be a discernable increase in stockpiled materials at the refinery or result in increased hazards to the public. The impact would be less than significant and no mitigation is required.

The Marine Terminal would continue to transport feedstock and refinery products. The Rodeo Refinery is required to meet applicable local, state, and federal fire safety standards. Refineries are required to have an emergency response plan to ensure that in the event of a fire, hazardous material release, medical emergency, or rescue situation, refinery personnel would be able to respond to the emergency quickly and effectively to minimize personal injuries, environmental damage, and/or property damage. Phillips 66 departments would continue to conduct various safety and regulatory compliance inspections and audits as part of standard on-going maintenance, and Phillips 66 would continue safety-training program for existing and new employees. In addition, Refinery fires generally pose little risk to the public when buffer zones are incorporated into the design, mainly because they are typically confined to the vicinity of the equipment from which the flammable release occurs.

[49] Title V permit limits also apply to gasoline range material that can be shipped from the Marine Terminal (25,000 bpd on a 12-month rolling average).

A release at the Marine Terminal would not present a significant safety hazard to members of the public due to the separation distance from public receptor locations. Even for low-probability large spills from the Marine Terminal, it is anticipated that separation distance of the Marine Terminal from public areas would provide time to respond with warnings and access controls before the spill could spread to public areas, which would limit the potential for unsafe levels of exposure to hazardous constituents in the spilled product or thermal radiation from a fire. Therefore, impacts from a spill and subsequent fire at the Marine Terminal would be less than significant.

During the transitional phase, refinery operations would be modified compared to the baseline, with crude processing reduced and the production of petroleum-based gasoline and other products also reduced. The reduction in the handling of crude oil may reduce the potential hazards at the refinery and therefore, public safety impacts at the Refinery would be less than significant. For more discussion, see the operations and maintenance impact section below.

Transportation

During the transitional phase, transportation of crude oil would be modified compared to the baseline, with crude transportation reduced and the production of petroleum-based gasoline and other products resulting in product transportation similar to the baseline. The reduction in the handling of crude oil would reduce the potential hazards along transportation routes and therefore, impacts would be less than significant. For more discussion, see the Operations and Maintenance section below.

Operation and Maintenance – Marine Terminal Spill Impacts: Significant and Unavoidable

Rodeo Refinery – Marine Terminal (spills)

Operation of the existing Marine Terminal is subject to numerous regulatory requirements to reduce accidents and spills associated with marine vessel traffic. Should an accident occur that causes a spill, existing infrastructure and procedures are in place to respond to a spill in accordance with OSPR, Phillip 66's CSLC Marine Terminal lease, and BAAQMD Operating Permit. These measures minimize the magnitude and consequences of spills. As described in BAAQMD (2012). Several recent EIRs prepared to support issuance of CSLC marine terminal leases have applied more quantified data regarding the estimated frequency of oil spills in California. These rates suggest a range of spills greater than 1,000 gallons to occur once every 73 years using a rate of 90 vessel calls per year (CSLC 2014) and once every 27 years using a rate of 137 vessel calls per year (CSLC 2012). The increased combined vessel (barges and tankers) traffic for the Project of 362 vessels per year is greater than these estimates.

Potential Spill Consequences and Vulnerable Resources

Contra Costa County's review of the Applicant's maritime risk assessment identified the need for a more methodical approach to calculate the frequency of spills greater than 100 gallons. In the absence of an accident frequency threshold, this review concluded any oil or feedstock product spill (greater than 100-gallons) from a vessel transiting the Marine Terminal above the baseline levels would be considered significant.

A spill from a vessel during transportation or while at the Marine Terminal could impact a range of areas, depending on the tide, the wind and other factors. Modeling was performed (Appendix C-2, *CEQA $PM_{2.5}$ Modeling Analysis*) to estimate the trajectory of potential spill events related to operation of the Marine Terminal and while in-transit. The spill sizes could cover a substantial range, with the worst-case discharge volume at the Marine Terminal estimated to be 3,976 bbls.

Tankers and barges are required to provide vessel response plans to the USCG which defines a worst-case discharge as "*the discharge in adverse weather conditions of a vessel's entire fuel or cargo oil*" (33 USC § 1321(j)(5) and USCG 2020). Therefore, as tanker/barge volumes could range as high as 1 million barrels, a theoretical maximum spill size from a barge or tanker contents that is used

for planning purposes in the USCG-required vessel response plans could range up to 1 million barrels (based on the largest tanker capacity). The Rodeo Refinery Emergency Response Plan also addresses potential spills from vessels as a type of spill that could occur. The CSLC EIRs used a large spill size of 10,000–20,000 barrels for modeling as representative of a potential worst case associated with tanker, barge and Marine Terminal spills. This volume is therefore utilized in this analysis. Note that the worst-case discharge associated with Marine Terminal operations would be less volume than the modeled release (20,000 barrels); less spreading would be expected given that the worst-case discharge release from the Marine Terminal volume could be substantially smaller. A spill from a tanker/barge could range higher than the 20,000 barrels used in the modeling. Based on modeling using TAPSII, larger or smaller spills than 20,000 barrels would be expected to yield similar modeling extents, but with corresponding different levels of oiling at receptors.

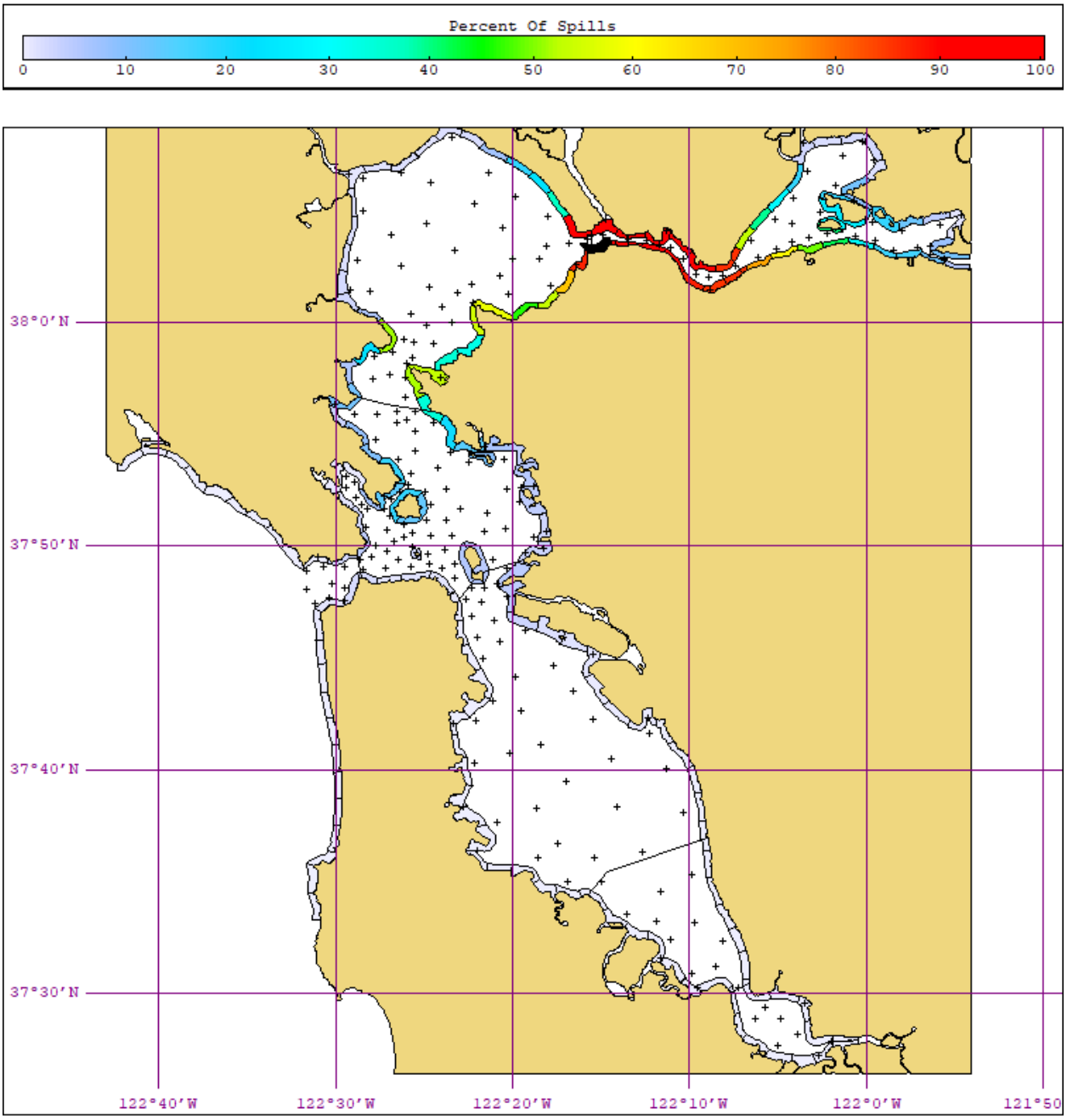
The areas that a spill could impact in the San Francisco Bay were assessed at the Marine Terminal and from a vessel travelling by the Golden Gate Bridge. Probabilistic spill modeling was performed using a tool provided by the NOAA and its Office of Response and Restoration's called the Trajectory Analysis Planner (TAP II). Through TAP II, probabilistic summaries of hundreds of simulated spills are provided. These probabilistic summaries were performed for spills originating at the two locations, during two seasons (summer and winter), for three different types of oils (gasoline, diesel and non-weathering oils).

The modeling analyzed shoreline oiling locations after 24 hours from the start of the spills for various spill scenarios. The worst-case impacts at the Marine Terminal and Golden Gate Bridge are shown in Figures 4.9-2 and 4.9-3. The modeling showed that, in summer, shoreline oiling locations along the East Bay due to spills at Marine Terminal were present from the Port of Richmond through the Carquinez Straights and into Suisun Bay. The highest probability of oiling was on both shorelines in the Carquinez Straights between San Pablo Bay and Suisun Bay.

During the winter conditions, oiling was slightly more widespread, likely driven by wind conditions with diesel and non-weathering oil showing probabilities of extent of oiling including a greater area of the western side of San Pablo Bay.

In general, with a spill release just east of the Golden Gate Bridge, the southern shorelines of the Marin Peninsula (northern side of Golden Gate), and the northern shorelines of the San Francisco Peninsula received the highest probability of oiling. This extended to Angel Island and Treasure Island with high probabilities of oiling with wind and tidal driven currents.

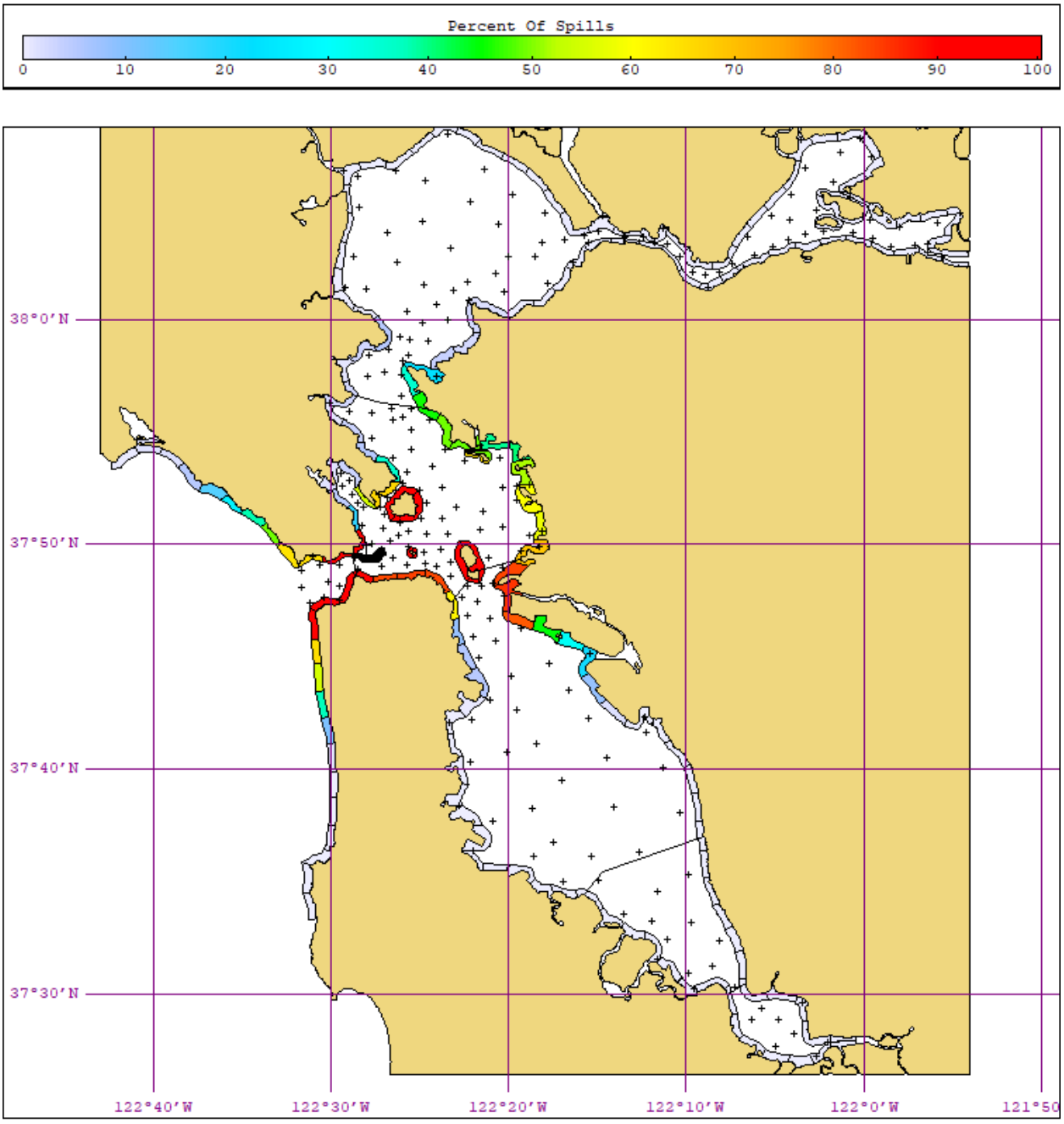
Operation of the Project could result in discharges into waters of the San Pablo and San Francisco Bays from vessels (barges and tankers) transporting feedstocks and blending stocks to, and refined products from, the Marine Terminal. At full operation, 201 tankers and 161 barges would call each year, an increase of approximately 113 percent over baseline. Therefore, potential impacts related to vessel spills would be significant.



Source: Krause 2021

Note: Summer impacts due to non-weathering oil spill at the Marine Terminal, 24 hours after the spill.

Figure 4.9-2. Oiling Extents for a Spill at the Marine Terminal



Source: Krause 2021 (refer to Appendix D-2, Long-Term Flood Protection Report, Phillips 66 San Francisco Refinery)
Note: Summer impacts due to non-weathering oil spill in-transit at the Golden Gate Bridge, 24 hours after the spill

Figure 4.9-3. Oiling Extents for a Spill In-transit at the Golden Gate Bridge

The following measures are consistent with requirements applied to other marine terminals in the San Francisco Bay (CSLC 2014, 2015) subject to discretionary permitting as a result of modified operations.

Mitigation Measure HAZ-1: Implement Release, Monitoring and Avoidance Systems

The following actions shall be completed by Phillips 66 prior to Project operations, including the transitional phase, and shall include routine inspection, testing and maintenance of all equipment and systems conducted in accordance with manufacturers' requirements. Of note, the Marine Terminal has a remote release system that can be activated from a single control panel or at each quick-release mooring hook set. The central control system can be switched on in case of an emergency necessitating a single release of all mooring lines.

Remote Release Systems

- Provide and maintain mooring line quick release devices that shall be able to be activated within 60 seconds.
- These devices shall be capable of being engaged by electric/push button release mechanism and by integrated remotely-operated release system.
- Document procedures and training for systems use and communications between Marine Terminal and vessel operator(s).
- Routine inspection, testing and maintenance of all equipment and systems in accordance with manufacturers' recommendations and necessity are required to ensure safety and reliability.

This measure would allow a vessel to leave the Marine Terminal as quickly as possible in the event of an emergency (fire, explosion, accident, or tsunami that could lead to a spill). In the event of a fire, tsunami, explosion, or other emergency, quick release of the mooring lines within 60 seconds would allow the vessel to quickly leave the Marine Terminal, which could help prevent damage to the Marine Terminal and vessel and avoid and/or minimize spills. This may also help isolate an emergency situation, such as a fire or explosion, from spreading between the Marine Terminal and vessel, thereby reducing spill potential. The above would only be performed in a situation where transfer connections were already removed and immediate release would not further endanger terminal, vessel and personnel.

Tension Monitoring Systems

- Provide and maintain Tension Monitoring Systems to effectively monitor all mooring line and environmental loads, and avoid excessive tension or slack line conditions that could result in damage to the Marine Terminal structure and/or equipment and/or vessel mooring line failures.
- Line tensions and environmental data shall be integrated into systems that record and relay all critical data in real time to the control room, Marine Terminal operator(s) and vessel operator(s).
- System shall include, but not be limited to, quick release hooks only (with load cells), site-specific current meter(s), site-specific anemometer(s), and visual and audible alarms that can support effective preset limits and shall be able to record and store monitoring data.
- Document procedures and training for systems use and communications between Marine Terminal and vessel operator(s).

- Routine inspection, testing and maintenance of all equipment and systems in accordance with manufacturers' recommendations and necessity are required to ensure safety and reliability.
- Install alternate technology that provides an equivalent level of protection.

The Marine Terminal is located in a high-velocity current area and currently has only limited devices to monitor mooring line strain and integrated environmental conditions. Updated MOTEMS Terminal Operating Limits (TOLs), including breasting and mooring, provide mooring requirements and operability limits that account for the conditions at the terminal. The upgrade to devices with monitoring capabilities can warn operators of the development of dangerous mooring situations, allowing time to take corrective action and minimize the potential for the parting of mooring lines, which can quickly escalate to the breaking of hose connections, the breakaway of a vessel, and/or other unsafe mooring conditions that could ultimately lead to a petroleum product spill. Backed up by an alarm system, real-time data monitoring and control room information would provide the Terminal Person-In-Charge with immediate knowledge of whether safe operating limits of the moorings are being exceeded. Mooring adjustments can be then made to reduce the risk of damage and accidental conditions.

Allision Avoidance Systems

- Provide and maintain Allision Avoidance Systems (AASs) at the Marine Terminal to prevent damage to the pier/wharf and/or vessel during docking and berthing operations. Integrate AASs with Tension Monitoring Systems such that all data collected are available in the Control Room and to Marine Terminal operator(s) at all times and vessel operator(s) during berthing operations. The AASs shall also be able to record and store monitoring data.
- Document procedures and training for systems use and communications between Marine Terminal and vessel operator(s).
- Routine inspection, testing and maintenance of all equipment and systems in accordance with manufacturers' recommendations and necessity are required to ensure safety and reliability.

The Marine Terminal has a continuously manned marine interface operation monitoring all aspects of the marine interface. The Automatic Identification System is monitored through TerminalSmart and provides a record of vessel movements. The Marine Terminal has a compliant AAS which is not required for MOTEMS compliance so long as MOTEMS TOLs are followed.

Monitoring these factors would ensure that all vessels can safely berth at the Marine Terminal and comply with the minimum standards required in the MOTEMS. Excessive surge or sway of vessels (motion parallel or perpendicular to the wharf, respectively) and/or passing vessel forces may result in sudden shifts/redistribution of mooring forces through the mooring lines, which can quickly escalate to the failure of mooring lines, breaking of loading arm connections, the breakaway of a vessel, and/or other unsafe mooring conditions that could ultimately lead to a spill.

Mitigation Measure HAZ-2: USCG Ports and Waterways Safety Assessment (PAWSA) Workshops, Spill Response and Pilotage Requirements

- Phillips 66 shall participate in the USCG's PAWSA workshops for the San Francisco Bay Area (Bay Area) to support overall safety improvements to the existing Vessel Traffic Service in the Bay Area or approaches to the bay if such workshops are conducted by the USCG during the life of the lease.

- Spill Response to Vessel Spills. Phillips 66 shall respond to any spill near the Marine Terminal from a vessel traveling to or from the Marine Terminal or moored at the Marine Terminal as if it were its own, without assuming liability, until such time as the vessel's response organization can take over management of the response actions in a coordinated manner.
- For all tankers and barges, Phillips 66 shall require that pilotage is utilized while transiting the Bay Vessels 300 GRT or larger and will cooperate in meeting USCG/NOAA VSR program to keep speed limited to 10 knots in the Bay and lower upon approach to the Marine Terminal due to tug escort speed limitations.

Vessel owners/operators are responsible for spills from their tankers. Tanker and barge owners/operators are required by federal and state regulations to demonstrate that they have, or have under contract, sufficient response assets to respond to worst-case releases. Tankers and barges operating in United States and California waters must certify that they have the required capability under contract. All terminals are under contract with one or more OSRO to respond to spills with all the necessary equipment and manpower to meet the response requirements dictated by regulations. This mitigation would further reduce the risk of spills in the San Francisco Bay or near approaches to the bay by requiring participation in USCG Ports and Waterways Safety Assessment workshops for the Bay Area to improve transit issues and response capabilities in general, and to support overall safety improvements to the existing VTS in the future.

While vessel owners/operators are responsible for their spills, if a spill were to occur near the Marine Terminal, Phillips 66 and its contractors may be in a better position to provide immediate response to a spill using their own equipment and resources, rather than waiting for mobilization and arrival of the vessel's response organization. The Phillips 66 staff is fully trained to take immediate action in response to spills. Such action could result in a quicker response and more effective control and recovery of spilled product. This mitigation would also require Phillips 66 to respond to any spill from a vessel traveling in the San Francisco Bay to or from the Marine Terminal or moored at its wharf, without assuming liability, until the vessel's response organization can take over management of the response actions in a coordinated manner. This requirement would further limit the potential for impacts from spills in the San Francisco Bay from vessels calling at the Marine Terminal.

In addition, Phillips indicates that it is their policy to utilize pilots for all tankers and barges while within the bay, even if the tanker or barge is under the required size requirements, and to limit vessels speeds below the required maximum. This mitigation ensures that all tankers and barges utilize pilots and speed limits in order to reduce the probability of groundings, collisions or allisions.

Even with implementation of these measures to reduce the frequency and size of potential feedstock spills from increased vessel traffic, the impacts associated with a large volume or worst-case discharge spill would remain significant and unavoidable.

Operations and Maintenance–All Other Locations: Less Than Significant, No Mitigation Proposed

Rodeo Refinery

The Project would involve the transport of renewable feedstocks, as well as various process chemicals, and hazardous materials in the form of gasoline blendstocks and refined products (gasoline and renewable diesel, gasoline, and jet fuel). Many of the substances handled and transported by the refinery, and associated with the Project, are flammable and combustible liquids that present hazards associated with releases producing flammable vapor clouds, or fires from the burning of a spilled material if ignited. The hazards of a material are related to how readily the material produces a vapor cloud and how readily the material will ignite and burn. The flash point is a characteristic that helps to define how hazardous a material may be. If a material, such as gasoline (a low flash point), will readily produce a flammable vapor cloud that can ignite when spilled, then it is

generally more hazardous than a material which does not produce a flammable vapor cloud and is therefore more difficult to ignite (vegetable oil, for example, with a high flash point). A characteristic called the flash point temperature is the minimum temperature at which a liquid gives off vapor within a test vessel in sufficient concentration to form an ignitable mixture with air near the surface of the liquid. Materials with higher flashpoint temperatures are thus less likely to ignite than materials with lower flash point temperatures. In general, a flammable liquid is defined as a material with a flash point temperature under 100 °F and a combustible liquid has a flash point temperature over 100 °F. Because of their higher flash points, combustible liquids do not pose as great a risk in storage or processing as flammable liquids.

NFPA 30 classification is as follows:

- **Class IA:** Flash Point less than 73°F; Boiling Point less than 100°F
- **Class IB:** Flash Point less than 73°F; Boiling Point equal to or greater than 100°F
- **Class IC:** Flash Point equal to or greater than 73°F, but less than 100°F
- **Class II**: Flash Point equal to or greater than 100°F, but less than 140°F
- **Class IIIA:** Flash Point equal to or greater than 140°F, but less than 200°F
- **Class IIIB:** Flash Point equal to or greater than 200°F

A flammable gas is a material, such as propane, which is a gas at 68°F and readily produces a flammable vapor cloud when released. Flammable gases are substantially more hazardous than liquids due to the rapid rate at which they produce a flammable vapor cloud and can ignite and explode and burn. Table 4.9-5 lists some materials and their respective classifications and flash point temperatures.

Table 4.9-5 Material Characteristics

Material	Materials Classification	Flash Point Temperature, °F
Hydrogen	Flammable Gas	-423**
Methane	Flammable Gas	-306
Propane	Flammable Gas	-155
Gasoline	Class IB Flammable Liquid	70
Jet Fuel	Class IC Flammable Liquid	100
Diesel Fuel	Class II Combustible Liquid	126
Crude Oil Light*	Class IA Flammable Liquid	-30
Crude Oil Medium*	Class IA Flammable Liquid	-10
Crude Oil Heavy*	Class IA Flammable Liquid	-3
Crude Bitumen	Class II Combustible Liquid	>100
Cooking Oil	Class IIIB	>460
Tallow Grade 1	Class IIIB	356–509

Source: Material Safety Data Sheets for Hydrogenated Tallow Fatty Acid and Corn Oil.

* unweathered

** melting point

Under the Project, the processing of crude oil, with a flash point of between -30 to -3°F and, therefore, readily able to produce flammable vapor clouds and cause fires, etc., would be replaced with oils and potentially tallow, which both have very high flash points and therefore present substantially lower hazards in terms of fires and potential hazards to the public. In addition, as the feedstocks are not as volatile, they do not end up producing as much lighter-ends at the refinery for storage and processing. The transportation of butane via railcar, for example, would be eliminated as part of the Project. The elimination of transportation and reduction in recovery and storage of light-ends as part of the Project would also reduce the hazards at the refinery.

The refinery would continue to require various hazardous materials to be used in the processing, and therefore some hazards as part of the baseline would remain as part of the Project, including the production and storage of gasoline and diesel.

However, in general, the Project would present less hazards to the public and the impacts would be less than significant.

Marine Terminal (public safety)

The Marine Terminal would continue to transport feedstock and refinery products, but the hazards to the public of the feedstocks would be reduced over the baseline transportation of crude oil. Generally, these renewable feedstocks are not identified as marine pollutants by the USDOT, the United Nations, or the International Maritime Organization, which regulate the movement of materials throughout the world. Feedstocks of gasoline and diesel would continue to be transported at the Marine Terminal. Impacts from a spill and subsequent fire at the Marine Terminal would be located a substantial distance away from any public receptors and impacts would therefore be less than significant.

Transportation

Rail Transportation

The proposed Project would increase the number of railcars handled at the Rodeo Refinery's railcar unloading facility from an average of 4.7 per day under baseline conditions to 16 per day. However, the number of train trips per day would not change: the railcars would continue to be delivered and removed by no more than one train each day. Because the risk of an accident is based on train miles, rather than the number of cars on each train, the risk of an upset would be similar to the baseline conditions. Furthermore, the railcars would carry less-hazardous or non-hazardous materials (i.e., renewable feedstocks) that do not meet the minimum hazard thresholds for USDOT regulations rather than the USDOT designated hazardous materials (butane) carried under baseline conditions; if an accident were to occur, whether at the Rodeo Refinery or along the rail lines throughout California leading to the Rodeo Refinery, the consequences to the public would be less than under baseline conditions. Therefore, the impacts of rail transportation during the operational period would be less than significant.

Pipeline Transportation

Under the proposed Project, refinery pipelines would continue to be used to transport petroleum-based gasoline out of the refinery and small amounts of pre-treated feedstocks into the refinery. However, the transportation of crude oil would be eliminated. Because of the inherent safety of pipeline transportation and the existing transportation of refinery products by pipeline under the baseline, the minor changes in pipeline quantities and materials would not substantially change the risk of upset or accident. In addition, the elimination of crude oil transportation would also reduce the hazards of pipeline transportation. Accordingly, the impacts of pipeline transport of hazardous materials associated with the Project would be less than significant.

Truck Transportation

The Project would involve the disposal of hazardous wastes produced from the renewable feedstock manufacturing processes. Trucks would be used to transport hazardous materials. New wastes would include spent filter cake and FOG concentrate, neither of which is listed as a regulated waste. Spent sodium hydroxide and vanadium would no longer be disposed of, eliminating approximately eight truck trips per month. The amount of spent catalyst transported would increase from an average of one truck per month to two trucks per month; therefore, the disposal of hazardous wastes would decrease overall from baseline levels.

Truck transport of some feedstock may occur, which would present a lower hazard than deliveries of feedstocks during the baseline. Truck transport of raw materials into the refinery is expected to be similar to the baseline operations.

Because the routine disposal of hazardous materials and waste would decrease compared to baseline conditions, and truck traffic related to feedstock transportation would also have a reduction in hazards, there would be an overall reduction in hazards and potential impacts associated with truck transport and impacts would be less than significant.

IMPACT 4.9-3

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

Construction/Demolition: Less Than Significant, No Mitigation Proposed

Rodeo Refinery – Marine Terminal

Although the Rodeo Refinery is on the Cortese List, it is an existing industrial facility with various controls to prevent significant hazard to the public or the environment. The Project would be constructed entirely within the Rodeo Refinery, where no public access is allowed. In the refinery's process areas, various levels of hazardous material contaminations may exist, but structural and procedural control measures prevent these hazardous materials from moving offsite. Demolition of the Carbon Plant could encounter contaminated soils. The Project would not involve further investigation or remediation of subsurface contamination that may underlie the Carbon Plant Site. Contaminated soils associated with construction or demolition would be handled in accordance with the existing Soil Management Plan that complies with regulatory requirements. Accordingly, the Project would not increase risk of exposure to people or the environment to hazardous substances as a result of being located on a Cortese List, and the level of impact would be less than significant and no mitigation is required.

Santa Maria Site

The Santa Maria Site is not listed on the Cortese List, but it is listed on the SWRCB's GeoTracker database because of subsurface hydrocarbon contamination. Contaminated soils resulting from demolition activities would be handled in accordance with the existing Soil Management Plan that complies with regulatory requirements. Therefore, it is not anticipated that the Project would increase the risk of hazardous substance exposure to people or the environment. The impact would be less than significant and no mitigation is required.

Transitional Phase, Operation and Maintenance: Less Than Significant, No Mitigation Proposed

Rodeo Refinery – Marine Terminal

Although the Rodeo Refinery area is on the Cortese List, it is an existing industrial facility with various controls to prevent significant hazard to the public or the environment. The Project would be constructed and operated entirely within the Rodeo Refinery, where no public access is allowed.

Mitigation Measure: **None Required**

IMPACT 4.9-4

f. Would the Project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Construction/Demolition: Less Than Significant, No Mitigation Proposed

Rodeo Refinery – Marine Terminal

Project construction/demolition would occur completely within the confines of existing industrial facilities and would not impair the implementation of any public emergency evacuation plan. The Rodeo Refinery maintains an emergency response plan and would update the HMBP, which includes evacuation routes. The Project would have a less-than-significant impact related to the potential to interfere with internal roads and movements at the Rodeo Refinery, including the Carbon Plant, during construction and demolition activities.

For a discussion of how construction and demolition activities could occur related to traffic circulation and impairment of emergency response see Section 4.13, *Transportation and Traffic*. Specifically, Mitigation Measure TRA-1 requires implementation of a Traffic Management Plan, which would include coordination of construction and demolition activities with refinery operations and the refinery's emergency response plan. The mitigation measure would eliminate or minimize interference with an adopted emergency response plan or emergency evacuation plan during construction/demolition.

Santa Maria Site

Project construction/demolition would occur completely within the confines of existing industrial facilities and would not impair the implementation of any public emergency evacuation plan. The Santa Maria Refinery maintains an emergency response plan and would prepare and update an HMBP with the CUPA that include evacuation routes. The Project has the potential to interfere temporarily with internal roads and movements at the Santa Maria Site during construction and demolition activities. However, coordination of those activities with site operations and the refinery's emergency response plan would eliminate or minimize interference with an adopted emergency response plan or emergency evacuation plan to result in a less-than-significant impact to emergency response during construction/demolition.

Transportation

Transportation of construction waste and raw materials via truck would utilize existing transportation networks in a manner similar to the baseline and would therefore not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. Impacts would be less than significant.

Transitional Phase, Operations and Maintenance: Less Than Significant, No Mitigation Proposed

Rodeo Refinery – Marine Terminal

Project operations would occur completely within the confines of the Rodeo Refinery where no public access is allowed. The Rodeo Refinery maintains an emergency response plan and would update the

HMBP, which includes evacuation routes, with the CUPA. Following construction/demolition, the Project would have no internal road closures and would not interfere with movements at the Rodeo Refinery during operations. Coordination of refinery operations and the refinery's emergency response plan would eliminate or minimize interference with the emergency response plan or emergency evacuation plan, so the level of impact to emergency response would be less than significant. No additional mitigation would be required.

During the 7-month transitional phase, deliveries and processing of crude oil and gas oil feedstocks by tanker vessel would result in increased vessel traffic at the Marine Terminal compared to baseline conditions. This temporary increase in vessel traffic would be coordinated with refinery operations and the facility's emergency response plan to eliminate or minimize interference through the implementation of the refinery's emergency response plan or emergency evacuation plan. Therefore, the level of potential impact to emergency response would be less than significant during the transitional phase.

Transportation

Transportation of waste, raw materials, and refinery products via pipeline, rail or truck would utilize existing transportation networks in a manner similar to the baseline and would therefore not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. Impacts would be less than significant.

Mitigation Measure: **None Required**

IMPACT 4.9-5

g. Would the Project expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildfire?

Construction/Demolition: Less Than Significant, No Mitigation Proposed

Rodeo Refinery – Marine Terminal

According to CAL FIRE (2020), the Rodeo Site, where all unit modifications and additions would occur, is in a CAL FIRE Local Responsibility Area. However, the portion of the Rodeo Refinery east of I-80 (including the Carbon Plant) is in a moderate to high Fire Hazard Severity Zone in a CAL FIRE State Responsibility Area.

Since the Carbon Plant would be demolished, no new Project elements with the potential to expose people or structures to wildfires would be introduced. The other Project elements would occur within developed areas and would pose no new risks of wildfires. Accordingly, the potential to expose people or structures to wildfire during construction/demolition would be less than significant at the Rodeo Site and the Carbon Plant Site.

Santa Maria Site

The Santa Maria Site is located in a State Responsibility Area but is not located in or near an area classified as a very high fire hazard severity zone. Therefore, construction and demolition activities at the Santa Maria Site would not produce impacts related to wildfires. The impact would be less than significant.

Transitional Phase, Operation and Maintenance: Less Than Significant, No Mitigation Proposed

Rodeo Refinery

The Rodeo Refinery is located in a CAL FIRE Local Responsibility Area. The portion of the Rodeo Refinery east of I-80 (including the Carbon Plant) is in a moderate to high Fire Hazard Severity Zone in a CAL FIRE State Responsibility Area.

Since the Carbon Plant would be demolished, no new Project elements with the potential to expose people or structures to wildfires would be introduced. Other Project elements would occur in developed areas that would not create increased risk of wildfires. Operations of new Rodeo facilities would comply with NFPA design requirements addressing flammable and combustible liquids (NFPA 30), fire extinguishing systems (e.g., NFPA 11, 12, 15), and the National Electrical Code (NFPA 70) to a avoid and minimize risk of onsite fires to a level of less than significant. Additionally, operations, maintenance and staff departments would continue to conduct various safety and regulatory compliance inspections and audits as part of standard on-going maintenance and Phillips 66 would continue safety-training program for existing and new employees. Therefore, the potential to expose people or structures to wildfire during construction/demolition would be less than significant at the Rodeo Refinery, including the Carbon Plant Site.

Transportation

Transportation of waste, raw materials, and refinery products via pipeline, rail or truck would utilize existing transportation networks in a manner similar to the baseline and would therefore not increase wildfire risks. Impacts would be less than significant.

Mitigation Measure: **None Required**

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4.10 Hydrology and Water Quality

4.10.1 Introduction

This section describes the existing hydrologic, surface water quality, and flooding setting, regulatory framework, potential impacts from implementation of the Project, and considers application of appropriate mitigation measures to reduce potential impacts to less-than-significant levels. This section primarily focuses on surface water, discharge water quality, and the existing wastewater treatment system at the Rodeo Site and the Carbon Plant. The Santa Maria Site, which would be demolished as part of the Project, is addressed to the extent information is available and at a qualitative level of discussion.

The Project also includes the Pipeline Sites—four regional pipelines serving the Santa Maria Site and the Rodeo Refinery. The Santa Maria Site is connected to the Rodeo Refinery by approximately 200 miles of subterranean pipeline, crossing San Luis Obispo, Santa Barbara, Kern, Kings, Fresno, Merced, Stanislaus, San Joaquin, Alameda, and Contra Costa Counties. Phillips 66 proposes to empty and clean the pipelines at existing maintenance access points and to decommission or sell them; they would not be excavated as part of this Project. No physical changes would occur. Therefore, the Pipeline Sites are not further addressed in this section.

4.10.2 Environmental Setting

4.10.2.1 Regional and Local Setting

This section describes the existing hydrological and water quality conditions in the vicinity of the Project components and presents specific information relevant to refinery process changes, demolition of the Carbon Plant and Santa Maria Site.

Rodeo Refinery

The Rodeo Refinery is located in the low rolling hills along the eastern shore of San Pablo Bay near the mouths of the Mare Island and Carquinez Straits within the Carquinez Drainages watershed in Contra Costa County (Figure 3-2). The watershed is approximately 10.3 square miles in extent. It begins on private ranchland to the east of the Rodeo Site and includes Cañada del Cierbo Creek on the northeast edge of the Rodeo Refinery and an unnamed creek. These two drainages are exposed east of I-80 and then diverted underground through the Rodeo Refinery. The two most prominent topographic features near the Rodeo Refinery are the roughly northwest–southeast trending Tormey Hill Ridge, which extends along the northeastern boundary and the central valley that lies between Tormey Hill Ridge and the lower hills to the southwest adjacent to the Bayo Vista residential neighborhood of Rodeo. The majority of the Rodeo Refinery is in the central valley. Approximately 95 percent of the Rodeo Refinery area drains along the valley toward San Pablo Bay and the remainder drains into Cañada del Cierbo Creek. The Carbon Plant is located south east of the Rodeo Refinery, in similar terrain, within the boundaries of the Rodeo Refinery (Figure 3-3).

4.10.2.2 Local Setting

Santa Maria Site

The Santa Maria Site, as shown on Figure 3-4, is located in undulating dune topography along the coast plains of San Luis Obispo County, approximately 2 miles north of the Santa Maria River, near Nipomo. The Santa Maria Site is located in the drainage area of Oso Flaco Creek. Local topography is complex, because of the undulating nature of the site, and elevations range from approximately 50 to 180 feet above mean sea level (USDOT et al. 2015). The Santa Maria Site includes petroleum storage and processing facilities and serves as a collection and pre-processing facility for high-sulfur heavy crude oil (primary crude oil source is from offshore platforms along the California coast and oil fields in the Santa

Maria Valley). Semi-refined liquid products from the Santa Maria Site are sent by pipeline as feedstocks to the Rodeo Refinery for upgrading into finished petroleum products. The proposed Project would discontinue processing of crude oil at the Rodeo Refinery; therefore, all components of the Santa Maria Site would no longer be necessary and would be demolished.

4.10.2.3 Existing Water Use and Management

Rodeo Refinery

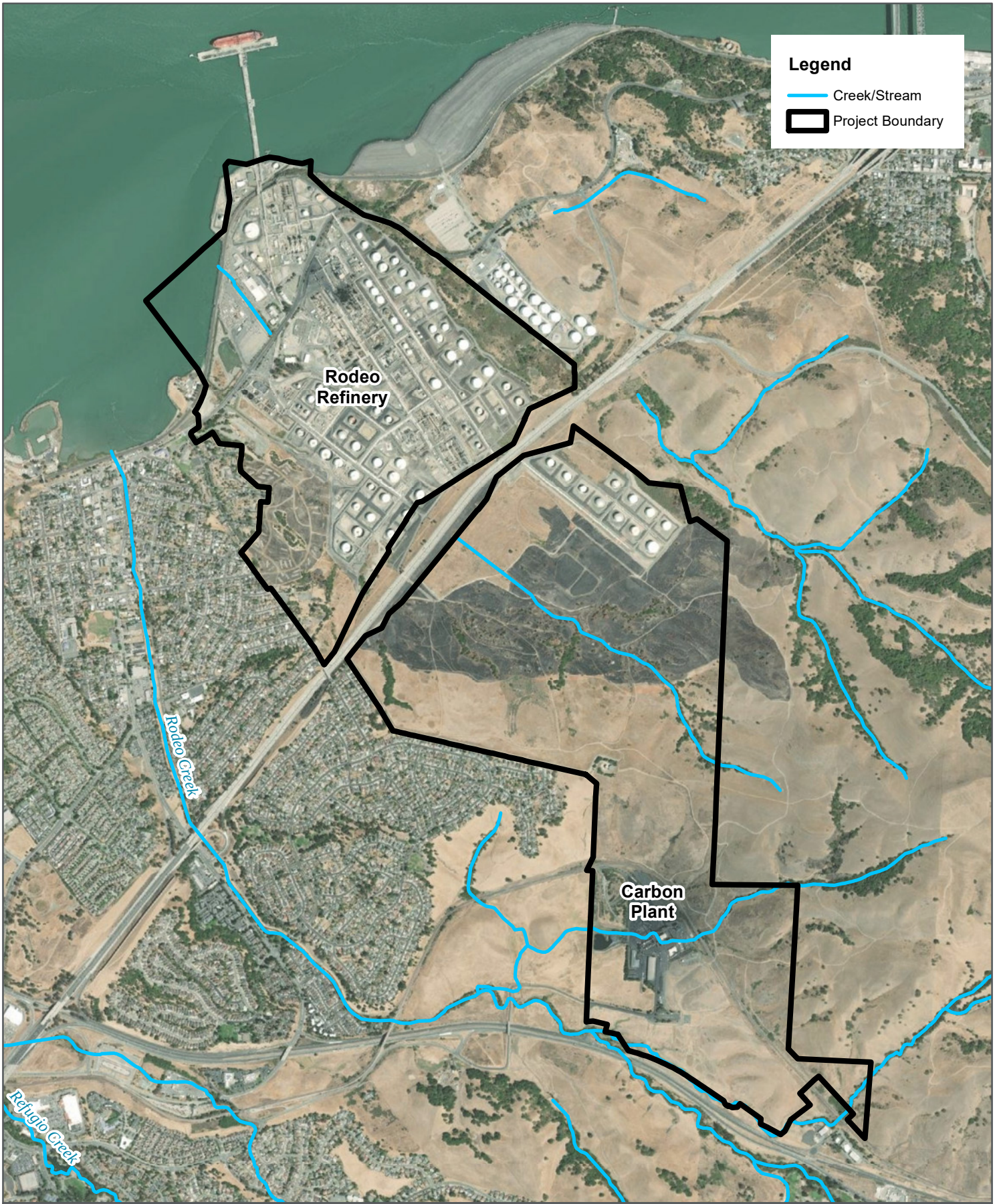
Water used to provide once-through process cooling at the Rodeo Refinery is withdrawn from San Pablo Bay at a typical rate of 30,000 gallons per minute via an intake structure located near the Marine Terminal, passed through various process units, temporarily held in the effluent safety basin, and discharged back to the Bay through NPDES discharge E-003, located on the shoreline.

Stormwater falling on the Rodeo Refinery and adjacent areas, including internal roadways, is collected onsite and conveyed through a drainage network to the onsite Wastewater Treatment Plant (Unit 100), as shown on Figure 3-2. The collection network includes screens to separate out trash, and settling sumps to initiate clarification. Normally, stormwater is conveyed directly to the Unit 100 storage tanks, but heavy rains can result in capacity exceedance, necessitating the diversion of stormwater to holding basins before being treated and released. The primary storm basin holds 2.3 million gallons and the main storm basin holds an additional 7.2 million gallons; these basins are empty under normal operation. Stormwater from the Marine Terminal wharf and causeway is routed to NPDES discharge E-004, on the wharf structure. The existing SWPPP establishes a monitoring program to confirm the effectiveness of the BMPs and overall stormwater quality, which is routinely monitored as part of NPDES permit requirements. The Rodeo Refinery is not covered by an industrial stormwater permit because rain and runoff from operation areas are collected, treated, and discharged under the NPDES permit.

Currently, the Rodeo Refinery has several sources of process wastewater, including cooling tower water, once-through cooling water, boiler blowdown, and sour water. In addition to process water, the Wastewater Treatment Plant also treats stormwater runoff collected from the Rodeo Refinery and contaminated groundwater, sanitary wastewater, and offsite wastewater generated at other refinery facilities, including remediation wastewater and cargo hold wastewater. The wastewater flows through various pipelines to the Wastewater Treatment Plant/Unit 100 and is treated to meet the limitations set forth in the Rodeo Refinery's NPDES discharge permit (Order R2-2016-0044). Unit 100 includes a 3-tank equalization system with a storage capacity of 19.8 million gallons to accommodate fluctuations in the volume of incoming water. The plant treats an average of 2.8 mgd but has a total capacity of 10 mgd.

Figure 4.10-1 illustrates existing site drainage, overlain with Project components (removal and new treatment units). In addition, three Project laydown areas are located within the west watershed. All Project components are located in areas with controlled surface runoff or active (Wastewater Treatment Plant) treatment of stormwater before being discharged to San Pablo Bay.

Wastewater and stormwater from the equalization system tanks are gravity fed to a four-cell oil/water separator where oily surface waters and oily solids are removed from the cells by top and bottom chain-driven skimmers. From there, the water flows into a four-cell dissolved air flotation unit to remove additional oil and suspended solids. The water then flows to a biological treatment unit, followed by clarification and sand filtration. Discharge from the sand media is disinfected with chlorine and then dechlorinated with sodium bisulfite. The treated water is discharged to San Pablo Bay through three outfalls: Discharge Point Nos. 002, 003, and 004. Discharge Point No. 002 is a 144-foot-long deepwater outfall and diffuser approximately 1,500 feet offshore along the Marine Terminal causeway. Discharge Point No. 003 is located approximately 60 feet beyond the confluence of the retention basin and open channel via an approximately 2,500 feet outfall south of the base of the Marine Terminal causeway. Discharge No. 004 discharges surface water from the Marine Terminal and runs along the Marine Terminal causeway.



Imagery Source: Maxar 11/1/2019

Figure 4.10-1: Site Drainage Map

Rodeo Renewed Project
Contra Costa County, CA

0 2,000 4,000 Feet

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GIS Analyst: anna.clare

Santa Maria Site

The Santa Maria Site withdraws groundwater for process and cooling purposes, and treats wastewater and a portion of the stormwater falling onsite in its in-plant treatment facility. Treated water is conveyed through an underground pipeline to an ocean outfall approximately 3.5 miles west of the Santa Maria Site. The average discharge volume in 2019 was 415,000 gallons per day.

4.10.2.4 Precipitation

Rodeo Refinery

The mean annual rainfall at the Rodeo Refinery and in its vicinity from between 1950 and 2016 was approximately 23 inches (WRCC 2021), although in individual years, rainfall ranging from between 10 and 47.5 inches during dry and wet cycles, which last several years each, is common in this region. Flooding generally results from intense rainstorms following prolonged rainy periods resulting in runoff. Peak flood flows are usually of short duration but can overwhelm stormwater conveyance systems, resulting in damage. Historically, major flood problems in the area have occurred in urban areas located in the relatively flat, wide valleys near the mouths of rivers and streams.

Santa Maria Site

Mean annual rainfall at the Santa Maria Site is approximately 17 inches and falls primarily in October through April. Flooding is uncommon because the Santa Maria Site and vicinity is largely underlain by highly drained and porous relict dune sands, so that most precipitation on the dune deposits percolates into the soil with minimal runoff, flooding, or ponding (USDOT et al. 2015).

4.10.2.5 Fresh Water Supply

Rodeo Refinery

The Rodeo Refinery receives its freshwater supply of approximately 3,000 gallons per minute from the East Bay Municipal Utility District. The refinery's main use of water is to supply refining processes with steam and cooling water. The water supply can also be used as a back-up source of water for emergency fire suppression. The use of saline cooling water supply is described above.

Santa Maria Site

The Santa Maria Site obtains all of its water from onsite groundwater wells in the Nipomo Mesa Management Area. Current usage of groundwater is estimated at 358 million gallons per year (USDOT et al. 2015).

4.10.2.6 Hydrology

Rodeo Refinery

The Rodeo Refinery area, including the Carbon Plant, are in the Suisun Basin within the San Francisco Bay Area Hydrologic Basin. San Francisco Bay marks a natural topographic separation between the northern and southern coastal mountain ranges. The San Francisco Bay estuarine system conveys the waters of the Sacramento and San Joaquin Rivers into the Pacific Ocean and is the only drainage outlet to the ocean for waters from California's Central Valley. These rivers enter San Francisco Bay through the Delta at the eastern end of Suisun Bay (RWQCB 2019a). The estuary has the following two basic elements: San Francisco Bay and the Sacramento-San Joaquin Delta, a 2,800-square-kilometer wetland formed at the confluence of the San Joaquin and Sacramento Rivers. Over 90 percent of the San Francisco Bay Estuary's fresh water originates from the Sacramento-San Joaquin drainage basin and enters the northern reach. The Sacramento River provides about 80 percent of this flow, and the San

Joaquin River and other streams contribute the remainder. The remaining 10 percent of freshwater comes from the San Francisco Bay watershed and flows into the southern reach (RWQCB 2019a).

San Francisco Bay can be divided into two distinct waterbodies—the northern reach and the southern reach—that have different physical and chemical properties. The northern reach includes three major embayments: Suisun Bay, San Pablo Bay, and Central Bay, also known as San Francisco Bay. The northern reach conveys outflow from the largely freshwater Delta at its head, and thus can be considered to be a typical estuary. Central Bay is deeper and more oceanic in character than the northern reach because of its proximity to ocean inflow through the Golden Gate. The southern reach extends from the San Francisco-Oakland Bay Bridge to San Jose.

Various factors, including a mix of point and non-point source discharges, groundwater and surface water interactions, and water quality/water quantity relationships, influence water quality in the San Francisco Bay Estuary. A number of waterbodies in the San Francisco Bay Estuary are impaired because of excessive siltation, but it is very difficult to distinguish between excessive siltation and impairment due to flow alterations. The State Water Quality Control Board and RWQCB have implemented the Water Management Initiative to protect water quality. RWQCB is structured to promote a watershed-based approach for implementing programs, placing particular emphasis on the integration of programs within county watershed management areas. RWQCB staff have identified issues in the San Francisco Watershed Management Area based on a combination of water quality, customer service, and program requirements.

In the Basin Plan, the RWQCB identifies several beneficial uses of San Pablo Bay that must be protected. These uses include industrial service supply, water contact recreation, non-contact water recreation, navigation, ocean commercial and sport fishing, wildlife and estuarine habitat, preservation of rare and endangered species, and fish spawning and migration (RWQCB 2019a). Based on Regional Monitoring Program data, San Pablo Bay meets the definition of “marine” under the definitions included in the California Toxics Rule and the Basin Plan (RWQCB 2019a).

Santa Maria Site

Although the Santa Maria Site is in the Santa Maria Valley, it is not part of the Santa Maria River watershed, but instead is in the watershed of Oso Flaco Creek (USDOT et al. 2015), a minor watercourse. Oso Flaco Creek and its tributary Little Oso Flaco Creek are listed by the US Environmental Protection Agency (USEPA) as 303 (d) impaired waterbodies (described in more detail below), based on high levels of fecal coliform, nitrates, and sediment toxicity from agriculture and contaminated groundwater. The downstream Oso Flaco Lake is the largest of four small freshwater lakes located in the Guadalupe Nipomo Dunes Complex. The freshwater lake occupies a surface area of 82 acres and is classified by the US Fish and Wildlife Service (USFWS) as palustrine (i.e., inland, non-tidal) emergent wetlands.

4.10.2.7 Water Quality

Rodeo Refinery

The majority (95 percent) of the Rodeo Refinery surface water is treated and then discharged into San Pablo Bay; the remainder drains into Cañada del Cierbo, which in turn flows into the San Francisco Bay, as shown on Figure 4.10-1. The quality of the San Francisco Bay water varies seasonally. For most of the year, tidal exchanges with the Pacific Ocean strongly influence water quality. From December through April, water quality is affected by freshwater inflow from the Sacramento-San Joaquin Delta and other local small tributaries that drain urbanized portions of Contra Costa County and the entire San Francisco Bay Area. The water quality of the creeks in urbanized areas has been degraded by the presence of high levels of suspended solids, together with traces of contaminants associated with motor vehicles, such as oil and grease, gasoline, and other hydrocarbons (Contra Costa County 2010). For similar reasons, the San Pablo Bay is known to be impacted by a variety of pollutants as a result of anthropogenic historic activities.

4.10.2.8 Groundwater

Rodeo Refinery

The Rodeo Refinery is not located within a state-designated groundwater basin; however, two unofficial groundwater basins underlie or partially underlie the Rodeo Refinery. The Refinery Groundwater Basin underlies most of the refinery, including the portions where new Rodeo Refinery components would be located. The Tormey Groundwater Basin underlies the area to the northeast of the division of the two groundwater basins.

Santa Maria Site

Groundwater near the Santa Maria Site wells is from the deep aquifer in the Paso Robles and Careaga formations underlying the Nipomo Mesa. The Santa Maria Site is underlain by the Nipomo Mesa Management Area of the Santa Maria Groundwater Basin (USDOT et al. 2015). The deep aquifer is also the main source of water for surrounding municipal and agricultural wells. The shallow aquifer in the Nipomo Mesa sand dunes is used by lower capacity domestic and agricultural wells. The shallow and deep aquifers underlying the refinery are separated by layers of relatively low hydraulic conductivity that act as confining layers (NMMA Technical Group 2014–2021) and, therefore, have a lower yield.

4.10.2.9 Flooding

Rodeo Refinery

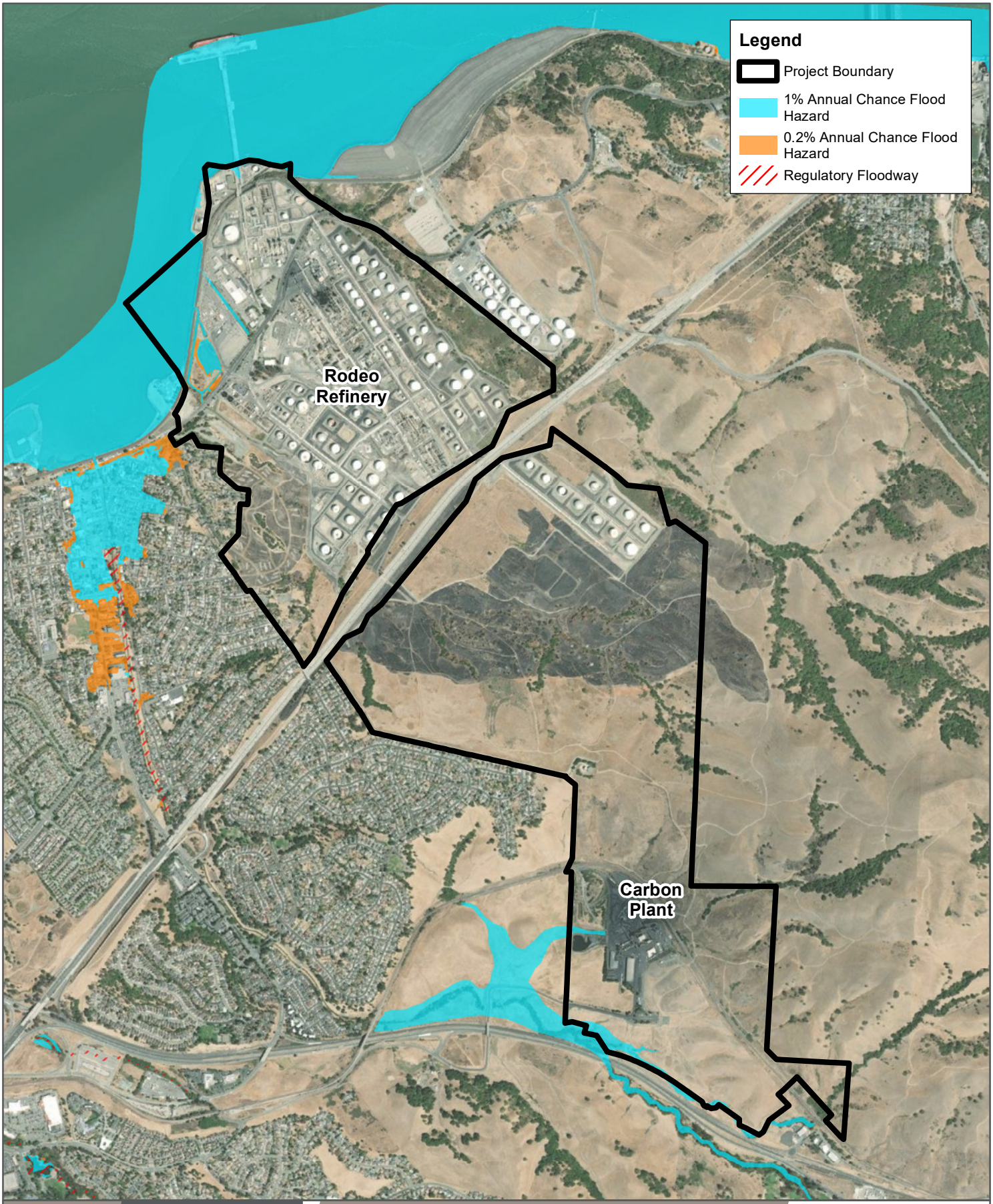
Limited portions of the Rodeo Refinery are located in low-lying areas susceptible to flooding (Contra Costa County 2010), as shown on Figure 4.10-2. FEMA, through its Flood Insurance Rate Map program, designates areas where flooding could occur during a 1.0 percent annual chance (100-year) flood event or a 0.2 percent annual chance (500-year) flood event. FEMA has designated limited portions of the Project area as Special Flood Hazards Areas (Zone AE), which is an area determined to be within the 100-year flood zone (FEMA 2017). Any new construction in this zone would require that the base floor elevations are raised above the flood elevation to avoid potential damages from flooding.

Santa Maria Site

Flooding near the Santa Maria Site can occur along Oso Flaco and Little Oso Flaco creeks, on the south side of the facility, and along Black Lake, north of the facility. However, no part of the Santa Maria Site lies within the mapped 100-year flood hazard zone (FEMA Flood Insurance Rate Map 06079C1615H; FEMA 2017), and this map notes that the site is in an area of minimal flood hazard (Zone X). Refer to Section 4.8, *Greenhouse Gas Emissions*, for analysis of sea level rise and its effects on coastal development.

4.10.2.10 Tsunamis and Seiches

Tsunamis (seismic sea waves) are long-period waves that are typically caused by displacement of the ocean floor from underwater disturbances (landslides), volcanic eruptions, or seismic events. A tsunami consists of a series of high-energy ocean waves that radiate outward from the area in which the generating event occurred. Areas that are highly susceptible to tsunami inundation tend to be located in low-lying coastal areas such as tidal flats, marshlands, and former bay margins that have been artificially filled but are still at or near sea level. Tsunamis affecting the San Francisco Bay region would most likely originate west of the San Francisco Bay, within the Pacific Rim. Areas that are highly susceptible to tsunami inundation tend to be located in low-lying coastal areas such as tidal flats, marshlands, and former bay margins that have been artificially filled and are closer to the Golden Gate entrance to the San Francisco Bay.



Imagery Source: Maxar 11/1/2019

Figure 4.10-2: Flood Zone Map

Rodeo Renewed Project
Contra Costa County, CA

0 2,000 4,000 Feet

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GIS Analyst: anna.clare

The maximum wave height of the 19 tsunamis recorded in the San Francisco Bay since 1868, as measured at the Golden Gate Tide Gauge, was 7.4 feet, which is considered to be a reasonable maximum for the future (Contra Costa County 2010). Due to attenuation, a tsunami wave would diminish to a height of approximately half its height at the Golden Gate by the time it reached Richmond and would nearly disappear by the time it reached to the head of the Carquinez Strait. Because of the proximity of the Rodeo Refinery to the Carquinez Strait, the likelihood of a damaging tsunami reaching the Rodeo Refinery is low due to the distance from the Pacific Ocean (Contra Costa County 2011).

Tsunami risk is restricted to the immediate area of the shoreline (ABAG 2021), and all components of the Project are outside the predicted tsunami risk area. Based on an estimated tsunami run-up of 20 feet at the Golden Gate, it is estimated that east of Point Pinole (located in San Pablo Bay approximately 14 miles west of the Project area), the wave height would be one-tenth of that at the Golden Gate. Attenuation within the Bay would diminish a 20-foot wave to a height of approximately 10 feet at Richmond, and would continue to diminish as it progressed further into the Bay. The likelihood of a damaging tsunami reaching the Rodeo Refinery is low due to rising elevation and distance from the Bay (Contra Costa County 2011).

Seiches are a series of standing waves (sloshing action) of an enclosed body or partially enclosed body of water, such as San Pablo Bay, caused by seismic shaking, prolonged strong winds, and storm surges. Seiche action can affect harbors, bays, lakes, rivers, and canals. Similar to tsunamis, seiches can be generated by a number of sources, including distant earthquakes, local earthquakes, large landslides into bodies of water, and submarine landslides. Because of the relatively large size of San Pablo Bay, with an inlet to the east and an outlet to the south, the seiche hazard is thought to be low. There is no record of seiches occurring in San Pablo Bay during strong earthquakes. Because of the distance inland from deep bodies of water, the risk of seiches at the Rodeo Refinery is low or moderate (Contra Costa County 2011).

Santa Maria Site

The Santa Maria Site's distance from the ocean and the rising elevations and distance from the Pacific Ocean precludes the risk of tsunamis or seiches. Refer to Section 4.8, *Greenhouse Gas Emissions*, for analysis of sea level rise and its effects on coastal development.

4.10.2.11 Regulatory Setting

Federal and State Surface Water Quality Requirements

The regulatory requirements for the proposed Project include the following:

- Federal floodplain management requirements of FEMA;
- Federal CWA, as enforced by the USEPA;
- California Porter-Cologne Water Quality Control Act and related California Administrative Code sections administered by the California SWRCB and the San Francisco Bay RWQCB;
- The CSLC's MOTEMS, and
- Permitting requirements, which must be fulfilled prior to development, are enforced by Contra Costa County, San Luis Obispo County, and other counties through which the pipelines pass.

The Santa Maria Site and the Pipeline Sites within San Luis Obispo County would be subject to the regulatory requirements of the federal CWA, Porter-Cologne Act, and the San Luis County Clean Water Program insofar as they govern the provisions of the permits that would be necessary for the demolition of the Santa Maria Site and cleanout of the pipelines. Those provisions require use of BMPs to control stormwater runoff and construction-related spills and leaks and are similar to the federal, state, regional, and Contra Costa County requirements governing the Rodeo Refinery, described below.

Flood Control Regulations

FEMA is responsible for management of floodplain areas defined as the lowland and relatively flat areas adjoining inland and coastal waters subject to a 1 percent or greater chance of flooding in any given year (also termed the 100-year floodplain). FEMA requires that local governments covered by federal flood insurance pass and enforce a floodplain management ordinance that specifies minimum requirements for any construction within the 100-year floodplain. In Contra Costa County, construction requirements are contained in the Floodplain Management Ordinance, which was adopted in 1987 and has been amended several times. Along with construction standards, the ordinance also specifies that a Floodplain Permit must be obtained prior to any grading within the 100-year floodplain. The vast majority of the Rodeo Refinery, including areas where new equipment would be developed, is outside the 100-year floodplain (see Figure 4.10-2).

Clean Water Act of 1977

Under the CWA, the USEPA seeks to restore and maintain the chemical, physical, and biological integrity of the nation's waters. The USEPA is responsible for implementing federal laws designed to protect air, water, and land. While numerous federal environmental laws guide the USEPA's activities, its primary mandate with respect to water quality is the CWA, whose purpose is to protect and maintain the quality and integrity of the nation's waters by requiring states to develop and implement state water plans and policies. The CWA authorizes the USEPA to implement water quality regulations. The USEPA has developed national technology-based water quality standards and states have developed water quality standards in accordance with the CWA. In the National Toxics Rule and California Toxics Rule, the USEPA has established such standards for certain toxic pollutants applicable to California waters. These standards are used to determine the amount and the conditions under which pollutants can be discharged.

Section 303 of the CWA requires states to establish water quality standards for all waters of the US to protect designated beneficial uses of those waterbodies. It also requires that each state identify waterbodies or segments of waterbodies that are "impaired" (i.e., do not meet one or more of the water quality standards established by the state). These waters are identified in the Section 303(d) list as waters that are polluted and need further attention to support their beneficial uses. San Pablo Bay is included on the 2017 California 303(d) list as an impaired waterbody resulting from the presence of a number of toxic pollutants. The 303(d) list identifies the sources of each pollutant. Once the waterbody or segment is listed, the state is required to establish a Total Maximum Daily Load for the pollutant. The Total Maximum Daily Load is the maximum amount of a pollutant that a waterbody can receive and still meet the water quality standards. Typically, a Total Maximum Daily Load is the sum of the allowable loads of a single pollutant from all contributing point and nonpoint sources.

The waterbody closest to the Rodeo Refinery on the 303(d) list is San Pablo Bay, which is listed as impaired for chlordane, dichlorodiphenyltrichloroethane, mercury, dieldrin, dioxin compounds, mercury, invasive species, furan compounds, polychlorinated biphenyls, and selenium (RWQCB 2019a).

National Pollutant Discharge Elimination System

The NPDES permit program under Section 402(p) of the CWA controls water pollution by regulating sources that discharge pollutants into the waters of the United States. California has an approved state NPDES program. The USEPA has delegated authority for issuing NPDES permits in California to the SWRCB, which has nine RWQCBs. The San Francisco Bay RWQCB regulates water quality in the Project area. Under the NPDES permit program, municipal and industrial facilities are required to obtain a NPDES permit that specifies allowable limits, based on available wastewater treatment technologies, for pollutant levels in their effluent.

Stormwater discharges are regulated somewhat differently than pollutant discharges. Discharge of stormwater runoff from construction areas of one acre or more requires either an individual permit issued

by RWQCB or coverage under the statewide General Construction Stormwater Permit for stormwater discharges. Specific industries and public facilities, including wastewater treatment plants that have direct stormwater discharges to navigable waters, are also required to obtain either an individual permit or obtain coverage under the statewide General Industrial Stormwater Permit.

Oil Pollution Act

The Oil Pollution Act of 1990 amends the CWA to create a comprehensive oil spill and prevention response scheme. It requires the removal of spilled oil and establishes a national system of planning for, and responding to, oil spill incidents. Owners or operators of facilities that have or could reasonably be expected to discharge a certain amount of oil must prepare Spill Prevention Control and Countermeasure Plans. These plans should contain preventative (failsafe) and contingency (clean-up) plans for controlling accidental discharges and minimizing the effect of such events. The Project involves continuation of the existing operations at the Rodeo Refinery with increased vessel traffic at the Marine Terminal.

Office of Spill Prevention and Response

The OSPR has the CDFW's public trustee and custodial responsibilities for protecting, managing and restoring the California's fish, wildlife, and plants. The OSPR coordinates federal, state, and local oil spill response organizations. Key activities include coordinating response drills; ensuring the preparation and maintenance of contingency plans for geographic areas, industries, and individual facilities, such as marine oil terminals; coordinating with harbor safety committees; coordinating oil spill response and cleanup; and investigating oil spills.

California State Lands Commission's Marine Terminal Lease and Marine Oil Terminal Engineering and Maintenance Standards Program

The CSLC has jurisdiction for state-owned sovereign land, in the case of this Project, the beds of tidal and navigable waters. The CSLC is responsible for protecting and enhancing these lands and natural resources by issuing leases for use. As part of the lease process, subject to CEQA, the CSLC ensures that these public resources are protected through the inclusion of protection measures. The existing CSLC lease for the Marine Terminal is valid from September 1, 2001, to December 31, 2031.

Phillips 66 would continue to remain in compliance with the lease restrictions. As part of regulatory compliance for the Project, this existing lease would require an amendment to accommodate the changes in feedstock deliveries and fuels shipped through the Marine Terminal to ensure consistency with state environmental and public health regulations.

In addition, marine terminals located on lands under CSLC jurisdiction are subject to comply with the CSLC's Marine Facilities Division–developed MOTEMS. For the existing Marine Terminal, these regulations establish standards for the maintenance of marine oil terminal berthing and cargo loading/unloading facilities. MOTEMS are intended to minimize the possibility of accidents at marine oil terminals during extreme weather events and seismic activity that would lead to releases of petroleum and oil-based substances to the environment. Existing facilities are required to retrofit or rebuild as necessary to meet MOTEMS, which the Rodeo Refinery's Marine Terminal has, and Phillips 66 would continue to comply.

Porter-Cologne Water Quality Act

The Porter-Cologne Water Quality Control Act allows the SWRCB to adopt statewide water quality control plans or basin plans. The purpose of the plans is to establish water quality objectives for specific waterbodies. The Basin Plan (RWQCB 2019a) establishes water quality objectives and implementation programs to meet the stated objectives and protect the beneficial uses of the San Francisco Bay waters.

This act also authorizes the NPDES program under the CWA, which establishes effluent limitations and water quality requirements for discharges to waters of the state.

Point source discharges are subject to federal regulations that are implemented at the state level by RWQCB. Prior to authorizations of waste discharge by RWQCB, the Porter-Cologne Act requires reports of waste discharges to be filed. RWQCB then prescribes Waste Discharge Requirements that serve as NPDES permits under a provision of the Porter-Cologne Act. The Basin Plan, the Enclosed Bays and Estuaries Plan, and the NPDES permit regulate discharges from the Wastewater Treatment Plant into the San Pablo Bay.

Another point source–control strategy of the state is to require the use of site-specific BMPs and an SWPPP. These individual or combined measures are those most practical and effective to prevent or minimize the potential release of toxic or hazardous pollutants in significant amounts to receiving waters. BMPs are required to manage potential releases of solid and hazardous wastes.

Bay Conservation and Development Commission

The BCDC comprises 27 appointees from local governments and state/federal agencies and administers the California Coastal Act (which implements the federal Coastal Zone Management Act) in the San Francisco Bay Area. BCDC is charged with, among other tasks:

- Regulating all filling and dredging in San Francisco Bay (which includes San Pablo Bay), including participating in the region-wide state and federal program to prepare a long-term management strategy for dredging and dredge material disposal;
- Regulating new development within the first 100 feet inland from San Francisco Bay to ensure maximum feasible public access;
- Minimizing pressures to fill San Francisco Bay by ensuring that the limited amount of shoreline area suitable for high-priority water-oriented uses is reserved for ports, water-related industries, water-oriented recreation, airports, and wildlife areas;
- Pursuing an active planning program to study San Francisco Bay issues so that BCDC plans and policies are based on the best available current information; and
- Participating in California's oil spill prevention and response planning program.

The following water-related industry policies in the San Francisco Bay Plan would apply to the Project (BCDC 2020):

- **Policy 1:** Bay water pollution should be prevented to the greatest extent feasible. The Bay's tidal marshes, tidal flats, and water surface area and volume should be conserved and, whenever possible, restored and increased to protect and improve water quality. Fresh water inflow into the Bay should be maintained at a level adequate to protect Bay resources and beneficial uses.
- **Policy 2:** Water quality in all parts of the Bay should be maintained at a level that would support and promote the beneficial uses of the Bay as identified in the Basin Plan and should be protected from all harmful or potentially harmful pollutants. The policies, recommendations, decisions, advice, and authority of the SWRCB and RWQCB should be the basis for carrying out the BCDC's water quality responsibilities.
- **Policy 3:** New projects should be sited, designed, constructed and maintained to prevent or, if prevention is infeasible, to minimize the discharge of pollutants into the Bay by (a) controlling pollutant sources at the Project site; (b) using construction materials that contain non-polluting materials; and (c) applying appropriate, accepted and effective BMPs, especially where water dispersion is poor and near shellfish beds and other significant biotic resources.

State Implementation Policy

In March 2000, the SWRCB adopted the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California, also referred to as the State Implementation Policy. The State Implementation Policy, developed as a statewide plan for all enclosed bays and estuaries, including San Francisco and San Pablo Bays, became fully effective on May 18, 2000, and amended in 2005, pursuant to Resolution No. 2005-0019. It established the policy for determining and implementing effluent limitations for toxic pollutants. The State Implementation Policy also requires monitoring for a minimum of 3 years by all major NPDES dischargers. In summary, the steps involve:

- Identifying applicable criteria and objectives;
- Determining whether there is a reasonable potential for the pollutant to cause or contribute to exceedance of a water quality criterion or objective;
- Calculating a value for the effluent limit taking into consideration the applicable criteria or objective, and discharge variability; and
- If a Total Maximum Daily Load is in effect, assigning a portion of the loading capacity to the discharge.

Water Quality Control Plan for the San Francisco Region

The Basin Plan is the master planning document for water quality in the Bay Area. It identifies beneficial uses of receiving waters, water quality objectives imposed to protect the designated beneficial uses, and strategies and schedules for achieving water quality objectives. The Basin Plan, developed and is implemented by the San Francisco Bay RWQCB pursuant to the requirements of Section 303(c)(2)(B) of the CWA, is amended periodically as necessary; the latest amendment was in 2018. The San Francisco Bay RWQCB prepared the Basin Plan (RWQCB 2019a), which contains descriptions of the legal, technical, and programmatic basis for water quality regulation in the region. The Basin Plan describes beneficial uses of major surface waters and their tributaries. Beneficial uses of the closest waterbody to the Project site—San Pablo Bay—include Industrial Service Supply; Ocean, Commercial, and Sport Fishing; Shellfish Harvesting, Estuarine Habitat, Fish Migration, Preservation of Rare and Endangered Species, Fish Spawning, Wildlife Habitat, Water Contact and Noncontact Recreation, and Navigation (RWQCB 2019a).

Water quality objectives are achieved primarily through the establishment and enforcement of WDRs for each wastewater discharger. State policy for water quality control in California is directed toward achieving the highest water quality consistent with maximum benefit to the people of the state. Therefore, all water resources must be protected from pollution and nuisance that may occur from waste discharges. Beneficial uses of surface waters, ground waters, marshes, and mud flats serve as a basis for establishing water quality standards and discharge prohibitions to attain this goal.

Groundwater Quality

In addition to its role in managing surface water quality, the San Francisco Bay RWQCB shares groundwater quality enforcement responsibility with the DTSC. In the area of the San Francisco Bay Basin, RWQCB tracks sites with confirmed releases of constituents of concern that have polluted or threaten to pollute groundwater. For each individual polluted site, RWQCB approves all proposed groundwater and soil cleanup levels. Cleanup activities are required by RWQCB to be performed in a manner that promotes attainment of background water quality, or the highest water quality that is reasonable, if background levels of water quality cannot be restored.

Construction General Permit

Construction activities on sites that are 1-acre or more are subject to the requirements of the NPDES *General Permit for Discharges of Stormwater Runoff Associated with Construction Activity (Order 2009-0009-DWQ, as amended by 2010-0014-DWQ and 2012-0006-DWQ)*, which is promulgated by the SWRCB for the purpose of reducing impacts to surface waters that may occur due to construction activities, and is jointly administered by the SWRCB and the RWQCBs. The General Permit requires preparation and implementation of an SWPPP that incorporates BMPs to control erosion and sedimentation and protect receiving water quality.

Contra Costa County provides guidance for preparing an SWPPP and refers to the *California Stormwater Quality Association's Stormwater Handbook* (California Stormwater Quality Association 2010) for guidance regarding construction site stormwater control BMPs to employ during construction. The Construction Site Monitoring Program for the Project would be consistent with the Rodeo Refinery's operational SWPPP and reviewed by Contra Costa County to ensure that it achieves compliance with the County's Grading Ordinance (Section 716) and Stormwater Management and Discharge Control (as described below).

Local Authority

Contra Costa County General Plan

The Project must be consistent with the goals and policies of the Contra Costa County General Plan (Contra Costa County 2010). The key water resources goal is to conserve, enhance, and manage water resources, protect their quality, and ensure an adequate long-term supply of water for domestic, fishing, industrial, and agricultural use. The following goals and policies of the Contra Costa County General Plan (Contra Costa County 2010), including approved amendments through 2014, are relevant to the Project:

General Water Resources

- **Policy 8-75:** Preserve and enhance the quality of surface and groundwater resources.
- **Policy 8-91:** Grading, filling, and construction activity near watercourses shall be conducted in such a manner as to minimize impacts from increased runoff, erosion, sedimentation, biochemical degradation, or thermal pollution.

Water Resources Implementation Measures

- **Policy 8-cy:** Through the environmental review process, the likely effects of construction and other proposed activities on nearby natural watercourses and related open space shall be determined. Measures shall be identified that would mitigate these effects and encourage the preservation of natural waterways and related open space.

Contra Costa County Code

Contra Costa County has adopted ordinances that have been subsequently incorporated into its municipal codes for the protection of water quality during construction and include the following:

- **Title 7 of the Code:** Division 716 specifying grading and erosion control requirements;
- **Title 10 of the Code:** Division 1010 specifying watercourse protection requirements; and
- **Title 10 of the Code:** Division 1014 specifying stormwater requirements.

Section 1014 of the Contra Costa County Code (Stormwater Management and Discharge Control) seeks to eliminate, to the maximum extent practicable, the discharge of pollutants into local watercourses and municipal storm drain systems. For projects creating and/or redeveloping at least 10,000 square feet of

impervious surface, Section 1014 requires that applicants prepare a Stormwater Control Plan that provides for the treatment of stormwater runoff generated by the Project.

Projects creating and/or redeveloping impervious surface in excess of 1 acre are required to not only treat stormwater runoff through preparation of a Stormwater Control Plan but also provide hydrograph modification management (resulting in post-Project stormwater runoff flow rates and durations effectively matching the estimated pre-Project levels) as pursuant to the County Stormwater C.3 Guidebook. Stormwater from the Project site ultimately drains into San Pablo Bay through a deepwater diffuser located under the existing Marine Terminal. Stormwater from the Project areas is treated at the Wastewater Treatment Plant, regulated by the NPDES permit (Water Board Order No. R2-2016-0044) discussed further below. Because the Project is subject to the NPDES permit requirements, a Stormwater Control Plan is not required.

The County Health and Safety Code Chapter 450-2, Hazardous Materials Release Response Plans and Inventories, requires, among other things, that any business which handles a specified quantity of a hazardous material establish a business plan for emergency response to a release or threatened release of a hazardous material. The business plan includes an inventory of hazardous materials handled by the business and includes a process to report to the administering agency and the State Office of Emergency Services occurrences of specified releases or threatened releases of hazardous materials. The purpose of this division is to impose regulations in addition to Health and Safety Code Chapter 6.95, for the protection of the public and emergency rescue personnel. Phillips 66 maintains an existing HMBP and emergency response plan for the refinery, which address established emergency response programs.

Contra Costa County (and the Contra Costa Countywide Clean Water Program)

The Contra Costa Clean Water Program was established as the local entity responsible for implementing compliance with the federal CWA to control stormwater pollution. It has jurisdiction over Contra Costa County, 19 incorporated cities within Contra Costa County, and the Contra Costa County Flood Control and Water Conservation District. It was established as the local entity responsible for coordinating compliance with Municipal Separate Storm Sewer System (MS4) NPDES permits for jurisdictions throughout Contra Costa County. The program is conducted in compliance with the NPDES Municipal Regional Permit issued by the San Francisco Bay RWQCB. The permit contains a comprehensive plan to reduce the discharge of pollutants to the “maximum extent practicable” and mandated that participating municipalities implement an approved stormwater management plan. The program incorporates BMPs that include construction controls (such as a model grading ordinance), legal and regulatory approaches (such as stormwater ordinances), public education and industrial outreach (to encourage the reduction of pollutants at various sources), inspection activities, wet-weather monitoring, and special studies.

Because the Project is located within unincorporated area of Contra Costa County, the Contra Costa Clean Water Program is being implemented in compliance with the MS4 NPDES Permit issued by the San Francisco Bay RWQCB (“Municipal Regional Permit”) (RWQCB 2011). Under the permit, Contra Costa County requires construction sites to have site specific and seasonally BMPs in the following five categories: erosion control; run-on and runoff control; sediment control, active treatment systems (as necessary); good site management; and non-stormwater management. The permit contains a comprehensive plan to reduce the discharge of pollutants to the “maximum extent practicable” and mandates that participating municipalities implement an approved stormwater management plan. The plan incorporates BMPs that include construction controls (such as a model grading ordinance), permanent stormwater management (treatment and flow control) facilities to manage runoff from new development and redevelopment projects, legal and regulatory approaches (such as stormwater ordinances), public education and industrial outreach (to encourage the reduction of pollutants at various sources), inspection activities, wet-weather monitoring, and special studies.

Because the Project area is regulated by the Rodeo Refinery's NPDES, which is in compliance with the County's MS4 NPDES Permit with specific requirements for development and implementation of an SWPPP, the Project is in already in compliance and, therefore, is not subject to the Contra Costa Clean Water Program requirements.

NPDES Permit

The Phillips 66 San Francisco Refinery (Rodeo Refinery) NPDES Permit (Order No. R2-2016-0044, NPDES No. CA0005053) issued by the San Francisco Bay RWQCB pursuant to Section 402 of the CWA regulates the point source discharges and stormwater discharges (RWQCB 2016). There are three discharge points to San Pablo Bay. The NPDES permit establishes receiving water and wastewater limitations for the discharges and requirements for monitoring that must be performed to confirm compliance with NPDES limits. The permit also requires Phillips 66 to update and submit the SWPPP annually and prepare an annual stormwater report for San Francisco Bay RWQCB review.

Foundation construction and equipment installation would require excavation. If groundwater is encountered, it would be directed to the Wastewater Treatment Plant and subject to the refinery's NPDES Construction General Permit.

The most recent violation of the Rodeo Refinery's NPDES discharge permit (Order No. R2-2016-0044, NPDES No. CA0005053) was associated with an incident on February 14, 2019, when the Rodeo Refinery discharged partially treated wastewater in violation of the NPDES permit (RWQCB 2016). This incident occurred because the wastewater was allowed to bypass refined filtration after consecutive 2019 winter storms caused particulate matter to clog the refined filters. The Rodeo Refinery was fined and required to comply with more restrictive sediment monitoring requirements.

San Luis Obispo County General Plan

The following policy and implementation of the San Luis Obispo General Plan are relevant to the Project:

- **Policy WR 3.1:** Prevent water pollution Take actions to prevent water pollution, consistent with federal and state water policies and standards, including but not limited to the federal CWA, Safe Drinking Water Act, and NPDES.
- **Implementation Strategy WR 3.1.3:** Minimize construction related impacts to water quality Minimize construction and post-construction impacts of development through implementation of the County's Stormwater Management Program and Stormwater Pollution Prevention and Discharge Control Ordinance in compliance with Phase II of the NPDES.

The Stormwater Management Program was prepared by the County of San Luis Obispo to comply with mandatory requirements of the US Environmental Protection Agency NPDES Phase II Final Rule and the SWRCB Water Quality Order No. 2003- 0005-DWQ, NPDES General Permit No. CA CAS000004, "Waste Discharge Requirements for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems" (MS4 General Permit). The NPDES Phase II Final Rule was adopted in December 1999 and requires operators of small municipal separate storm sewer systems (MS4s) located in designated urbanized areas and in areas meeting certain regulatory criteria to develop and implement Stormwater Management Programs.

The San Luis Obispo County Water Resources Division is the County's management authority to ensure sustainable water uses, reliable water supplies, and better water quality. The Water Resources Division has incorporated the Integrated Regional Water Management Plan, which promotes coordination with statewide water planning efforts.

4.10.3 Significance Criteria

Based on CEQA Guidelines Appendix G, a project would cause adverse impacts to hydrology and water quality if it would:

a. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality;

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

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

   i. result in substantial erosion or siltation onsite or offsite;

   ii. substantially increase the rate or amount of surface runoff in a manner which would result in flooding onsite or offsite;

   iii. create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or

   iv. impede or redirect flood flows.

d. Would the project in flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

e. Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

4.10.4 CEQA Baseline

Baseline conditions reflect the 2019 operation and maintenance of the Rodeo Refinery and Santa Maria Site as petroleum refineries, including operation and maintenance activities. The baseline setting also includes the applicable regulatory framework to protect environmental resources, which are described above. The CEQA baseline for analysis of marine transportation, is an average of the years 2017–2019.

4.10.5 Approach to Analysis

The Project comprises the existing Rodeo Refinery located on a 495-acre property northwest of I-80, and the Carbon Plant Site (as shown on Figures 3-2 and 3-3), and undeveloped land that serves as a buffer zone between open space and residential development. The Carbon Plant would no longer be necessary and would be demolished. Additional components of the existing Project include the Santa Maria Site and Pipeline Sites. The Pipeline Sites would be cleaned out and decommissioned or sold; they would not be excavated as part of this Project. No physical changes would occur. Therefore, the Pipeline Sites are not further addressed in this section.

4.10.6 Discussion of No Hydrology and Water Quality Impacts

Review and comparison of the environmental setting and Project characteristics with each of the significance criteria stated above indicate no impacts associated with hydrology and water quality would result for following CEQA Checklist criteria:

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

Operation and maintenance of the Project at the Rodeo Refinery and Santa Maria Site would not affect groundwater supplies or recharge above baseline conditions. The Rodeo Refinery would

result in a decrease for the need of any groundwater with demolition of the Carbon Plant. Facilities requiring water supplies at the Santa Maria Site would cease to operate. Therefore, no Project operation or maintenance impacts would occur related to groundwater. Construction and demolition impacts are addressed in Impact 4.10-2.

c. *Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:*

   i. *result in substantial erosion or siltation onsite or offsite;*

   ii. *substantially increase the rate or amount of surface runoff in a manner which would result in flooding onsite or offsite;*

   iii. *create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or*

   v. *impede or redirect flood flows.*

   Refer to Impact 4.10-1 for a discussion of potential construction/demolition impacts related to erosion and siltation, and potential impacts related to exceeding the capacity of existing stormwater systems, that could affect onsite and offsite water quality. Removal of the Carbon Plant and Santa Maria facilities would result in a decrease in total impermeable surface area. Therefore, operation and maintenance of these sites would not result in an increase in surface runoff that could affect onsite and offsite flooding, or cause an exceedance of stormwater drainage systems. No impact would occur.

d. *Result in or cause inundation by seiche, tsunami, or mudflow.*

   At the Rodeo Refinery, the Project would not be located in an area that would likely be affected by seiche or tsunami. The amount of grading required at the Rodeo Refinery and Carbon Plant Site would not contribute to or cause the scale of mass movement required to produce a mudflow. The Project would not denude the Project area of vegetation or cause other impacts that would result in increased potential for onsite mudflow. With demolition of the Santa Maria Site no facilities would be affected. Therefore, no impacts would occur related to resulting or causing inundation by seiche or tsunami, or mudflow.

e. *Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.*

   As discussed in Impact 4.10-1, the Project would not result in significant impacts related to water quality standards or waste discharge requirements, or otherwise substantially degrade surface or ground water quality. Therefore, the Project would not conflict or obstruct a water quality control plan or sustainable groundwater management plan.

   For impacts related to marine vessel traffic and potential spills refer to Section 4.9, *Hazards and Hazardous Materials*.

4.10.7 Direct and Indirect Impacts of the Proposed Project

The proposed Project would entail ground-disturbing construction and demolition activities at the Rodeo Refinery and Santa Maria Site. Review and comparison of the setting circumstances and proposed Project characteristics with the significance criteria indicate potential impacts associated with criteria a and b. The following discusses these potential impacts.

Table 4.10-1 presents a summary of the potential hydrology and water quality impacts, as well as significance determinations for each impact.

Table 4.10-1. Summary of Impacts

Impact	Significance Determination		
	LTS	LTSM	SU
Impact 4.10-1. (a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality.			
Rodeo Refinery			
Construction/Demolition including Transitional Phase – Other Water Quality Impacts	✓		
Rodeo Refinery–Transitional Phase, Operation and Maintenance			
Rodeo Refinery			✓
Marine Terminal			✓
Operation and Maintenance – Other Water Quality Impacts	✓		
Santa Maria Site			
Construction/Demolition	✓		
Impact 4.10-2. (b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the Project may impede sustainable groundwater management of the basin.			
Rodeo Refinery and Santa Maria Site			
All Phases	✓		

Notes: LTS = Less than significant, no mitigation proposed
LTSM = Less-than-significant impact with mitigation
SU = Significant and unavoidable

IMPACT 4.10-1

a. Would the Project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

Construction/Demolition: Less than Significant Impact with Mitigation

Rodeo Refinery

Construction and demolition, including during the transitional phase, would produce discharges that have the potential to cause violations of water quality standards and waste discharge requirements. Refer to Section 4.9, *Hazards and Hazardous Materials*, for analysis of impacts related to marine vessel traffic during construction, including the transitional phase.

Construction and demolition activities at the Rodeo Site require the decommissioning and removal of three existing storage tanks and construction of foundations and other equipment for the proposed PTU and STU, both located adjacent to the Sulfur Recovery Unit. The Carbon Plant would be decommissioned and demolished. Ancillary ground disturbance would occur in laydown areas to accommodate larger equipment, construction materials, and staging for demolished equipment. In addition, temporary storage of chemicals, such as oil, grease, and fuel, and the use of construction equipment, such as bulldozers and cranes, could result in accidental spills or inadvertent releases that could degrade the water quality of the receiving waters.

All wastewater generated during construction and decontamination activities would be routed to the Wastewater Treatment Plant, which has a maximum treatment capacity of about 10 mgd to treat and discharge storm/surface flows to San Pablo Bay, through an existing deepwater diffuser located underneath the Marine Terminal. The Wastewater Treatment Plant uses equalization tanks designed

to provide an even, steady flow to the wastewater treatment system for optimal system effectiveness. In addition, Phillips 66 is required to prepare a Project-specific Construction Site Monitoring Program that would be incorporated into the Project SWPPP to address and limit water quality impacts during construction and demolition activities. Therefore, impacts would be less than significant and no mitigation is required.

Santa Maria Site

Demolition activities at the Santa Maria Site would remove concrete, asphalt, and other ground cover, and would involve a certain amount of excavation. These activities would expose soils that are susceptible to erosion to the potential effects of wind and rain.

The Project is required by County ordinance (San Luis Obispo County Chapter 23.05, Contra Costa County Chapter 716-8) as well as through the NPDES General Construction Permit administered by the state to establish erosion control measures for construction activities. The Erosion Control Plan would include, at a minimum, the following requirements:

- Excavation and grading activities would be scheduled for the dry season (April 15 to October 15) to the extent possible. This would reduce the chance of severe erosion from intense rainfall and surface runoff, as well as the potential for soil saturation.
- Temporary erosion control measures would be provided until re-vegetation is established or impervious surfaces (e.g., asphalt, concrete) are added.
- After completion of grading, erosion protection would be provided on all cut-and-fill slopes.
- Erosion control BMPs selected and implemented for the proposed Project would be in place and operational prior to the onset of major earthwork on the site.

Implementation of the Erosion Control Plan and required BMPs as part of the NPDES General Construction Permit would minimize erosion impacts during construction and reduce the potential impacts to less than significant.

Transitional Phase: Significant and Unavoidable

Rodeo Refinery—Marine Terminal (spills)

During the 7-month transitional phase that would be concurrent with Rodeo Refinery construction, vessel traffic arriving at the Marine Terminal would increase from 80 tankers and 90 barges to an estimated 96 tankers and 92 barges, which is an increase of approximately 10 percent over baseline conditions. Marine vessels would bring renewable feedstocks and gasoline-blending components. In the event of an accidental spill hazardous materials would discharge into waters of the San Pablo and San Francisco Bays.

As detailed in Section 4.9, *Hazards and Hazardous Materials*, Impact 4.9-1, although implementation of Mitigation Measure HAZ-1 would reduce the frequency and size of potential feedstock spills, impacts would remain significant. Therefore, impacts related to violation of water quality standards or otherwise substantially degrade surface water during the transitional phase, would be significant and unavoidable.

Operation and Maintenance

Rodeo Refinery Operational Phase—Marine Vessel Traffic: Significant and Unavoidable

As detailed in Section 4.9, *Hazards and Hazardous Materials,* Impact 4.9-1, during Project operation, marine vessels would bring renewable feedstocks and gasoline-blending components to the Project and transport refined products from the Project. At full operation, 201 tankers and 161 barges would call each year, which is an increase of approximately 113 percent over baseline. In the event of an

accidental spill hazardous materials would discharge into waters of the San Pablo and San Francisco Bays.

Although implementation of Hazards and Hazardous Materials Mitigation Measure HAZ-1 would reduce the frequency and size of potential marine vessel feedstock spills, impacts would remain significant. Therefore, Project operational impacts related to violation of water quality standards or otherwise substantially degrade surface water during the operational phase, would be significant and unavoidable.

Rodeo Refinery Other Water Quality Impacts: Less Than Significant, No Mitigation Proposed

Operation of the Project would produce discharges of treated wastewater, stormwater, and cooling water that would continue to be discharged through the existing outfalls E-002 (storm and wastewater), E-003 (cooling water), and E-004 (Marine Terminal stormwater). Once the Project is implemented the volume of treated water discharged would decrease by approximately 20 percent from baseline conditions (from 1,659 to 1,357 gallons per minute).

It is expected that the quality of water discharged to San Pablo Bay would improve over baseline conditions since processing renewable feedstock versus hydrocarbon feedstock would result in lower toxicity levels in waste streams. The safety data sheets were reviewed for the proposed feedstock sources to determine whether the compositions of the renewable feedstocks raise process concerns in potential changes in the constituents of process and surface water. As a result of these changes, the composition of discharge to the Bay would be somewhat different from baseline conditions, containing higher concentrations of sulfate and lower concentrations of nitrates. Sulfate is not listed as a water pollutant requiring regulation under the Basin Plan (RWQCB 2019a) and is not considered to be toxic to aquatic organisms except at concentrations considerably above typical values (e.g., Wang et al. 2015). The RWQCB would continue to have oversight responsibilities for the NPDES permit (and is identified as a responsible agency in this analysis). NPDES requirements are expected to maintain water quality at acceptable constituent levels.

Since the Project would result in a reduction in the volume of treated water discharged to San Pablo Bay, and continued compliance with the NPDES permit requirements would ensure that impacts to surface water quality from refinery process discharges would be less than significant, and no mitigation is required.

Impact Summary

For the Rodeo Site, impacts related to construction, including the Transitional Phase, would be significant and unavoidable related to marine vessel traffic. Impacts related to demolition of the Santa Maria Site would be less than significant.

For the Rodeo Site, impacts related to operations and maintenance would be significant and unavoidable related to marine vessel traffic.

Mitigation Measure: **None Required**

IMPACT 4.10-2

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

Construction/Demolition: Less Than Significant, No Mitigation Proposed

Rodeo Refinery

During excavation and trenching activities for foundation construction, piping, and utility work at the Rodeo Refinery and demolition of the Carbon Plant, shallow groundwater could be encountered. If construction intercepts shallow groundwater, dewatering would be required. The extracted

groundwater would be discharged to the Wastewater Treatment Plant, and after treatment, it would be discharged into San Pablo Bay in compliance with the requirements of the existing NPDES permit. Therefore, impacts related to groundwater would be less than significant.

Santa Maria Site

Site investigations at the Santa Maria Site have suggested that groundwater is deeper than approximately 20 feet below the ground surface. Demolition activities at the Santa Maria Site would include minor grading and excavation activities to remove concreate foundations and underground piping. No deep excavation (15 feet or more) would be necessary. Therefore, it is not expected that encountering extensive groundwater during demolition would occur (San Luis Obispo County 2014). Any surface stormwater run-on to the site would be tested and handled in accordance with criteria of the Central Coast Basin Plan (RWQCB 2019b) and a Project-specific SWPPP. At this point, Phillips 66 has no plans to reuse the Santa Maria Site, and any further reuse and remediation would be subject to subsequent environmental analysis, as applicable. Therefore, impacts related to groundwater would be less than significant.

Mitigation Measure: **None Required**

4.10.8 References

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4.11 Land Use and Planning

4.11.1 Introduction

This section identifies and evaluates potential impacts related to land use and planning that could result from the Project. Discussed are the physical and regulatory settings, the baseline for determining environmental impacts, the significance criteria used for determining environmental impacts, and potential impacts associated with Project construction and demolition including the transitional phase, and operation and maintenance at the Rodeo Refinery and Santa Maria Site.

The Project also includes the Pipeline Sites—four regional pipelines serving the Santa Maria Site and the Rodeo Refinery. The Santa Maria Site is connected to the Rodeo Refinery by approximately 200 miles of subterranean pipeline, crossing San Luis Obispo, Santa Barbara, Kern, Kings, Fresno, Merced, Stanislaus, San Joaquin, Alameda, and Contra Costa Counties. Phillips 66 proposes to empty and clean the pipelines at existing maintenance access points and to decommission or sell them; they would not be excavated as part of this Project. No physical changes would occur. Therefore, the Pipeline Sites are not further addressed in this section.

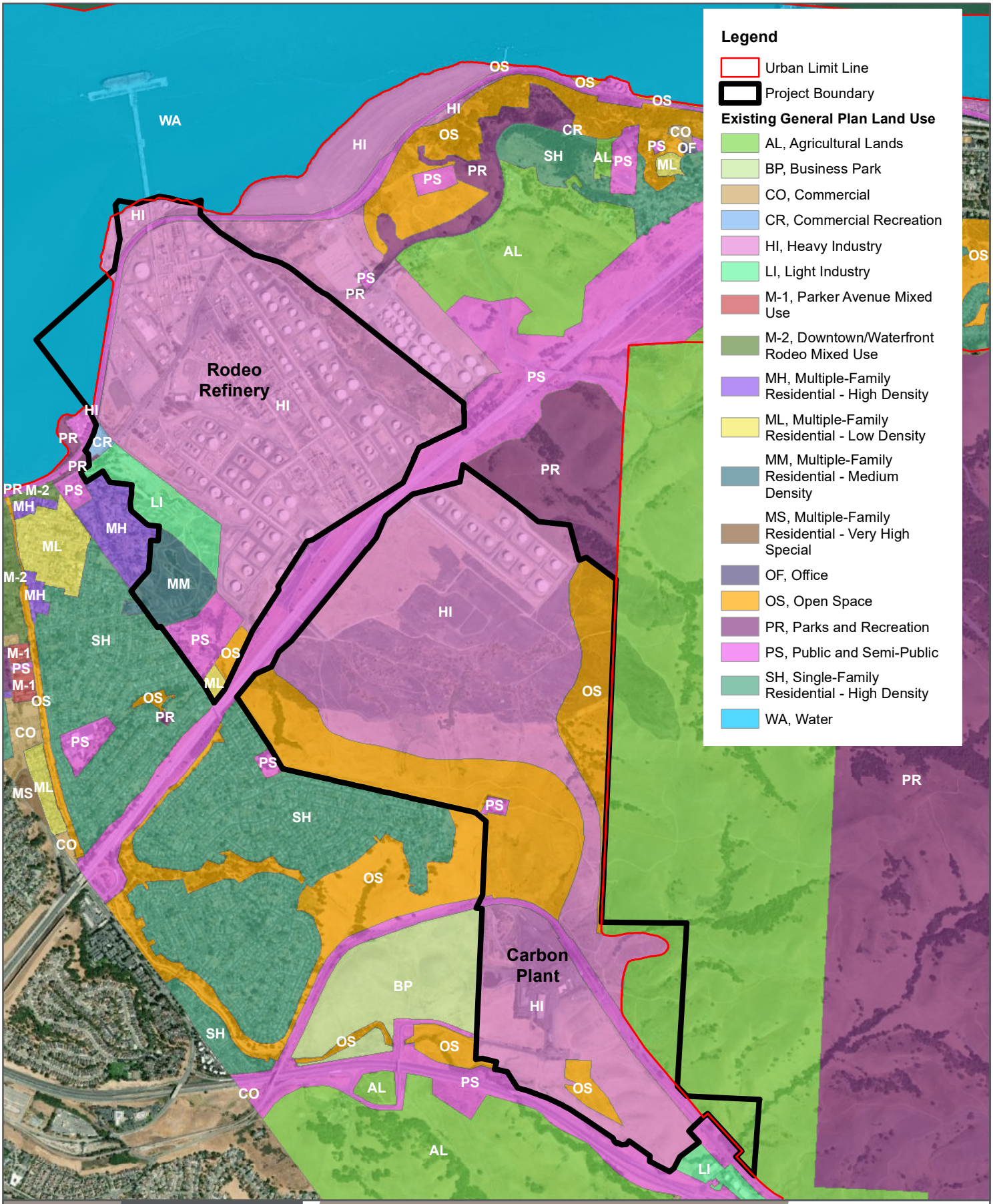
4.11.2 Environmental Setting

4.11.2.1 Rodeo Refinery Regional and Local Settings

The 1,100-acre Rodeo Refinery, including the Rodeo Site and the Carbon Plant, is located in an unincorporated area in the northwest corner of Contra Costa County. Pursuant to the Contra Costa County General Plan, this region of the county is considered West County (Contra Costa County 2010). It is adjacent to the San Pablo Bay, directly north of the unincorporated community of Rodeo, and approximately 1.5 miles southwest of the unincorporated community of Crockett. Shown in Figure 4.11-1 and Figure 4.11-2, the existing Project site has a land use designation of *Heavy Industry* and is zoned *Heavy Industrial* (Contra Costa County 2021a, 2021b).

The land uses that surround the Project are described as follows:

- **North:** The north edge of the Rodeo Site is bordered by the Nu-Star facility, which is also designated *Heavy Industry*. North of the Nu-Star facility are lands designated *Agricultural Land* and *Open Space*. The Union Pacific Railroad and I-80 run southwest to northeast through the Project site and are designated *Public* and *Semi-Public*. The area to the north is zoned *Heavy Industrial*, *Agricultural Preserve District*, and *General Agricultural District*.
- **East:** Land to the east of the Project site is largely undeveloped. It is designated *Open Space*, *Agricultural Land*, and *Parks and Recreation* and zoned *Agricultural Preserve District* and *General Agricultural District*.
- **South:** To the south of the Rodeo Site is a buffer area designated *Light Industry*, beyond which is the Bayo Vista residential neighborhood, which is designated as *Multiple-Family Residential Medium* and *High*. Near the San Pablo Bay is land designated *Commercial Recreation* and *Parks and Recreation*. All of the land to the south of the Rodeo Site is zoned *Planned Unit District*. The area south of the Carbon Plant is State Route 4, which is designated as *Public* and *Semi-Public*, and then further to the south is land designated *Agricultural Land* and zoned *Agricultural Preserve District*.
- **West:** To the west of the Rodeo Site lies the San Pablo Bay, which is designated *Water* and zoned *Unrestricted*. To the west of the Carbon Plant lies land designated as *Business Park*; however, it is currently undeveloped.



Imagery Source: Maxar 11/1/2019

Figure 4.11-1: Contra Costa County General Plan Land Use Map

Rodeo Renewed Project
Contra Costa County, CA

0 2,000 4,000 Feet

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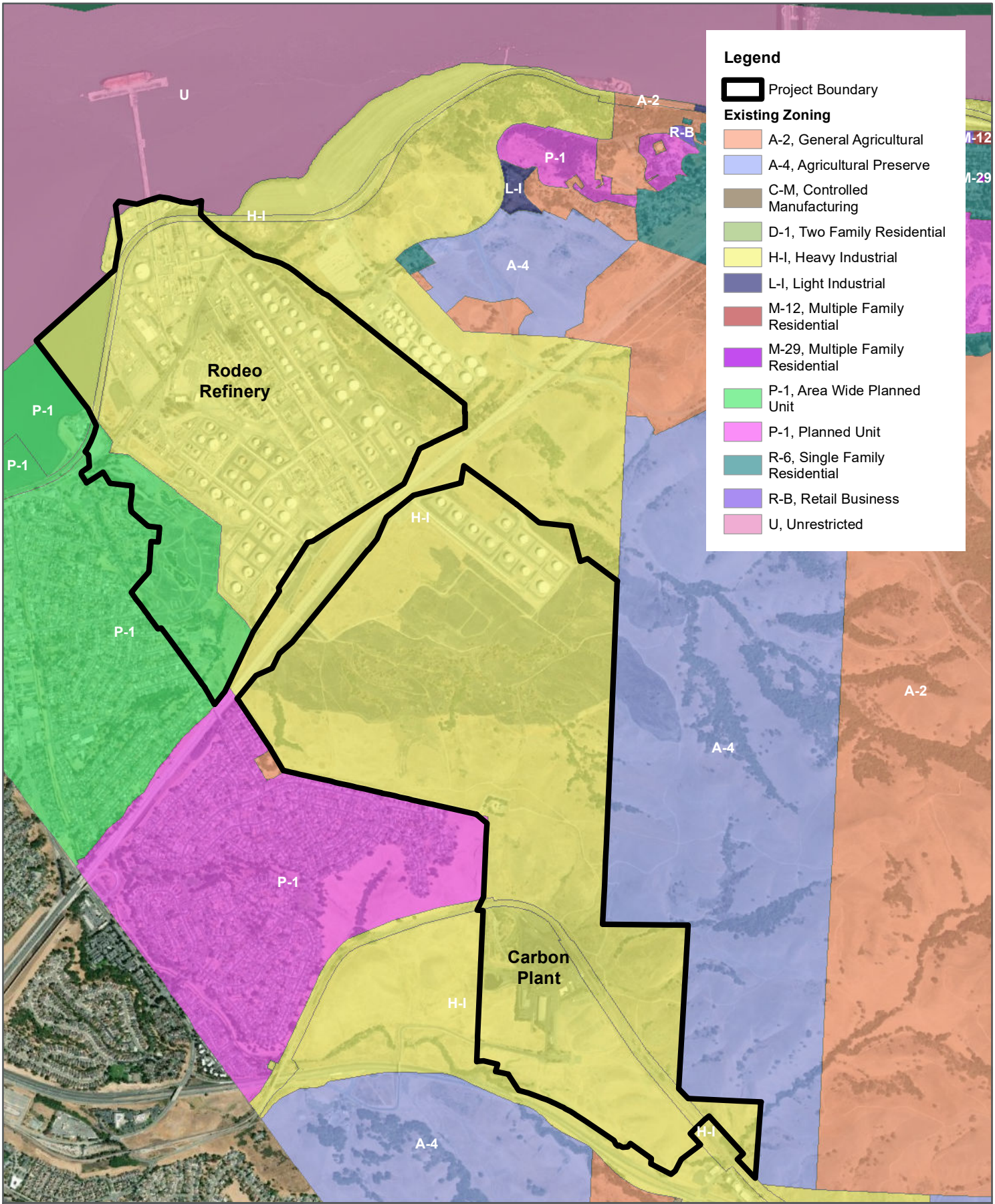
2890 Gateway Oaks Drive, Suite 200
Sacramento, CA 95833
Phone (+1) 916 923 1097 Fax (+1) 916 923 6251
www.cardno.com

Date Created: 7/15/2021 Date Revised: 7/15/2021 File Path: C:\Users\anna.clare\OneDrive - Cardno\Documents_Working\Rodeo\map\Rodeo_Fig4_11_1_GeneralPlanLandUse_Map.mxd
GIS Analyst: Anna.Clare



Imagery Source: Maxar 11/1/2019

Figure 4.11-2: Contra Costa County Zoning Map

Rodeo Renewed Project
Contra Costa County, CA

0 2,000 4,000 Feet

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GIS Analyst: Anna.Clare

4.11.2.2 Santa Maria Site Regional and Local Settings

The Santa Maria Site occupies 1,600 acres in the southwest corner of unincorporated San Luis Obispo County in the South County Area of the Coastal Zone. The Project boundary includes the Santa Maria Site surrounded by open space buffer area. As shown in Figure 4.11-3, the Project area largely falls under the *Industrial* land use category with the northwest buffer area designated as *Open Space*. The northeast edge of the Santa Maria Site is bordered by *Agriculture*, *Residential Suburban*, and *Industrial* land use designations. The south edge is bordered by *Agriculture* land use designation, and the west edge is bordered by *Recreation* land use.

4.11.2.3 Regulatory Setting

Section 15125(d) of the CEQA Guidelines states that "the EIR shall discuss any inconsistencies between the project and applicable general plans and regional plans" as a part of the discussion of the existing setting of the project. However, the CEQA Guidelines further state that inconsistency with an adopted plan does not necessarily indicate a significant impact by the project. This section considers adopted Contra Costa County, San Luis Obispo County, and regional plans and the policies that are applicable to the Project and determines whether the Project is consistent with those plans and policies. Other local, regional, or state plans and policies that relate to other resource areas other than land use (such as air quality, water quality, and biological resources) are addressed in detail in the respective sections of this EIR.

Contra Costa County

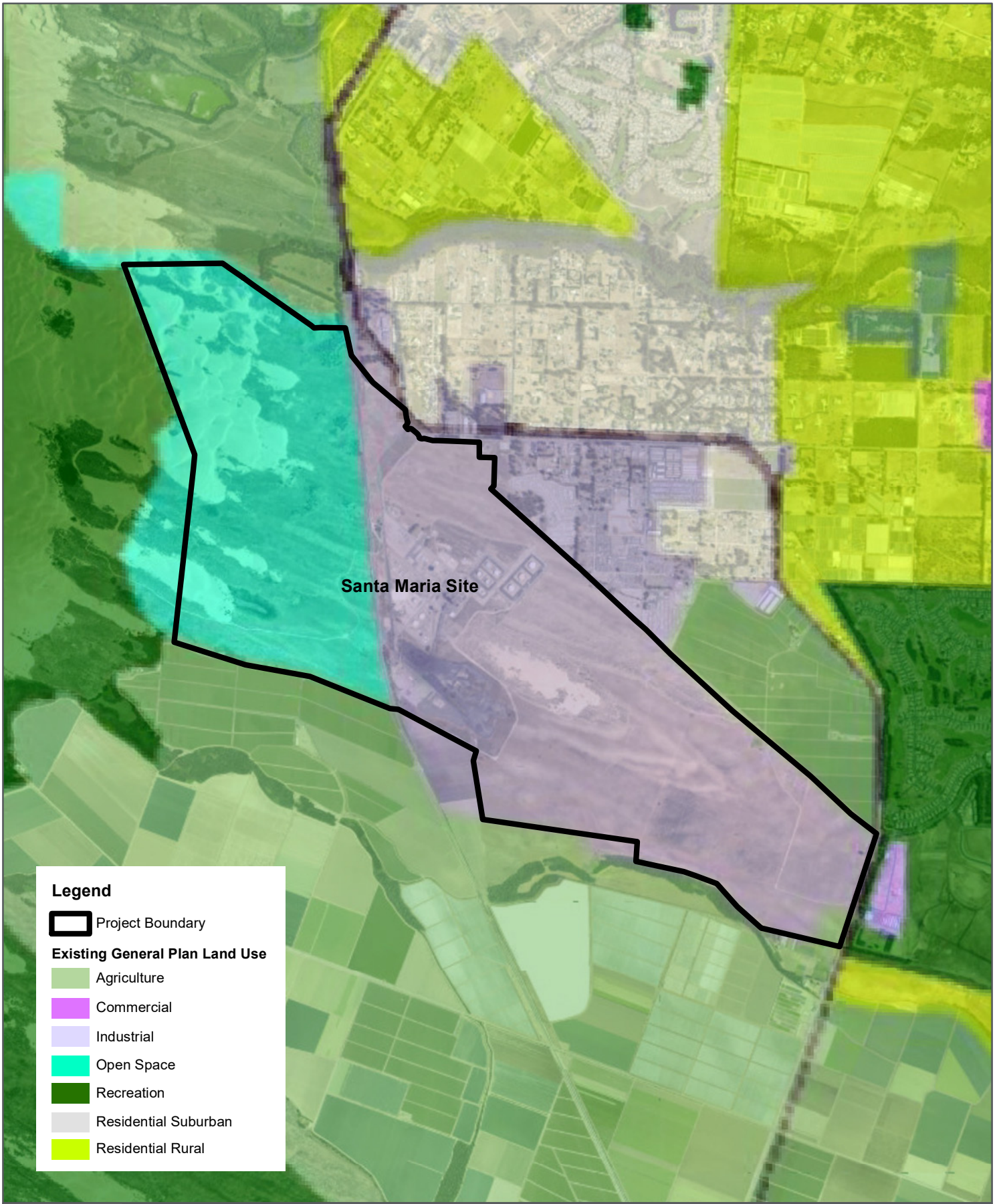
Contra Costa County General Plan

The Contra Costa County General Plan designates the entire Rodeo Site as *Heavy Industry*. Pursuant to the Land Use Element of the general plan, this designation allows activities such as metal working, chemical or petroleum processing and refining, and heavy equipment operation. These activities may require large areas of land that are readily accessible to truck, rail, and/or ship. Additionally, uses and operations of this type may produce noise or other conditions that require spatial separation from residential areas (Contra Costa County 2010).

The following general plan policies and implementation measures apply to the Project:

- **Policy 3-42:** Industrial development shall be concentrated in select locations adjacent to existing major transportation corridors and facilities.
- **Policy 3-43:** Industrial employment centers shall be designed to be unobtrusive and harmonious with adjacent areas and development.
- **Implementation Measure 3b**: During project review, require that proposed uses on the edges of land use designations be evaluated to ensure compatibility with adjacent planned uses.
- **Implementation Measure 3d:** Review proposed land development projects for consistency with land use designations and relevant policies and standards of each element of the general plan.

The Rodeo Site is located within the Rodeo Area, which is one of the general plan's unincorporated communities with adopted area polices (Contra Costa County 2010).



Imagery Source: County of San Luis Obispo 8/7/2018

Figure 4.11-3: San Luis Obispo County General Plan Land Use Map

Rodeo Renewed Project
Contra Costa County, CA

0 2,000 4,000 Feet

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2890 Gateway Oaks Drive, Suite 200
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Date Created: 7/15/2021 Date Revised: 7/15/2021 File Path: R:\Cardno\Rodeo\map\Rodeo_Fig4_11_3_SantaMaria_LandUse_Map.mxd
GIS Analyst: anna.clare

The following policies are applicable to the Rodeo Site:

- **Policy 3-146:** Mitigate the effects of industrial traffic on downtown streets.
- **Policy 3-159:** A buffer of *Agricultural Lands* around the eastern Phillips 66 property is created in this general plan to separate the Viewpoint residential area from future industrial development on the Phillips 66 property. These open space lands should remain essentially undeveloped.

The Project does not fall within the Rodeo Waterfront/Downtown Specific Plan boundary (Contra Costa Redevelopment Agency 1997).

Contra Costa County Zoning Ordinance

Title 8 of the Contra Costa County Code contains the County Zoning Ordinance. The Rodeo Refinery is zoned as *Heavy Industry*, which allows for manufacturing and/or processing of petroleum, chemicals, lumber, and any other industrial products (Contra Costa County 2021a, 2021b).

Growth Management, 65/35 Standard, and Urban Limit Line

In 1990, the voters of Contra Costa County passed Measure C-1990, which established the 65/35 Land Preservation Standard. The purpose of the standard is to limit urban development to no more than 35 percent of the land and require that no less than 65 percent of the land in the county be preserved for parks, open space, agriculture, wetlands, and other non-urban uses. The 65/35 Land Preservation Standard is a policy that applies to the county planning process and is implemented through the establishment of the Urban Limit Line, which is aimed at limiting annexation, extension of urban services, and urban-type development in areas beyond the Urban Limit Line. In 2000, the county conducted a land use inventory to assess its development status relative to the 65/35 standard. That analysis measured the developed or urban area of the county at 30 percent and the undeveloped or non-urban portion at 70 percent. The Urban Limit Line is incorporated into the Contra Costa County General Plan (Contra Costa County 2010). The Rodeo Refinery is located within the Urban Limit Line of Contra Costa County (Contra Costa County 2021a).

San Francisco Bay Plan

The BCDC enforces the San Francisco Bay Plan, which was developed to help protect and preserve the use of the San Francisco Bay. The plan was initially adopted in 1968 pursuant to the McAteer-Petris Act. The BCDC has jurisdiction within the defined boundaries of the San Francisco Bay, including the Bay itself, wetlands, and shorelines. The plan defines ports, water-related industry, wildlife refuges, and recreation as priority uses of the Bay and shoreline area, and the plan has various policies and measures to protect these defined uses. For discussion on policies specific to water quality see Section 4.10, *Hydrology and Water Quality*. Pursuant to the San Francisco Bay Plan maps, the Rodeo Refinery is designated as a *Water-Related Industry* priority use (BCDC 2020).

The San Francisco Bay Plan policies applicable to the Project include:

- **Water Quality Policy 2:** Water quality in all parts of the Bay should be maintained at a level that would support and promote the beneficial uses of the Bay as identified in the Basin Plan and should be protected from all harmful or potentially harmful pollutants. The policies, recommendations, decisions, advice, and authority of the SWRCB and the RWQCB should be the basis for carrying out the BCDC's water quality responsibilities.
- **Water Quality Policy 3:** New projects should be sited, designed, constructed, and maintained to prevent or, if prevention is infeasible, to minimize the discharge of pollutants into the Bay by: (1) controlling pollutant sources at the Project site; (2) using construction materials that contain non-polluting materials; and (3) applying appropriate, accepted, and effective BMPs, especially where water dispersion is poor and near shellfish beds and other significant biotic resources.

- **Water-Related Industry Policy 1:** Sites designated for both water-related industry and port uses in the San Francisco Bay Plan should be reserved for those industries and port uses that require navigable, deep water for receiving materials or shipping products by water in order to gain a significant transportation cost advantage.
- **Water-Related Industry Policy 5:** Water-related industry and port uses should be planned so as to make the sites attractive (as well as economically important) uses of the shoreline. The following criteria should be employed to the maximum extent possible:
  - Air and water pollution should be minimized through strict compliance with all relevant laws, policies, and standards. Mitigation, consistent with the BCDC's policy concerning mitigation, should be provided for all unavoidable adverse environmental impacts.

San Luis Obispo County

San Luis Obispo County General Plan

The Santa Maria Site falls within the Coastal Zone and the San Luis Obispo South County Area. The Project is subject to the Land Use Element of the San Luis Obispo County Coastal Zone Framework for Planning and the South County Area Plan (San Luis Obispo County 2018a). The industrial facility and the majority of the Santa Maria Site falls under the *Industrial* land use category (San Luis Obispo County 2021).

The Land Use Element defines the *Industrial* land use purpose as:

a. To identify areas suited to industrial activities that will not adversely affect adjacent areas of other uses

c. To protect adjacent land uses from harmful influences, as well as to prevent the intrusion of incompatible uses into industrial areas. Residences are allowed only as caretaker or accessory uses.

d. Where the Industrial *category is located outside of urban or village reserve lines, it is intended to reserve appropriately located areas for industrial uses requiring large areas of land, nearby transportation or energy facilities, or related activities compatible with agricultural and other rural uses.*

The South County Area Plan mentions the Santa Maria Site and the importance of the buffer area around the facility. The South County Area Plan further states that any expansion or modification should be subject to development plan approval that considers buildable and open space area for the entire site (San Luis Obispo County 2018b).

Coastal Zone Land Use Ordinance

The CZLUO is Title 23 of the San Luis Obispo County Code. The goals and policies of the general plan are implemented through sections and guidelines of the county code. The Coastal Zone Land Use Element and the CZLUO make up the county's Local Coastal Program (San Luis Obispo County 2018a). The CZLUO states that development must be consistent with the designated land use category of the site and defines specific site development requirements (San Luis Obispo County 2019).

4.11.3 Significance Criteria

Based on CEQA Guidelines Appendix G, a project would have significant adverse impacts to land use and planning if it would:

a. Physically divide an established community;

b. Conflict with any applicable land use plan, policy, or the regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.

4.11.4 CEQA Baseline

Baseline conditions reflect the 2019 operation and maintenance of the Rodeo Refinery and Santa Maria Site as petroleum refineries, including operation and maintenance activities. The baseline setting also includes the applicable regulatory framework to protect environmental resources, which are described above.

4.11.5 Approach to Analysis

The transitional phase included in construction of the Project does not involve activities that would affect existing land uses and land use designations above those identified for construction/demolition impacts. Therefore, the transitional phase is not further addressed.

4.11.6 Discussion of No Land Use and Planning Impacts

Review and comparison of the setting circumstances and Project characteristics with significance criteria a and b show that no impacts related to land use and planning would result for these criteria. The following discusses the reasoning supporting this conclusion.

a. Physically divide an established community.

With the exception of construction equipment staging at the adjacent Selby Site, which is owned by Phillips 66, all activities associated with the Project at the Rodeo Refinery and Carbon Plant would occur within the existing site boundary in an unincorporated area of Contra Costa County. The closest community to the Rodeo Site is Bayo Vista, which lies to the south of the Rodeo Site after the defined buffer zone. Project activities and development would not occur within this community or the buffer zone. The Selby Site equipment staging area is directly adjacent to the Rodeo Site on the northern side. There is no established community in this area as the site is also used for industrial purposes. There are no established communities in the vicinity of the Carbon Plant.

All demolition activities at the Santa Maria Site would occur within the existing refinery boundaries. The closest communities to the Santa Maria Site are Arroyo Grande to the north and Nipomo to the east. No Project activities would divide these communities.

There are no established communities within the Project area of the Rodeo Refinery and the Santa Maria Site that could divide an established community. Additionally, all Project activities would occur within existing refinery boundaries and land (Selby Site) owned by Phillips 66. Therefore, the Project would have no impact regarding division of an established community in either Contra Costa County or San Luis Obispo County.

4.11.7 Direct and Indirect Impacts of the Proposed Project

Table 4.11-1 presents a summary of the potential land use and planning impacts, as well as significance determinations for each impact.

Table 4.11-1. Summary of Impacts

Impact	Significance Determination		
	LTS	LTSM	SU
Impact 4.11-1. Conflict with any applicable land use plan, policy, or the regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?			
Rodeo Refinery and Santa Maria Site			
Construction/Demolition and Transitional[a]	✓		
Operation and Maintenance	✓		

Notes: LTS = Less than significant, no mitigation proposed
LTSM = Less-than-significant impact with mitigation
SU = Significant and unavoidable

[a.] Transitional phase applies only to Rodeo Refinery

IMPACT 4.11-1

b. Would the Proposed Project conflict with any applicable land use plan, policy, or the regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

Construction and Demolition: Less Than Significant, No Mitigation Proposed

The Project, including both the Rodeo Refinery and the Santa Maria Site, was analyzed against applicable plans and policies including Land Use Elements of both the Contra Costa County General Plan and the San Luis Obispo County General Plan.

Rodeo Refinery

The Rodeo Refinery, including the Carbon Plant, is designated *Heavy Industry* and zoned for heavy industrial use by the Contra Costa County General Plan and the Contra Costa County Code, respectively. Project construction and demolition activities would occur within the existing Project site boundaries and are activities consistent with the *industrial* land use classification in Contra Costa County. Therefore, the Project would have less-than-significant impacts related to consistency with local land use plans and policies.

Santa Maria Site

Demolition activities at the Santa Maria Site are outside the jurisdiction of Contra Costa County and would require a separate permit and environmental process by resource agencies, San Luis Obispo County, and the Coastal Commission.

The Santa Maria Site is primarily designated as *Industrial* land use, with the northern portion of the buffer area designated as *Open Space*. A small section of the site at the southeast corner is designated as *Agriculture*. The Santa Maria facility and Project demolition activities would occur entirely within the area designated as *Industrial* land use and not result in conflicts with surrounding *Open Space* and *Agriculture* land uses. Therefore, the Project would have less-than-significant impacts related to consistency with local land use plans and policies.

Operation and Maintenance: Less Than Significant, No Mitigation Proposed

Rodeo Refinery

The Rodeo Refinery would be modified to process renewable feedstocks instead of crude oil, but would continue to operate as an industrial facility consistent with baseline conditions. The Carbon Plant would be demolished, and operations would cease at this Project facility. No changes to other

existing operation and maintenance activities would occur. In addition, there are no proposed changes to the Urban Limit Line boundary (Contra Costa County 2021a). The Project would require a new LUP through Contra Costa County for the new proposed Project activities, but the proposed uses would be consistent with the *Industrial* land use designation.

The Rodeo Site where proposed modifications would occur is designated as a *Water-related Industry* by the San Francisco Bay Plan. The Project would continue its current use, and therefore would not be inconsistent with the policies and goals of the San Francisco Bay Plan.

Therefore, the Project would have less-than-significant impacts related to consistency with local land use plans and policies.

Santa Maria Site

At this point in time it is speculative to assume a specific future use of the Santa Maria Site. Any future use of the Santa Maria Site would be subject to a separate permit application and environmental review process. Any development or reuse would likely require a Coastal Development Permit as well as grading and building permits from San Luis Obispo County. Any remediation that may be necessary would be coordinated with the RWQCB.

Mitigation Measure: **None Required**

4.11.8 References

BCDC (San Francisco Bay Conservation and Development Commission). 2020. San Francisco Bay Plan. May. Available at: https://bcdc.ca.gov/pdf/bayplan/bayplan.pdf. Accessed June 30, 2021

Contra Costa County. 2010. Contra Costa County General Plan 2005–2020. Available at: https://www.contracosta.ca.gov/4732/General-Plan. Accessed June 14, 2021.

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Contra Costa Redevelopment Agency. 1997. Rodeo Waterfront/Downtown Specific Plan. Community Development Department. Available at: https://www.contracosta.ca.gov/DocumentCenter/View/28606/Rodeo-Specific-Plan?bidId=. Accessed July 12, 2021.

San Luis Obispo County. 2018a. South County Area Plan. September 2018. Available at: https://www.slocounty.ca.gov/Departments/Planning-Building/Forms-Documents/Plans-and-Elements/Area-Plans/South-County-Coastal-Area-Plan.pdf. Accessed July 12, 2021.

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———. 2019. Coastal Zone Land Use Ordinance. April. Available at: https://www.slocounty.ca.gov/Departments/Planning-Building/Forms-Documents/Ordinances/Coastal-Land-Use-Ordinance-(Title-23).pdf. Accessed June 30, 2021.

———. 2021. Land Use View. Available at: https://gis.slocounty.ca.gov/Html5Viewer/Index.html?configBase=/Geocortex/Essentials/REST/sites/PL_LandUseView/viewers/PL_LandUseView/virtualdirectory/Resources/Config/Default. Accessed on July 12, 2021.

4.12 Noise and Vibration

4.12.1 Introduction

This section analyzes and evaluates the potential impacts of the Project regarding noise and vibration at the Rodeo Refinery and Santa Maria Site. Discussed are the physical and regulatory settings, the baseline for determining environmental impacts, the significance criteria used for determining environmental impacts, and potential impacts associated with Project construction and demolition, the transitional phase, and operation and maintenance.

The Project also includes the Pipeline Sites—four regional pipelines serving the Santa Maria Site and the Rodeo Refinery. The Santa Maria Site is connected to the Rodeo Refinery by approximately 200 miles of subterranean pipeline, crossing San Luis Obispo, Santa Barbara, Kern, Kings, Fresno, Merced, Stanislaus, San Joaquin, Alameda, and Contra Costa Counties. Phillips 66 proposes to empty and clean the pipelines at existing maintenance access points to be decommissioned or sold; they would not be excavated as part of this Project. No physical changes would occur.

4.12.1.1 Noise and Vibration Background

Noise

Noise is typically described as dissonant, unwanted, or objectionable sound, and the terms noise and sound are used more or less synonymously in this section. The human ear responds to a very wide range of sound intensities. The decibel (dB) scale used to describe sound is a logarithmic rating system that accounts for the large differences in audible sound intensities, from low to high volumes. When addressing the effects of noise on people, it is necessary to consider the frequency response of the human ear, or those frequencies that people hear the best. Sound measuring instruments are therefore often designed to "weight" sounds based on the way people hear. The frequency weighting most often used to evaluate environmental noise is "A-weighting" because it best reflects how humans perceive sound in the mid-frequency range. Measurements from instruments using this system, and associated noise levels, are reported in *A-weighted decibels*, or the dBA scale. Using this scale, changes in sound levels are perceived as follows: 3 dBA as barely perceptible, 5 dBA as readily perceptible, and 10 dBA as a doubling or halving of noise (Caltrans 2013). Therefore, a 70-dBA sound level will be perceived as about twice as loud as a 60-dBA sound level. People generally cannot detect differences of 1 to 2 dBA in a complex acoustical environment, such as urban outdoor situations.

On the logarithmic scale used to measure noise, a doubling of sound-generating activity (i.e., a doubling of the sound energy) causes a 3-dBA increase in average sound produced by that source, not a doubling of the loudness of the sound (which requires a 10-dBA increase). For example, if traffic on a road is causing a 60-dBA sound level at a nearby location, a doubling of the number of vehicles on this same road in the same amount of time would cause the sound level at that location to increase to 63 dBA.

For any noise source, several factors affect the efficiency of sound transmission traveling from the source, which in turn affects the potential noise impact at offsite locations. Important factors include distance from the source, frequency of the sound, absorbency and roughness of the intervening ground (or water) surface, the presence or absence of obstructions such as buildings and their absorbency or reflectivity, and the duration of the sound. Table 4.12-1 presents typical sound levels of some familiar noise sources and activities.

Table 4.12-1. Typical Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	110	Rock Band
Jet flyover at 1,000 feet		
	100	
Gas lawnmower at 3 feet		
	90	
Diesel truck at 50 feet at 50 mph		Food blender at 3 feet
	80	Garbage disposal at 3 feet
Noisy urban area, daytime		
Gas lawnmower at 100 feet	70	Vacuum cleaner at 10 feet
Commercial area		Normal speech at 3 feet
Heavy traffic at 300 feet	60	
		Larger business office
Quiet urban daytime	50	Dishwasher in next room
Quiet urban nighttime	40	Theater, larger conference room (background)
Quiet suburban nighttime		
	30	Library
Quiet rural nighttime		Bedroom at night, concert hall (background)
	20	
		Broadcast/recording studio
	10	
	0	

Source: Caltrans 2013

Although a measured A-weighted noise level will adequately indicate the level of environmental noise at any instant in time, community noise levels typically vary by time. Several noise descriptors have been developed to characterize community noise by the total acoustical energy content of the noise over defined periods of time or by characterizing the loudest sound levels over a given time interval. Several useful noise metrics are described below.

- **L_{eq}:** The L_{eq} is the constant sound level that would contain the same acoustic energy as the varying sound level, during the same time period (i.e., the average noise exposure level for the given time period).
- **L_n:** The sound level exceeded n percent of a specified time interval, often 1 hour. For example, the L_{90} is the sound exceeded 90 percent of the time.
- **L_{max}:** The instantaneous maximum noise level measured during the measurement period of interest.

- **Day-night noise level (DNL):** The energy average of the A-weighted sound levels occurring during a 24-hour period that accounts for the greater sensitivity of most people to nighttime noise by weighting noise levels at night ("penalizing" nighttime noises). Noise between 10:00 p.m. and 7:00 a.m. is weighted (penalized) by adding 10 dBA to take into account the greater annoyance of nighttime noises.
- **Community noise equivalent level (CNEL):** Similar to the DNL, the CNEL adds a 5-dBA penalty for the evening hours between 7:00 p.m. and 10:00 p.m. in addition to a 10-dBA penalty between the hours of 10:00 p.m. and 7:00 a.m.

The effects of noise on people can include general annoyance, interference with mental concentration, interference with speech communication, sleep disturbance, stress-related disease, and, in the extreme, hearing impairment (Caltrans 2013).

Vibration

Most perceptible indoor vibration is caused by sources within buildings such as operation of mechanical equipment, movement of people, or slamming of doors. Typical outdoor sources of vibration waves that propagate through the ground and create perceptible ground-borne vibration in nearby buildings include construction equipment, steel-wheeled trains, and truck traffic on rough roads. If the roadway is fairly smooth, the vibration from rubber-tired traffic is rarely perceptible. Building damage due to vibration is also rare; but in extreme cases, such as during hydraulic breaking during demolition or pile-driving during construction, vibration could cause cosmetic or structural damage to buildings (FTA 2018).

Several metrics are used to describe ground-borne vibration. The following is a summary of metrics that are applicable to the analysis of ground-borne vibration impacts associated with the Project:

- **Vibration decibels (VdB):** The vibration velocity level in decibel scale.
- **Peak particle velocity (PPV):** The peak signal value of an oscillating vibration velocity waveform. Expressed in inches per second in the United States.
- **Root mean square (rms):** The square root of the arithmetic average of the squared amplitude of the signal.

Human response to vibration is difficult to quantify. Vibration can be felt or heard well below a level that would result in damage to a structure. VdB is commonly used to describe the perception of groundborne vibration, and PPV is most frequently used to describe vibration impacts to structures but can also be used to describe vibration impacts related to perception. The typical background level in residential areas is about 50 VdB, and most people generally cannot detect levels below about 65 VdB. A vibration level of 85 VdB in a residence can result in strong annoyance (FTA 2018). However, note that the duration of a vibration event has an effect on human response, as does the frequency of the event. Generally, as the duration of a vibration event increases, the potential for adverse human response increases. In addition, while people have varying sensitivities to vibrations at different frequencies, in general, they are most sensitive to low-frequency vibration that can be felt.

4.12.2 Environmental Setting

4.12.2.1 Physical Conditions

This section describes the noise environment of the Rodeo Refinery, on which the Project would be built and operated, and of the Santa Maria Site, which would be shut down and demolished. Because the Pipeline Sites would be cleaned and either decommissioned or sold, detailed information about the noise environments at those sites is unnecessary for an assessment of Project impacts, and they are not included in the following description of noise conditions.

Section 4.11, *Land Use and Planning*, provides a detailed description of land uses in the vicinity of the Rodeo Refinery and the Santa Maria Site. That information is summarized below as necessary to describe the noise environments of the Project.

Rodeo Refinery

The Rodeo Refinery is located in an unincorporated area of Contra Costa County. The general plan land use designation for the refinery is Heavy Industry (Contra Costa County 2010), and it is zoned for heavy industrial use (Contra Costa County 2005).

The Rodeo Refinery includes developed land occupied by an existing active petroleum refinery (the Rodeo Site) and substantial areas of undeveloped land (Figure 4.12-1). The Rodeo Site is wholly occupied by industrial facilities. I-80 runs through the Rodeo Refinery in a southwest to northeast direction and divides the Rodeo Site from the undeveloped portion and from the Carbon Plant to the southeast of the Rodeo Refinery. The Rodeo Site is surrounded by buffer areas, ranging between 300 to 600 feet in width, that separate it from nearby land uses, so no noise-sensitive land uses are located immediately adjacent to the Rodeo Site. Existing land uses in the vicinity of the Rodeo Site include industrial, commercial, office, residential, and vacant land.

San Pablo Bay, the Union Pacific/Amtrak railroad right-of-way, and the NuStar Energy tank farm abut the Rodeo Site to the north. A small residential enclave (i.e. Tormey) is located along Old County Road north of the NuStar Energy tank farm. The Bayo Vista residential neighborhood of Rodeo, several schools, at least one daycare center, several churches, and a few commercial establishments are located south of the Rodeo Refinery.

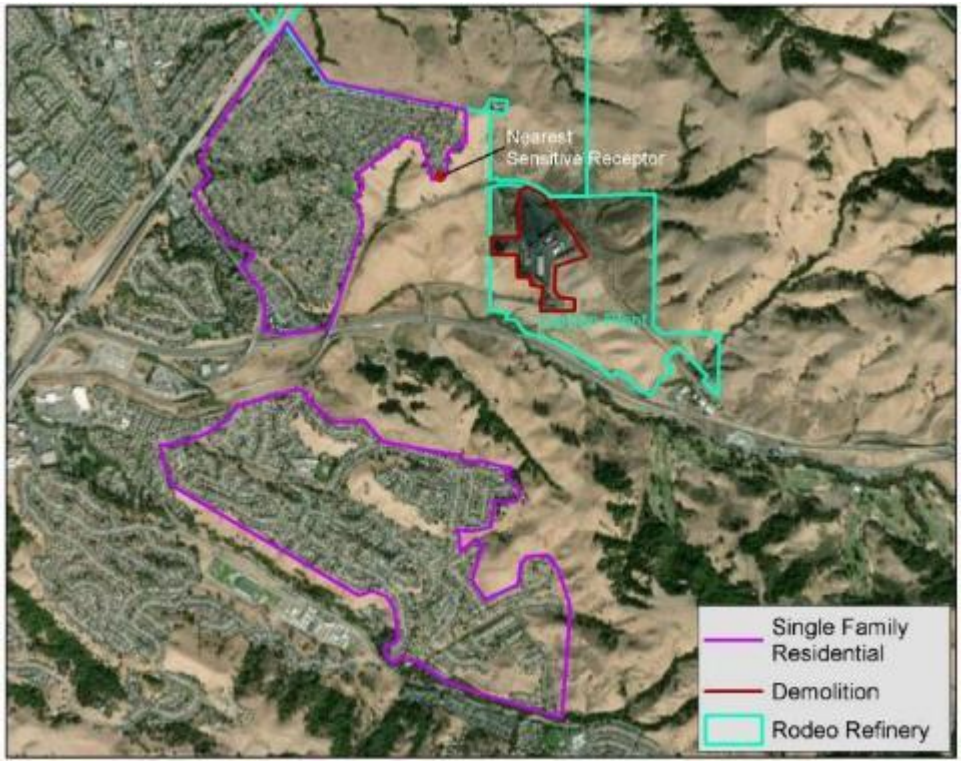
An apartment complex at the eastern edge of Bayo Vista is the closest sensitive receptor to the Project activities on the Rodeo Site. Although construction activities would occur throughout the Rodeo Site, most work would be minor, involving new piping and modifications of existing equipment and infrastructure. Demolition of three existing tanks and construction of the PTU and STU on the site, which would involve pile driving, are the activities closest to the apartment complex property line (approximately 1,475 feet).

No schools are within 0.5 mile of the Rodeo Site. The two closest schools are a Montessori academy on Parker Avenue (approximately 0.8 mile from the PTU area) and the Rodeo Hills Elementary School on Rodeo Avenue (approximately 1.0 mile from the PTU area). Most commercial uses in the vicinity are located in an area centered on San Pablo Avenue/Parker Avenue, approximately 0.5 mile southwest of the Rodeo Site.

The Carbon Plant is located on the Rodeo Refinery property east of I-80 and consists of an operating petroleum coke processing plant (Figure 4.12-2). The site is zoned for heavy industrial land use (Contra Costa County 2005). It is surrounded by vacant land to the north and west, land zoned for industrial uses to the east, residential open space to the northwest, and State Route 4 and agricultural land uses to the south. The nearest sensitive receptors are single-family homes located approximately 1,500 feet northwest of the Carbon Plant Site. The Crockett Hills Regional Park is located approximately 0.7 mile east of the Carbon Plant.

Source: Google Earth V 7.3.3.7786 (July 2019). Boundaries based on Contra Costa County 2005.

Figure 4.12-1. Key Land Uses and Location of Nearest Sensitive Receptor – Rodeo Refinery

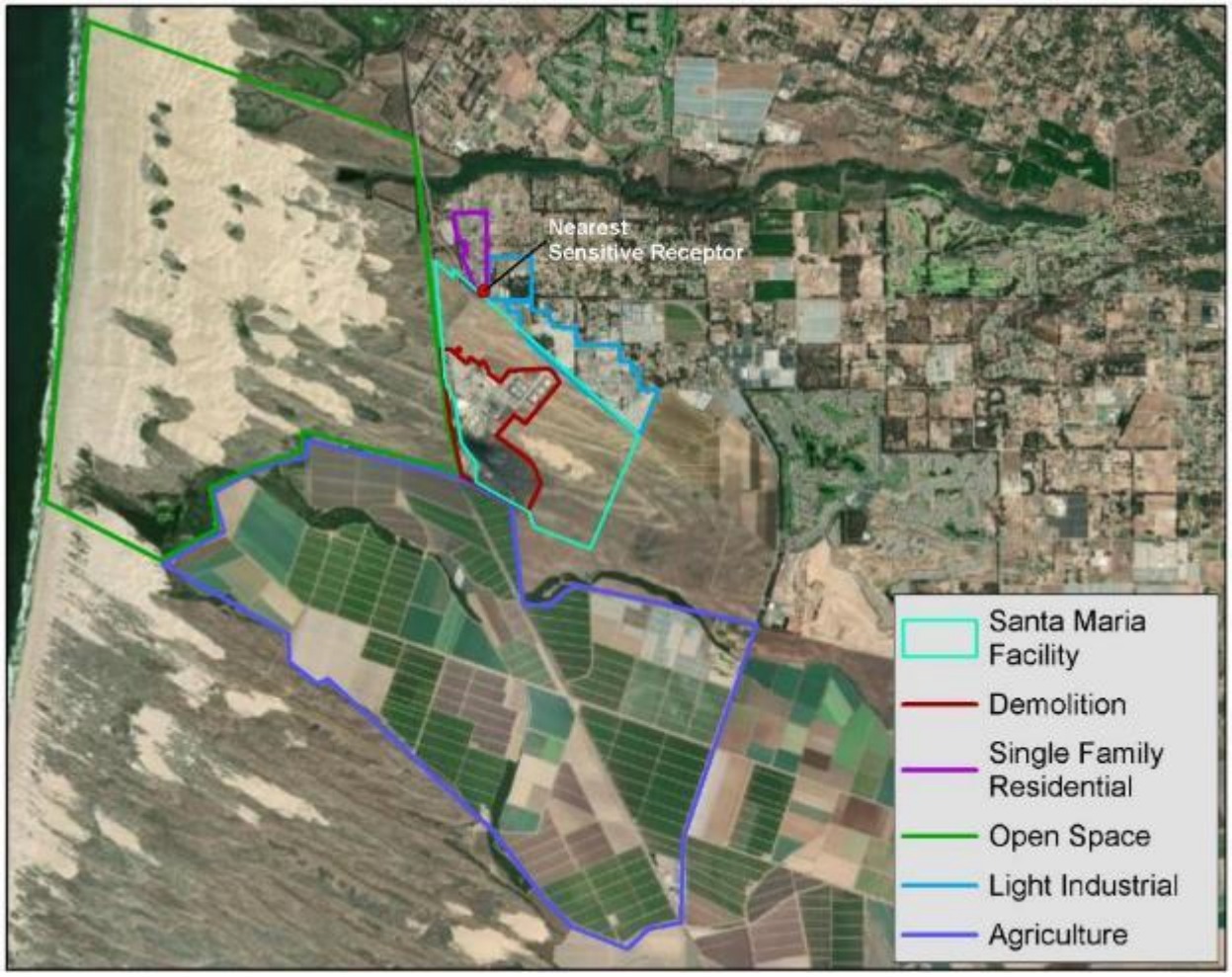


Source: Google Earth V 7.3.3.7786 (July 2019). Boundaries based on Contra Costa County 2005.

Figure 4.12-2. Key Land Uses and Location of Nearest Sensitive Receptor – Carbon Plant

Santa Maria Site

The Santa Maria Site is an active petroleum refinery; in addition to the refinery, this property includes vacant land east and west of the refinery (Figure 4.12-3). The Santa Maria Site is designated as coastal appealable, and surrounding lands are designated flood hazard, agricultural, open space, and recreational. The site itself is zoned for industrial uses (San Luis Obispo County 2021). Surrounding land uses include industrial and residential (suburban and rural) to the north, agriculture to the south, recreation and commercial to the east, and open space to the west. The nearest sensitive receptors are single-family homes located approximately 2,000 feet to the north of the refinery.



Source: Google Earth V 7.3.3.7786 (July 2016). Boundaries based on San Luis Obispo County 2021.

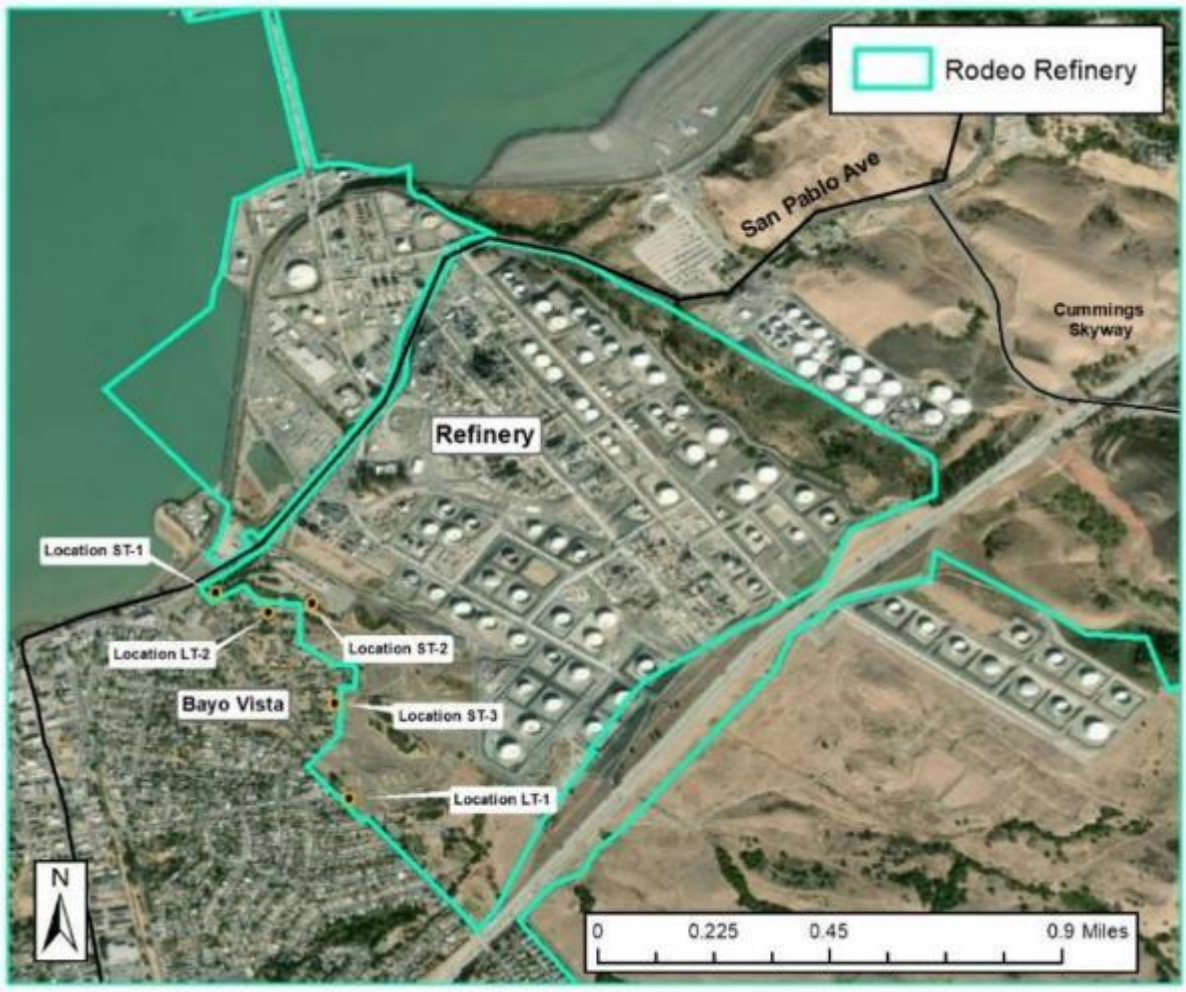
Figure 4.12-3. Key Land Uses and Location of Nearest Sensitive Receptor – Santa Maria Refinery

4.12.2.2 Baseline Ambient Noise Levels

Rodeo Refinery

The ambient noise environment at the Rodeo Site is dominated by existing operations at the refinery, vehicular traffic on I-80, and rail traffic on the Union Pacific/Amtrak railroad tracks. Baseline noise measurements, both long term and short term, were collected at representative locations around the Rodeo Site in 2006 as part of the environmental impact report for a previous project at the Rodeo Refinery, and additional measurements were taken in 2012 (ESA 2012). Because refinery operations have remained essentially the same with respect to noise generation since then, data from these measurements are used to evaluate Project-related increases in noise levels at sensitive receptors.

The noise-monitoring locations for both monitoring events are shown in Figure 4.12-4. The noise monitoring locations have varying line-of-sight views of the refinery processing area and the overall refinery due to the surrounding topography. Table 4.12-2 summarizes the range of hourly sound levels measured at each of the long-term noise monitoring locations and the resulting calculated DNL. Table 4.12-2 also identifies the time and measured sound levels at several short-term monitoring locations.



Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Note: LT = long-term noise monitoring locations; ST = short-term monitoring locations

Figure 4.12-4. Rodeo Site Noise Measurement Locations

Table 4.12-2. Ambient Noise Levels at Monitored Locations, dBA

Site[a]	Location	Measurement Period	Noise Level in dBA	
			L_{eq}	DNL
LT-1	Near the Rodeo Refinery fenceline near the former Hillcrest Elementary School	24-Hour (January 2006)	51–58	61
		24-Hour (December 2012)	49–58	60
LT-2	Near the Rodeo Refinery fenceline near terminus of Trigger Road	24-Hour (January 2006)	56–60	65
		24-Hour (December 2012)	54–66	65
ST-1	At the intersection of San Pablo Avenue and California Street	12:10–12:20 p.m. (January 2006)	68	NA
ST-2	At the end of Trigger Road near the Rodeo Refinery boundary	12:28–12:38 p.m. (January 2006)	61	NA
ST-3	Residence on Tullibee Road	12:45–12:55 p.m. (January 2006)	58	NA

Source: Contra Costa County 2006; ESA 2012

Notes: dBA = A-weighted decibels
DNL =Day-night noise level
L_{eq} = Average noise exposure level for the given time period
NA = Not Applicable

[a] Locations correspond to those illustrated in Figure 4.12-4.

The nearest sensitive receptors to the Carbon Plant (single-family homes) are exposed to noise associated with State Route 4, which is closer (on the south) to the receptors than the Carbon Plant. Pursuant to the Noise Element of the Contra Costa County General Plan, the noise level associated with State Route 4 in this area is 72-dBA DNL at a distance of 100 feet from the centerline (Contra Costa County 2005). The affected single-family homes are located between 130 and 4,150 feet from the centerline of State Route 4. Assuming standard distance attenuation for a line source, the calculated existing noise levels at distances of 130 and 4,150 feet are 71- and 56-dBA DNL, respectively.

Santa Maria Site

The nearest sensitive receptors to the Santa Maria Site are located north of the refinery, approximately 270 to 680 feet from State Route 1, which is closer to the receptors than the refinery at the Santa Maria Site. According to the Noise Element of the San Luis Obispo County General Plan, noise levels are expected to reach 60-dBA DNL at a distance of 136 feet from State Route 1 in this vicinity (San Luis Obispo County 1992). Assuming standard distance attenuation for a line source, the calculated existing noise levels at distances of 270 and 680 feet from State Route 1 are approximately 5,757- and 5,353-dBA DNL, respectively.

4.12.2.3 Regulatory Setting

The following provides a discussion of the regulations established by Contra Costa and San Luis Obispo Counties to limit noise exposure and ground-borne vibration at sensitive land uses. No state or federal regulations apply to community noise.

Noise Element of the Contra Costa County General Plan

The Noise Element of the Contra Costa County General Plan (Contra Costa County 2010) sets various goals and policies that apply to all development projects in the county. Most of these policies address land use compatibility for evaluating the acceptability of existing and future exterior noise levels for new projects, such as commercial and residential developments, and for proposing noise-sensitive receptors; thus, they are not directly applicable to the Project, which is in an existing industrial zone.

The General Plan also identifies land use compatibility guidelines for various land uses, shown in Table 4.12-3 (Contra Costa County 2010). Contra Costa County uses these guidelines, along with future noise contour maps contained in the general plan, as a guide for evaluating the compatibility of noise sensitive projects in potentially noisy areas.

The Noise Element of the general plan also establishes a DNL criteria for outdoor noise levels in residential areas of 60 dBA. However, the county recognizes that a DNL of 60 dBA or less may not be achievable in all residential areas due to economic or aesthetic constraints. In addition, Policy 11-8 of the Contra Costa County General Plan Noise Element pertains to construction activities as being concentrated during the day time to minimize effects on adjacent noise-sensitive adjacent land uses (Contra Costa County 2010).

Table 4.12-3. Land Use Compatibility for Community Noise Environments, dBA

Land Use Category	Community Noise Exposure, DNL or CNEL			
	Normally Acceptable[a]	Conditionally Acceptable[b]	Normally Unacceptable[c]	Clearly Unacceptable[d]
Residential—Low-Density, Single-Family, Duplex, Mobile Homes	< 60	55 to 70	70 to 75	> 75
Residential—Multi Family	< 65	60 to 70	70 to 75	> 75
Transient Lodging—Motels, Hotels	< 65	60 to 70	70 to 80	> 80
Schools, Libraries, Churches, Hospitals, Nursing Homes	< 70	60 to 70	70 to 80	> 80
Auditoriums, Concert Halls, Amphitheaters	--	< 70	--	> 65
Sports Arena, Outdoor Spectator Sports	--	< 75	--	> 70
Playgrounds, Neighborhood Parks	< 70	--	67.5 to 75	> 72.5
Golf Courses, Riding Stables, Water Recreation, Cemeteries	< 75	--	70 to 80	> 80
Office Buildings, Business, Commercial and Professional	< 70	67.5 to 77.5	> 75	--
Industrial, Manufacturing, Utilities, Agriculture	< 75	70 to 80	> 75	--

Source: Noise Element, Figure 11-6, in Contra Costa County 2010.

Notes: CNEL = Community noise equivalent level
dBA = A-weighted decibel
DNL =Day-night noise level

[a] Normally Acceptable: Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

[b] Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design.

[c] Normally Unacceptable: New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

[d] Clearly Unacceptable: New construction or development clearly should not be undertaken.

Contra Costa County Municipal Code and General Plan

Contra Costa County does not have an ordinance that specifically addresses noise or ground-borne vibration and would apply to the proposed Project demolition and construction activities, such as decibel limits at adjacent land uses. Noise complaints within the unincorporated area of the county are addressed through application of peace disturbance sections of the County Code. Contra Costa County General

Plan Noise Element Policy 11-8 specifies that "construction activities shall be concentrated during the hours of the day that are not noise-sensitive for adjacent land uses and should be commissioned to occur during normal work hours of the day to provide relative quiet during the more sensitive evening and early morning periods." The Project demolition and construction activities would be conducted during daytime or normal working hours on industrial-zoned land. Project operational noise from mechanical equipment would not be substantially different than existing noise emanating from equipment presently in use at the Project site.

Noise Element of the San Luis Obispo County General Plan

Noise Element goals applicable to the proposed Project include protecting the residents of San Luis Obispo County from the harmful and annoying effects of exposure to excessive noise and preserving the tranquility of residential areas by preventing the encroachment of noise-producing uses. The Project would eliminate a noise-producing land use.

San Luis Obispo County Municipal Code

San Luis Obispo County limits construction noise impacts by limiting construction to daytime hours. The noise limit standards presented in Sections 23.06.044 through 23.06.050 do not apply to noise sources associated with construction, if such activities do not take place before 7:00 a.m. or after 9:00 p.m. any day except Saturday or Sunday, or before 8:00 a.m. or after 5:00 p.m. on Saturday or Sunday.

4.12.3 Significance Criteria

Based on CEQA Guidelines Appendix G, a project would have significant adverse noise impacts if it would result in:

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 ground-borne vibration or ground-borne noise levels; or

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 2 miles of a public airport or public use airport, expose people residing or working in the project area to excessive noise levels.

4.12.4 CEQA Baseline

Baseline conditions reflect the 2019 operation and maintenance of the Rodeo Refinery and Santa Maria Site as petroleum refineries, including operation and maintenance activities. The baseline setting also includes the applicable regulatory framework to protect environmental resources, which are described above.

4.12.5 Approach to Analysis

4.12.5.1 Construction Noise Impacts

Contra Costa County does not have noise-related performance standards for short-term construction activities; however, per General Plan Policy 11-8, the County restricts construction to typical daytime or normal working hours as a standard condition of approval for development projects. The County also uses project-specific conditions of approval to regulate construction noise levels at sensitive project sites, e.g., residential areas. Short-term noise level increases from construction activities would be considered substantial if construction noise conducted outside normal working hours is distinctly audible.

San Luis Obispo County limits construction noise impacts by exempting construction noise that occurs during daytime hours, specifically between 7:00 a.m. and 9:00 p.m. any day, except Saturdays and Sundays, or before 8:00 a.m. or after 5:00 p.m. on Saturdays and Sundays.

4.12.5.2 Operational Noise Impacts

Contra Costa County does not have an ordinance that specifically addresses noise. Noise complaints within the unincorporated area of Contra Costa County are addressed through application of peace disturbance sections and generic nuisance ordinances of the Contra Costa County Code. In the absence of quantitative limits, a proposed project would result in a significant impact if it is deemed likely to disturb existing sensitive receptors. The Noise Element of the Contra Costa County General Plan provides guidance for this assessment.

The Noise Element of the general plan states: "a change in level of at least 5 dBA is required before any noticeable change in community response would be expected." To assess changes in the ambient noise environment resulting from the proposed Project, the following significance criteria take into account both the absolute change in noise levels resulting from the Project and the relationship between the resultant noise level and Contra Costa County's noise/land use compatibility criteria shown in Table 4.12-3:

- Where the resultant noise level would remain *normally acceptable* for the affected land use, a change of 5-dBA DNL or more would be considered significant;
- Where the resultant noise level would be in the range described as *conditionally acceptable* or *normally unacceptable*, a change of 3-dBA DNL or more over existing noise levels would be considered significant; and
- Where the resultant noise level would be *clearly unacceptable*, any increase in noise over existing levels would be considered significant.

4.12.5.3 Groundborne Vibration Impacts

Contra Costa County has not established guidelines to assess impacts associated with ground-borne vibration. However, Caltrans has developed a guidance manual for specifically assessing vibration impacts associated with construction (Caltrans 2020). Table 4.12-4 presents a synthesis of various vibration impact criteria for assessing vibration damage to structures; Table 4.12-5 presents a synthesis of criteria relating to human perception of ground-borne vibration.

Table 4.12-4. Guideline for Vibration Damage Potential Threshold Criteria

	Maximum Peak Particle Velocity (inches/second)	
Structure and Condition	**Transient Sources**	**Continuous / Frequent Intermittent Sources**
Extremely Fragile Historic Buildings, Ruins, Ancient Monuments	0.12	0.08
Fragile Buildings	0.2	0.1
Historic and Some Old Buildings	0.5	0.25
Older Residential Structures	0.5	0.3
New Residential Structures	1.0	0.5
Modern Industrial/Commercial Buildings	2.0	0.5

Source: Caltrans 2020

Table 4.12-5. Guideline for Vibration Annoyance Potential Criteria

Human Response	Maximum Peak Particle Velocity (inches/second)	
	Transient Sources	Continuous / Frequent Intermittent Sources
Barely Perceptible	0.04	0.01
Distinctly Perceptible	0.25	0.04
Strongly Perceptible	0.9	0.10
Severe	2.0	0.4

Source: Caltrans 2020

San Luis Obispo Code Section 23.06.060 specifically exempts ground-borne vibration associated with construction activities if it occurs between 7:00 a.m. and 9:00 a.m. It also exempts vibration associated with moving sources such as trucks and railroads. Ground-borne vibration associated with demolition that occurs outside the exempt hours would be significant if it would be perceptible at or beyond the Santa Maria Site.

4.12.6 Discussion of No Noise Impacts

Review and comparison of the environmental setting and Project characteristics with each of the significance criteria stated above indicate no impacts associated with noise related to Project operations and maintenance would result for CEQA Checklist criteria a and b as regards to operation of the Santa Maria Site and the operation and decommissioning of the Pipeline Sites. The following discussion supports the reasoning for this conclusion.

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

b. *Would the Project result in generation of excessive groundborne vibration or groundborne noise levels?*

   With demolition of the Santa Maria Site, there would be no operation and maintenance noise or vibration impacts at that site.

   The Pipeline Sites would be emptied and cleaned. Decommissioning activities at the Pipeline Sites would closely resemble existing routine maintenance activities, e.g., vehicles and potable equipment use, which include periodic cleaning of the pipelines. Accordingly, noise and vibration levels would not be increased above baseline levels and would therefore not exceed applicable standards. Therefore, no impact would occur associated with noise or vibration from decommissioning and operation of the Pipeline Sites.

c. *For a project located within the vicinity of a private airstrip or in an airport land use plan or, where such a plan has not been adopted, within 2 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 public use airports or private airstrips are located within a 2-mile radius of the Rodeo Refinery or the Santa Maria Site, and those sites are not located within an airport land use plan. Therefore, the Project would not expose people to excessive noise levels, and people working at the Project sites would not be exposed to excessive levels of aircraft noise. There would be no impact.

4.12.7 Direct and Indirect Impacts of the Proposed Project

Table 4.12-6 presents a summary of the potential noise and ground-borne vibration impacts, as well as significance determinations for each impact.

Table 4.12-6. Summary of Impacts

Impact	Significance Determination		
	LTS	LTSM	SU
Impact 4.12-1. Demolition and construction activities associated with the Project would not generate noise levels in excess of standards established by Contra Costa County or San Luis Obispo County (as applicable).			
Rodeo Refinery and Santa Maria Site			
Construction/Demolition Including Transitional Phase[a]	✓		
Impact 4.12-2. Operation of the Project would not result in exposure of persons to noise levels in excess of standards established by Contra Costa County.			
Rodeo Refinery			
Operation and Maintenance	✓		
Impact 4.12-3. The Project would not generate ground-borne vibration or ground-borne noise levels.			
Rodeo Refinery and Santa Maria Site			
Construction/Demolition Including Transitional Phase[a]	✓		
Operation and Maintenance	✓		

Notes: LTS = Less than significant, no mitigation proposed
LTSM = Less-than-significant impact with mitigation
SU = Significant and unavoidable

[a] Transitional phase applies only to Rodeo Refinery

IMPACT 4.12-1

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

Construction/Demolition: Less Than Significant, No Mitigation Proposed

Noise levels associated with typical demolition and construction activities vary during different periods of activity, depending upon the activity location(s) and the number and types of equipment commonly used. Given that complexity, both spatially and in timing, of the demolition and construction noise emissions associated with the Project, typical demolition and construction scenarios were modeled using the Federal Highway Administration's Road Construction Noise Model to assess the Project's potential to exceed the applicable thresholds at the Rodeo Refinery and Santa Maria Site.

Typical noise levels produced by various types of demolition and construction equipment are shown in Table 4.12-7.

Table 4.12-7. Construction Equipment Sound Levels (dBA)

Equipment Description	Sound Level at 50 Feet (dBA)[a]
Backhoe	78
Compactor (ground)	83
Compressor (air)	78
Crane	81
Dozer	82
Drill Rig Truck	79
Dump Truck	76
Excavator	81
Forklift[b]	67
Front End Loader	79
Small Generator for Lighting	73
Generator	81
Grader	85
Hydra Break Ram	90
Man Lift	75
Impact Pile Driver	101
Paver	77
Pumps	81
Roller	80
Tractor	84

Source: Federal Highway Administration 2006

Notes: dBA = A-weighted decibel

[a.] The sound levels presented in the table are the actual measured values summarized in the Roadway Construction Noise Model User's Guide (Federal Highway Administration 2006) unless the actual measured value is unavailable, in which case the equipment specifications are used.

[b.] Forklift sound level taken from Illingworth & Rodkin, Inc. 2015.

Rodeo Refinery

At the Rodeo Site three existing storage tanks would be demolished, a new PTU and STU would be constructed, and existing processing units and other facilities would be modified (Section 3.9, *Project Components*; Figure 3-2); all these activities could generate construction noise. The nearest residential receptor (Bayo Vista apartment building) is approximately 1,475 feet to the south of the Rodeo Site, which is a substantial attenuation distance .

The assumed equipment list for a typical demolition scenario includes four excavators, two hydra break rams, two shears, four manlifts, and two front-end loaders. To allow for a conservative analysis, five cranes, two lifts, one generator, one pile driver, and a pump were modeled to represent daytime construction noise activities. Demolition and pile driving activities would be limited to normal daytime working hours. Nighttime construction activities within the industrial zone, if necessary, would be limited to relatively quiet activities, with assumed equipment including two forklifts and six small generators, such as those used for nighttime lighting. For demolition and construction work conducted

near residential areas that could be impacted by noise, activities would be restricted to the hours of 7:30 am to 5:00 pm Monday through Friday, and work would be prohibited on Saturdays, Sundays, and state and federal holidays.

The Road Construction Noise Model default usage percentages were used for both demolition and construction calculations. In addition, an existing earthen berm in the buffer area would eliminate the line of sight between the construction area and the nearest sensitive receptors. That berm would reduce noise by at least 10 dBA, and that estimated shielding was included in the Road Construction Noise Model. The road construction noise model input and output is provided in Appendix E, *Noise Technical Data*.

Demolition activities, including the transitional phase, at the Rodeo Site were calculated to result in hourly sound levels of up to 56-dBA L_{eq} at the nearest residential receptor approximately 1,475 feet away (Bayo Vista apartment building). Assuming that 12 hours of demolition would occur during daytime hours, the calculated DNL of 53 dBA added to the existing DNL of 61 dBA would result in a total DNL of less than 62 dBA and an increase of less than 1 dBA, which would not be perceivable by most persons, thus negligible.

Daytime construction activities at the Rodeo Site were calculated to result in sound levels of up to 55 dBA at the nearest sensitive receptors, while nighttime construction activities were calculated to be 39 dBA. Assuming 15 hours of daytime construction and 9 hours of nighttime construction daily, the calculated DNL of 54 dBA added to the existing DNL of 61 dBA would result in a total DNL of less than 62 dBA and an increase of less than 1 dBA, which would not be perceivable by most persons, thus negligible.

Because noise is instantaneous in nature and does not persist or accumulate in the environment, random noise-generating events during the transitional phase are not expected to coincide in such a manner as to cause a significant noise impact at receptors, particularly given the distances between the Rodeo and Carbon Plant Sites and the nearest sensitive receptor. The impact would be less than significant, and no mitigation is required.

Construction/Demolition Traffic

Construction at the Rodeo Site, including the Transitional Phase, would generate up to 1,000 daily vehicular trips at its peak (Abrams Associates Traffic Engineering 2021). All trucks and the majority of worker vehicles are assumed to arrive and depart via Cummings Skyway and San Pablo Avenue, meaning they would pass by the residences along the adjacent Old County Road, northeast of the Rodeo Refinery. An increase in roadway volumes of 100 percent (a doubling of sound energy) is necessary to cause a barely noticeable 3 dBA increase in noise levels (Caltrans 2013). According to the site-specific traffic study prepared for the Project (Abrams Associates Traffic Engineering 2021), there would be 3,900 vehicles per day on San Pablo Avenue south of Cummings Skyway. Accordingly, Project construction and demolition would not result in a doubling of vehicles during peak construction, and there would not be a perceptible increase in ambient noise levels, i.e., less than 3 dBA.

Per General Plan Policy 11-8, the County restricts construction to typical daytime or normal working hours as a standard condition of approval for development projects. Short-term noise level increases from construction activities would be considered substantial if construction noise conducted outside normal working hours is distinctly audible. However, as shown above, any increases in ambient noise from the Rodeo Site would be barely perceptible or imperceptible and would thus not represent a substantial increase or a nuisance to the surrounding community.

During approximately 7 months of the construction period, the number of vessels calling at the Marine Terminal would increase above baseline levels, but the number of vessels calling at the Marine

Terminal on a peak day would not increase. Accordingly, noise levels resulting from peak-day vessel activity during construction would not increase.

Carbon Plant Site

Demolition

The Carbon Plant would be demolished and removed. The nearest sensitive receptors in the vicinity of the Carbon Plant Site are two single-family residential neighborhoods: Rancho El Pinole Tract 4329 located approximately 1,500 feet (0.28 mile) to the northwest and Rancho El Pinole Tract 5007 approximately 3,100 feet (0.59 mile) to the south, which are substantial attenuation distances. As described earlier, existing noise levels at those residences nearest to State Route 4 further west are estimated, based on their distance from State Route 4, to be 71-dBA DNL and 56-dBA DNL, respectively. The assumed equipment list for the demolition is the same as that assumed for the Rodeo Site. The Road Construction Noise Model default usage percentages were used for demolition calculations.

Modeled demolition noise levels at the sensitive receptors to the northwest of the Carbon Plant Site would reach 66-dBA L_{eq} and modeled demolition noise levels at the receptors to the south would reach 60-dBA L_{eq}. Assuming 8 working hours and low evening and nighttime noise levels of 45-dBA L_{eq}, the DNL associated with the Carbon Plant Site demolition noise at the nearest sensitive receptors would be 63 dBA (northwest) and 57 dBA (south), resulting in no perceptible increase in noise at the sensitive receptors northwest of the Carbon Plant Site and a 2-dBA DNL increase in ambient noise levels at the sensitive receptors south of the Carbon Plant Site. Furthermore, a 2-dBA increase in DNL would not be perceptible by most persons and would thus not represent a substantial increase or a nuisance.

Per General Plan Policy 11-8, the County restricts construction to typical daytime or normal working hours as a standard condition of approval for development projects. Short-term noise level increases from construction activities would be considered substantial if construction noise conducted outside normal working hours is distinctly audible. However, as shown above, any increases in ambient noise from the Carbon Plant Site would be barely perceptible or imperceptible and would thus not represent a substantial increase or a nuisance to the surrounding community. Therefore, noise impacts related to demolition of the Carbon Plant would not exceed an applicable standard. Furthermore, a 2-dBA increase in DNL would not be perceptible by most persons and would thus not represent a substantial increase or a nuisance. Therefore, impacts of onsite noise at the Carbon Plant Site would be less than significant, and no mitigation would be required.

Demolition Traffic

Demolition-related vehicle and truck traffic would access State Route 4 via Franklin Canyon Road and would not pass by existing sensitive receptors. Accordingly, impacts of noise related to Carbon Plant demolition traffic would be less than significant.

Santa Maria Site

Demolition

Under the Project, most existing process equipment and support infrastructure (storage tanks, buildings, onsite piping and pumps) at the Santa Maria Site would be demolished. The nearest sensitive receptors to the Santa Maria Site are approximately 2,000 feet to the north (approximately 0.4 mile), a substantial attenuation distance. Existing ambient noise levels range between 53- and 71-dBA DNL.

Modeled demolition noise at these receptors may reach 63-dBA L_{eq}. Assuming 8 working hours per day and lower evening and nighttime noise levels of 45-dBA L_{eq}, the DNL associated with demolition at the Santa Maria Site would be 59 dBA.

Demolition activities, including the transitional phase could, at most, result in a 6-dBA increase over ambient noise levels, which would be just perceptible by most persons. This attenuation calculation does not take into consideration the intervening buildings (insertion losses) and topography (terrain losses). A 2,000-foot attenuation distance combined with these other losses are anticipated to result in actual daytime noise impacts that are less than a 6-dBA increase over ambient noise levels at the sensitive receptors. Furthermore, demolition activities are expected to occur during hours that are exempt from Sections 23.06.044 through 23.06.050 of the San Luis Obispo County noise ordinance. Demolition-related vehicle and truck traffic would amount to no more than 36 vehicles per day on utility roads, and these vehicles would not pass by existing sensitive receptors that are located on residential streets. The impact would be less than significant and no mitigation is required.

Mitigation Measure: **None Required**

IMPACT 4.12-2

Operation of the Project would not result in exposure of persons to noise levels in excess of standards established by Contra Costa County.

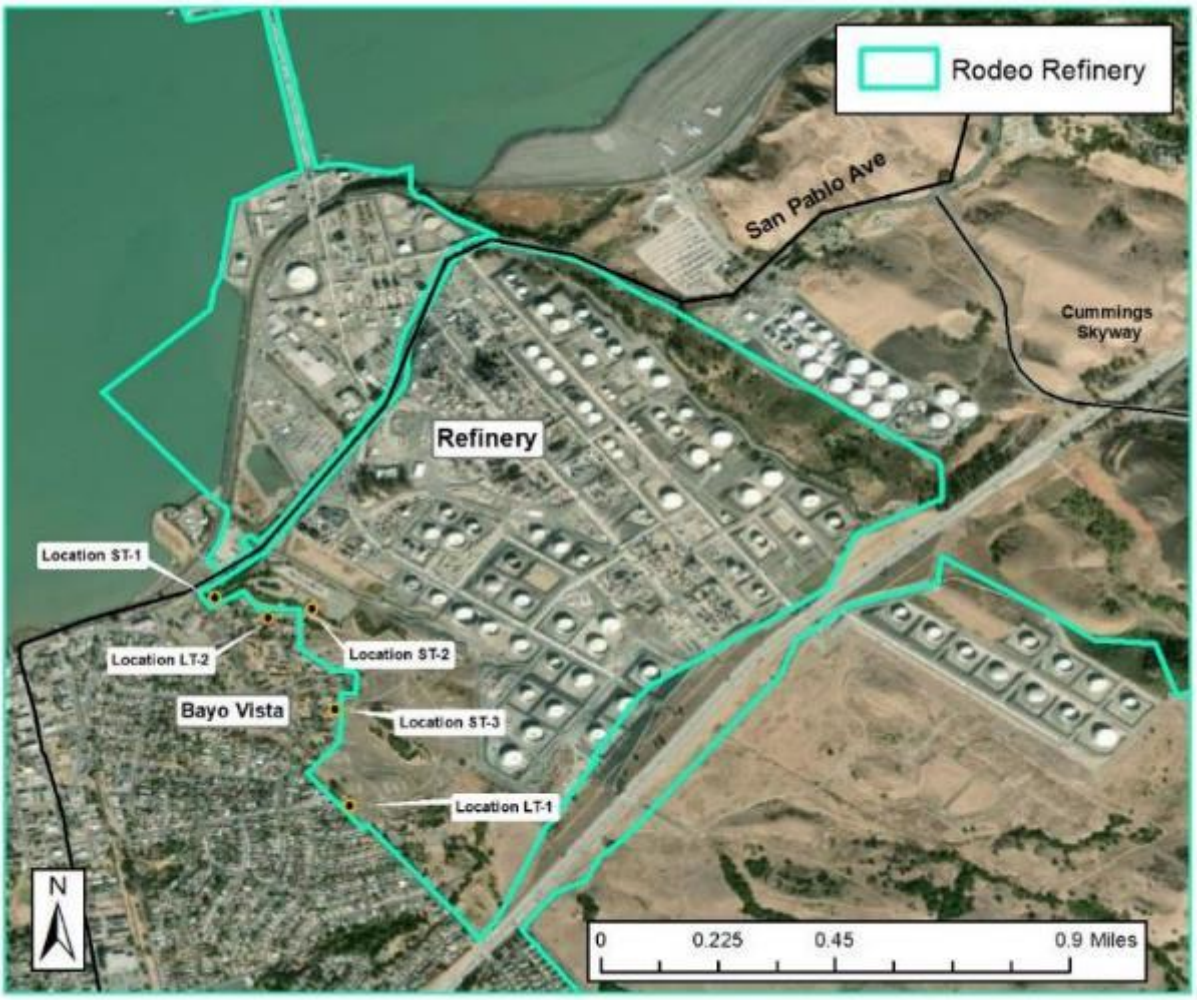
Operation and Maintenance: Less Than Significant, No Mitigation Proposed

Operation of the Project would occur entirely on the Rodeo Site. No operational activity would occur at the Carbon Plant, the Santa Maria Site, or the Pipeline Sites. Accordingly, this analysis considers only impacts of operations at the Rodeo Site, as discussed below.

Rodeo Refinery

Noise generated by new equipment at the Project as received at nearby sensitive receptors was estimated using the Computer Aided Noise Abatement (CadnaA) Noise Model. The CadnaA Noise Model is a software program that enables noise modeling of complex industrial sources using sound propagation factors as adopted by International Organization for Standardization 9613. Atmospheric absorption was estimated for conditions of 10°C and 70 percent relative humidity (i.e., conditions that favor propagation) and computed in accordance with International Organization for Standardization 9613-1. The modeling process included (1) characterizing the noise sources, (2) creating 3-dimensional maps of the site, proposed structures, and vicinity to enable the model to evaluate effects of distance, structural interference, and topography on noise attenuation, and (3) assigning the equipment sound levels to appropriate locations on the site. The CadnaA Noise Model then constructed topographic cross sections to calculate sound levels in the vicinity of the Project site. The new equipment at the Project is expected to operate 24 hours per day.

The modeling effort used modeling receptor locations representing the residences nearest the Rodeo Site. The modeling receptors considered in the noise modeling are depicted in Figure 4.12-5.



Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Figure 4.12-5. Noise Model Receptor Locations

The assessment considered the noise implications of new equipment associated with the Project. The primary noise sources associated with the Project were identified by review of the lists of new process equipment in consultation with Phillips 66. Process equipment sound levels were estimated based on the type and capacity of the equipment and standard sound level estimates for such equipment provided in the CadnaA Noise Model, or by review of similar equipment for sound levels. The equipment locations, numbers, and sound levels used for this evaluation are provided in Table 4.12-8.

Table 4.12-8. Process Equipment Sound Levels

Equipment	Site Location	# Units	Range of Capacity	Sound Power Level (dBA)	
				Range of Sound Levels	Overall Level
PTU Train 1					
Centrifugal Pumps	PTU	48	15 to 74 hp	86 to 95[a]	106
Screw Pumps		7	8 to 40 hp	87 to 95[a]	99
Blower		5	25 hp	103[b]	110
PTU Train 2					
Centrifugal Pumps	PTU	13	3 to 60 hp	76 to 94[a]	101
Screw Pumps		7	8 to 40 hp	87 to 95[a]	99
Blower		3	25	103[b]	108
PTU Train 3					
Centrifugal Pumps	PTU	48	15 to 74 hp	86 to 95[a]	106
Screw Pumps		7	8 to 40 hp	87 to 95[a]	99
Blower		5	25 hp	103[b]	110
General PTU					
Centrifugal Pumps	PTU	7	4 to 150 hp	78 to 99[a]	103
Spray Pumps		2	50 hp	89[a]	92
Leaf and Vibratory Filters		38	--	76 to 80[b]	106
Wet Surface Air Cooler		4	125 hp	110[a]	116
Scrubber					
Various Pumps	STU	4	25 to 75 hp	81 to 87[a]	91
PTU FOG Recovery					
Centrifugal	WWTP	20	1 to 74 hp	72 to 95[a]	99
Screw		1	20 hp	91[a]	91
Other Pumps		3	3 to 10 hp	76 to 82[a]	84
Blower		2	20 to 50 hp	103[b]	106

Notes: dBA = A-weighted decibel
FOG = Fats, oils and grease
PTU = Pre-treatment Unit
STU = sulfur treatment unit
WWTP = Wastewater Treatment Plant

[a] The sound levels were calculated by the CadnaA Noise Model based on equipment type and capacity and represent conservative estimates of equipment sound levels.

[b] The sound levels were provided by Phillips 66.

Onsite Process Equipment Noise

As stated previously, Project operation would result in a significant noise impact if it causes a 5-dBA increase at a receptor already exposed to noise levels considered to be *normally acceptable*; causes an increase of 3 dBA in at a receptor already exposed to noise levels considered to be *conditionally acceptable*; or causes any increases at a receptor already in an area exposed to *clearly unacceptable* noise levels.

As shown in Table 4.12-9, the estimated DNL from 24-hour operation would range between 51- and 56-dBA DNL, where the existing DNL ranges from 61- to 65-dBA DNL. Cumulative Project operational noise would not cause the existing DNL to increase by more than 1 dBA at sensitive receptors, which is below the 5-dBA incremental threshold.

Table 4.12-9. Modeled Sound Levels of New Process Equipment (dBA)

	dBA, DNL				
Receptors	**R1**	**R2**	**R3**	**R4**	**R5**
Estimated DNL from 24-hour Operation	55	51	52	55	56
Existing DNL[a]	61	61	61	65	65
Existing Plus Project DNL	61	61	61	65	65
Increase	0	0	1	0	0
Applicable Threshold Significant?	No	No	No	No	No

Notes: dBA = A-weighted decibels
DNL =Day-night noise level

[a.] Measured noise levels presented in Table 4.12-2.

On-Road Vehicle Noise

An increase in roadway traffic volumes of 100 percent (a doubling of sound energy) would be needed to cause a 3-dBA increase in noise levels. Operation of the Project would not result in an increase of the number of permanent employees and, therefore, no increase in commuter light-duty vehicle traffic. In 2019, 70 percent of the truck traffic to and from the Rodeo Refinery was related to petroleum coke movements. Shutting down the Carbon Plant would reduce total daily trucks from the Rodeo Refinery by more than half, from 76 trucks per day on average in 2019 to 44 trucks per day on average during the Project. Accordingly, traffic noise related to the Project would be reduced from baseline levels, although the reduction would be too small to be perceptible by most persons at sensitive receptors.

Rail Traffic

The Project would result in 11.3 additional railcars per day at the Rodeo Site rail unloading rack compared to baseline conditions. These additional railcars would be handled by the existing railroad operation and would not necessitate additional locomotives. Although noise associated with switching railcars would last longer than during baseline conditions because of the additional number of cars, the noise would be of the same magnitude. Because there would be no additional daily train visits, the Project would not result in additional noise events. The rail operations at the Carbon Plant Site, which consisted of three trains per week during 2019, would cease during the Project. Accordingly, the Project would result in a slight, likely imperceptible, decrease in rail-related noise.

Vessels

The Project would not result in an increased number of vessels calling at the Marine Terminal on a peak day. Accordingly, noise levels would not increase as a result of peak-day vessel activity.

Mitigation Measure: None Required

IMPACT 4.12-3

b. Would the Project result in generation of excessive groundborne vibration or groundborne noise levels?

Construction/Demolition: Less Than Significant, No Mitigation Proposed

Construction activities, including during the transitional phase, have the potential to result in varying degrees of temporary ground-borne vibration, depending on the specific construction equipment used and operations involved. Vibration levels associated with typical construction equipment are presented in Table 4.12-10.

Table 4.12-10. Vibration Source Levels for Construction Equipment

Equipment	Peak Particle Velocity (inches/second) at 25 Feet	Approximate Vibration Level LV (dVdB) at 25 feet
Pile Driver (impact)	1.518 (upper range)	112
	0.644 (typical)	104
Pile Driver (sonic)	0.734 upper range	105
	0.170 typical	93
Clam Shovel Drop (slurry wall)	0.202	94
Hydromill	0.008 in soil	66
(Slurry wall)	0.017 in rock	75
Vibratory Roller	0.21	94
Hoe Ram	0.089	87
Large Bulldozer	0.089	87
Caisson Drill	0.089	87
Loaded Trucks	0.076	86
Jackhammer	0.035	79
Small Bulldozer	0.003	58

Source: Federal Transit Administration 2018

Rodeo Refinery

Construction and demolition equipment would produce vibration levels that would be felt in the immediate vicinity of construction activities. However, ground-borne vibration diminishes rapidly with distance from the source, depending on ground/soil characteristics. Based on the information in Table 4.12-10, a pile driver would represent the greatest vibration source at 1.518 PPV at a distance of 25 feet. A PPV of 0.21 is the threshold for potential structural damage; and 0.01 is the level at which groundborne vibration becomes strongly perceptible. The nearest sensitive receptor to the Rodeo Site is located at least 1,475 feet from the proposed work area, which is a substantial attenuation distance. Groundborne vibration associated with a pile driver at that distance would not be expected to exceed 0.30033 PPV, which would not be perceived at sensitive receptors.

For demolition activities at the Carbon Plant, where pile drivers would not be employed, a vibratory roller would be the equipment that would produce the most groundborne vibration at a distance of 25 feet (Table 4.12-10). Because the threshold for damage is 0.21 PPV, demolition activities would

not cause damage outside the Carbon Plant. The vibration level at the nearest sensitive receptor (1,500 feet from the site) would be 0.000452 PPV, which would not be perceived at that receptor.

Santa Maria Site

For demolition activities at the Santa Maria Site, where pile drivers would not be employed, a vibratory roller would be the equipment that would produce the most groundborne vibration at a distance of 25 feet (Table 2.12-10). Because the threshold for damage is 0.21 PPV, demolition activities would not cause damage outside the demolition site. The vibration level at the nearest sensitive receptor (2,000 feet from the demolition site, which is a substantial attenuation distance) would be 0.000293 PPV and would not be perceived at that receptor. The impact would be less than significant and no mitigation is required.

Operation and Maintenance: Less Than Significant, No Mitigation Proposed

Rodeo Refinery

Sources of ground-borne vibration associated with Project operation would include backup generators and air handling units at the Rodeo Site. These pieces of equipment are typically well-balanced because they are designed to produce very low vibration levels throughout their operational life. In most cases, even when there is an imbalance, this equipment contributes to ground vibration levels only in the near vicinity of the equipment, and any such vibration would dissipate within a short distance and would not be felt at receptors at longer distances. Therefore, noise impacts associated with operation and maintenance at the Rodeo Refinery would be less than significant and no mitigation is required.

Mitigation Measure: **None Required**

4.12.8 References

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4.13 Transportation and Traffic

4.13.1 Introduction

This section summarizes the results of the Project-specific transportation analysis prepared by Abrams Associates Traffic Engineering (2021). The section discusses the methodologies and findings of the analysis and evaluates the Project's potential to have significant impacts on local and regional traffic. The Santa Maria Site is addressed to the extent information is available and at a qualitative level of discussion.

The Project also includes the Pipeline Sites—four regional pipelines serving the Santa Maria Site and the Rodeo Refinery. The Santa Maria Site is connected to the Rodeo Refinery by approximately 200 miles of subterranean pipeline, crossing San Luis Obispo, Santa Barbara, Kern, Kings, Fresno, Merced, Stanislaus, San Joaquin, Alameda, and Contra Costa Counties. Phillips 66 proposes to empty and clean the pipelines at existing maintenance access points and to decommission or sell them; they would not be excavated as part of this Project. No physical changes would occur.

4.13.2 Environmental Setting

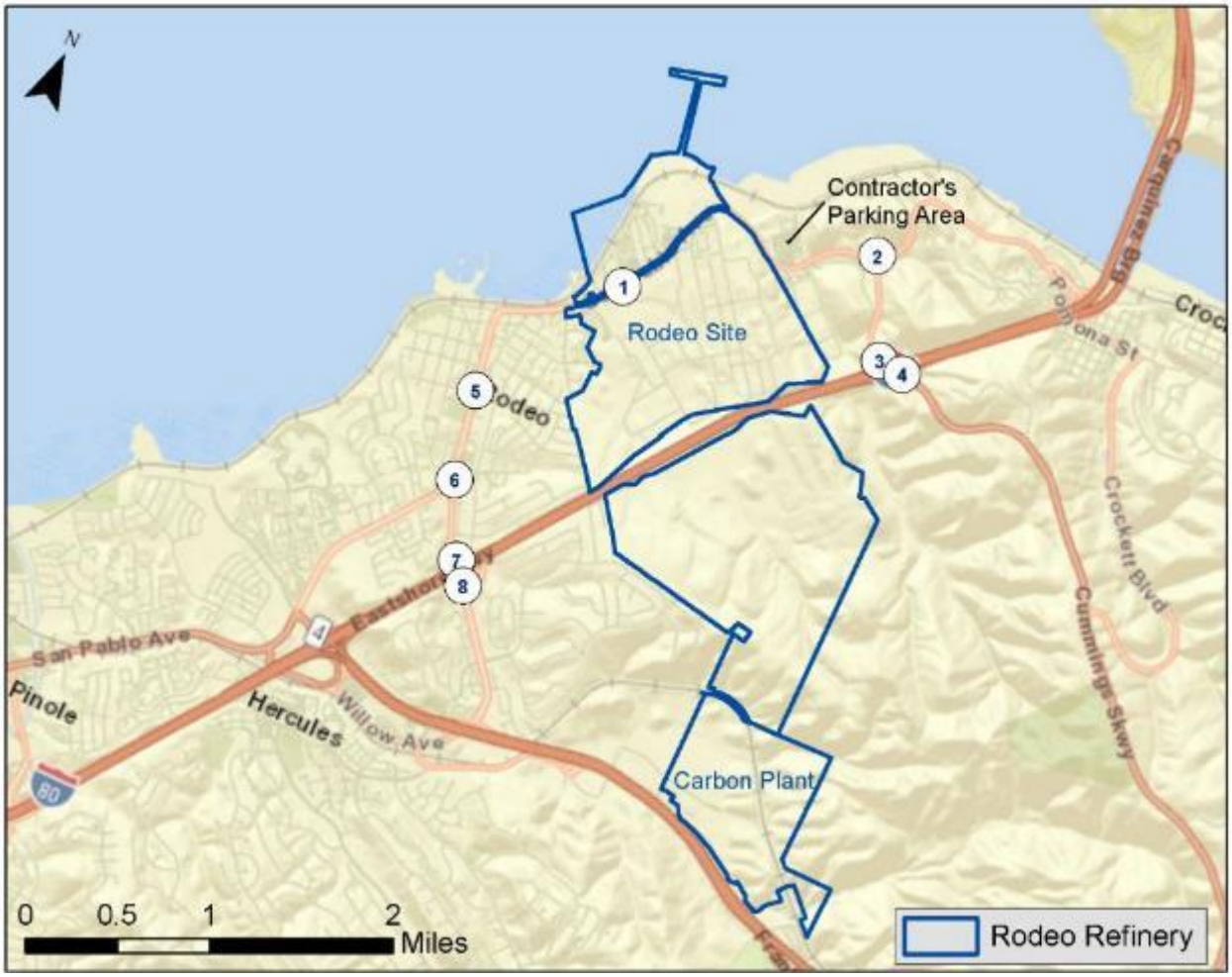
4.13.2.1 Existing Roadway Network

Rodeo Refinery

Figure 4.13-1 illustrates the location of the Rodeo Refinery in relation to the regional and local circulation network and depicts the study area intersections described below.

Interstate 80

I-80 is an east-west freeway (although oriented north-south in the immediate Project area) that connects Contra Costa County and Solano County via the Carquinez Bridge. I-80 is a heavily used route for commuters from Solano County and points north to the San Francisco Bay Area. In the vicinity of the Rodeo Refinery, the interchange of concern is Cummings Skyway, which provides the main access to the Rodeo Refinery. The freeway is designated as a *route of regional significance* (Contra Costa Transportation Authority [CCTA] 2017). Within the vicinity of the Project, I-80 is classified as a national Surface Transportation Assistance Act truck route.



Note: The numbered circles represent the eight study area intersections for the Project (see Section 4.13.2.2, *Rodeo Refinery Site Study Intersections*).

Figure 4.13-1. Study Area and Traffic Monitoring Intersections

Cummings Skyway

Cummings Skyway is a two-lane arterial road extending from San Pablo Avenue west of I-80 to connect with State Route 4 east of I-80. The intersection at San Pablo Avenue is signalized, while the I-80 eastbound and westbound ramps are unsignalized, but controlled with stop signs. The roadway is designated as an *expressway* in the Contra Costa County General Plan (Contra Costa County 2010) and as a route of regional significance by the CCTA (2017). Cummings Skyway serves as the main truck route to and from the Rodeo Refinery via I-80. The speed limit on Cummings Skyway between I-80 and San Pablo Avenue is 40 mph.

San Pablo Avenue/Parker Avenue

San Pablo/Parker Avenue is designated as an *arterial roadway* in the Contra Costa County General Plan (Contra Costa County 2010) and as a *route of regional significance* by the CCTA (2017). San Pablo Avenue is a four-lane arterial that provides north-south access in the Project vicinity, and runs through the Refinery Site. San Pablo Avenue connects with I-80 via the Cummings Skyway interchange north of the refinery and in Crockett. The speed limit on San Pablo Avenue in the vicinity of the Rodeo Site is 45 mph. Parker Avenue is a two-lane divided roadway that connects San Pablo Avenue to Willow Avenue, providing access to the Willow Avenue interchange with I-80 to the south of the Refinery Site. The speed

limit on Parker Avenue is 30 mph. Contra Costa County currently has plans for a road improvement project on San Pablo Avenue between Rodeo and Crockett, adjacent to the Rodeo Refinery. Phillips 66 is not proposing modifications to existing Rodeo Refinery access points; however, minor changes to internal roadways may be necessary.

Willow Avenue

Willow Avenue is designated as an *arterial roadway* in the general plan and as a *route of regional significance* by the CCTA (2017). Willow Avenue is a four-lane road running in a northwest-southeast direction. The street extends from Seventh Avenue to connect with San Pablo Avenue and the I-80 interchange. From San Pablo Avenue, Willow Avenue continues through northern Hercules before crossing State Route 4 and terminating at Sycamore Avenue. The speed limit on Willow Avenue is 40 mph.

Santa Maria Site

The Santa Maria Refinery, located in San Luis Obispo County, generates approximately 206 vehicle roundtrips per day or 412 one-way vehicle trips per day, including truck trips and personnel vehicle trips (San Luis Obispo County 2015).

State Route 1

State Route 1 from the Santa Maria Site entrance north to Halcyon Road is primarily a north-south, two-lane arterial; portions of the roadway have a median turning lane near certain intersections. State Route 1 from the Santa Maria Site entrance east to Willow Road (local) is an east-west, two-lane arterial. State Route 1 south of Willow Road is a north-south, two-lane arterial. Stretching from Willow Road south to W. Clark Avenue, State Route 1 is locally known as Guadalupe Road. It becomes Cabrillo Highway south of the town of Guadalupe and Casmalia Road south of Black Road.

Willow Road

Willow Road is a county-managed, east-west, two-lane minor arterial with access from the Santa Maria Site via State Route 1. The intersection at Willow Road and State Route 1 is controlled by a stop sign on Willow Road. The Willow Road extension provides a full access interchange at Highway 101 and extends Willow Road to N. Thompson Avenue. Willow Road is the county-designated truck route from the Santa Maria Site to Highway 101.

4.13.2.2 Rodeo Refinery Site Study Intersections

As required by the CCTA's Technical Procedures, the project-specific analysis is required to include affected intersections for projects that would add more than 50 peak hour trips (CCTA 2013). Based on the Project's trip generation and the potential for adverse effects on traffic operations, eight study intersections were selected in coordination with Contra Costa County staff (Figure 4.13-1). The eight study area intersections include the following:

1. San Pablo Avenue at Refinery Road (Main Project Entrance)
2. San Pablo Avenue at the Cummings Skyway
3. Cummings Skyway at the I-80 Westbound Ramps
4. Cummings Skyway at the I-80 Eastbound Ramps
5. Parker Avenue at Fourth Street
6. Willow Avenue at San Pablo Avenue

7. Willow Avenue at the I-80 Westbound Off-Ramp
8. Willow Avenue at the I-80 Eastbound Ramps

The I-80 ramp intersections fall under the jurisdiction of Caltrans; all other intersections fall under Contra Costa County jurisdiction. The geometry of each of the analyzed intersections (i.e., turning and through lanes and signalization) is illustrated in Figures 4.13-2a and 4.13-2b. Freeway mainline operations along segments of I-80 were not included as part of this analysis because, in general, such an analysis is required only if the project in question is expected to increase peak-hour traffic in the peak direction of the freeway by more than 3 percent, which would not be the case for the Project.

4.13.2.3 Existing Traffic Volumes

For analysis of construction traffic, existing operational conditions at the eight study intersections were evaluated according to using the methodology set forth in CCTA's Technical Procedures (CCTA 2013). Analysis of traffic operations at signalized and unsignalized intersections was conducted using the methodology described in the Highway Capacity Manual (Transportation Research Board 2016) with Synchro software (Appendix F, *Transportation Analysis*). Vehicle counts for the AM and PM peak periods were collected in March and April of 2021 and are depicted in Figures 4.13-2a and 4.13-2b.

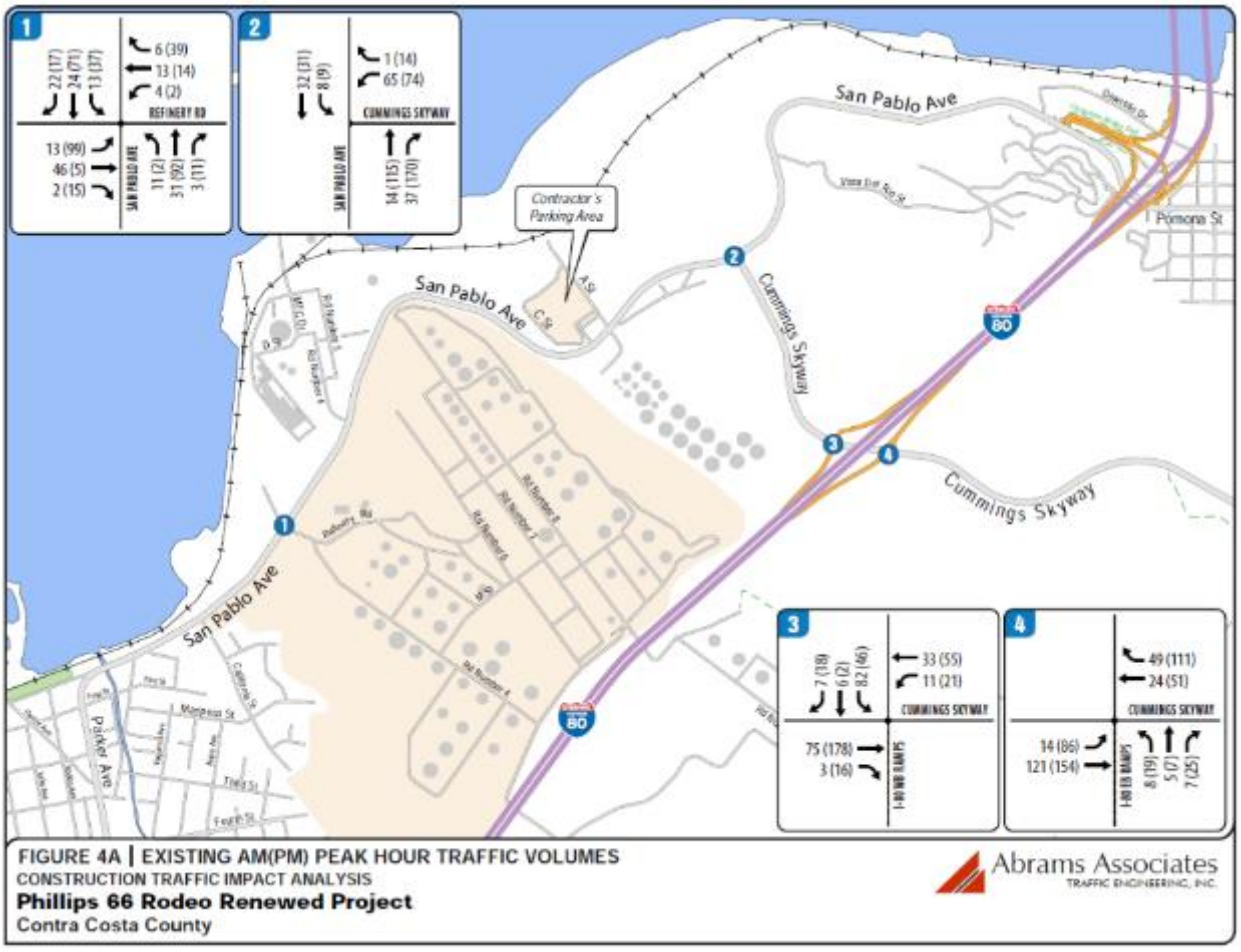


Figure 4.13-2a. Existing (2021) Peak-Hour Traffic at Study Intersections 1–4

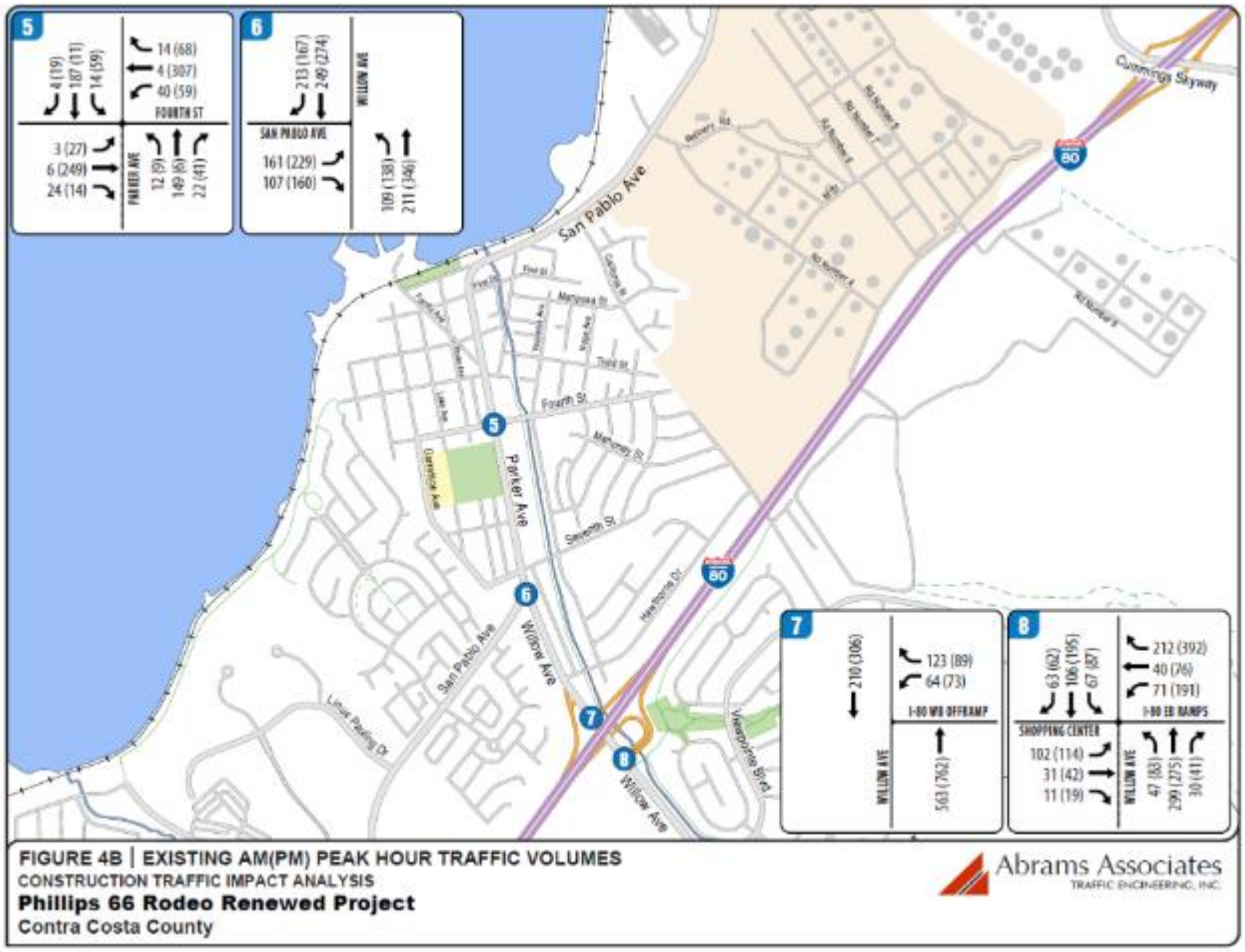


Figure 4.13-2b. Existing (2021) Peak-Hour Traffic at Study Intersections 5–8

4.13.2.4 Rail Facilities

Rodeo Refinery

The Rodeo Refinery is served by two rail lines: the Union Pacific/Amtrak mainline passing through the Rodeo Site along the shoreline and the Burlington Northern-Santa Fe mainline passing by the Carbon Plant Site through Franklin Canyon. The Union Pacific line supports daily service to the Rodeo Site to handle approximately five butane railcars per day at a rail loading facility adjacent to the mainline tracks. The Burlington Northern-Santa Fe line supports a thrice-weekly service handling an average of seven petroleum coke railcars per week (a little more than two per visit on average).

Santa Maria Site

The Union Pacific lines access the Santa Maria Site via the Union Pacific Coast Line, which runs from San Jose to about Moorpark. Freight rail services along this line are operated by Union Pacific, providing service that roughly parallels the Highway 101 corridor between San Jose in the north, and Camarillo in the south. The crude oil unit trains servicing the Santa Maria Site would use various Union Pacific tracks that are shared with a number of intercity passenger rail lines. The Santa Maria Site generates up to eight petroleum coke railcars per week, which are hauled by a weekly Union Pacific train delivering empty cars and hauling loaded cars.

Pipeline Sites

The Pipeline Sites do not have rail service.

4.13.2.5 Bicycle and Pedestrian Facilities

Caltrans provides guidelines and standards for four distinct types of bikeway facilities: Class I (bicycle paths separated from roads with crossing points minimized); Class II (restricted right-of-way designated lane for the exclusive or semi-exclusive use of bicycles with through travel by motor vehicles or pedestrians prohibited, but with vehicle parking and cross-flows by pedestrians and motorists permitted); Class III (signed bicycle routes that allow cyclists to share streets with vehicles); and Class IV (an adjacent bike lane or bikeway that is physically separated from motor vehicle traffic). Pedestrian facilities generally include sidewalks, crosswalks, curb ramps, pedestrian signals, and streetscape amenities (e.g., benches, tree-lined buffers).

Rodeo Refinery

No sidewalks or bicycle lanes are located along San Pablo Avenue in the immediate vicinity of the Rodeo Refinery. Cumming Skyway has bicycle lanes, but no sidewalk. Parker Avenue and Willow Avenue have bicycle lanes and sidewalks in most areas. Marked crosswalks, pedestrian push buttons, and pedestrian signals are provided at all nearby signalized intersections. There are also some Class I trails in the area, including the Rodeo Creek Trail and a section of the San Francisco Bay Trail, to the south of Rodeo that starts at the west end of Third Street.

Santa Maria Site

There are no sidewalks or bicycle lanes in the immediate vicinity of the Santa Maria Site (Google Maps 2021). Based on aerial imagery, an unpaved road and informal trail exists between the Santa Maria Site and sand dunes near Lettuce Lake, providing access to the beach.

4.13.2.6 Public Transportation

Rodeo Refinery

Two major public transit operators—Bay Area Rapid Transit (BART) and Western Contra Costa County Transit Authority (WestCAT)—provide service in the study area.

WestCAT provides local, express, and regional service to the cities of Pinole and Hercules and the unincorporated communities of Montalvin Manor, Tara Hills, Bayview, Rodeo, Crockett, and Port Costa (WestCAT 2021). WestCAT Route 11 provides service on Willow, San Pablo, and Parker Avenues between Hercules and Crockett, passing through Rodeo. As of May 1, 2021, WestCAT Route 11's Covid-reduced service operates Monday through Friday with approximately 30- to 60-minute headways between about 5:45 a.m. and 9:30 p.m. and less frequently on Saturdays. Routes JR/JL, 11, and 15 and the LYNX route operate on Willow Avenue and San Pablo Avenue. The nearest bus stops to the Rodeo Refinery, all on WestCAT Route 11, are located on San Pablo Avenue at California Street, adjacent to the main entrance to the Rodeo Site, and at the contractors' parking area farther east.

BART is a rapid mass transit system providing regional transportation connections to much of the Bay Area. North–south, it runs from Richmond to Fremont, and east–west, it runs from Bay Point to the San Francisco Airport and Millbrae with several connections in Oakland. The Richmond BART station, about 9 miles from the Rodeo Refinery, is the closest BART station to the study area and has trains running with approximately 30-minute headways between 5:00 a.m. and 9:00 p.m.

4.13.2.7 Emergency Access

The Rodeo Refinery has several temporary/emergency vehicle access entrances on San Pablo Avenue, in addition to the main signalized entrance intersection with Refinery Road. Multiple roadways provide external access to the Rodeo Site, and internal roadways within the Rodeo Refinery also provide access for both general and emergency vehicles.

Santa Maria Site

There are no public transit corridors adjacent to the Santa Maria Site, or along State Route 1 in the Project area (Google Maps 2021).

4.13.2.8 Regulatory Setting

State Authority

Caltrans is a state agency responsible for the design, construction, maintenance, and operation of the California State Highway System, as well as segments of the Interstate Highway System that lie within the state's boundaries. Headquartered in Sacramento, Caltrans is organized into 12 districts. Caltrans District 4 in Oakland is responsible for the operation and maintenance of I-80, State Route 4, and other state-administered facilities in Contra Costa County, as well as other state-maintained highways in nearby counties. Caltrans' construction practices require temporary traffic control planning "when the normal function of the roadway, or a private road open to public travel, is suspended" (Caltrans 2021). Specifically, if it is determined that traffic restrictions and detours are needed on, or would affect, state highways, a Transportation Management Plan may be required of the Project applicant for approval by Caltrans prior to construction. The plan must be prepared in accordance with the *California Manual on Uniform Traffic Control Devices* (Caltrans 2021). In addition, Caltrans requires permits for transporting oversized loads and certain materials as well as for construction-related traffic disturbance.

The Caltrans *Guide for the Preparation of Traffic Impact Studies* provides consistent guidance for Caltrans staff who review local development proposals (Caltrans 2002). This guide also informs local agencies about the information needed for Caltrans to analyze the traffic impacts to state highway facilities, which include freeway segments, on- or off-ramps, and signalized intersections.

Local Authority

Contra Costa County

Contra Costa Countywide Comprehensive Transportation Plan

Transportation policies that are currently applicable within Contra Costa County are based on the *Contra Costa County Comprehensive Transportation Plan* (CCTA 2020). That document identifies the criteria for analyzing transportation impacts and sets forth plans for future roadway improvements in the county.

Contra Costa County Transportation Analysis Guidelines

The Transportation Analysis Guidelines, amended in December 2020, provides guidance for the preparation of traffic analyses for projects. The purpose of the document is to establish a uniform approach, methodology, and tools to evaluate the transportation impacts on the County transportation system that may result from land use projects (Contra Costa County 2020).

Contra Costa County General Plan

The purpose of the Transportation and Circulation Element of the Contra Costa County General Plan is to "establish transportation goals and policies, and to establish specific implementation measures to assure that the transportation system of the County will have adequate capacity to serve planned growth in

Contra Costa County through the year 2020" (Contra Costa County 2010). The following policies are applicable to the Project:

- Circulation Phasing and Coordination
  - **Policy 5-4:** Development shall be allowed only when transportation performance criteria are met and necessary facilities and/or programs are in place or committed to the developed within a specified period of time.
- Circulation Safety, Convenience and Efficiency
  - **Policy 5-14:** Physical conflicts between pedestrians, bicyclists, and vehicular traffic shall be minimized.
  - **Policy 5-17:** Emergency response vehicles shall be accommodated in development of project design.

San Luis Obispo County

2019 Regional Transportation Plan

The San Luis Obispo Council of Governments adopted the Final Regional Transportation Plan in 2019 (San Luis Obispo County Council of Governments 2019), which serves as the "region's blueprint for a transportation system that enhances quality of life and meets the mobility needs of the region's residents and visitors…" Applicable to the proposed Project are the following safety policies:

- Safety – Improve public safety and security
  - **Policy 4.1:** Reduce fatalities, serious injuries, and collisions for motorized and non-motorized users.
  - **Policy 4.2:** Reduce congestion and increase safety by improving operations.
  - **Policy 4.3:** Enhance public safety and security in all modes of transportation.

4.13.3 Significance Criteria

According to the CEQA Guidelines Appendix G and Contra Costa County's Transportation Analysis Guidelines (Appendix C), a project would have a significant impact to transportation conditions if it would:

a. Conflict with a plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, including transit, roadway, bicycle, and pedestrian facilities;

b. Conflict with or be inconsistent with CEQA Guidelines Section 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); and

d. Result in inadequate emergency vehicle access.

In addition to the above-listed criteria, the following criterion, derived from common engineering practice, applies to the Project impact analysis:

- Cause substantial damage or wear of public roadways by increased movement of heavy vehicles.

4.13.4 CEQA Baseline

The baseline traffic operations scenario evaluates the existing conditions with the addition of traffic from reasonably foreseeable projects in the area and a general baseline growth in traffic. For this analysis, the baseline volumes were developed based on the assumption that Project completion and full occupancy would be in 2022 with a conservative assumption that the traffic volumes in the study area would have returned to 95 percent of pre-Covid levels at the time of counts in March and April 2021. Based on forecasts of the share of the work force that would work from home in the future (i.e., post-COVID), the future share is forecast to be 10 percent (versus a 5 percent share pre-COVID) (Institute of Transportation Engineers 2020). Based on the traffic volumes on Bay Area freeways, as reported by MTC (2021), and a comparison to pre-COVID traffic counts at the study intersections, it was determined that traffic volumes in the study area were close to 90 percent of pre-COVID levels. However, to be conservative a 20 percent increase was applied to the traffic counts taken in March and April of 2021. The traffic volumes for each of the study intersections for the baseline (2022) scenario are shown in Figures 4.13-2a and 4.13-2b. The baseline setting also includes the applicable regulatory framework to protect environmental resources, which are described above.

4.13.4.1 Methodology

The transportation analysis was conducted in accordance with the requirements and methodologies set forth by the Circulation Element of the Contra Costa County General Plan, CCTA Congestion Management Program, Contra Costa County Transportation Analysis Guidelines, Caltrans, and CEQA. Detailed data, raw calculation worksheets and other pertinent raw data for the study area roadways and intersections are provided in Appendix F, *Transportation Analysis*.

Based on the CEQA Guidelines 15064.3(c), the performance measure used to quantify the environmental impacts of a project is the vehicle miles traveled. Level of service analysis no longer constitutes the basis of significance determination. Vehicle miles traveled is typically estimated using an area-wide travel demand model from a regional transportation agency that calculates the vehicle miles traveled based on the number of vehicles multiplied by the typical distance traveled by each vehicle originating from or driving to a certain area.

The California OPR's 2018 Technical Advisory and Contra Costa County's Transportation Analysis Guidelines include standards for screening the vehicle miles traveled. These standards specify that low trip-generating projects that are consistent with the general plan and that "generate or attract fewer than 110 trips per day" can be presumed to cause a less-than-significant impact under CEQA and would not require further analysis of the vehicle miles traveled.

Employee traffic would not change with implementation of the proposed Project. Therefore, the vehicle miles traveled associated with commuter trips would not be increased. Truck traffic related to the refinery deliveries and waste byproducts in 2019 was 7,540 roundtrips per year. Truck traffic related to the transport of petroleum coke to and from the Carbon Plant Site, which totals 32,673 round trips in 2019, would no longer occur. As a result, annual truck round trips under the Project would total approximately 16,026 truck roundtrips per year. The Project would result in a decrease from approximately 110 roundtrips per day to and from the Rodeo Refinery as a whole to approximately 44 roundtrips per day to and from the Rodeo Refinery. Therefore, the proposed Project would qualify for this screening criteria because it is forecast to generate a net reduction of approximately 66 truck trips per day (Contra Costa County 2020).

The analysis of construction and demolition assumes the entire Project would be implemented in one phase to identify the potential worst-case traffic effects. If the project is built in phases over time, the effects of each phase would be less.

4.13.5 Discussion of No Impacts on Transportation and Traffic

The Pipeline Sites would be cleaned out and decommissioned or sold. No physical changes would occur. Their associated maintenance traffic (minimal and periodic) would cease under the Project. Therefore, the Pipeline Sites are not further addressed in this section.

Comparison of the setting and the Project's characteristics with the significance criteria stated above shows that no significant impacts would occur associated with the following criteria:

a. *Would the Project result in a Conflict with a plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, including transit, roadway, bicycle, and pedestrian facilities?*

   Operation and maintenance of the Project would not result in increased traffic on any roadway segments currently being used by pedestrian, bicycle, or transit facilities in the area, and the use of these existing facilities would not increase because Project operation would be accommodated with the existing workforce. Therefore, operation and maintenance of the Project would not result in a conflict with a plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, including transit, roadway, bicycle, and pedestrian facilities. Rail traffic would be altered by the Project, but result in a reduction in rail cars overall. Refer to Impact 4.13-3 for discussion of potential rail impacts. Potential impacts associated with construction and demolition are addressed in Impact 4.13-1. At the Santa Maria Site, existing traffic would be eliminated at Project completion. Employee commuters using pedestrian, bicycle, and transit facilities would no longer be needed. Therefore, no conflict with a plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system would occur. No impact would occur.

b) *Conflict with or be inconsistent with CEQA Guidelines Section 15064.3 subdivision (b);*

   At the Rodeo Refinery, employee traffic would not change with implementation of the proposed Project. Therefore, the vehicle miles traveled associated with commuter trips would not be increased. Operational traffic at the Santa Maria Site would cease with demolition of refinery facilities. No adverse effects on area traffic infrastructure would occur. Therefore, a vehicle miles traveled analysis is not required for the Project. No impact would occur.

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

   Phillips 66 does not propose any changes to existing public roadways or to the type of vehicles entering and exiting the Rodeo Site. Operation and maintenance activities would be the same as those currently existing, but with fewer vehicle trips. The Project could require minor changes in the configuration of internal roads at the Rodeo Site, but these changes, if they were to occur, would be constructed to operate safely in compliance with established design standards and would not affect public roadways or be substantial; however, as part of the permitting process for the Project Phillips 66 will need to obtain approvals from the Contra Costa County Public Works Department to ensure that any changes to site plans and layouts, including internal roadways, would not conflict with the planned road improvement project on San Pablo Avenue adjacent to the Rodeo Refinery. Therefore, the Project would not result in a substantial increase in hazards due to a geometric design feature or incompatible uses. No impact would occur.

   At the Santa Maria Site, the refinery would cease operation and be demolished. Removal of the Santa Maria Refinery would not result in a substantial increase in hazards due to a geometric design feature or incompatible uses. No impact would occur.

d) Result in inadequate emergency access?

Sufficient emergency access is determined by factors such as the number of access points, roadway width, and proximity to fire stations. The Rodeo Refinery has several temporary emergency vehicle access entrances on San Pablo Avenue, in addition to the main signalized entrance intersection with Refinery Road. Multiple roadways provide external access to the Rodeo Site, and internal roadways within the Rodeo Refinery also provide access for both general and emergency vehicles. Because operational truck traffic volumes at the Rodeo Refinery would be substantially less than under baseline conditions (44 trucks per day versus 110 trucks per day) and light-duty vehicular traffic would not increase, the Project would not adversely affect emergency access. Therefore, operation and maintenance of the Project at the Rodeo Refinery would have no impact on emergency access. Impacts related to construction and demolition, including the transitional phase, are addressed in Impact 4.13-1.

Truck traffic at the Santa Maria Site (approximately 36 trucks per day in 2019) would cease completely under the Project. Therefore, once the Project is implemented emergency access would not be needed, so no impact would occur. Demolition impacts at the Santa Maria Site are discussed in Impact 4.13-1.

4.13.6 Direct and Indirect Impacts of the Project

Table 4.13-1 presents a summary of the potential transportation and traffic impacts, as well as significance determinations for each impact.

Table 4.13-1. Summary of Impacts

Impact	Significance Determination		
	LTS	LTSM	SU
Impact 4.13-1. Would the Project result in inadequate emergency vehicle access? Project construction/demolition would temporarily increase peak-hour traffic volumes, and could result in inadequate emergency vehicle access.			
Rodeo Refinery and Santa Maria Site			
Construction/Demolition, Including Transitional Phase[a]		✓	
Impact 4.13-2. Conflict with or be inconsistent with CEQA Guidelines Section 15064.3 subdivision(b)			
Rodeo Refinery			
Operation and Maintenance	✓		
Impact 4.13-3. Would the Project result in a Conflict with a plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, including transit, roadway, bicycle, and pedestrian facilities? Operation of the Project would result in potential changes to rail operations.			
Rodeo Refinery			
Operation and Maintenance	✓		
Impact 4.13-4 Cause substantial damage or wear of public roadways by increased movement of heavy vehicles?			
Rodeo Refinery and Santa Maria Site			
Construction/Demolition, Including Transitional Phase[a]	✓		

Notes: LTS = Less than significant, no mitigation proposed
LTSM = Less-than-significant impact with mitigation
SU = Significant and unavoidable

[a] Transitional phase applies only to Rodeo Refinery

IMPACT 4.13-1

d) Would the Project Result in inadequate emergency access?

Project construction/demolition would temporarily increase peak-hour traffic volumes, and could result in inadequate emergency vehicle access.

Construction/Demolition: Less-than-significant Impact with Mitigation

Rodeo Refinery

The Project would result in truck and employee traffic to and from the Rodeo Site and the Carbon Plant during construction/demolition, including the transitional phase. Materials such as concrete, structural steel, pipe and fittings, vessels and associated equipment, electrical equipment, insulation and construction services equipment (e.g., portable toilets, temporary office trailers for construction contractors) would be delivered by truck. Asphalt, steel, and concrete generated by demolition and site preparation activities would be transported offsite by truck.

The Project includes onsite and offsite contractor parking in areas owned and operated by Phillips 66. For the offsite area, shuttle buses would be provided to transport workers to and from work sites. The weekday work is expected to begin around 7:00 a.m. and end around 4:00 p.m. The construction worker arrival peak would occur between 6:30 a.m. and 7:30 a.m., and the departure peak would occur between 4:00 p.m. and 5:00 p.m. The intersection operations analysis assumes that the peak hours of employee trips coincide with the peak hours of adjacent street traffic to provide a conservative basis for the analysis.

As shown in Table 4.13-2, construction of the Project is expected to employ up to 500 workers at its peak, and during this period the hauling of materials could involve up to 20 truck trips (10 round trips) per day. With an estimate of approximately 30 vehicle visits per day from vendors, deliveries, and other visitors, the Project is forecast to generate up to 1,080 vehicles per day during the peak phase of construction. The peak phase for traffic generation is expected to occur for approximately 4 months out of the 21-month construction period. As seen in Table 4.13-2, with adjustments to convert the trucks into the equivalent number of passenger car trips (passenger car equivalent), the Project is forecasted to generate up to 552 trips during the peak hours.

Table 4.13-2. Peak Project Construction Vehicle Trip Generation

Trip Generation Component	Daily VehicleTrips	PCE Rate[b]	PCE DailyTrips	PCE Peak Hour Trips[c]
Workers	1,000	1.0	1,000	500
Hauling Trucks	20	2.0	40	4
Vendors/Other Vehicles[a]	60	1.6	96	48
Totals	1,080		1,136	552

Source: Abrams Associates 2021

Notes: PCE = passenger car equivalent

[a.] Vendors and other vehicles are expected to include a mix of pickup trucks, buses, and 18-wheeler trucks.

[b.] The Passenger Car Equivalent (PCE) assumption for trucks is based on recommendations in the Highway Capacity Manual and assumes that a portion of the project generated trucks would be empty.

[c.] Based on the Mitigation Monitoring Program Reports for previous projects at the refinery, 50% of the employee trips are assumed to occur during the peak commute hour. Hauling trucks would be restricted from arriving or leaving during the peak commute periods but 10% are assumed to occur the peak hour. 50% of the trips associated with vendors and other vehicles were assumed to occur during the peak commute hour.

The AM and PM. peak-hour construction-generated trip generation estimates were applied to the distribution paths described previously to determine the construction period trip assignment. The assigned Project trips were added to the projected baseline AM and PM peak-hour volumes to determine Project-specific construction and demolition traffic impacts to study area intersections.

As shown in Figures 4.13-3a and 4.13-3b, the bulk of construction traffic (92 percent) would occur at the study intersections north and east of the Rodeo Site, at Cummings Skyway intersections (study locations 2-4). This is consistent with existing Contra Costa County requirement that Rodeo Refinery traffic use Cummings Skyway. At those intersections, construction worker commuter traffic to and from the contractor parking area would result in additional traffic relative to the existing volumes during the peak hours. Those traffic volumes, added to the forecasted 2022 baseline traffic volumes, would result in increased delay at the study intersections, but operating conditions would remain acceptable (i.e., within county general plan standards) at all study intersections.

Additional traffic through the intersections south and west of the Rodeo Site (study locations 5 through 8) would not constitute a substantial increase in relation to existing volumes. The forecasted traffic volumes are within the existing capacity of the intersections and would not be expected to result in any substantial increases in congestion or delay.

The presence of additional trucks and heavy equipment movements could potentially affect emergency access during construction and demolition. To ensure Project construction and demolition activities would not substantially interfere with existing traffic or emergency access in the vicinity of the Rodeo Refinery, Mitigation Measure TRA-1 requires that Phillips 66 prepare and implement a Traffic Management Plan for review and approval by the County Public Works Department and the Department of Conservation and Development, prior to issuance of construction permits. With implementation of an approved Traffic Management Plan, potential traffic impacts associated with all phases of construction and demolition of the Project would be less than significant.

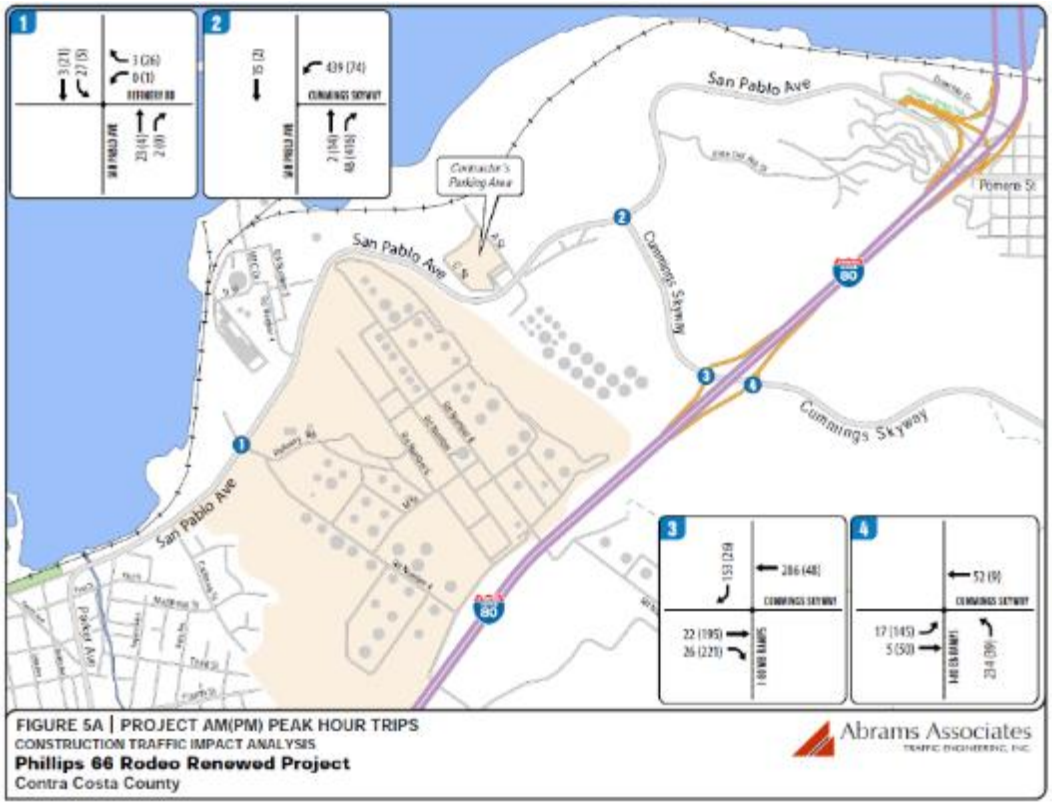


Figure 4.13-3a. Peak-Hour Construction Traffic, Study Intersections 1–4

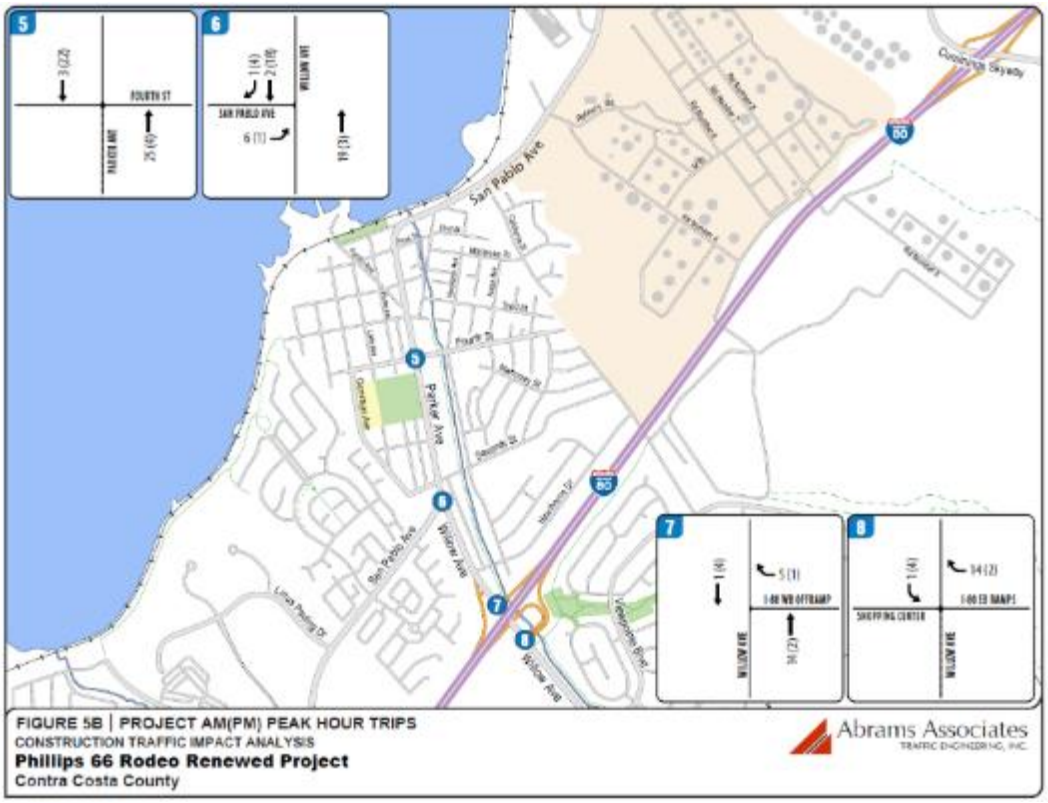


Figure 4.13-3b. Peak-Hour Construction Traffic, Study Intersections 5–8

Mitigation Measure TRA-1: Implement a Traffic Management Plan

Prior to issuance of grading and building permits, Phillips 66 shall submit a Traffic Management Plan for review and approval by the Contra Costa County Public Works Department. At a minimum the following shall be included:

- The Traffic Management Plan shall be prepared in accordance with the most current California Manual on Uniform Traffic Control Devices, and will be subject to periodic review by the Contra Costa County Public Works Department throughout the life of all construction and demolition phases.
- Truck drivers shall be notified of and required to use the most direct route between the site and the freeway;
- All site ingress and egress shall occur only at the main driveways to the Project site;
- Construction vehicles shall be monitored and controlled by flaggers;
- If during periodic review the Contra Costa County Public Works Department, or the Department of Conservation and Development, determines the Traffic Management Plan requires modification, Phillips 66 shall revise the Traffic Management Plan to meet the specifications of Contra Costa County to address any identified issues. This may include such actions as traffic signal modifications, staggered work hours, or other measures deemed appropriate by the Public Works Department.
- If required, Phillips 66 shall obtain the appropriate permits from Caltrans for the movement of oversized or excessive load vehicles on state-administered highways.

Santa Maria Site

The Project would result in truck and employee traffic to and from the Santa Maria Site during demolition. Demolition traffic at the Santa Maria Site would consist of up to 36 worker vehicles per day and up to 12 pieces of mobile equipment, which would include heavy equipment transporters, delivery trucks, and hauling trucks to transport asphalt, steel, and concrete offsite. Based on CalEEMod assumptions, the total hauling trips for the entire demolition phase duration are estimated to be approximately 730 one-way trips, or approximately 3 one-way trips per day.

According to a recent EIR for a proposed project at the site (San Luis Obispo County 2015), all of the study road segments and intersections in the immediate vicinity of the Santa Maria Site were being used at less than 50 percent of capacity. The addition of demolition traffic, particularly when much of that traffic would be off-peak under a typical construction schedule, would not represent a substantial increase to existing traffic. It is anticipated that demolition impacts would be less than significant.

Demolition of the Santa Maria Site will undergo its own separate and project-level environmental analysis. San Luis Obispo County will be the CEQA Lead Agency for demolition of the Santa Maria Refinery because it has the primary discretionary authority to determine whether or how to approve demolition and issue required county permits. As part of the permit process, it is expected that San Luis Obispo County would require a Construction Traffic Management Plan prior to project approval to ensure that demolition traffic would not interfere with traffic on area roads and highways.

IMPACT 4.13-2

b. Conflict with or be inconsistent with CEQA Guidelines Section 15064.3 subdivision (b)

Operation and Maintenance: Less Than Significant, No Mitigation Proposed

Based on the CEQA Guidelines 15064.3(c), the performance measure used to quantify the operational impacts of a project is the vehicle miles traveled. Guidelines for the vehicle miles traveled screening specify that low trip generating projects that are consistent with the Contra Costa County Transportation Analysis Guidelines (2020) and general plan and “generate or attract fewer than 110 trips per day” can be presumed to cause a less-than-significant impact under CEQA and would not require further vehicle miles traveled analysis.

Rodeo Refinery

Worker vehicle traffic associated with equipment changes at the Rodeo Site would not change because operation and maintenance would be accommodated by the existing Refinery workforce. Therefore, the vehicle miles traveled associated with commuter trips would not be increased. With decommissioning of the Carbon Plant all operation and maintenance traffic associated with this facility would cease. Truck traffic related to the transport of petroleum coke to and from the Carbon Plant Site, which totaled 32,673 round trips in 2019, would no longer occur. Truck traffic related to the refinery deliveries and waste byproducts in 2019 was 7,540 roundtrips per year. As a result, annual truck round trips under the Project would total approximately 16,026 truck roundtrips per year, a decrease from approximately 110 roundtrips per day to approximately 44 roundtrips per day to and from the Rodeo Refinery.

Because the Project would result in a net decrease in vehicular traffic, the Project meets the Contra Costa County guidelines for the presumption of a less-than-significant impact on the basis that it would generate less than 110 additional vehicle trips. Therefore, a vehicle miles traveled analysis is not required for the Project, and the Project would be consistent with CEQA Guidelines Section 13064.3(b). Impacts of operational traffic would be less than significant.

Mitigation Measure: **None required**

IMPACT 4.13-3

a. Would the Project result in a Conflict with a plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, including transit, roadway, bicycle, and pedestrian facilities?

Operation of the Project would result in potential changes to rail operations.

Operation and Maintenance: Less Than Significant, No Mitigation Proposed

Rodeo Refinery

Project operations would result in an increase in the number of railcars delivered to and from the Rodeo Site, although rail traffic at the Carbon Plant would cease. The additional railcars would not require additional train trips, but rather would be handled by the existing train traffic on the Union Pacific mainline that passes through the Rodeo Site. Trains would no longer travel on the branch line to access the Carbon Plant, which would represent a decrease in rail activity on that line. Therefore, the Project would not require additional trains or add congestion that could affect operation of the existing rail facilities, and impacts would be less than significant.

Mitigation Measure: None Required

IMPACT 4.13-4

Cause substantial damage or wear of public roadways by increased movement of heavy vehicles?

Construction/Demolition: Less Than Significant, No Mitigation Proposed

Rodeo Refinery

The use of large trucks to transport equipment and material to and from the Project site could affect road conditions on haul routes by increasing the rate of road wear and tear. The degree to which this impact would occur depends on the roadway design (pavement type and thickness) and the existing condition of the road. Freeways, such as I-80, are designed to handle a mix of vehicle types, including heavy trucks. Arterial and collector streets, such as Cummings Skyway, San Pablo Avenue/Parker Avenue, and Willow Avenue, are likewise designed to handle a mix of vehicle types.

As shown in Table 4.13-2, peak construction and demolition is expected to occur for approximately 4 months out of the 21-month construction period. During this period large trucks to transport equipment and material, and delivery and hauling trucks would be necessary. This results in approximately 20 truck trips per day that would be added to the surrounding street network.

Relative to the baseline, the Project's truck traffic generation is minor, and the addition of up to 20 daily truck trips over a limited period, the Project's impact relative to roadway wear and tear would be less than significant.

Santa Maria Site

Demolition truck traffic at the Santa Maria Site would consist of up to 12 pieces of mobile equipment, which would include heavy equipment transporters, delivery trucks, and hauling trucks to transport asphalt, steel, and concrete offsite. This results in approximately 24 truck trips per day that would be added to the surrounding street network.

It is expected that relative to the baseline, the Project's truck traffic generation would be minor. The addition of up to 24 daily truck trips over a limited period would not be expected contribute to substantial roadway wear and tear. The impact would be less than significant.

Mitigation Measure: None Required

4.13.7 References

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4.14 Tribal Cultural Resources

4.14.1 Introduction

This section assesses the potential for the Project to result in significant adverse environmental impacts related to tribal cultural resources. Discussed are the physical and regulatory setting, the baseline for determining environmental impacts, the significance criteria used for determining environmental impacts, and potential impacts associated with construction, operation, and maintenance of the Project at the Rodeo Refinery. Tribal cultural resources include prehistoric and historic-period archaeological resources, and human remains. The Santa Maria Site is addressed to the extent information is available and at a qualitative level of discussion.

The Project also includes the Pipeline Sites—four regional pipelines serving the Santa Maria Site and the Rodeo Refinery. The Santa Maria Site is connected to the Rodeo Refinery by approximately 200 miles of subterranean pipeline, crossing San Luis Obispo, Santa Barbara, Kern, Kings, Fresno, Merced, Stanislaus, San Joaquin, Alameda, and Contra Costa Counties. Phillips 66 proposes to empty and clean the pipelines at existing maintenance access points and to decommission or sell them; they would not be excavated as part of this Project. No physical changes would occur. Therefore, the Pipeline Sites are not further addressed in this section.

4.14.2 Environmental Setting

4.14.2.1 Regional Setting

Rodeo Refinery

Contra Costa County is part of the San Francisco Bay region, which is within the Coast Ranges Geomorphic Province of California, a system of northwest/southeast-trending longitudinal mountain ranges and valleys. The Rodeo Site is located on soils classified as Urban Land, a designation applied to heavily engineered and developed land that may include imported fill material or stripping of native topsoil (NRCS 2012). The remainder of the Rodeo Refinery property, except for the Carbon Plant Site and the tank farm, is undeveloped land resembling the native condition.

Prior to development, native vegetation in the vicinity of the Rodeo Refinery included coastal salt marsh, annual grassland, coastal scrub, and riparian woodlands. These habitats supported a variety of plant and animal species useful to Native Americans. Fresh water was seasonally available from the Cañada del Cierbo and other local streams that carried runoff from the East Bay Hills toward San Pablo Bay.

Geo-archaeological Context

The San Francisco Bay Area has undergone dramatic landscape changes since humans began to inhabit the region more than 10,000 years ago. Rising sea levels and increased sedimentation into streams and rivers are among some of the changes (Helley and Lajoie 1979). In many places, the interfaces between older land surfaces and alluvial fans are marked by a well-developed buried soil profile, or paleosol, formed from weathering at or near the ground surface during a period of comparative landform stability. Paleosols would have been available for human occupation and use prior to subsequent sediment deposition, and in such cases have the potential to preserve archeological resources (Meyer and Rosenthal 2007). Because human populations have increased since the arrival of the area's first inhabitants, younger paleosols (late Holocene, or from approximately 4,000 years before present [BP]) are more likely to yield archaeological resources than older paleosols (early Holocene or Pleistocene, or after approximately 14000 BP). Numerous archaeological sites in the Bay Area have been found in this context.

The Rodeo Refinery is primarily mapped as pre-quaternary deposits of Tierra Loam and Sehorn Clay overlying sedimentary bedrock, with little to no alluvial sedimentation overlying these older soils. While quaternary-age alluvial sedimentation may have been present along the San Pablo Bay shoreline near

the mouth of Cañada del Cierbo, these deposits have been largely graded and/or removed during the development of the refinery.

Prehistoric Context

Archaeologists have developed individual cultural chronological sequences tailored to the archaeology and material culture of each sub-region of California. Each of these sequences is based principally on the presence of distinctive cultural traits and stratigraphic separation of deposits. Milliken et al. (2007) provide a framework for the interpretation of the San Francisco Bay Area. The authors divided human history in California into three broad cultural periods comprising the past 10,000 years: the Early Period, the Middle Period, and the Late Period. This scheme uses economic and technological types, socio-politics, trade networks, population density, and variations of artifact types to differentiate between cultural periods. Economic patterns, stylistic aspects, and regional phases further subdivide cultural periods into shorter phases. Evidence of human habitation during a fourth identified cultural period, the Paleoindian Period (13500 to 10000 BP), has not yet been discovered in the San Francisco Bay Area.

During the Lower Archaic phase of the Early Period (10000 to 5500 BP), geographic mobility in the region was evident. During the Middle Archaic phase (5500 to 2500 BP), the first cut shell beads and mortar and pestle are documented in burials, indicating the beginning of a shift from mobility to sedentism. The Middle Period includes the Lower Middle Period or Initial Upper Archaic (2500 to 1570 BP) and the Upper Middle Period or Late Upper Archaic (1570 to 950 BP), separated by the “dramatic cultural disruption” of the collapse of a trade network. In this period, groups began to establish longer-term base camps in localities from which a more diverse range of resources could be exploited. The first rich black middens are recorded from this period, and the presence of new artifacts and the occurrence of sites in a wider range of environments suggest that the economic base was more diverse. By the Upper Middle Period, mobility was being replaced by the development of numerous small villages. During the Initial Late Period (950 to 450 BP, i.e., up to the arrival of Europeans), social complexity developed toward lifeways of large, central villages with resident political leaders and specialized activity sites. Artifacts associated with the period include the bow and arrow, small corner-notched projectile points, and a diversity of beads and ornaments.

Archaeological Research

The large prehistoric population of the San Francisco Bay region resulted in the creation of a prolific archaeological record, with some of the most important sites located in Contra Costa County. The first intensive archaeological survey of the region, between 1907 and 1908, recorded nearly 425 “earth mounds and shell heaps” (also known as middens) on or near the shoreline of the Bay (Nelson 1909). The most notable sites, such as the Emeryville shellmound (CA-ALA-309), the Ellis Landing Site in Richmond (CA-CCO-295), and the Fernandez Site in Rodeo Valley (CA-CCO-259), have been scientifically excavated (Moratto 1984). Countless others have been lost to urban development.

Ethnographic Context

Based on a compilation of ethnographic, historic, and archaeological data, Milliken (1995) describes a group known as the Ohlone, who once occupied a large territory from San Francisco Bay in the north to the Big Sur and Salinas Rivers in the south. Levy (1978) describes the language group spoken by the Ohlone, known as “Costanoan, ” a linguistic term that refers to a larger family of at least eight languages of the same Penutian language group (as different as Spanish is from French) spoken by distinct sociopolitical groups. Rodeo is in the area that was occupied by speakers of the Huchiun-Aguasto language. Villages of Huchiun-Aguasto speakers lined the southeastern corner of San Pablo Bay and the south shore of the Carquinez Strait (Milliken 1995).

Economically, Ohlone engaged in hunting and gathering. Their territory encompassed both coastal and open valley environments that contained a wide variety of plant and animal resources. The Huchuin-Aguasto and their neighbors along the Carquinez Strait caught salmon that were returning to the

Sacramento and San Joaquin Rivers to spawn. The Ohlone acknowledged private ownership of goods, and village ownership of rights to land and/or natural resources; they appear to have aggressively protected their village territories, requiring monetary payment for access rights in the form of clamshell beads, and even shooting trespassers if caught. After European contact, Ohlone society was severely disrupted by missionization, disease, and displacement.

The first European expedition into the East Bay occurred in 1772 when Pedro Fages and his party explored the east shore of San Francisco Bay up to San Pablo Bay. The Fages expedition encountered five villages between the locations of the towns of Rodeo and Crockett. Diarist Juan Crespí reported that the villagers welcomed the Spaniards, giving them food and gifts, expressing their desire that the Spaniards should come and stay with them. Three years later, the ship *San Carlos*, tasked with charting the bay, encountered many Ohlone and neighboring Coast Miwok villagers (from the Marin County shore) who greeted the ship's longboat and provided food and gifts to the new arrivals (Milliken 1995).

The Spanish established three missions in the immediate Bay Area between 1776 and 1797. Missions at San Jose, Santa Clara, and San Francisco (Mission Dolores) attempted to Christianize the Bay Area Ohlone groups, including the Huchuin-Aguasto speakers that lived in the Rodeo vicinity. Mass displacements of villagers to the missions were followed almost immediately by catastrophic epidemics of European diseases, as well as food shortages, resulting in alarming death rates among the mission inhabitants. Subsequent contacts had the unfortunate consequence of spreading the European diseases to those villagers who had never left their homes, further devastating the populations of the remaining Ohlone villages. Introduced European diseases, a declining birth rate and high infant mortality reduced the overall Ohlone population from at least 10,000 (precontact) to approximately 2,000 by 1832, and no more than 1,000 by 1852 (Cook 1957). Today, the Ohlone still have a strong presence in the San Francisco Bay Area, and are highly interested in their historic and prehistoric past.

Santa Maria Site

Geo-archaeological Context

The Santa Maria Site is located within the coastal plain, along the eastern margin of the Oceano Dune complex, and is within the South Coast Ranges physiographic province. Natural History Museum of Los Angeles County paleontological records state: "The entire proposed project area has surficial deposits composed of older Quaternary dune sands" and "Older Quaternary or even Pliocene deposits probably underlie the Quaternary dune sands at relatively shallow depth" (San Luis Obispo County 2015).

Prehistoric Context

As stated in the *Phillips 66 Rail Spur Extension and Crude Unloading Project Final EIR* (San Luis Obispo County 2015), the Santa Maria Site lies in what is generally described as the Central Coast Archaeological Region, which extends southward from Monterey Bay and includes most of San Luis Obispo County (Moratto 1984). This region extends southward from Monterey Bay and includes most of San Luis Obispo County. Several chronological sequences have been devised to understand cultural changes within the Central Coast Region subsequent to the Paleoindian (ca. 10000 BC) and Milling Stone (ca. 6500–3500 BC) periods. The Milling Stone period was first described by Wallace as part of his synthesis of earlier studies and development of a comprehensive southern California coastal region sequence, a chronological scheme that is still widely used today (Wallace 1955, 1978). Initially, Central Coast researchers relied on the cultural sequences developed for the San Francisco Bay Area to the north, the Central Valley to the east, and the Santa Barbara region to the south. Breschini and Haversat proposed the Sur and Monterey Patterns to describe Central Coast occupations dating younger than 5,000 years (Breschini and Haversat 1980). Jones and Jones and Waugh presented an integrated central coast sequence after the development of cultural resource management in the 1980s and ensuing excavations of numerous archaeological sites (Jones et al. 1994; Jones and Waugh 1995). Three periods are

presented in their prehistoric sequence subsequent to the Milling Stone period: Early, Middle, and Late periods. More recently, Jones and Ferneau updated the sequence following the Milling Stone period as follows: Early, Early-Middle Transition, Middle, Middle-Late Transition, and Late periods (Jones and Ferneau 2002). It has become apparent that the archaeology of the Central Coast Region subsequent to the Milling Stone period is distinct from that of the Bay Area and Central Valley, although the region has more in common with the Santa Barbara Channel area during the Middle and Middle-Late Transition periods, but few similarities during the Late period (Jones and Ferneau 2002).

Ethnographic Context

The Santa Maria Site was historically occupied by the northernmost subdivision of the Chumash, the Obispeño (Gibson 1983; Kroeber 1925). Chumash refers to the entire linguistic and ethnic group of societies that occupied the coast between San Luis Obispo and northwestern Los Angeles County, including the Santa Barbara Channel Islands, and inland to the western edge of the San Joaquin Valley.

European influence began in the 1770s with the establishment of the Spanish missions and the introduction of ranching and agriculture. As in Contra Costa County, the effect of mission influence upon local native populations in San Luis Obispo County was devastating; in addition to the ravages of European diseases, the increase in agriculture and the spread of grazing livestock into their collecting and hunting areas made maintaining traditional lifeways increasingly difficult. Although most Chumash eventually submitted to the Spanish and were incorporated into the mission system, some refugees escaped into the interior regions of the state to live with other tribes. With the secularization of mission lands after 1834, traditional Chumash lands were distributed among grants to private owners. Only in the area of Mission Santa Barbara and Mission San Fernando del Rey were several small ranchos granted to neophytes of those missions, providing secure homes and gardens for a few people.

Most Chumash managed to maintain a presence in the area into the early twentieth century as cowboys, farm hands, and town laborers. The Catholic Church provided some land near Mission Santa Ynez for ex-neophytes. This land eventually was deeded to the US government in 1901 as a 127-acre reservation and is the sole Chumash reservation. Since the 1970s, Chumash descendants living in the City of Santa Barbara and the rural areas of San Luis Obispo, Santa Barbara, and Ventura counties have formed social and political organizations to aid in cultural revitalization, to protect sacred areas and archaeological sites, and to petition for federal recognition. Today, the Santa Ynez Band of Chumash Indians is the only federally recognized Chumash tribe (San Luis Obispo County 2015).

4.14.2.2 Local Setting

Rodeo Refinery

A records search was conducted for a previous project at the Rodeo Refinery at the NWIC of the California Historical Resources Information System at Sonoma State University on September 6, 2012 (File No. 12-0246). The purpose of the records search was to determine whether known cultural resources have been recorded within or adjacent to the Rodeo Refinery and to assess the likelihood for unrecorded cultural resources to be present based on historical references and the distribution of nearby sites. That records search is described in detail in Contra Costa County (2013).

In addition, as required by CEQA and Assembly Bill 52 (refer to Section 4.14.2.3, *Regulatory Setting*), Contra Costa County submitted a request for formal consultation to the Wilton Rancheria on October 21, 2020 (Contra Costa County 2020). Mariah Mayberry of the Wilton Rancheria responded on October 25, 2020, requesting consultation. Based on discussion between Contra Costa County and the Wilton Rancheria it was agreed that inclusion of four mitigation measures into the EIR for the Project will satisfy the consultation requirements under AB 52 (Wilton Rancheria, pers. comm. 2020). Refer to Section 4.14.6, *Direct and Indirect Impacts of the Proposed Project*.

The records research identified five prehistoric shell mounds (most with documented human burials) that have been recorded within or adjacent to the Rodeo Refinery (Table 4.14-1). Four of those sites are east of I-80, outside the Rodeo Site, although Rosenthal (2007) suggests that sites CCO-254 and CCO-255 could actually be in nearby Cañada de Cierbo, entirely outside the Rodeo Refinery. Only one resource, CA-CCO-257, has been reported in the immediate vicinity of a Project component (i.e., the rail facility), but that resource was removed in the early development of the Rodeo Refinery. The records search also identified four research reports that described activities within the Rodeo Refinery near Project components, and all four reports yielded negative results. An archaeological field survey of the Rodeo Refinery was conducted in 2006 for a previous project at the Rodeo Refinery (Contra Costa County 2006). Because that and other previous cultural resource surveys have had negative results within the areas of the Project component sites, and because the ground surface in these areas has been thoroughly graded, filled, and paved or built on during the various stages of refinery development, a pedestrian field survey for the Project would not be an effective way of identifying and evaluating cultural resources, and no field survey was conducted.

Table 4.14-1. Identified Cultural Resources within or Adjacent To Rodeo Refinery

Primary Number	Trinomial	Age	Description	Comments	Location
P-07-000135	CA-CCO-254	Prehistoric	Shellmound site with human burials	"…main central portion of the mound has been removed." (Nelson 1909)	East of I-80
P-07-000136	CA-CCO-256	Prehistoric	Shellmound site	"Some hauling from the place has been done leaving 2-4 ft. exposures." (Nelson 1909)	East of I-80
P-07-000137	CA-CCO-257	Prehistoric	Shellmound site with human burials	"The site is at present occupied by the Union Oil Refinery…The last of the material was removed within the past year to give place for some oil tanks." (Nelson 1909)	~1,000 feet east of railcar facility
P-07-000318	CA-CCO-547	Prehistoric	Shellmound site with human remains	"Surrounding area has been modified by Freeway." (Elsasser 1957)	East of I-80
P-07-000439	CA-CCO-255	Prehistoric	Shellmound site with human remains	"…presents a very uneven surface as a result of the removal of material through 20 years past." (Nelson 1909)	East of I-80

Source: Contra Costa County 2013; Northwest Information Center 2012

Santa Maria Site

A records search conducted for a previous project at the Santa Maria Site identified one prehistoric archeological resource in the immediate area of the site. That resource, CA-SLO-1190, consists of marine shell, lithic artifacts and debitage, fire affected rock (i.e., hearth stones), and midden soil, and is located the undeveloped eastern portion of the Santa Maria Refinery property, approximately 0.75 mile from the Santa Maria Site; none of the resource is within the Santa Maria Site (San Luis Obispo County 2015).

4.14.2.3 Regulatory Setting

Federal Authority

Section 106 of the National Historic Preservation Act of 1966

Section 106 requires that every federal agency "take into account" how each of its undertakings could affect historic properties. Historic properties are districts, sites, buildings, structures, traditional cultural properties, and objects significant in American history, architecture, engineering, and culture that are eligible for or listed in the National Register. Historic properties are resources listed on or eligible for listing on the National Register (36 CFR Sections 800.16(l)(1)). A property may be listed in the National Register if it meets criteria provided in the National Register regulations (36 CFR Section 60.4). For more detailed discussion refer to Section 4.5, *Cultural Resources*.

Properties of traditional religious and cultural importance to Native Americans are considered under Section 101(d)(6)(A) of the National Historic Preservation Act (as amended). Other pertinent federal laws include the Archaeological Data Preservation Act of 1974, the American Indian Religious Freedom Act of 1978, the Archaeological Resources Protection Act of 1979, and the Native American Graves Protection and Repatriation Act of 1990, among others.

Native American Heritage Commission and Tribal Consultation

Consultation is required with the NAHC, the local Native American community, the State Historic Preservation Office, and any persons or organizations that know and/or are interested in cultural resources (e.g., traditional use areas and places of traditional or cultural significance) that could be impacted or affected by the Proposed Project.

State Authority

California Environmental Quality Act and Assembly Bill 52

Effective July 1, 2015, CEQA was revised to include early consultation with California Native American tribes and consideration of Tribal Cultural Resources (TCRs). These changes were enacted through AB 52. By including TCRs early in the CEQA process, AB 52 intends to ensure that local and Tribal governments, public agencies, and project proponents would have information available, early in the project planning process, to identify and address potential adverse impacts to TCRs. CEQA now establishes that a "project with an effect that may cause a substantial adverse change in the significance of a TCR is a project that may have a significant effect on the environment" (PRC Section 21084.2).

To help determine whether a project may have such an adverse effect, the PRC requires a lead agency to consult with any California Native American tribe that requests consultation and is traditionally and culturally affiliated with the geographic area of a proposed project. The consultation must take place prior to the determination of whether a negative declaration, mitigated negative declaration, or EIR is required for a project (PRC Section 21080.3.1). Consultation must consist of the lead agency providing formal notification, in writing, to the tribes that have requested notification or proposed projects within their traditionally and culturally affiliated area.

If the tribe wishes to engage in consultation on the project, the tribe must respond to the lead agency within 30 days of receipt of the formal notification. Once the lead agency receives the tribe's request to consult, the lead agency must then begin the consultation process within 30 days. As noted above, Mariah Mayberry of the Wilton Rancheria responded on October 25, 2020, requesting consultation. Based on discussion between Contra Costa County and the Wilton Rancheria it was agreed that inclusion of four mitigation measures into the EIR for the Project will satisfy the consultation requirements under AB 52 (Wilton Rancheria, pers. comm. 2020).

California Native American Graves Protection and Repatriation Act

The California Native American Graves Protection and Repatriation Act of 2001 is the state repatriation policy for Native American remains

California Register of Historical Resources

The California Register 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" (PRC Section 5024.1[a]). Criteria eligibility to the California Register are based on National Register criteria (PRC Section 5024.1[b]). Certain resources are determined by the statute to be automatically included in the California Register, including California properties formally determined eligible for, or listed in the National Register.

In order for a resource to meet the criteria for listing in the California Register, it must satisfy all of the following three provisions:

1. It meets one or more of the following four criteria of significance (PRC 5024.1[c] and CEQA Guidelines 15064.5):
2. the resource "is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;"
3. the resource "is associated with the lives of persons important in our past;"
4. the resource "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;" or
5. the resource "has yielded, or may be likely to yield information important in prehistory or history" (this criterion applies primarily to archaeological sites).
6. The resource retains sufficient integrity to be recognizable as a historical resource and to convey its significance; and
7. It is fifty years old or older (except where it can be demonstrated that sufficient time has passed to understand the historical importance of the resource).

California Health and Safety Code

The Project is also subject to the provisions of the California Health and Safety Code with respect to the discovery of human remains. Health and Safety Code Section 7050.5 states that "Every person who knowingly mutilates or disinters, wantonly disturbs, or willfully removes any human remains in or from any location other than a dedicated cemetery without authority of law is guilty of a misdemeanor, except as provided in Section 5097.99 of the Public Resources Code."

The measures outlined in Section 7050.5 of the Health and Safety Code and Section 5097.98 of the PRC are considered standard mitigation measures implemented in the event of an accidental discovery of human remains during excavation activities.

Local Authority

Contra Costa County General Plan

The Open Space Element of the Contra Costa County General Plan (Contra Costa County 2010) provides a general overview of cultural resources in the County, and includes an archaeological sensitivity map for planning purposes. The Rodeo Refinery is in an area of that map described as "Largely urbanized areas and publicly owned lands excluded from archaeological sensitivity survey. However, there are also significant archaeological resources within this area." A portion of the map immediately adjacent to the northeast of the refinery is designated as "Extremely sensitive area (known archaeological sites)," due to the documented presence of multiple prehistoric/ethnohistoric period shell middens along the edge of San Pablo Bay and the Carquinez Strait.

The general plan also contains goals and policies related to the protection of cultural resources. The goal and policy that could be applicable to the Project are Goal 9-31 (To identify and preserve important archaeological and historic resources within the County) and Policy 9-32 (Areas which have identifiable and important archaeological or historic significance shall be preserved for such uses, preferably in public ownership).

San Luis Obispo County General Plan

The San Luis Obispo County CZLUO includes ordinance requirements for the protection of known cultural resources, and implementation of mitigation measures to minimize potential impacts to known and unknown resources. In addition to San Luis Obispo County General Plan and ordinance requirements, *Coastal Plan Policies* include policies for the protection of cultural resources consistent with the requirements of the California Coastal Act (1976).

4.14.3 Significance Criteria

Based on CEQA Guidelines Section 15064.5 and CEQA Guidelines Appendix G, a project would cause adverse impacts to tribal cultural resources if it would:

> 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:
>
> a. 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;
>
> b. 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.
>
> CEQA Guidelines Section 15064.5(a)(3) provides standards for determining what constitutes a "substantial adverse change" that must be considered a significant impact on historical resources. In addition, a resource included on a local register of historical resources, as defined by PRC Section 5020.1(k) or identified as significant in a historical resource survey meeting the requirements of PRC Section 5024.1(g), shall be presumed to be culturally significant.

4.14.4 CEQA Baseline

Baseline conditions reflect the 2019 operation and maintenance of the Rodeo Refinery and Santa Maria Site as petroleum refineries, including operation and maintenance activities. The baseline setting also includes the applicable regulatory framework to protect environmental resources, which are described above.

4.14.5 Approach to Analysis

Under existing law, environmental documents must not include information about the locations of an archaeological site or sacred lands or any other information that is exempt from public disclosure pursuant to the Public Records Act. TCRs are also exempt from disclosure. CEQA defines the term "tribal cultural resource" as either of the following:

(1) Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following:

(A) Included or determined to be eligible for inclusion in the California Register of Historical Resources.

(B) Included in a local register of historical resources as defined in subdivision (k) of [PRC] Section 5020.1.

(2) 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 [PRC] Section 5024.1.

In addition, continuing operation and maintenance of the Rodeo Refinery does not involve any new activities or ground disturbance that could affect tribal cultural resources. Therefore, operation and maintenance impacts associated with the Rodeo Refinery are not further addressed, and the focus of analysis is on construction of new facilities and demolition impacts.

The transitional phase of the Project does not involve activities that would be affect tribal cultural resources above that identified for construction/demolition impacts. Therefore, the transitional phase is not further addressed.

4.14.6 Direct and Indirect Impacts of the Proposed Project

Direct impacts result from land modification directly and immediately caused by the construction, operation, or maintenance of a facility. Indirect impacts also occur as a result of a specific project, but do not result from intentional ground disturbance. Common indirect impacts include erosion, vibration, unauthorized artifact collecting, and vandalism. The proposed Project entails ground disturbance construction and demolition activities at the Rodeo Refinery and Santa Maria Site.

Table 4.14-2 presents a summary of the potential tribal cultural resources impacts, as well as significance determinations for each impact.

Table 4.14-2. Summary of Impacts

Impact	Significance Determination		
	LTS	LTSM	SU
Impact 4.14-1. Would the Proposed Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in PRC Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is: a. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in PRC Section 5020.1(k)? b. 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 PRC Section 5024.1. In applying the criteria set forth in subdivision (c) of PRC Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.)?			
Rodeo Refinery and Santa Maria Site			
Construction/Demolition including Transitional Phase[a]		✓	

Notes: LTS = Less than significant, no mitigation proposed
LTSM = Less-than-significant impact with mitigation
SU = Significant and unavoidable

[a] Transitional phase applies only to Rodeo Refinery

IMPACT 4.14-1

Would the Proposed Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in PRC Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

a. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in PRC Section 5020.1(k)?

b. 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 PRC Section 5024.1. In applying the criteria set forth in subdivision (c) of PRC Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?

Construction/Demolition: Less-than-Significant Impact with Mitigation

Rodeo Refinery

The Project components at the Rodeo Refinery, including existing equipment to be repurposed and new equipment, are in an area that has been a developed part of the refinery for decades. One prehistoric archaeological site (CA-CCO-257) that would represent a tribal cultural resource has been previously recorded in the general vicinity of the rail loading facility. Recorded by Nelson in 1909, the site was at that time already largely removed and built upon by the original Union Oil Company Refinery. Subsequent researchers (Nelson 1998; Tremaine 2000) have found only inconclusive evidence of the site during monitoring projects for utilities construction, including: in 2000, archaeological monitors found small bits of shell in a highly disturbed context approximately 1,000 feet from the location of the proposed rail unloading element of the Project.

Although CA-CCO-257 has not been evaluated for its eligibility for the California Register, any remaining intact deposits could potentially meet the CEQA definition of a historical resource. Additionally, construction activities for other Project components could unearth previously unknown archaeological sites that are not visible on the ground surface. Although this scenario is very unlikely

given the extreme disturbance of the native soils on the Rodeo Site (including the placement of up to 15 feet of imported fill), pockets of intact buried cultural remains could still exist. The impact would be considered potentially significant. However, with implementation of Mitigation Measures TCR-1, TCR-2, TCR-3, TCR-4 construction- and demolition-related impacts to previously unknown tribal cultural resources would be less than significant.

Santa Maria Site

A records search of the Santa Maria Site identified one prehistoric archeological resource in the immediate area. That resource, CA-SLO-1190, consists of marine shell, lithic artifacts and debitage, fire affected rock (i.e., hearth stones), and midden soil, and is located at the undeveloped eastern edge of the Santa Maria Refinery, approximately 0.75 mile from the Santa Maria Site; none of the resource is within the Santa Maria Site (San Luis Obispo County 2015). Demolition activities would not, therefore, affect this known resource. Consultation was conducted with the NAHC for a previous project that was never implemented; however, that analysis resulted in a series of measures to protect the resource in the event of disturbance. Because the project was not constructed, the resource is still in place.

Demolition activities could, however, unearth previously unknown archaeological sites that are not visible on the ground surface. Although this scenario is very unlikely given the extreme disturbance of the native soils, pockets of intact buried cultural remains could still exist. The impact would be considered potentially significant. However, with implementation of Mitigation Measures TCR-1 through TCR-4, construction- and demolition-related impacts to previously unknown tribal cultural resources would be less than significant.

Mitigation Measure TCR-1: Awareness Training

- A consultant and construction worker tribal cultural resources awareness brochure and training program for all personnel involved in project implementation shall be developed by Phillips 66 in coordination with interested Native American Tribes (i.e. Wilton Rancheria). The brochure will be distributed and the training will be conducted in coordination with qualified cultural resources specialists and Native American Representatives and Monitors from culturally affiliated Native American Tribes before any stages of project implementation and construction activities begin on the Project site. The program will include relevant information regarding sensitive tribal cultural resources, including applicable regulations, protocols for avoidance, and consequences of violating state laws and regulations. The worker cultural resources awareness program will also describe appropriate avoidance and minimization measures for resources that have the potential to be located on the Project site and will outline what to do and whom to contact if any potential archaeological resources or artifacts are encountered. The program will also underscore the requirement for confidentiality and culturally-appropriate treatment of any find of significance to Native Americans and behaviors, consistent with Native American Tribal values.

Mitigation Measure TCR-2: Monitoring

To minimize the potential for destruction of or damage to existing or previously undiscovered burials, archaeological and tribal cultural resources and to identify any such resources at the earliest possible time during project-related earthmoving activities, Phillips 66 and its construction contractor(s) will implement the following measures:

- Paid Native American monitors from culturally affiliated Native American Tribes will be invited to monitor the vegetation grubbing, stripping, grading or other ground-disturbing activities in the project area to determine the presence or absence of any cultural resources. Native American representatives from cultural affiliated Native American

Tribes act as a representative of their Tribal government and shall be consulted before any cultural studies or ground-disturbing activities begin.

- Native American representatives and Native American monitors have the authority to identify sites or objects of significance to Native Americans and to request that work be stopped, diverted or slowed if such sites or objects are identified within the direct impact area. Only a Native American representative can recommend appropriate treatment of such sites or objects.
- If buried cultural resources, such as chipped or ground stone, historic debris, building foundations, or bone, are discovered during ground-disturbing activities, work will stop in that area and within 100 feet of the find until an archaeologist who meets the Secretary of the Interior's qualification standards can assess the significance of the find and, if necessary, develop appropriate treatment measures in consultation with the Caltrans, the State Historic Preservation Office, and other appropriate agencies. Appropriate treatment measures may include development of avoidance or protection methods, archaeological excavations to recover important information about the resource, research, or other actions determined during consultation.
- In accordance with the California Health and Safety Code, if human remains are uncovered during ground disturbing activities, the construction contractor or the County, or both, shall immediately halt potentially damaging excavation in the area of the burial and notify the County coroner and a qualified professional archaeologist to determine the nature of the remains. The coroner shall examine all discoveries of human remains within 48 hours of receiving notice of a discovery on private or state lands, in accordance with Section 7050(b) of the Health and Safety Code. If the coroner determines that the remains are those of a Native American, they shall contact the NAHC by phone within 24 hours of making that determination (Health and Safety Code Section 7050[c]). After the coroner's findings are presented, the County, the archaeologist, and the NAHC-designated MLD shall determine the ultimate treatment and disposition of the remains and take appropriate steps to ensure that additional human interments are not disturbed.

Mitigation Measure TCR-3: Inadvertent Discoveries

- Phillips 66 shall develop a standard operating procedure, or ensure any existing procedure, to include points of contact, timeline and schedule for the project so all possible damages can be avoided or alternatives and cumulative impacts properly accessed.
- If potential tribal cultural resources, archaeological resources, other cultural resources, articulated, or disarticulated human remains are discovered by Native American Representatives or Monitors from interested Native American Tribes, qualified cultural resources specialists or other Project personnel during construction activities, work will cease in the immediate vicinity of the find (based on the apparent distribution of cultural resources), whether or not a Native American Monitor from an interested Native American Tribe is present. A qualified cultural resources specialist and Native American Representatives and Monitors from culturally affiliated Native American Tribes will assess the significance of the find and make recommendations for further evaluation and treatment as necessary. These recommendations will be documented in the project record. For any recommendations made by interested Native American Tribes which are not implemented, a justification for why the recommendation was not followed will be provided in the project record.

- If adverse impacts to tribal cultural resources, unique archeology, or other cultural resources occurs, then consultation with Wilton Rancheria regarding mitigation contained in the Public Resources Code sections 21084.3(a) and (b) and CEQA Guidelines section 15370 should occur, in order to coordinate for compensation for the impact by replacing or providing substitute resources or environments.

Mitigation Measure TCR-4: Avoidance and Preservation

Avoidance and preservation in place is the preferred manner of mitigating impacts to tribal cultural resources and shall be accomplished by several means, including:

- Planning construction to avoid tribal cultural resources, archaeological sites and/ or other resources; incorporating sites within parks, green-space or other open space; covering archaeological sites; deeding a site to a permanent conservation easement; or other preservation and protection methods agreeable to consulting parties and regulatory authorities with jurisdiction over the activity. Recommendations for avoidance of cultural resources will be reviewed by the CEQA lead agency representative, interested Native American Tribes and the appropriate agencies, in light of factors such as costs, logistics, feasibility, design, technology and social, cultural and environmental considerations, and the extent to which avoidance is consistent with project objectives. Avoidance and design alternatives may include realignment within the project area to avoid cultural resources, modification of the design to eliminate or reduce impacts to cultural resources or modification or realignment to avoid highly significant features within a cultural resource. Native American Representatives from interested Native American Tribes will be allowed to review and comment on these analyses and shall have the opportunity to meet with the CEQA lead agency representative and its representatives who have technical expertise to identify and recommend feasible avoidance and design alternatives, so that appropriate and feasible avoidance and design alternatives can be identified.
- If the resource can be avoided, the construction contractor(s), with paid Native American monitors from culturally affiliated Native American Tribes present, will install protective fencing outside the site boundary, including a buffer area, before construction restarts. The construction contractor(s) will maintain the protective fencing throughout construction to avoid the site during all remaining phases of construction. The area will be demarcated as an “Environmentally Sensitive Area.” Native American representatives from interested Native American Tribes and the CEQA lead agency representative will also consult to develop measures for long term management of the resource and routine operation and maintenance within culturally sensitive areas that retain resource integrity, including tribal cultural integrity, and including archaeological material, Traditional Cultural Properties and cultural landscapes, in accordance with state and federal guidance including National Register Bulletin 30 (Guidelines for Evaluating and Documenting Rural Historic Landscapes), Bulletin 36 (Guidelines for Evaluating and Registering Archaeological Properties), and Bulletin 38 (Guidelines for Evaluating and Documenting Traditional Cultural Properties); National Park Service Preservation Brief 36 (Protecting Cultural Landscapes: Planning, Treatment and Management of Historic Landscapes) and using the Advisory Council on Historic Preservation’s Native American Traditional Cultural Landscapes Action Plan for further guidance. Use of temporary and permanent forms of protective fencing will be determined in consultation with Native American representatives from interested Native American Tribes.

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4.15 Wildfire

4.15.1 Introduction

This section assesses the potential for the Project to result in significant adverse environmental impacts related to fire hazards and wildfires. Discussed are the physical and regulatory settings, the baseline for determining environmental impacts, the significance criteria used for determining environmental impacts, and potential impacts associated with the construction, demolition, including the transitional phase, and operation and maintenance at the Rodeo Refinery and Santa Maria Site.

The Project also includes the Pipeline Sites—four regional pipelines serving the Santa Maria Site and the Rodeo Refinery. The Santa Maria Site is connected to the Rodeo Refinery by approximately 200 miles of subterranean pipeline, crossing San Luis Obispo, Santa Barbara, Kern, Kings, Fresno, Merced, Stanislaus, San Joaquin, Alameda and Contra Costa Counties. Phillips 66 proposes to empty and clean the pipelines at existing maintenance access points and to decommission or sell them; they would not be excavated as part of this Project. No physical changes would occur. Therefore, the Pipeline Sites are not further addressed in this section.

4.15.2 Environmental Setting

4.15.2.1 Regional Setting

Contra Costa County

The Rodeo Refinery is in an unincorporated area of northwestern Contra Costa County. The Rodeo Refinery encompasses approximately 1,100 acres of land near the community of Rodeo and adjoins the shore of San Pablo Bay. Land uses in the region include extensive undeveloped land characterized by grasslands, scrub, and small pockets of trees, and a patchwork of developed areas including low-density and medium density residential, industrial and commercial uses.

San Luis Obispo County

The Santa Maria Site is in an unincorporated area of southern San Luis Obispo County just south of the City of Nipomo. Land uses in the region include extensive undeveloped land characterized by grasslands, scrub, and sand dunes, and, to the north and east, developed areas including low-density and medium density residential and commercial uses.

4.15.2.2 Local Setting

Rodeo Refinery

The Rodeo Refinery is in the Rodeo-Hercules Fire Protection Area (Contra Costa County 2010). The Rodeo Site, where construction and operation of the Project would occur, is the 495-acre active area west of I-80 where the Rodeo Refinery's facilities and equipment are located; the remaining 600+ acres of the Rodeo Refinery comprise undeveloped land and small developed areas that include the Carbon Plant and tank farm. According to CAL FIRE (2020), the Rodeo Site is in a CAL FIRE Local Responsibility Area, but the portion of the Rodeo Refinery east of I-80 where the Carbon Plant is located is in a moderate to high fire hazard severity zone in a CAL FIRE State Responsibility Area.

Santa Maria Site

The Project Site currently receives fire protection and paramedic service from CAL FIRE, a California state agency that functions as the San Luis Obispo County Fire Department under a contract with the County. Fire Station #22 (Mesa Fire Station) at 2391 Willow Road in Arroyo Grande, less than 0.5 mile away from the steam methane reformer, is the jurisdictional station ("first in") for the Project Site and has a 5-minute

response time. Station 22 staffs up to 25 firefighter personnel, including one Fire Captain, one Fire Apparatus Engineer, two licensed paramedics, and 25 paid call firefighters dispatched via radio pager (CAL FIRE 2021). The next closest station to the Project Site is Fire Station #20 (Nipomo Fire Station) at 450 Pioneer Avenue in Nipomo, which is approximately 8 miles away and has an eight-minute response time. Station 20 staffs up to 25 firefighter personnel, including one Fire Captain, one Fire Apparatus Engineer, two licensed paramedics, and 25 paid call firefighters dispatched via radio pager (CAL FIRE 2021).

The Santa Maria Site consists of approximately 240 developed acres, containing refinery equipment, storage tanks, and buildings, and another approximately 1360 acres of undeveloped grassland and scrub. Adjacent uses are largely agriculture and open space. The Santa Maria Site is in a high fire hazard severity zone of a State Responsibility Area (CAL FIRE 2020).

4.15.2.3 Regulatory Setting

State of California Regulations and Policy

Defensible Space for Fire Protection

State of California regulations regarding defensible space requirements are contained in PRC Section 4291 and California Government Code Section 51182. The PRC primarily directs the creation of defensible space in State Responsibility Areas, while the California Government Code sets the fuel-treatment requirements in local responsibility areas that are designated as very high hazard severity zones. Both codes generally include a requirement to maintain defensible space of 100 feet from each side and from the front and rear of structures but not beyond the property line except under specific circumstances.

State Board of Forestry and Fire Protection – 2018 Strategic Fire Plan

The Board of Forestry and Fire Protection (Board) developed and adopted the Strategic Fire Plan pursuant to the direction provided under PRC Sections 4114 and 4130 regarding fire protection plan development. The Board has used this plan since the 1930s and periodically updates it to reflect current and anticipated needs. The 2018 Strategic Fire Plan reflects CAL FIRE's focus on (1) fire prevention and suppression activities to protect lives, property, and ecosystem services and (2) natural-resource management to maintain the state's forests as a resilient carbon sink to meet California's climate change goals and to serve as important habitat for adaptation and mitigation. Additionally, the continued inclusive collaboration among local, state, federal, tribal, and private partners remains paramount to effectively manage toward a more fire-resilient wildland–urban interface and natural environment. Through government and community collaboration, the following goals are intended to enhance the protection of lives, property, and natural resources from wildland fire as well as to improve environmental resilience to wildland fire, all of which would apply to this Project:

1. Identify and evaluate wildland-fire hazards and recognize life, property, and natural resource assets at risk, including watershed, habitat, social, and other values of functioning ecosystems. Facilitate the collaborative development and sharing of all analyses and data collection across all ownerships for consistency in type and kind.
2. Promote and support local land-use planning processes as they relate to (a) protection of life, property, and natural resources from risks associated with wildland fire and (b) individual-landowner objectives and responsibilities.
3. Support and participate in the collaborative development and implementation of local, county, and regional plans that address fire protection and landowner objectives.
4. Increase fire-prevention awareness, knowledge, and actions implemented by individuals and communities to reduce human loss, property damage, and impacts to natural resources from wildland fires.

5. Integrate fire and fuels management practices with landowner/land manager priorities across jurisdictions.
6. Determine the level of resources necessary to effectively identify, plan, and implement fire prevention using adaptive management strategies.
7. Determine the level of fire suppression resources necessary to protect the values and assets at risk identified during planning processes.
8. Implement post-fire assessments and programs for the protection of life, property, and natural-resource recovery.

Local Regulations

Contra Costa County General Plan

The Safety Element of the Contra Costa County General Plan (Contra Costa County 2010) provides a general overview of safety planning and resources related to wildfire risks. The plan acknowledges the risk of wildfires given the extensive grasslands and the dry-farming techniques in the county, and establishes policies and measures to reduce risks of wildfire to people and property.

San Luis Obispo County General Plan

The Safety Element of the San Luis Obispo County General Plan (San Luis Obispo County 2014) acknowledges the risk of wildfire in wildlands and the urban/wildland interface, and also that wildlands fires are a natural feature of much of the county's landscape. San Luis Obispo County closely coordinates its fire protection services and programs with the California Department of Forestry and Fire Protection (CAL FIRE) programs and resources. The plan establishes the goal of reducing development conflicts with fire risk, and several policies aimed at achieving that goal. These include establishing development guidelines, ensuring adequate equipment and staffing, and improving readiness and response metrics.

4.15.3 Significance Criteria

Based on CEQA Guidelines Section 15064.5 and CEQA Guidelines Appendix G, a project located in or near state responsibility areas or lands classified as very high fire hazard severity zones would cause adverse impacts related to wildfires if it would:

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.

4.15.4 CEQA Baseline

Baseline conditions reflect the 2019 operation and maintenance of the Rodeo Refinery and Santa Maria Site as petroleum refineries, including operation and maintenance activities. The baseline setting also includes the applicable regulatory framework to protect environmental resources, which are described above.

4.15.5 Approach to Analysis

Continuing operation and maintenance of the Rodeo Refinery does not involve any new activities that could increase wildfire risk. No Project activities would take place outside the developed area of the refineries. Once the Santa Maria Refinery is demolished structures and personnel would no longer be present. Exposure of people and structures to significant wildfire risks associated with operation and maintenance would not be exacerbated. Therefore, operation and maintenance of the Project are not further addressed, and the focus of analysis is on construction of new facilities and demolition impacts.

The transitional phase of the Project does not involve activities that would increase wildfire risk above that identified for construction/demolition impacts. Therefore, the transitional phase is not further addressed.

4.15.6 Discussion of No Wildfire Impacts

Review and comparison of the setting circumstances and Project characteristics with each of the significance criteria stated above clearly shows that no direct or indirect wildfire impacts would result for items b. or d. The following discusses the reasoning supporting this conclusion:

> *A project located in or near state responsibility areas or lands classified as very high fire hazard severity zones would cause adverse impacts related to wildfires if it would:*
>
> *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.
>
> *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.*

Hillsides in the active area of the Rodeo Refinery have been subjected to extensive cut-and-fill modifications during construction activities in order to form level areas for the construction of tanks and refining equipment. Site-specific mapping has not identified landslide prone materials (Contra Costa County 1994). Demolition activities would occur within the developed portion of the Rodeo Refinery. In addition, Phillips 66 maintains a fire brigade that is staffed 24-hours per day, 365-days per year, which would continue to be implemented during construction and demolition.

Demolition activities would occur within the developed portion of the Santa Maria Site. At the site, slope gradients are predominantly gentle from extensive grading for refinery facilities. Due to the high infiltration rates of site soils, there is minimal runoff or flooding. Therefore the site is not in an area prone to landslides or flooding. In addition, Phillips 66 maintains a fire brigade that is staffed 24-hours per day, 365-days per year, which would continue to be implemented during demolition.

Since demolition would occur within the existing boundaries of the refineries limiting the potential for a wildland fire, the sites are not prone to landslides or flooding, and Phillips 66 maintains a fire brigade that would be available during demolition, people or structures would not be exposed to significant risks as a result of post-fire slope instability.

4.15.7 Direct and Indirect Impacts of the Proposed Project

Direct impacts result from land modification directly and immediately caused by the construction, operation, or maintenance of a facility. Indirect impacts also occur as a result of a specific project, but do not result from intentional ground disturbance. Common indirect impacts include erosion, vibration, unauthorized artifact collecting, and vandalism. The proposed Project entails ground disturbance construction and demolition activities at the Rodeo Refinery and Santa Maria Site.

Table 4.15-1 presents a summary of the potential tribal cultural resources impacts, as well as significance determinations for each impact.

Table 4.15-1. Summary of Impacts

Impact	Significance Determination		
	LTS	LTSM	SU
Impact 4.15-1. A project located in or near state responsibility areas or lands classified as very high fire hazard severity zones would cause adverse impacts related to wildfires if it would: a. Substantially impair an adopted emergency response plan or emergency evacuation plan;			
Rodeo Refinery and Santa Maria Site			
Construction/Demolition, Transitional Phase[a]	✓		
Impact 4.15-2. A project located in or near state responsibility areas or lands classified as very high fire hazard severity zones would cause adverse impacts related to wildfires if it would: 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;			
Rodeo Refinery and Santa Maria Site			
Construction/Demolition, Transitional Phase[a]	✓		

Notes: LTS = Less than significant, no mitigation proposed
LTSM = Less-than-significant impact with mitigation
SU = Significant and unavoidable

[a] Transitional phase applies only to Rodeo Refinery

IMPACT 4.15-1

A project located in or near state responsibility areas or lands classified as very high fire hazard severity zones would cause adverse impacts related to wildfires if it would:

a. Substantially impair an adopted emergency response plan or emergency evacuation plan.

Construction/Demolition: Less Than Significant, No Mitigation Proposed

Rodeo Refinery

According to CAL FIRE (2020), the Rodeo Site, where all unit modifications and additions would occur, is in a CAL FIRE Local Responsibility Area. However, the portion of the Rodeo Refinery east of I-80 (including the Carbon Plant) is in a moderate to high fire hazard severity zone in a CAL FIRE State Responsibility Area.

Sufficient emergency access is determined by factors such as number of access points, roadway width, and proximity to fire stations. The Rodeo Refinery, including the Carbon Plant, has several temporary/emergency vehicle access entrances on San Pablo Avenue, in addition to the main signalized entrance intersection with Refinery Road. There are multiple roadways that provide external access to the Rodeo Site and there are internal roadways within the refinery that also provide access for both general and emergency vehicles. In addition, as discussed in Section 4.13, *Transportation and Traffic*, as part of obtaining a Contra Costa County construction permit, Phillips 66 is required to implement a Traffic Control Plan, which would further minimize potential impacts.

Therefore, construction and demolition activities at the Rodeo Refinery would not impair an adopted emergency response plan or emergency evacuation plan. The impact would be less than significant.

Santa Maria Site

The Santa Maria Site is located in a State Responsibility Area but is not located in or near an area classified as a very high fire hazard severity zone. As noted previously, sufficient emergency access is determined by factors such as number of access points, roadway width, and proximity to fire

stations. Access to the Santa Maria Site is via State Route 1, which is also called Mesa View Drive north of the site entrance and is called Willow Road east of the site entrance. There are multiple internal roadways within the refinery that provide access for both general and emergency vehicles. No Project activities would take place outside the developed area of the Santa Maria Site. In addition, as discussed in Section 4.13, *Transportation and Traffic*, as part of obtaining a San Luis Obispo County construction permit, Phillips 66 is required to implement a Traffic Control Plan, which would further minimize potential impacts.

Therefore, construction and demolition activities at the Santa Maria Site would not impair an adopted emergency response plan or emergency evacuation plan. The impact would be less than significant.

Mitigation Measure: **None Required**

IMPACT 4.15-2

A project located in or near state responsibility areas or lands classified as very high fire hazard severity zones would cause adverse impacts related to wildfires if it would:

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.

Construction/Demolition: Less Than Significant, No Mitigation Proposed

Rodeo Refinery

Demolition of the Carbon Plant, which is surrounded by open space, would involve the temporary use of mechanical equipment that has the potential to ignite a fire. However, all demolition activities, including staging areas, would occur within the existing Carbon Plant and Rodeo Site boundaries. In addition, areas located in State Responsibility Areas, defensible space of 100 feet from structures must be maintained. Similarly, state regulations in local responsibility areas that are designated as very high hazard severity zones, requires that defensible space and fuel-treatment requirements must be met. Phillips 66 currently maintains these areas to minimize the potential for wildfire in accordance with state fire regulations, and would continue to do so during construction and demolition.

Phillips 66 also maintains a fire brigade that is staffed 24-hours per day, 365 days per year with a minimum of 15 people and has an emergency response plan in place. The emergency response plan ensures that in the event of a fire refinery personnel would be able to respond quickly and effectively so that personal injuries, environmental damage, and/or property damage can be minimized.

Therefore, construction and demolition activities at the Rodeo Refinery would not exacerbate fire risk or result in temporary or ongoing impacts to the environment. The impact would be less than significant.

Santa Maria Site

The Santa Maria Site is located in a State Responsibility Area but is not located in or near an area classified as a very high fire hazard severity zone. Demolition of the Santa Maria Site, which is surrounded by open space, would involve the temporary use of mechanical equipment that has the potential to ignite a fire. However, all demolition activities, including staging areas, would occur within the existing Carbon Plant Site boundary. In addition, Phillips 66 currently maintains buffer areas as defensible space to minimize the potential for wildfire, and would continue to do so during demolition.

Phillips 66 also maintains a fire brigade that is staffed 24 hours per day, 365-days per year, and has an emergency response plan in place. The emergency response plan ensures that in the event of a fire refinery personnel would be able to respond quickly and effectively so that personal injuries, environmental damage, and/or property damage can be minimized.

Therefore, demolition activities at the Santa Maria Site would not exacerbate fire risk or result in temporary or ongoing impacts to the environment. The impact would be less than significant.

Mitigation Measure: **None Required**

4.15.8 References

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4.16 Solid Waste

4.16.1 Introduction

This section addresses the generation and disposal of solid waste associated with the Project. Discussed is the environmental and regulatory settings, the baseline for determining environmental impacts, the significance criteria used for determining environmental impacts, and potential impacts associated with the construction, demolition, including the transitional phase, and operation and maintenance at the Rodeo Refinery and Santa Maria Site.

The Project also includes the Pipeline Sites—four regional pipelines serving the Santa Maria Site and the Rodeo Refinery. The Santa Maria Site is connected to the Rodeo Refinery by approximately 200 miles of subterranean pipeline, crossing San Luis Obispo, Santa Barbara, Kern, Kings, Fresno, Merced, Stanislaus, San Joaquin, Alameda and Contra Costa Counties. Phillips 66 proposes to empty and clean the pipelines at existing maintenance access points and to decommission or sell them; they would not be excavated as part of this Project. No physical changes would occur.

4.16.2 Environmental Setting

4.16.2.1 Regional Setting

Contra Costa County

The Rodeo Refinery is within the service area of Richmond Sanitary Service, which hauls municipal waste from the Refinery to a Class III landfill. The bulk of the other non-hazardous waste and recyclable waste generated by the Rodeo Refinery is taken to the Keller Canyon Landfill in Pittsburg by a contracted hauler. The Keller Canyon Landfill is a Class II landfill that accepts agricultural, construction/demolition, industrial, mixed municipal, and sludge waste up to the maximum permit amount of 3,500 tons per day (Contra Costa County 2015). The maximum permitted capacity is 75,018,280 cubic yards and the estimated closure date is 2050. As of December 31, 2020, the Keller Canyon Landfill had 49,441,787 cubic yards of remaining capacity (Contra Costa County 2021).

San Luis Obispo County

The Santa Maria Site is within the San Luis Obispo Integrated Waste Management Authority jurisdiction. Each jurisdiction is responsible for its own solid waste management. Solid waste generated in San Luis Obispo County is mostly residential waste, construction wastes, commercial and industrial wastes, and sludge residues. In most cases, solid waste is hauled directly to major Class III landfills in San Luis Obispo County including Cold Canyon, Chicago Grade, and City of Paso Robles. The remainder is taken to transfer stations, resource recovery centers, and composting facilities. According to the Department of Resources Recycling and Recovery (CalRecycle), in 2019 the residents and businesses of San Luis Obispo County disposed of 288,432 tons of solid waste in 14 permitted landfill facilities throughout the county (CalRecycle 2021).

4.16.2.2 Local Setting

Rodeo Refinery

Non-Hazardous and Recyclable Waste

Richmond Sanitary Service hauls approximately one-quarter ton per month of municipal waste from the Rodeo Refinery to a Class III landfill. Approximately 195 tons per month of other non-hazardous waste generated by the Rodeo Refinery is taken to Keller Canyon Landfill by a contracted hauler. The Rodeo Refinery generates approximately 1,900 pounds per month of “universal waste,” such as spent batteries and

lights that contain hazardous materials and therefore require special disposal separate from municipal trash. The Rodeo Refinery disposes of universal waste at a household hazardous waste collection facility or other authorized universal waste handler. The Rodeo Refinery has implemented a waste paper recycling program.

The Rodeo Refinery generates approximately 130 tons per year of additional non-hazardous waste that is sent to Keller Canyon Landfill due to maintenance turnaround activity. Turnarounds on various cycles are dependent upon the equipment and operating conditions of the individual processing units. The determining factors for a turnaround include regulatory inspection requirements, catalyst life, equipment fouling, and anticipated equipment life.

Santa Maria Site

Non-Hazardous and Recyclable Waste

The Santa Maria Site is served by South County Sanitary Services. Non-hazardous waste generated from demolition of the Santa Maria Refinery would likely be disposed of at the Cold Canyon Landfill. In 2016, the Cold Canyon landfill was expanded and has capacity to accept waste for at least 20 years at the current rate of disposal. The landfill has a maximum permitted throughput of 1,650 tons per day and total permitted capacity of 23,900,000 cubic yards with a remaining capacity of 14,500,000 cubic yards or 61 percent (San Luis Obispo County 2018).

4.16.2.3 Regulatory Setting

State Regulations

Assembly Bill 341

AB 341, enacted in 2011, replaced the Integrated Waste Management Act (AB 939) to establish new diversion and recycling goals. While AB 939 had a diversion goal of 50 percent by the year 2000, AB 341 established a goal of 75 percent by 2020. Diversion includes waste prevention, reuse, and recycling. Unincorporated Contra Costa County has disposal rate targets of 3.9 pounds per resident per day and 20.1 pounds per employee per day. In 2019, the County had an annual per capita residential disposal rate of 2.4 pounds per day and 10.7 annual per capital employee disposal rate, thereby meeting waste diversion goals for 2010 (CalRecycle 2020b).

Local Regulations

Contra Costa County General Plan

The Contra Costa County General Plan contains goals and policies pertaining to solid waste within the Public Facilities/Services Element (Contra Costa County 2010). The Public Facilities/Services Element establishes goals and policies and implementation measures that address infrastructure and public services that must be provided. These goals and policies are summarized as follows:

Solid Waste:

- Consider solid waste disposal capacity in County land use planning and permitting; and
- Encourage solid waste resource recovery (including recycling, composting, and waste to energy) so as to extend the *life* of sanitary landfills, reduce environmental impacts, and to make use of a valuable resource.

Contra Costa County Code

The County Board of Supervisors adopted County Ordinance 2019-31 in conjunction with the 2019 California Green Building Standards (CALGreen) Code to provide a single set of construction waste management requirements that apply to projects in the unincorporated County area. The 2019 Code, as amended in Contra Costa County Code, requires that at least 65 percent by weight of job site debris generated by most types of building project types be recycled, reused, or otherwise diverted from landfill disposal. This requirement applies to demolition projects and most new construction, as well as the majority of building additions or alterations for more details. CalGreen requires submission of plans and reports with verifiable post-project documentation to demonstrate that at least 65 percent of the nonhazardous construction and demolition debris generated on the job site are salvaged for reuse, recycled or otherwise diverted.

County Code Section 74-4.006 contains the complete set of CALGreen requirements pertaining to waste and recycling, including the County's amendments. Section numbers used below are those of the 2019 CALGreen Code.

Non-Residential Mandatory Measures

Section 5.408.1, Construction waste management: Recycle and/or salvage for reuse a minimum of 65 percent of the nonhazardous construction and demolition waste in accordance with Section 5.408.1.1.

Exceptions:

- Excavated soil and land-clearing debris.
- The enforcing agency may identify alternate waste reduction requirements if the agency determines that an owner or contractor has adequately demonstrated that diversion facilities necessary for the owner to comply with this section do not exist or are not located within a reasonable distance from the jobsite.

Section 5.408.1.1, *Construction Waste Management Plan*: Submit a construction waste management plan for the project, signed by the owner, in conformance with Items 1 through 5 prior to issuance of building permit. The construction waste management plan shall be updated as necessary upon approval by the enforcing agency and shall be available during construction for examination by the enforcing agency. The plan must do all of the following:

1. Identify the construction and demolition waste materials to be diverted from disposal by recycling, reuse on the project, or salvage for future use or sale.
2. Specify if construction and demolition waste materials will be sorted onsite (source-separated) or bulk mixed (single stream).
3. Identify diversion and disposal facilities where the construction and demolition waste material will be taken and identify the waste management companies, if any, that will be used to haul the construction and demolition waste material. A waste management company used to haul construction and demolition waste material must have all applicable County approvals.
4. Identify construction methods employed to reduce the amount of construction and demolition waste generated. Page 6 of 7
5. Specify that the amount of construction and demolition debris shall be calculated consistent with the enforcing agency's requirements for the weighing of debris. The owner shall ensure that all construction and demolition debris diverted or disposed are measured and recorded by weight or volume using the most accurate method of measurement available. To the extent practicable, all construction and demolition debris shall be weighed using scales. Scales shall be in compliance with all regulatory requirements for accuracy and maintenance. For construction and demolition

debris for which weighing is not possible due to lack of scales or not practical due to material being reused onsite or elsewhere or other considerations, a volumetric measurement shall be used. The owner shall convert volumetric measurements to weight using the standardized conversion factors approved by the enforcing agency for this purpose.

Section 5.408.1.3, *Waste Stream Reduction Alternative*: The combined weight of new construction disposal that does not exceed two pounds per square foot of building area may be deemed to meet the 65 percent minimum requirement as approved by the enforcing agency

Section 5.408.1.4, *Documentation*: A construction waste management final report containing information and supporting documentation that demonstrates compliance with Section 5.408.1, Section 5.408.1.1, Items 1 through 5, and, when applicable, Section 5.408.1.3, shall be provided to the enforcing agency before the final inspection. The required documentation shall include, but is not necessarily limited to, the following:

1. Documentation of the quantity by weight of each material type diverted or disposed, consistent with the requirements of Section 5.408.1.1, Item 5, and receipts or written certification from all receiving facilities used to divert or dispose waste generated by the project that substantiate the amounts specified on the construction waste management final report; or
2. For projects that satisfy the waste stream reduction alternative specified in Section 5.408.1.3, documentation of the quantity by weight of each new construction material type disposed and the total combined weight of new construction waste disposed as a result of the project, the corresponding pounds of new construction disposal per square foot of the building area, and receipts or written certification from all receiving facilities used to dispose waste generated by the project that substantiate the amounts specified on the construction waste management final report.

Section 5.408.2, *Universal Waste*: Additions and alterations to a building or tenant space that meet the scoping provisions in Section 301.3 for nonresidential additions and alterations, shall require verification that Universal Waste items such as fluorescent lamps and ballast and mercury containing thermostats as well as other California prohibited Universal Waste materials are disposed of properly and are diverted from landfills. A list of prohibited Universal Waste materials shall be included in the construction documents.

Excavated soil and land clearing debris: 100 percent of trees, stumps, rocks and associated vegetation and soils resulting primarily from land clearing shall be reused or recycled. For a phased project, such material may be stockpiled onsite until the storage site is developed. Exception: Reuse, either onsite or offsite, of vegetation or soil contaminated by disease or pest infestation.

Contra Costa Countywide Integrated Waste Management Plan

As required by the California Integrated Waste Management Act, Contra Costa County adopted a Countywide Integrated Waste Management Plan and Source Reduction and Recycling Element. The Integrated Waste Management Act establishes waste management goals, objectives, and policies related to solid waste disposal; facilities siting; household hazardous waste collection and disposal; and implementing programs to achieve plan goals. The Countywide Integrated Waste Management Plan and Source Reduction and Recycling Element establishes policies and goals related to source reduction, recycling, composting, special waste, and public information and education, and programs designed to achieve its Source Reduction and Recycling Element goals.

San Luis Obispo County General Plan

The Energy chapter of the General Plan's Conservation and Open Space Element contains the following goals and policies related to solid waste (San Luis Obispo County 2015):

- **Goal E 5:** Recycling, waste diversion, and reuse programs will achieve as close to zero waste as possible.

- **Policy E 5.1:** Source reduction and waste diversion: Encourage source reduction and diversion of solid waste

Integrated Waste Management Authority

In 2018, the San Luis Obispo Integrated Waste Management Authority adopted its *Regional Strategy to Meet California's Solid Waste Diversion Mandates*. This strategy provides guidelines for the Authority's compliance with the state's mandates, including AB 341 and related legislation.

San Luis Obispo County Municipal Code

San Luis Obispo County Municipal Code (Title 8, Chapter 8.12, Solid Waste Management), regulates wastes handled within the county. San Luis Obispo County Integrated Waste Management Authority Ordinance No. 2008-3 establishes requirements for recycling materials generated from residential facilities, commercial facilities, and special events. These requirements should increase diversion of recyclable materials from landfill disposal, reduce GHG emissions by recycling more materials, and avoid the potential financial and other consequences of failing to meet and maintain AB 939 requirements (San Luis Obispo County 2015).

4.16.3 Significance Criteria

Based on CEQA Guidelines Appendix G, a project would cause adverse impacts to solid waste service systems if it would:

a. Would the project generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

b. Would the project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

4.16.4 CEQA Baseline

Baseline conditions reflect the 2019 operation and maintenance of the Rodeo Refinery and Santa Maria Site as petroleum refineries, including operation and maintenance activities. The baseline setting also includes the applicable regulatory framework to protect environmental resources, which are described above.

4.16.5 Approach to Analysis

The Project would involve construction and demolition activities at the Rodeo Site that would occur in phases over a period of approximately 21 months and is assumed to begin as early as the first quarter of 2022. All demolition and construction associated with the Rodeo Refinery would occur within its boundaries (except for one laydown area). Similarly, all demolition at the Santa Maria Site would occur within the existing refinery boundaries.

Refer to Section 4.9, *Hazards and Hazardous Materials,* for discussion related to hazardous waste generation and disposal, including hydro carbon-containing soils and other hazardous waste debris.

4.16.6 Direct and Indirect Impacts of the Proposed Project

Table 4.16-1 presents a summary of the potential solid waste impacts associated with construction and demolition, as well as significance determinations for each impact.

Table 4.16-1. Summary of Impacts

Impact	Significance Determination		
	LTS	LTSM	SU
Impact 4.16-1. Would the proposed Project generate solid waste in excess of state or local standards or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals*?* Would the project comply with federal, state, and local management and reduction statutes and regulations related to solid waste*?*			
Rodeo Refinery and Santa Maria Site			
Construction/Demolition, Including Transitional Phase[a]	✓		
Operation and Maintenance	✓		

Notes: LTS = Less than significant, no mitigation proposed
LTSM = Less-than-significant impact with mitigation
SU = Significant and unavoidable

[a.] Transitional phase applies only to Rodeo Refinery

IMPACT 4.16-1

a. Would the project generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

b. Would the project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

Construction and Demolition: Less Than Significant, No Mitigation Proposed

Rodeo Refinery

Grading and demolition would be required as a part of construction of the Project. The existing Carbon Plant would be demolished. New Project equipment would be constructed on previously developed land at the Rodeo Site that currently includes three storage tanks, which would be demolished as part of the Project. There may also be additional demolition activities (e.g., of pipe supports, concrete slabs, equipment replacement in-kind, equipment refurbishment) associated with proposed new interconnecting piping and other in-plant utilities. Other demolition materials include asphalt and concrete and typical construction debris, such as packaging materials. Demolition activities would require the offsite transport and disposal of approximately 19,400 tons of non-hazardous solid waste, or approximately 46 tons per day. It is expected that 80 percent would be recyclable scrap and 20 percent would be non-recyclable demolition debris. Solid waste generated by the Project would be transported to the Keller Canyon Landfill, which has an allowable throughput of 3,500 tons per day, and an estimated closure date of 2050.

The 2019 CalGreen Code, as amended in Contra Costa County Code, requires that at least 65 percent by weight of job site debris generated by most types of building project types be recycled, reused, or otherwise diverted from landfill disposal. This requirement applies to demolition projects and most new construction. As detailed in Section 4.16.2.3, *Regulatory Setting*, CalGreen requires submission of a project-specific Construction Waste Management Plan and reports with verifiable post-project documentation to demonstrate that at least 65 percent of the nonhazardous construction and demolition debris are salvaged for reuse, recycled or otherwise diverted. The Construction Waste Management Plan must be updated as necessary upon approval by Contra Costa County and be available during construction for examination. Debris that cannot be recycled would be sent to a sanitary landfill in compliance with the *Countywide Integrated Waste Management Plan*.

By diverting 80 percent of construction and demolition debris, the Project would exceed the Contra Costa County and GalGreen requirement of 65 percent of debris to be recycled, reused, or otherwise diverted from Keller Canyon Landfill, and therefore, would comply with management and reduction statutes and regulations related to solid waste. Implementation of a project-specific Construction Waste Management Plan that must meet the requirements of Contra Costa County Code, and providing verifiable post-project documentation to demonstrate compliance, would ensure that the amount of solid waste diverted to the Keller Canyon Landfill would be minimized. In addition, generation and disposal of solid waste would be short term occurring during the 21-month construction and demolition period.

Based on the short term construction and demolition period, compliance with CalGreen requirements, and the Keller Canyon Landfill having adequate capacity to support the daily solid waste disposal needs of the Project, the Project would not substantially affect the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals, and would comply with solid waste management and reduction regulations. Therefore, impacts related to solid waste would be less than significant.

Santa Maria Site

Demolition of the Santa Maria Site would generate solid waste in the form of steel, crushed concrete, and dirt. It is expected that the majority of the demolition debris would be recycled as scrap metal. Some of the crushed concrete and dirt would be re-used onsite as fill to level the sites of demolished process equipment, pipe support, and buildings. The remainder would be disposed of at a regional landfill, likely Cold Canyon Landfill. In 2016, the Cold Canyon Landfill was expanded and has capacity to accept waste for at least 20 years at the current rate of disposal. The landfill has a maximum permitted throughput of 1,650 tons per day and total permitted capacity of 23,900,000 cubic yards, with a remaining capacity of 14,500,000 cubic yards or 61 percent (San Luis Obispo County 2018).

It is estimated that 28 tons per day of debris would be generated during the 21-month demolition period at the Santa Maria Site. As with the Rodeo Refinery, Phillips 66 is required to comply with the 2019 CalGreen Code. Implementation of a project-specific Construction Waste Management Plan that must meet the requirements of CalGreen Code, and provide verifiable post-project documentation to demonstrate compliance, would ensure that the amount of solid waste diverted to the Cold Canyon Landfill would be minimized. In addition, generation and disposal of solid waste would be short term occurring during the 21-month construction and demolition period.

Based on the short term construction and demolition period, compliance with CalGreen requirements, and the Cold Canyon Landfill having adequate capacity to support the daily solid waste disposal needs of the Project, the Project would not substantially affect the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals, and would comply with solid waste management and reduction regulations. Therefore, impacts related to solid waste would be less than significant.

Operation and Maintenance: Less Than Significant, No Mitigation Proposed

Rodeo Refinery

Under baseline conditions, normal operations produce one-quarter ton per month of municipal waste from the Rodeo Refinery to a Class III landfill. Approximately 195 tons per month of other non-hazardous waste generated by the Rodeo Refinery is taken to Keller Canyon Landfill by a contracted hauler. The Rodeo Refinery generates approximately 1,900 pounds per month of “universal waste,” such as spent batteries and lights that contain hazardous materials and therefore require special disposal separate from municipal trash. The Rodeo Refinery disposes of universal waste at a household hazardous waste collection facility or other authorized universal waste handler.

The Rodeo Refinery generates approximately 11 tons per month of additional non-hazardous waste that is sent to Keller Canyon Landfill due to maintenance turnaround activity. Turnarounds on various cycles are dependent upon the equipment and operating conditions of the individual processing units.

The determining factors for a turnaround include regulatory inspection requirements, catalyst life, equipment fouling, and anticipated equipment life.

The Project would result in the elimination or alteration of some existing non-hazardous solid waste streams at the Rodeo Refinery. Solid waste from the Carbon Plant would cease. The nature and quantity of process wastes from the Rodeo Site would increase above the baseline condition from the processing of renewable feedstocks. Process waste generation and disposal is addressed in Section 4.9, *Hazards and Hazardous Materials.*

The Rodeo Refinery is currently complying with federal, state, and county requirements related to management of solid waste, and would continue to do so under the Project. In addition, Phillips 66 has an ongoing recycling program that would be employed during operation and maintenance of the Project. No aspects of the Project would affect the continued compliance with these existing solid waste statutes and regulations. Because employment would remain the same as under baseline conditions, waste generation is unlikely to increase under the Project; however, if any additional waste quantities above baseline are generated the amounts would not be considered a substantial increase compared to the baseline solid waste generation from normal operations at the Rodeo Refinery. Therefore, operation and maintenance impacts would be less than significant.

Santa Maria Site and Pipeline Sites

With demolition of the Santa Maria Site and non-operation of the Pipeline Sites the Project would reduce the amount of solid waste generated at each site. At this time, it is speculative to assume a future land use at the Santa Maria Site; therefore, the amount of future solid waste that would be generated is unknown. Any proposed reuse of the site would be subject to separate permitting and approval processes. Given the capacity of the Cold Canyon Landfill, it is expected that operation and maintenance would not substantially affect the permitted capacity at local landfills. Therefore, the impact would be less than significant.

Mitigation Measure: **None Required**

4.16.7 References

CalRecycle. 2021. SWIS Facility/Site Activity Details Keller Canyon Landfill (07-AA-032). Available at: https://www2.calrecycle.ca.gov/SolidWaste/SiteActivity/Details/4407?siteID=228 Accessed on September 8, 2021.

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———. 2021. Personal Communication in the form of email correspondence between Gary Kupp, Senior Planner and David Brockbank, Principal Planner. September 14.

San Luis Obispo County. 2015. Phillips 66 Company Rail Spur Extension and Crude Unloading Project Final Environmental Impact Report and Vertical Coastal Access Project Assessment. SCH# 2013071028. Prepared by Marine Research Specialists. December.

———. 2018. Jack Ranch San Luis Obispo Agricultural Cluster Project, Draft Environmental Impact Report, SCH# 2016051012. January 2018.

4.17 Environmental Justice

4.17.1 Background

The State of California first codified environmental justice into law in 1999, empowering the Office of Planning and Research (OPR) to coordinate the state's environmental justice programs and directing the CalEPA to take into account environmental justice in "designing its mission for programs, policies, and standards," adding a new section to the Public Resources Code entitled "Environmental Justice" (1999 Cal SB 115; codified at Section 65040.12 of the California Government Code and Section 72000 of the Public Resources Code [now Section 71110 et seq.]). Section 65040.12(e) defines environmental justice and provides further detail regarding the scope of environmental justice principles:

> *(e) (1) For purposes of this section, "environmental justice" means the fair treatment and meaningful involvement of people of all races, cultures, incomes, and national origins, with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies.*
>
> *(2) Environmental justice" includes, but is not limited to, all of the following:+*
>
> *(A) The availability of a healthy environment for all people.*
>
> *(B) The deterrence, reduction, and elimination of pollution burdens for populations and communities experiencing the adverse effects of that pollution, so that the effects of the pollution are not disproportionately borne by those populations and communities.*
>
> *(C) Governmental entities engaging and providing technical assistance to populations and communities most impacted by pollution to promote their meaningful participation in all phases of the environmental and land use decision making process.*
>
> *(D) At a minimum, the meaningful consideration of recommendations from populations and communities most impacted by pollution into environmental and land use decisions.*

The OPR is also responsible for including environmental justice matters in the General Plan Guidelines pursuant to Section 65040.12(e) of the California Government Code. In 2016, the California Legislature adopted SB 1000, which required that general plans include an environmental justice element for disadvantaged communities within the general plan area. With the passage of SB 1000, the OPR prepared *Guidelines for the Environmental Justice Element* in Chapter 4 of the General Plan Guidelines, and the county is in the process of updating its general plan, including an environmental justice element.

The analysis of environmental justice refers to the assessment of environmental impacts, primarily from the perspective of federal law, focused on the potential for projects to create adverse impacts that might be disproportionately borne by under-served or disadvantaged (minority and low-impact) communities. Impact analysis required under CEQA identifies and assesses environmental impacts to the public at large and does not distinguish between differing populations and communities that may be adversely affected. California state law recommends an environmental justice analysis under certain conditions, and CEQA generally does not include specific environmental justice analysis in the CEQA Guidelines.

Although not expressly listed in the Appendix G, Environmental Checklist Form, set forth in the CEQA Guidelines, Contra Costa County is addressing environmental justice in this EIR to provide the public and decision makers a better understanding of the environmental justice communities adjacent to the Project and the implications of the Project on those communities.

4.17.2 Regulatory Setting

4.17.2.1 Federal Authority

Executive Order 12898

The basis for environmental justice lies in the Equal Protection Clause of the US Constitution. The Fourteenth Amendment expressly provides that the states may not *deny to any person within [their] jurisdiction the equal protection of the laws* (US Constitution, amend. XIV, §1). On February 11, 1994, President Clinton signed EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*. The EO followed a 1992 report by the US Environmental Protection Agency indicating that [*r]acial minority and low-income populations experience higher than average exposures to selected air pollutants, hazardous waste facilities, and other forms of environmental pollution*.

4.17.2.2 State Authority

Senate Bill 1000/California Government Code 65302

SB 1000, the *Planning for Healthy Communities Act*, passed in 2016, requires that general plans includes an environmental justice element for disadvantaged communities within the area covered by the general plan. SB 1000 is codified in California Government Code Section 65302(h), which states the following:

> ***65302.*** *The general plan shall consist of a statement of development policies and shall include a diagram or diagrams and text setting forth objectives, principles, standards, and plan proposals. The plan shall include the following elements:*
>
> *(h) (1) An environmental justice element, or related goals, policies, and objectives integrated in other elements, that identifies disadvantaged communities within the area covered by the general plan of the city, county, or city and county, if the city, county, or city and county has a disadvantaged community. The environmental justice element, or related environmental justice goals, policies, and objectives integrated in other elements, shall do all of the following:*
>
> *(A) Identify objectives and policies to reduce the unique or compounded health risks in disadvantaged communities by means that include, but are not limited to, the reduction of pollution exposure, including the improvement of air quality, and the promotion of public facilities, food access, safe and sanitary homes, and physical activity.*
>
> *(B) Identify objectives and policies to promote civic engagement in the public decision making process.*
>
> *(C) Identify objectives and policies that prioritize improvements and programs that address the needs of disadvantaged communities.*
>
> *(2) A city, county, or city and county subject to this subdivision shall adopt or review the environmental justice element, or the environmental justice goals, policies, and objectives in other elements, upon the adoption or next revision of two or more elements concurrently on or after January 1, 2018.*
>
> *(3) By adding this subdivision, the Legislature does not intend to require a city, county, or city and county to take any action prohibited by the United States Constitution or the California Constitution.*
>
> *(4) For purposes of this subdivision, the following terms shall apply:*
>
> *(A) "Disadvantaged communities" means an area identified by the CalEPA pursuant to Section 39711 of the Health and Safety Code or an area that is a low-income area that is*

disproportionately affected by environmental pollution and other hazards that can lead to negative health effects, exposure, or environmental degradation.

(B) "Public facilities" includes public improvements, public services, and community amenities, as defined in subdivision (d) of Section 66000.

(C) "Low-income area" means an area with household incomes at or below 80 percent of the statewide median income or with household incomes at or below the threshold designated as low income by the Department of Housing and Community Development's list of state income limits adopted pursuant to Section 50093 of the Health and Safety Code.

With the passage of SB 1000, the OPR prepared guidelines for the Environmental Justice Element Section in Chapter 4 of the General Plan Guidelines. Section VI of Chapter 4 addresses the Statutory Requirements in Section 65302 and describes the requirements in the "Completeness Checklist" chart (copied below):

Completeness Checklist

Statutory Citation	Brief Description of Requirement
Gov. Code § 65302(h)(1)	Identify disadvantaged communities within the area covered by the general plan. (Note: see guidance provided earlier under Step 1)
Gov. Code § 65302(h)(1)(A)	Identify objectives and policies to reduce exposure to pollution including improving air quality in disadvantaged communities.
Gov. Code § 65302 (h)(1)(A)	Identify objectives and policies to promote public facilities in disadvantaged communities.
Gov. Code § 65302(h)(1)(A)	Identify objectives and policies to promote food access in disadvantaged communities.
Gov. Code § 65302(h)(1)(A)	Identify objectives and policies to promote safe and sanitary homes in disadvantaged communities.
Gov. Code § 65302(h)(1)(A)	Identify objectives and policies to promote physical activity in disadvantaged communities.
Gov. Code § 65302(h)(1)(A)	Identify objectives and policies to reduce any unique or compounded health risks in disadvantaged communities not otherwise addressed above.
Gov. Code § 65302(h)(1)(B)	Identify objectives and policies to promote civic engagement in the public decision-making process in disadvantaged communities.
Gov. Code § 65302(h)(1)(C)	Identify objectives and policies that prioritize improvements and programs that address the needs of disadvantaged communities.

4.17.2.3 Local Authority

Recognizing that planning officials throughout the state can influence health and equity outcomes across communities, SB 1000 includes guidance to integrate environmental justice principles into the general plan process and improve public participation.

Contra Costa County General Plan

Contra Costa County defines environmental justice as the *fair treatment of people of all races, cultures and incomes with respect to the development, adoption, implementation, and enforcement of all environmental laws, regulations, and polices*. This policy was adopted by the Board of Supervisors in 2003.

To meet the requirements of SB 1000, Contra Costa County is currently updating its general plan to address environmental justice in unincorporated areas of the county. Based on community outreach effort

to obtain input on policy guidance, the County prepared the Revised Draft Environmental Justice Policy Guidance document (Contra Costa County 2021). The following draft policies apply to the Project:

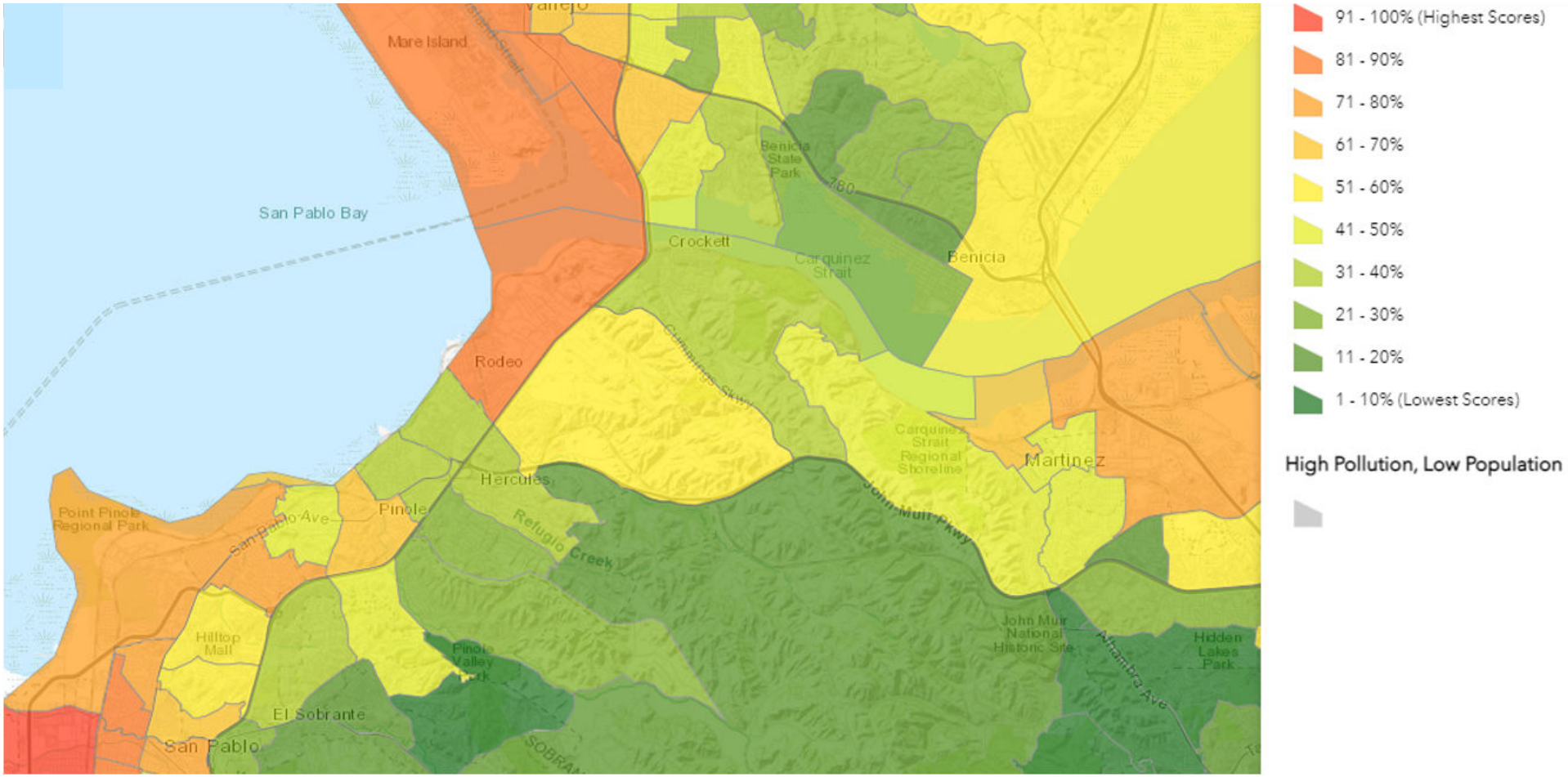
- **SC-P1.1:** In coordination with residents of Impacted Communities, workers, and business/industry, environmental and environmental justice stakeholders, community colleges, workforce development and training entities, local government, and other appropriate agencies, support transition from petroleum-refining industries to just, equitable, and clean renewable and sustainable industries that offer provide living-wage jobs.
- **SC-P1.5:** For projects negatively affecting an Impacted Community, pursue community benefits agreements (CBAs) negotiated with the community and project applicant. The primary objective of these CBAs is to mitigate project impacts to the greatest extent possible, which could include mitigations exceeding the requirements of CEQA. Secondarily, to compensate for impacts that cannot be fully mitigated, these CBAs should secure community benefits that exceed that go beyond the inherent project benefits and achieve support the community goals identified in the community profile, as negotiated with the community.
- **SC-P1.6:** To support the findings necessary to approve large-scale Prior to approval of a major developments project in or adjacent to an Impacted Communities, require applicants for such projects to submit documentation demonstrating how the project will promote environmental justice and health, including how the project will ensure the following: (a) It will not adversely impact the community; (b) It will provide benefits that support the community goals, as identified in the community profile and/or otherwise expressed by negotiated with the community; (c) It will provide economic opportunities for the community; (d) It will neither not directly nor indirectly cause unwelcome, permanent displacement of existing residents or businesses in the community; and (e) It will avoid either direct or and indirect negative impacts on health and the quality of life and health of residents within the community.

At this time, Contra Costa County does not provide its own definition of a disadvantaged community or standards in determining when an impact to a minority and/or low income population would occur. As a result, this analysis relies on data compiled by CalEPA's OEHHA as described below.

Environmental Justice Communities

The California Communities Environmental Health Screening Tool (CalEnviroScreen) is a data tool developed by CalEPA's OEHHA pursuant to Health and Safety Code Section 39711 and other statutory requirements. CalEnviroScreen provides statewide data that can be used to identify communities disproportionately impacted by, or vulnerable to, environmental pollution and contaminants. The mapping tool contains 12 indicators related to pollution burden and 8 indicators that track population characteristics and other vulnerabilities based by the 2020 Census. Census tracts rated in the highest quartile of scores (75 to 100) are considered to be disadvantaged as defined under SB 1000 (OEHHA 2021). CalEnviroScreen is used by CalEPA and its boards and departments to aid in administering environmental justice grants, promote compliance with environmental laws, prioritize site-cleanup activities and identify opportunities for sustainable economic development.

As shown in Figure 4.17-1, in Contra Costa County CalEnviroScreen identifies Rodeo (scores 81 to 90) as a disadvantaged communities in the vicinity of the Project. This high vulnerability ranking indicates a need to reduce overall emissions and exposures. Figure 4.17-2 shows that the area surrounding the Santa Maria Site is not considered a disadvantaged community with a score of 21 to 30 (OEHHA 2021). The Pipeline Sites are not addressed since the Project would not result in any changes that could negatively affect disadvantaged communities.



Source: California Office of Environmental Health Hazard Assessment, 2021

Figure 4.17-1. Disadvantaged Communities Surrounding the Rodeo Refinery

Rodeo Renewed Project
Contra Costa County, CA

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Date Created: 8/31/2021 Date Revised: 8/31/2021 File Path: R:\Cardno\E320405800_Rodeo\map\Rodeo_Fig4_16_1_Disadvantaged_Communities_RodeoRefinery.mxd
GIS Analyst: anna.clare

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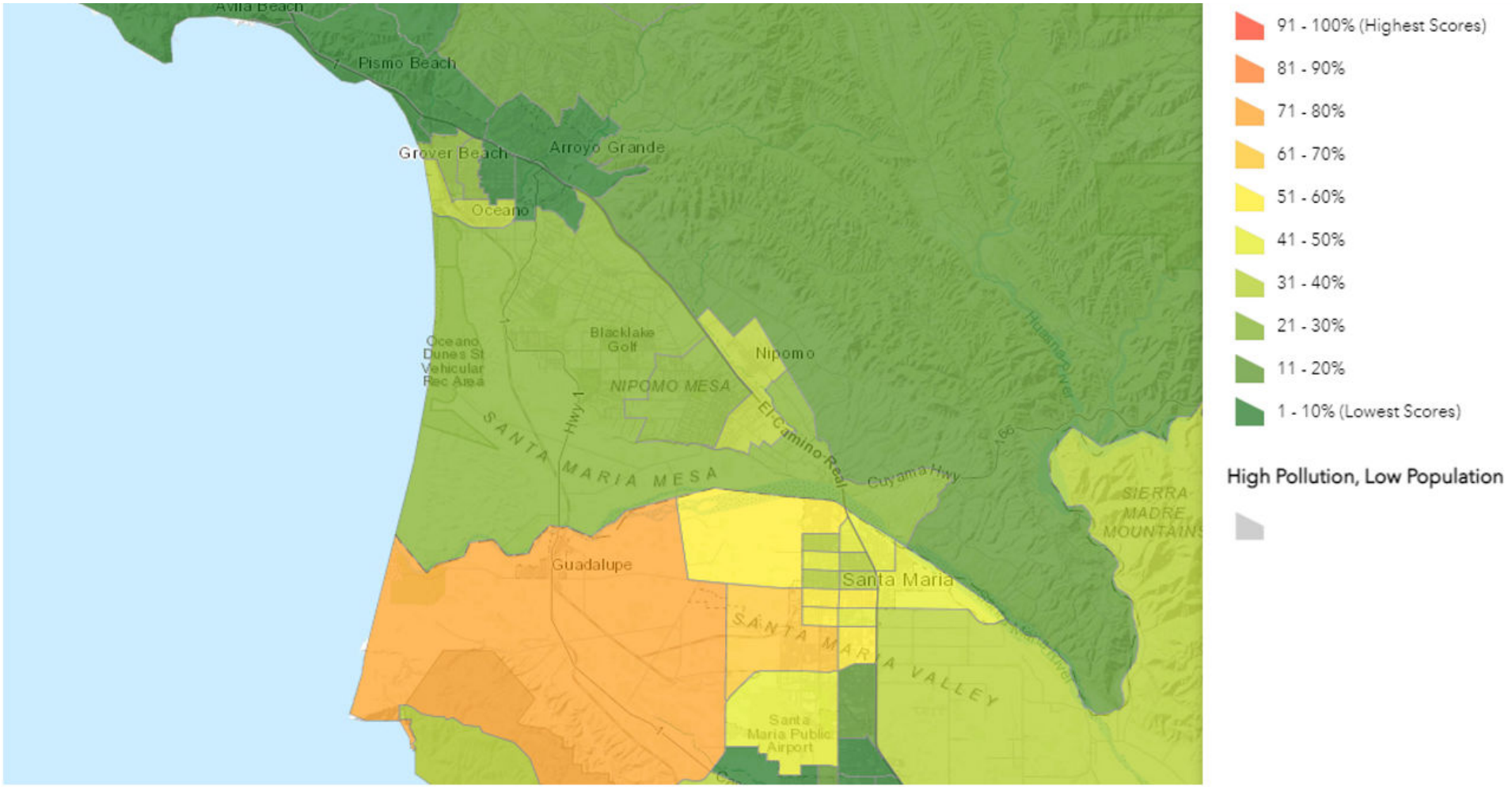

Source: California Office of Environmental Health Hazard Assessment, 2021

Figure 4.17-2. Disadvantaged Communities Surrounding the Santa Maria Site

Rodeo Renewed Project
Contra Costa County, CA

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Date Created: 8/31/2021 Date Revised: 8/31/2021 File Path: R:\Cardno\E320405800_Rodeo\map\Rodeo_Fig4_16_2_Disadvantaged_Communities_SantaMariaSite.mxd
GIS Analyst: anna.clare

Envision Contra Costa 2040

Contra Costa County is developing its General Plan update Envision Contra Costa 2040, which contains new sustainability and environmental justice elements. A requirement for the General Plan update is compliance with SB 1000, the Planning for Healthy Communities Act of 2016. SB 1000 requires that city and county general plans address environmental justice in Impacted Communities. The County prepared the initial draft of the General Plan environmental justice goals, policies, and actions in October 2020. Between November 2020 and February 2021, the County solicited and incorporated input from the community and several County departments on the draft environmental justice policy guidance. These efforts produced the Draft Stronger Communities Element that contains overall thematic Goal SC-1, which calls for *Equitable distribution of social and economic resources among all communities in the county so that Impacted Communities are not disproportionately burdened by environmental pollution or other hazards* (Contra Costa County 2021a, 2021b).

Consistent with draft Goal SC-1, the County will be developing a plan-level approach to reduce emissions and improve community health in the Project area. Concurrent with the Project and with assistance from the Bay Area Air Quality Management, the County plans to develop a community risk-reduction plan as part of the Stronger Communities Element of the Envision Contra Costa 2040 General Plan.

4.17.3 Significance Criteria

Contra Costa County is in process of developing an Environmental Justice Element of the Contra Costa County General Plan, and does not at this time provide any standards in determining when an impact to a minority and/or low income population would occur.

In the absence of local thresholds, the EIR evaluates the Project based on the definition of environmental justice in Section 65040.12(e) and the relevant statutory requirements in Section 65302(h) for the environmental justice element required in the general plan (also set forth in the Completeness Checklist in Chapter 4 of the OPR's General Plan Guidelines).

Section 65040.12(e)(1)(B) defines environmental justice to include:

> *"The deterrence, reduction, and elimination of pollution burdens for populations and communities experiencing the adverse effects of that pollution, so that the effects of the pollution are not disproportionately borne by those populations and communities."*

Section 65302(h) requires that the environmental justice element of the general plan:

> *Identify objectives and policies to reduce the unique or compounded health risks in disadvantaged communities by means that include, but are not limited to, the reduction of pollution exposure, including the improvement of air quality, and the promotion of public facilities, food access, safe and sanitary homes, and physical activity.*

While the requirements in Section 65302(h) to identify objectives and policies are directed to local agencies in the development of the general plan, they can be used to determine whether the Project would impede or support the preparation and implementation of the county's environmental justice element. Specifically, this EIR focuses on "the reduction of pollution exposure, including improvement of air quality" and not on "the promotion of public facilities, food access, safe and sanitary homes, and physical activity."

Thus, this analysis consists of whether the Project is consistent with these statutory provisions to reduce pollution exposure, including air quality, in disadvantaged communities and to consider whether or not the effects of pollution are disproportionately borne by disadvantaged communities.

4.17.4 Methodology

The methodology for conducting the impact analysis for environmental justice included reviewing Project impact conclusions for each of the resources in Chapter 4, as well as the cumulative analysis in Chapter 5. If the EIR identified that the Project could result in potentially significant impacts or that the Project's incremental effect is cumulatively considerable, after the application of mitigation, an evaluation was conducted to determine if those impacts would result in disproportionate effect on disadvantaged communities.

For impacts that were less than significant and also less than cumulatively considerable, or classified as "No Impact" (and therefore also not cumulatively considerable), further evaluation of the potential for disproportionately high and adverse effects on minority and low-income populations was not needed.

4.17.5 Evaluation of Reduction of Pollution Exposure

The proposed Project's construction and operations at the Rodeo Refinery result in less-than-significant impacts, or less-than-significant impacts with mitigation, that could disproportionally affect disadvantaged communities as identified in Section 4.3, *Air Quality* (criteria pollutants, toxics, health risk. odor); Section 4.4, *Biological Resources* (terrestrial); Section 4.8, *Greenhouse Gas Emissions*; Section 4.9, *Hazards and Hazardous Materials* (terrestrial); 4.12, *Noise and Vibration*; and 4.13, *Transportation and Traffic*. With respect to air quality and GHGs in particular, there is a net reduction in criteria air pollutant emissions and GHGs as compared to baseline conditions (existing operations), resulting in a reduction of criteria air pollution exposure to the public, including disadvantaged communities. This reduction occurs in part as a result of the conversion of the Rodeo Refinery to a renewable fuels facility, the termination of Carbon Plant operations and significantly reduced truck traffic.

As shown in Figure 4.17-2, the area surrounding the Santa Maria Site is not identified as containing disadvantaged communities. However, with demolition of the Santa Maria Refinery, the communities surrounding the Project site would experience beneficial effects related to visual quality, local air quality, noise, and traffic.

4.17.6 Evaluation of Potential Disproportionate Effect of Significant Impacts on Disadvantaged Communities

The proposed Project would have potentially significant impacts that would remain significant after mitigation with respect to marine biological resources, hazardous materials, and water quality based on an increased risk of hazards associated with marine vessel spills.

As described in Sections 4.4, *Biological Resources*, 4.9, *Hazards and Hazardous Materials*, and 4.10, *Hydrology and Water Quality*, these potentially significant impacts occur due to the increased risk of accidents resulting from increased vessel traffic, where any increase in risk, regardless of its magnitude or statistical significance (e.g. risk associated with just one additional vessel over baseline) is considered to be a significant impact. In addition, however, as explained in Section 4.9, the effects of any such incident would not result in a corresponding public health or safety impact based on the separation distance between the Marine Terminal and public receptor locations and the comprehensive regulatory programs and mitigation measures to address any such accidents. Therefore, these remaining significant impacts would not impact public health and safety in general and would not disproportionately affect disadvantaged communities.

4.17.6.1 No Impact

The following resource areas were found to have no Project impact and/or the cumulatively considerable contribution would not affect human populations or target a specific group or area considered to be a disadvantaged community.

- Agriculture and Forest Resources
- Mineral Resources
- Air Quality – Conflict with or obstruct implementation of an applicable air quality plan.
- Historical Resources
- Population and Housing
- Public Services
- Recreation
- Utilities and Service Systems

4.17.7 References

Contra Costa County. 2021. Revised Draft Environmental Justice Policy Guidance. June 2021. Available at: https://envisioncontracosta2040.org/wp-content/uploads/2021/07/EJ_GOPA_Revised.pdf. Accessed September 6, 2021.

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———. 2021b. Environmental Justice Documents. Available at: https://envisioncontracosta2040.org/environmental-justice-documents/. Accessed September 13, 2021.

OEHHA (California Office of Environmental Health Hazard Assessment). 2021. CalEnviroScreen 4.0 Updated February 2021. Available at: https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-30. Accessed July 14, 2021.

5 Alternatives Analysis

5.1 General Consideration of Alternatives

CEQA requires the lead agency to evaluate feasible mitigation measures or feasible alternatives to substantially lessen or avoid significant environmental impacts of the project that otherwise would occur. The California Environmental Quality Act (CEQA) requires a lead agency to analyze a range of reasonable alternatives to a proposed project that could feasibly attain most of the basic objectives of the project while substantially reducing or eliminating significant environmental effects. The lead agency must identify an environmentally superior alternative among the alternatives and the Project.

CEQA provides the following guidance for discussing project alternatives:

- An EIR need not consider every conceivable alternative to a project. Rather, it must consider a reasonable range of potentially feasible alternatives that will foster informed decision-making and public participation (CEQA Guidelines § 15126.6(a)).
- An EIR is not required to consider alternatives that are infeasible (§ 15126.6(a)).
- The discussion shall focus on alternatives to the project or its location that are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly (§ 15126.6(b)).
- The range of alternatives shall include those that could feasibly accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more of the significant effects (§ 15126.6(c)).
- The EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis and comparison with the proposed project (§ 15126.6(d)).

CEQA requires the consideration of “feasible” alternatives. Section 15364 of the CEQA Guidelines define “feasible” as:

> *. . . capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors.*

(See also Section 21061.1 of CEQA (“Feasible” means capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors.)

Among the factors that may be considered when addressing the feasibility of an alternative include, without limitation, site suitability, economic viability, availability of infrastructure, general plan consistency, consistency with other plans or regulatory limitations, or jurisdictional boundaries (CEQA Guidelines § 15126.6(f)(1)). In addition, CEQA requires an EIR to evaluate a “no project” alternative to allow decision-makers to compare the impacts of approving the project with the impacts of not approving it (CEQA Guidelines § 15126.6(e)). “When a project involves a proposed change to an ongoing operation, or even the continuation of an ongoing operation, a decision to reject the project would leave the operation in place. In such a situation, CEQA defines the no project alternative as a continuation of the existing operation” (*Ctr. for Biological Diversity v. Dep't of Fish & Wildlife*, 234 Cal. App. 4th 214, 253-254, 183 Cal. Rptr. 3d 736 (2015)). The “no project” alternative analysis “is not the baseline for determining whether the proposed project’s environmental impacts may be significant, unless it is identical to the existing environmental setting analysis which does establish that baseline” (CEQA Guidelines, § 15126.6(e)(1)). If

the “no project” alternative is the environmentally superior alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives (CEQA Guidelines § 15126.6(e)(2)). The No Project Alternative to the Project is analyzed in Section 5.5.1.

The range of alternatives required in an EIR is governed by a “rule of reason” that requires the EIR to set forth only those alternatives necessary to permit a reasoned choice (CEQA Guidelines § 15126.6(a)). The lead agency is responsible for selecting a range of alternatives for examination and must publicly disclose its reasoning for selecting those alternatives (CEQA Guidelines § 15126.6(a)). There is no ironclad rule governing the nature or scope of the alternatives to be discussed other than the rule of reason (CEQA Guidelines § 15126.6(a)). The EIR should briefly describe the rationale for selecting the alternatives to be discussed (CEQA Guidelines § 15126.6(c)). The EIR should also identify any alternatives that were considered by the lead agency but were rejected as infeasible during the scoping process and briefly explain the reasons underlying the lead agency’s determination (CEQA Guidelines § 15126.6(c)). Section 5.4, *Alternatives Considered but Dismissed from Further Consideration*, evaluates alternatives that were rejected as infeasible.

As explained above, the intent of the alternatives analysis is to reduce significant impacts of a project. Implementation of the Project could result in potentially significant impacts, as further described below. Based on the significant environmental impacts of the Project and the objectives established for the Project, and based on the feasibility of the alternatives considered, the following alternatives to the Project are evaluated in this Alternatives chapter:

- Alternative 1: No Project Alternative
- Alternative 2: Reduced Project Alternative
- Alternative 3: Terminal-Only Alternative
- Alternative 4: No Temporary Increase in Crude Oil

These alternatives are evaluated in detail below.

5.2 Project Objectives

The objectives of the Project include:

1. Convert the Phillips 66 Rodeo Refinery to a renewable transportation fuels production facility.
2. Provide/maximize production of renewable fuels to assist California in meeting its goals for renewable energy, GHG emission reductions, and reduced CI for transportation fuels.
3. Convert existing equipment and infrastructure to produce transportation fuels from non-hazardous renewable feedstocks and discontinue the processing of crude oil at the Rodeo Refinery.
4. Preserve and protect existing family-wage jobs in Contra Costa County during and after the transition to a renewable transportation fuels production facility.
5. Repurpose and reuse the facility’s existing equipment capacity, including the marine and rail terminals.
6. Preserve marine, rail, and truck offloading facilities to access national/international renewable feedstocks to provide renewable transportation fuels and to provide conventional fuels and conventional fuel components.
7. Provide ability to process a comprehensive range of renewable feedstocks, including treated and untreated feedstocks.
8. Maintain the facility’s current capacity to supply regional market demand for transportation fuels, including renewable and conventional fuels.

9. Ensure California transportation fuel supply needs are met during the transition to a renewable fuels facility by temporarily (approximately 7 months) increasing gas oil and crude deliveries at the Marine Terminal to maintain current transportation fuel production at the Rodeo Refinery.
10. Provide a beneficial use for recyclable FOG within the state of California.
11. Provide a mechanism for compliance with both the federal RFS and state LCFS through processing facilities in California.

5.3 Potentially Significant Impacts of the Project

As mentioned above, CEQA requires a review of a reasonable range of alternatives that could avoid or substantially lessen any of the significant environmental impacts of the Project. This analysis evaluates the potential impacts of implementing the Project.

5.4 Alternatives Considered but Dismissed from Further Consideration

CEQA Guidelines require a brief explanation of alternatives that were considered but rejected during the scoping process. Among the factors that may be used to eliminate alternatives from further consideration under CEQA include the failure to meet most of the basic project objectives, the alternative's infeasibility, and the alternative's inability to avoid significant environmental effects (CEQA Guidelines, Section 15126.6(c)). The six alternatives described below were considered but rejected for the reasons stated below. Each alternative considered is summarized below, as well as an explanation why it was not carried forward for full evaluation.

5.4.1 Continued Operation of Rodeo Refinery and Shut-Down of Santa Maria and Pipeline Sites

In this alternative, the Rodeo Refinery would continue to refine crude oil into petroleum-based fuels; all of the crude would come into the refinery through the Marine Terminal. The Santa Maria Site would be shut down and demolished, and the Pipeline Sites would be cleaned and taken out of active service. Accordingly, those facilities would no longer collect and process crude oil for delivery to the Rodeo Refinery. This alternative would potentially increase deliveries of crude oil to the Marine Terminal up to the facility's permit limit of approximately 51,000 bpd to partially compensate for the decreased amounts of crude and partially refined feedstock received from the Santa Maria Site and Pipeline Sites under baseline conditions (70,000 bpd, on average). Accordingly, the Rodeo Refinery would refine up to approximately 51,000 bpd of crude oil and gasoil into petroleum products such as diesel fuel, jet fuel, gasoline components, propane, butane, and blendstocks, and would continue its gasoline blending and distribution operation. The Carbon Plant would remain in service, although operating at a lower activity level than under baseline conditions.

This alternative would not meet the fundamental purpose of the Project as reflected in the Project's basic objectives. The fundamental purpose of the Project is to transition the Rodeo Refinery to a renewable transportation fuels production facility. Accordingly, many of the Project objectives relate to the production of renewable fuels and repurposing the existing facility, consistent with federal and state renewable standards and LCFS, and those objectives could not be achieved with this alternative.

This alternative was also rejected from further consideration as infeasible because it would reduce transportation fuels production at the refinery to approximately 42 percent of the refinery's capacity (51,000 bpd vs 120,000 bpd), and would severely underuse refinery facilities for the refining of conventional fuels or the production of renewable fuels. In addition, at 42 percent capacity, this alternative would reduce regionally-available supply to meet regional demand. Regional demand is based on numerous factors, most of which are independent of the production of transportation fuels, and a reduction of production does not necessarily reduce demand. Phillips 66 is a critical supplier of transportation fuels to the region. The demand for gasoline in northern California is not met by the refining

capacity available in the region, necessitating imports every year (CEC 2021a), and any reduction in regional supply will result in increased imports of gasoline from other areas. This pattern has already been observed as a result of the closure of the Marathon Martinez refinery in April, 2020: thereafter, less gasoline was exported and more gasoline was imported, particularly from Southern California and the Pacific Northwest (CEC 2021a). Although in that case overall supply shortages did not occur because of reduced demand related to the pandemic, reduction of supply in the future, whether of regional production or imported supply, could cause demand to exceed supply (CEC 2021a). Further, this alternative would not achieve the state's objective to encourage the production of renewable fuels and it would not allow Phillips 66 to use the transformation of the facility to comply with the federal renewable standards and the state LCFS.

With respect to environmental effects, this alternative would not avoid any significant environmental impacts, but some environmental effects would be reduced because the alternative envisions substantially reduced operations. However, potential increased deliveries of crude oil to the Marine Terminal would not avoid the significant and unavoidable impacts related to marine traffic. The construction impacts of this alternative would be lower than those of the Project, as the Project's Rodeo components would not be constructed. The operational impacts of the Rodeo Refinery (primarily, air emissions, hazardous materials, and vehicular traffic impacts) would be reduced, but, similar to the Project, the operational impacts of the Santa Maria Site and the Pipeline Sites (primarily, air emissions and hazardous materials) would be eliminated.

In summary, although the environmental effects of this alternative would necessarily be reduced as compared to the Project, this alternative is rejected from further consideration because it is infeasible and would not meet most of the project objectives.

5.4.2 Project without Gasoline Blending Element

In this alternative, Phillips 66 would proceed with the Rodeo Renewed Project as described in Chapter 1, but the existing gasoline blending and distribution operation would no longer take place at the Rodeo location. Instead, this alternative would handle only renewable feedstocks and products. This alternative would eliminate from the Project the receipt of up to 38,000 bpd of petroleum-based gasoline and blendstocks, and the shipping of up to 40,000 bpd of finished gasoline.

Several of the Project's basic objectives depend on the ability to use the Rodeo Refinery to provide transportation fuels to the region to meet demand for both conventional and renewable fuels. This alternative would eliminate entirely any distribution of gasoline and gasoline blendstocks from the facility, and reduce the capacity of the site by 33 percent. Accordingly, this alternative would not preserve facilities "to provide conventional fuels and conventional fuel components" nor would it allow the facility to maintain its current capacity to supply regional market demand for transportation fuels, including renewable and conventional fuels.

This alternative is infeasible because Phillips 66 is a critical supplier of conventional transportation fuels to the region. The gasoline operation at the Rodeo Refinery exists to meet regional demand for gasoline that cannot be filled solely by the region's existing refining capacity. Accordingly, the elimination of the Rodeo Refinery's gasoline operation would likely lead to regional shortages, which might then cause other refiners or importers to import gasoline from outside Northern California to remedy the supply shortage. The demand for gasoline in northern California is not met by the refining capacity available in the region, necessitating imports every year (CEC 2021a), and any reduction in regional supply will result in increased imports of gasoline from other areas. This pattern has already been observed as a result of the closure of the Marathon Martinez refinery in April 2020; thereafter, less gasoline was exported and more gasoline was imported, particularly from Southern California and the Pacific Northwest (CEC 2021a). Although in that case overall supply shortages did not occur because of reduced demand related to the pandemic, reduction of supply in the future, whether from regional production or imported supply, could cause demand to exceed supply (CEC 2021a).

In addition, if the gasoline blending operation at the Rodeo Refinery is eliminated, marine vessel and, potentially, rail and truck traffic in the Bay Area region would not decrease. Instead, other facilities in the region would begin to import gasoline from outside Northern California to meet the regional demand (pipeline transport would not be used because there are no pipelines between the Bay Area and other sources of gasoline). Thus, the environmental effects reduced by eliminating gasoline blending operation at the Rodeo Refinery would occur at other facilities in the region and would require increased vessel traffic to those facilities. On balance, therefore, it is likely that, on a regional basis, this alternative would not avoid or materially reduce environmental impacts of the Project, and could increase them depending on the sources of supply to the other regional facilities.

With the elimination of a primary component of both the existing operation and the Project, the air emissions and hazards in the immediate vicinity of the Rodeo Refinery could be reduced for this alternative; impacts would therefore remain less than significant, similar to the Project. Marine vessel traffic would be reduced at the Rodeo Site relative to the Project by eliminating the blendstocks and product that currently arrive at and leave the Rodeo Refinery through the Marine Terminal, but potential impacts would still be significant and unavoidable, similar to the Project. However, operations by other facilities to supply regional demand could have similar or greater environmental effects, depending on the methods of transportation and location of supplies. Given that this alternative would be unlikely to avoid or substantially reduce environmental effects, as well as its infeasibility related to regional gasoline supply and demand and its failure to meet several of the Project's objectives, this alternative was rejected from further consideration.

5.4.3 Project at an Alternate Site

Consideration of an "alternate site" alternative may be included among the reasonable range of alternatives under CEQA. The objectives of the Project are based on the transformation of an existing facility at the Rodeo Site. Development of an alternate site would not result in any changes to the Rodeo Site and would not advance any of the basic objectives of the Project.

This alternative is not feasible for several reasons. First, due to the nature of the Project, implementing it at an alternate site would require either construction of the Project facilities at another operating refinery, or construction of a new processing facility at a new location. The Rodeo Refinery is the only Phillips 66 refinery in northern California (the only other Phillips 66 refinery in California besides the Santa Maria Refinery is located in the Wilmington/Carson area in Los Angeles County), which means that an existing alternate location for the Project to serve the regional fuels market is not available. Further, as discussed in Section 5.4.1, *Continued Operation of Rodeo Refinery and Shut-Down of Santa Maria and Pipeline Sites*, the conversion of existing refining and hydrogen production facilities has been important to the development of renewable diesel facilities throughout the United States (USDA 2021), and this alternative would not result in a conversion of an existing facility. Second, it is unlikely that a suitable site, combining marine access, rail access, connecting infrastructure, adequate size, and community acceptability, could be located and obtained in a reasonable time frame. Third, Project activities at the Santa Maria and Pipeline sites similarly cannot take place elsewhere, as they consist of demolition activities at Santa Maria and taking the Pipeline Sites out of service, neither of which could be accomplished at a different location.

With respect to environmental effects, construction of a renewable fuels facility at a new site would be a substantially larger undertaking than the Project and would result in significant new environmental impacts related to that site, particularly because the Project consists of repurposing an existing industrial site and existing equipment. The Project as proposed focuses development only within the active area of the existing Rodeo Site, and would not result in development in new or previously undisturbed areas either within or outside the existing Rodeo Refinery footprint.

In summary, this alternative would fail to meet the Project's basic objectives, would not be feasible because no "alternative site" is readily available, and would not reduce environmental impacts. Therefore, this alternative is dismissed and is not considered further in this analysis.

5.4.4 Pretreated Feedstocks Only Alternative (No Pretreatment Unit)

In this alternative, as in the Project, the Rodeo Refinery would not refine petroleum-based feedstocks. Unlike the Project, however, the refinery would not be able to process untreated renewable feedstocks. This alternative would re-purpose the Rodeo Refinery to process pretreated renewable feedstocks by altering the process equipment and other support elements as described for the Project; the only difference would be that the PTU and supporting infrastructure would not be installed. Instead, the Rodeo Refinery would process only pretreated renewable feedstocks from other sources. This alternative would continue to handle refined blendstocks for gasoline. In this alternative, as in the Project, the Carbon Plant and Santa Maria Site would be closed and demolished and the Pipeline Sites would be cleaned and removed from active service.

This alternative was dismissed from further analysis as infeasible because current and reasonably foreseeable market conditions show that the pretreatment process is integral to the production of renewable fuels. To use a broader range of renewable feedstocks for the production of renewable fuels (and to reduce market impacts on edible oils), producers employ a pretreatment process for the renewable feedstocks. Both biodiesel and renewable diesel production rely on pretreated feedstocks. Biodiesel production in the United States has grown substantially over the past two decades, rising to a peak of 1.86 billion gallons in 2018, while the renewable diesel market is “a nascent but rapidly growing sector” with 2018 US production at approximately 356 million gallons, produced from only four commercial facilities (USDA 2021). Given the growth of the renewable fuels market, and the use of pretreated feedstocks in the production of biodiesel and renewable diesel, there is market uncertainty regarding the future availability of pretreated renewable feedstocks. Pretreatment is an integral part of the renewable fuels process, and increased capacity to produce renewable diesel requires pretreatment capacity. In California, the pretreatment capacity is limited, and the pretreatment capacity currently proposed elsewhere in California is dedicated to that particular facility and no excess capacity would be available. The renewable diesel facilities currently being developed include pretreatment facilities to provide an internal capability of processing the broad range of feedstocks (Bryan 2021).

Several of the Project’s basic objectives depend on the ability to use treated and untreated renewable feedstocks and to provide transportation fuels to the region to meet demand for both conventional and renewable fuels. This alternative would eliminate the capacity of the facility both to accept untreated renewable feedstocks and to provide renewable fuels from untreated renewable feedstocks. Accordingly, this alternative would not fully meet several of the project objectives, including maximizing production of renewable fuels to assist California in meeting its goals for renewable energy, GHG emission reductions, and reduced CI for transportation fuels; allowing the facility to process a comprehensive range of renewable feedstocks, including treated and untreated feedstocks; maintain the facility’s current capacity to supply regional market demand for transportation fuels, including renewable and conventional fuels; and providing a beneficial use for recyclable FOG within the state of California. Without a PTU, this alternative would not be able to process the Bay Area region’s recyclable FOG to produce renewable fuels for local consumption, and such FOG would likely continue to be handled as wastes. Furthermore, this alternative would not fully support the objective of providing a mechanism for compliance with both the federal RFS and the state’s LCFS through processing facilities in California. Increasing renewable fuels production in California will require the development of additional pretreatment capacity in California. With this alternative, renewable fuels production would be curtailed and dependent on sufficient quantities of pretreated feedstocks, which are subject to market uncertainties.

With uncertain sources of pretreated feedstocks, this alternative’s production of renewable fuels would likely be substantially lower than that proposed for the Project and substantially lower than the capacity of the Rodeo Refinery. Thus, this alternative is also considered to be infeasible because it would reduce transportation fuels production at the Rodeo Refinery and severely underuse existing refinery facilities for the production of renewable fuels. This alternative would, therefore, reduce locally available supply to meet regional demand. Regional demand is based on numerous factors, most of which are independent

of the production of transportation fuels, and a reduction of production does not necessarily reduce demand. Accordingly, as described for the Continued Operation of Rodeo Refinery and Shut-Down of Santa Maria and Pipeline Sites Alternative and the Project without Gasoline Blending Element Alternative, regional demand would likely be met through the import of transportation fuels by other facilities in the region. Further, this alternative would not fully achieve the state's objective to produce renewable fuels and it would not allow Phillips 66 to use fully the transformation of the facility to comply with federal renewable standards and the state LCFS.

The Pretreated Feedstocks Only Alternative would not avoid any of the potentially significant impacts of the Project associated with increased vessel traffic (hazards, biology and hydrology) because it would have a similar level of vessel traffic as the Project, but it would have reduced effects compared to the Project. The construction impacts of this alternative would be lower than those of the Project because the PTU would not be constructed. This alternative's other operational impacts (primarily, air emissions, biology, energy use, hazardous materials, and vehicular traffic) would, like those of the Project, be less than significant. Also, similar to the Project, the operational effects of the Santa Maria Site and the Pipeline Sites (primarily, air emissions and hazardous materials) would be eliminated.

In summary, the Pretreated Feedstocks Only Alternative would not meet key project objectives related to increasing the availability of renewable fuels and meeting federal and state goals for renewable fuels and GHG reduction, would be infeasible because it would reduce the region's supply of transportation fuel and not meet federal and state goals related to transportation fuels, and would not substantially reduce environmental impacts. Accordingly, this alternative was dismissed and is not considered further in this analysis.

5.4.4.1 Hydrogen Generation Technology Alternative

This alternative would re-purpose the Rodeo Refinery, as described for the Project, to process renewable feedstocks by altering the process equipment and other support elements; the difference from the Project would be that the existing hydrogen generation process equipment would be replaced with equipment using an alternative technology. As under baseline conditions, the Project and this alternative would consume approximately 120,000,000 cubic feet per day of hydrogen. As proposed for the Project, that hydrogen would be generated from natural gas using a steam reforming technology, as under baseline conditions. In the Hydrogen Generation Technology Alternative, however, hydrogen would be generated by electrolysis (i.e., using electrolyzers to split water into hydrogen and oxygen), an energy-intensive process that uses a relatively large quantity of electricity. For example, Phillips 66 estimates that the Hydrogen Generation Technology Alternative would require approximately 750 MW of electrical generating capacity to power enough electrolyzers to meet the Project's hydrogen demand.

Under baseline conditions the Rodeo Refinery produces nearly enough electricity at the Rodeo Site and the Carbon Plant to power the refinery operations. However, that existing equipment would not have the capacity to power both the renewable processing and the electrolyzers. Accordingly, a new source or sources of electricity would need to be developed. The new source has not been determined, but this analysis assumes that it would be either the local utility (i.e., PG&E), which would deliver electricity produced by a mixture of fossil-fuel and renewable sources, or a new, dedicated generation facility such as a solar farm, wind farm, or conventional (i.e., natural-gas-fired) generator. A dedicated facility could be located either on the Rodeo Refinery site (suitable space permitting) or at a more remote site.

The electrolyzers and, if employed, the dedicated electrical generation equipment, would represent additional construction above that described for the Project; in fact, a dedicated generation facility would constitute a major project in itself, as described below. The electrolyzers would be constructed on the Rodeo Site, but it is unclear where the dedicated electricity generation equipment could be constructed. In this alternative, as in the Project, the Carbon Plant and Santa Maria Site would be closed and demolished and the Pipeline Sites would be cleaned and removed from active service.

This alternative would meet many of the project objectives because it would continue to process treated and untreated renewable feedstocks for the production of renewable fuels, but it would add a substantial component to the Project -- the construction of numerous electrolyzers and an electricity source – that is not contemplated by any of the objectives.

This alternative is considered infeasible for both technical and financial reasons. The scale of the electrolysis operation that would be required far exceeds any facility that has been put into operation in the world. At this time, the largest electrolyzer in service is 20 MW (Collins, 2021), meaning that approximately 37 units would need to be installed to supply the necessary amounts of hydrogen. Electrolysis projects similar in size to that required for the Rodeo Refinery have been announced (e.g., a 700 MW plant in Germany; Collins 2020), but none is in the construction stage, let alone operational; at this point only pilot-scale plants are under construction, and those appear to have been enabled with substantial government grants. Accordingly, the feasibility of production of hydrogen by electrolysis on such a large scale is unknown.

In addition to technical infeasibility, the capital costs of hydrolysis technology make it financially infeasible compared to the steam reformation process currently employed at the Rodeo Refinery. Electrolyzers have an estimated capital cost of between $1,000 and $1,500 per kilowatt (US Department of Energy 2020); considering both capital and installation costs, Phillips 66 estimates that the total capital cost of a dedicated facility would be $0.75 billion to $1.1 billion. If a third-party source of electricity were to be used (e.g., PG&E), the operational cost of the electricity would be prohibitive (at the current PG&E rate of $120 per MWh the annual cost would be approximately $788 million, which is ten times the refinery's current utility bill). Furthermore, the current demand-versus-capacity situation in the California Independent System Operator balancing area suggests that the regional system may not be able to meet such a substantial additional demand easily, particularly during high-demand periods such as summer (CAISO 2021).

Finally, it is not clear that a renewable-energy-based dedicated facility would be feasible. For an onsite solar or wind facility, it is unlikely that there is enough space at the Rodeo Refinery or favorable solar and wind conditions to generate the necessary energy to power the electrolyzers. For example, each megawatt of solar power installation requires between 4 and 9 acres of land (NREL 2013; Clements 2019) and each megawatt of wind farm capacity could require up to 85 acres (NREL 2009), so that a 750 MW installation would require at least 3,000 acres and possibly as much as 30,000 acres of land. Given that the total area of the Rodeo Refinery is 1,100 acres, including the currently vacant hilly grasslands east of I-80, an onsite renewable energy generation facility of sufficient size to meet the refinery's demand is clearly infeasible. For an offsite facility, the same access constraints would apply as for the Project at an Alternate Site Alternative (Section 5.4.3, *Project at an Alternate Site*), as would issues of favorable solar or wind conditions and the probable need for transmission facilities. These constraints would combine to make it extremely unlikely that a suitable location could be developed within a reasonable time frame.

The Hydrogen Generation Technology Alternative's environmental impacts would be similar to those of the Project with the following exceptions. First, construction of a dedicated electricity generation facility, whether onsite or offsite, would have substantial construction impacts related to air quality and terrestrial habitat loss that the Project would not have. In addition, if an offsite renewable energy facility is used to produce electricity, this alternative could have substantial additional environmental impacts related to aesthetics, recreation, habitat loss, and land use. Finally, because this technology would use substantially more electricity to produce the hydrogen than the current technology in use at the refinery, as described above, it could result in an inefficient, wasteful, and unnecessary use of energy, resulting in a potential significant impact with respect to energy. The use of renewable energy to produce electricity, if it were feasible, would have fewer impacts related to energy use and GHG emissions, and could have fewer impacts related to operational emissions of criteria pollutants. However, the use of substantially more

renewable energy to produce the same amount of hydrogen may not be a “wise and efficient” use of energy (Appendix F, CEQA Guidelines).

In summary, although the Hydrogen Generation Technology Alternative, if it could be implemented, would meet several key project objectives related to increasing the availability of renewable fuels and meeting federal and state goals for renewable fuels and GHG reduction, it would introduce a new stand-alone electrolyzer and electricity project component not contemplated by the objectives. In addition, it would be infeasible for technical and financial reasons, it would not substantially reduce environmental impacts, and it could result in new environmental impacts, particularly regarding the use of energy. Accordingly, this alternative was dismissed and is not considered further in this analysis.

5.4.4.2 Decommission All Facilities

In this alternative, Phillips 66 would shut down and decommission the Rodeo Refinery (including the Carbon Plant), the Santa Maria Site, and the Pipeline Sites. Phillips 66 would no longer refine crude oil to produce petroleum products in Northern California and would no longer operate the gasoline blending activity. There would be no marine vessel, pipeline, truck, or rail transport of feedstocks or refined product in or out of any of the properties. All employment at the Rodeo and Santa Maria facilities, other than security forces, would cease.

Phillips 66 is not proposing to decommission the existing and operating Rodeo Refinery, and this alternative would conflict with the fundamental purpose of the Project, which is to convert the facility to a renewable transportation fuels facility. In addition, the Decommission All Facilities Alternative would not meet any of the project objectives because it would not transition the Rodeo Refinery to renewable fuels, repurpose existing equipment and facilities, preserve local jobs, provide a beneficial reuse for FOG, or support federal and state goals related to renewable and low-carbon fuels.

Importantly, the failure to re-use the facilities and equipment at the Rodeo Refinery undermines the state’s ability to produce renewable diesel as compared to biodiesel. Renewable diesel is not subject to the blending constraints of biodiesel due to its chemical composition, and it can be used at any blend level up to 100 percent (USDA 2021). Renewable diesel production is different than the production of biodiesel, as it uses “refinery-grade hydrogen,” and existing petroleum-refining hydrotreating can be converted to produce renewable diesel, as is proposed for the Project (USDA 2021). Because the capital costs for renewable diesel are three to four times those of biodiesel, the conversion of existing refining and hydrogen production facilities has been important to the development of renewable diesel facilities throughout the United States (USDA 2021). By leveraging existing infrastructure at sufficient scale and using unlimited blending potential, these facilities are able to produce an economically viable renewable diesel. (USDA 2021). Thus, the Decommissioning All Facilities would fail to re-use the refinery’s equipment and eliminate an opportunity to produce renewable diesel in an economically worthwhile manner.

This alternative is considered infeasible because it would eliminate a major supplier of transportation fuels to the Bay Area region. According to CEC (2021b), the Rodeo Refinery accounts for nearly 20 percent of the refined product produced in the Bay Area, and is thus a critical supplier of conventional transportation fuels to the region. For example, the demand for gasoline (representing 80 percent of transportation fuel consumption; CEC 2021b) in northern California is not met by that area’s refining capacity, necessitating imports every year (CEC 2021a). Accordingly, any reduction in regional supply would result in increased imports of gasoline from other areas. This pattern has already been observed as a result of the closure of the Marathon Martinez refinery in April, 2020: thereafter, less gasoline was exported and more gasoline was imported, particularly from Southern California and the Pacific Northwest (CEC 2021a). The supply/demand balance for diesel fuel has been tightening in 2021, and the situation for jet fuel is expected to do likewise in the near future (CEC 2021a). Accordingly, the elimination of the Rodeo Refinery’s production of transportation fuels, at least in the near term, would likely lead to regional shortages that could trigger increased imports and higher prices (CEC 2021a).

This alternative would have impacts related to decommissioning if demolition activities are undertaken, primarily in the areas of air quality, GHGs, and energy use arising from the emissions of diesel-powered equipment. However, because those emissions would be spread over a period of years, it is likely that they would be below baseline, and thus would not exceed a regulatory threshold of significance. Depending on the scale of excavation associated with demolition, this alternative could have impacts related to cultural and tribal resources, but if so, the mitigation measures proposed for the Project would ensure that impacts would be less than significant. The Decommission All Facilities Alternative would have beneficial effects related to biology, hazards and hazardous materials, hydrology, noise, and utilities as a result of the cessation of activities involving the transport of feedstocks and products, the use of hazardous materials onsite, and the consumption of natural gas and electricity. However, some of those beneficial effects would be offset by the impacts of the increased imports of fuels to other regional facilities that would be necessitated by the closure of the Rodeo Refinery.

In summary, although the Decommission All Facilities Alternative would have fewer environmental impacts than the Project, it would not meet any of the project objectives, including those related to increasing the availability of renewable fuels and meeting federal and state goals for renewable fuels and GHG reduction. In addition, it would be infeasible because of its effect on the region's transportation fuels market. Accordingly, this alternative was dismissed and is not considered further in this analysis.

5.5 Alternatives to the Project

As described in Section 5.1, *General Consideration of Alternatives*, four alternatives to the Project have been identified for further consideration. The alternatives are the No Project Alternative (required by CEQA), the Reduced Project Alternative, the Terminal Only Alternative, and the No Temporary Increase in Crude Oil Alternative. The characteristics of these four alternatives, as well as those of the Project, are summarized in Table 5-1.

Table 5-1. Summary of Alternatives

	Project	No Project	Reduced Project	Terminal Only	No Temporary Increase in Crude Oil
Product Processed (bpd)					
Renewable Feedstock Received/Processed	80,000	0	55,000	0	80,000
Gasoline Blendstocks Received/Processed	38,000	115,000	38,000	0	38,000
Existing Renewable Fuels Processed	13,000	13,000	13,000	0	13,000
Product Produced (bpd)					
Renewable Fuels Produced/Shipped	55,000	0	50,000	75,000	55,000
Existing Renewable Fuels Produced	12,000	12,000	12,000		12,000
Conventional Fuels Produced/Shipped	40,000	100,000	40,000		40,000

	Project	No Project	Reduced Project	Terminal Only	No Temporary Increase in Crude Oil
Mode of Transportation[g]					
Ships (annual visits)	201	80	165	70	201
Barges (annual visits)	161	90	161	40	161
Truck Trips (roundtrips/year)	16,026	53,221	11,230	0	16,026
Railcars (per day)	16	5	16	8	16
Employees	650	650	630	75	650

Notes:

[a.] No Project and Terminal Only Alternatives would transport blend stock and product by pipeline, marine vessel, and rail.

[b.] The No Temporary Increase in Crude Oil Alternative at full buildout is identical to the Project; it differs only in the temporary change in throughput of crude oil during the construction period, and associated vessel calls, which is not reflected in this table. This difference, however, is described in the following discussion.

[c.] Up to 25,000 bpd excess capacity of pre-treated feedstocks could be sold elsewhere.

[d.] As explained in the Project Description, Section 3.7, *Project Operation*, the facility currently has the capacity to produce approximately 12,000 bpd of renewable fuels from pretreated feedstocks using Unit 250, which was previously used to process petroleum-based feedstocks. Unit 250 is not included in the Project as the Project does not propose any changes for Unit 250 and it would continue to produce 12,000 bpd of renewable fuels. Given that Unit 250 is not part of the Project, Unit 250 feedstock and production numbers are not included in this chart under the No Project Alternative.

[e.] 70,000 bpd out of 115,000 bpd would arrive by pipeline, the rest would arrive through the Marine Terminal.

[f.] Blendstocks and product into the facility would arrive through the Marine Terminal and by rail, and products leaving the facility would be transported by pipeline and rail.

[g] Reflects operations (not construction) of the Project and Alternatives.

5.5.1 No Project Alternative

5.5.1.1 Description of the No Project Alternative

Based on the CEQA Guidelines, the No Project Alternative is the continued operation of the Rodeo Refinery, the Carbon Plant, the Santa Maria Site, and the Pipeline Sites, which would be the "circumstance" if the Project did not proceed. Under the No Project Alternative, the Rodeo Refinery would continue to receive petroleum-based feedstocks, including crude oil, by pipeline (from the Santa Maria Site via the Pipeline Sites) and marine vessels, refine those feedstocks into a variety of petroleum-based fuel products, and ship those products out by pipeline, marine vessels, and rail. The Carbon Plant would continue to receive raw coke by truck, produce finished petroleum coke, and ship that material to market by rail and truck. The No Project Alternative would consist of the continued operation of the existing Rodeo Refinery equipment and the Santa Maria Site and the Pipeline Site. Future activity levels would be, on average, similar to the baseline in terms of material throughput, number of truck, train, and marine vessel trips, and employment.

The propriety of using the continued operation of an existing facility for the "no project" alternative was explained in *Ctr. for Biological Diversity v. Dep't of Fish & Wildlife*, 234 Cal. App. 4th 214, 253-254, 183 Cal. Rptr. 3d 736 (2015):

> *Discussing a no project alternative in an EIR "provides the decision makers and the public with specific information about the environment if the project is not approved. It is a factually based forecast of the environmental impacts of preserving the status quo. It thus provides the decision makers with a base line against which they can measure the environmental advantages and disadvantages of the project and alternatives to the project" (Planning & Conservation League v. Department of Water Resources (2000) 83 Cal.App.4th 892, 917–918 [100 Cal. Rptr. 2d 173], italics added.)*

> *When a project involves a proposed change to an ongoing operation, or even the continuation of an ongoing operation, a decision to reject the project would leave the operation in place. In such a situation, CEQA defines the no project alternative as a continuation of the existing operation.*

See also Saltonstall v. City of Sacramento, 234 Cal. App. 4th 549, 573-574, 183 Cal. Rptr. 3d 898 (2015) ("no project" alternative consists of continued operation of an arena at its current location).

Comments on the NOP suggested that the Santa Maria Site would close whether or not the Project is approved, and that therefore the appropriate No Project alternative would be continued operation of the Rodeo Refinery without the Santa Maria Site. While throughput at the Santa Maria Site has declined over time, existing operations continue to use production from Santa Maria; furthermore, declining production is not equivalent to closure. If the Project were not to be approved, the Rodeo Refinery would continue to refine crude oil and crude feedstocks, including those supplied by the Santa Maria Site, and the Rodeo Refinery would continue to use the Pipeline Sites to transport feedstocks as under baseline conditions.

5.5.1.2 Impacts and Relationship to Project Objectives

The purpose of the Project is to transition the Rodeo Refinery to a renewable transportation fuels production facility. Accordingly, many of the Project objectives relate to the production of renewable fuels and repurposing the existing facility, consistent with federal renewable standards and the state LCFS. The No Project Alternative would not meet most of the project objectives, would fully meet only one objective, and would only partially meet the rest of the objectives. Below is an evaluation of the No Project Alternative relative to each objective on an individual basis.

1. **Convert the Rodeo Refinery to a renewable transportation fuels production facility.**

   The No Project Alternative would retain the existing uses at the site, include crude oil refining, and would not convert the Rodeo Refinery to a renewable transportation production facility. Although this alternative would retain the existing production of a relatively small quantity (12,000 bpd) of renewable fuels by processing pretreated feedstocks, it would also continue to refine crude oil feedstock, and therefore, the alternative would not achieve this objective.

2. **Provide/maximize production of renewable fuels to assist California in meeting its goals for renewable energy, GHG emission reductions, and reduced CI for transportation fuels.**

   Although the No Project Alternative would continue the existing facility's production of renewable fuels at up to 12,000 bpd by processing pretreated feedstocks, it would not maximize production, nor would it provide for the processing of untreated feedstocks. The Project includes a PTU with a capacity to treat up to 80,000 bpd of a broad range of renewable feedstocks, resulting in 55,000 bpd of renewable fuels and up to 25,000 bpd of pre-treated feedstocks to be exported into the market for potential further renewable fuels production at other facilities. Thus, while the facility's existing renewable fuels production would assist California in meeting its goals for renewable energy, GHG emission reductions and reduced CI, the No Project Alternative would not contribute to the production of renewable fuels. Therefore, the No Project Alternative would not meet this objective.

3. **Convert existing equipment and infrastructure to produce transportation fuels from non-hazardous renewable feedstocks and discontinue the processing of crude oil at the Rodeo Refinery.**

   The No Project Alternative does not involve any changes to the Rodeo Refinery, and therefore it would not result in the conversion of any equipment or infrastructure to produce renewable fuels, and it would not discontinue the processing of crude oil at the Rodeo Refinery. This alternative would not achieve this objective.

4. **Preserve and protect existing family-wage jobs in Contra Costa County during and after the transition to a renewable transportation fuels production facility.**

   Because the No Project Alternative provides for the continued operation of the Rodeo Refinery and related facilities and would preserve all existing jobs, it would achieve this objective.

5. **Repurpose and reuse the facility's existing equipment capacity, including the marine and rail terminals.**

   The No Project Alternative does not involve any changes to the Rodeo Refinery and therefore it would not repurpose or reuse the facility's existing equipment capacity, including the marine and rail terminals. This alternative would not achieve this objective.

6. **Preserve marine, rail, and truck offloading facilities to access national/international renewable feedstocks to provide renewable transportation fuels and to provide conventional fuels and conventional fuel components;**

   The No Project Alternative provides for the continued operation of the Rodeo Refinery and related facilities and therefore it would preserve marine and rail offloading facilities to provide renewable and conventional fuels. With respect to renewable feedstocks and fuels, however, the No Project Alternative would continue to access only pretreated feedstocks, which are subject to market conditions. This alternative would partially achieve this objective.

7. **Provide the ability to process a comprehensive range of renewable feedstocks, including treated and untreated feedstocks.**

   The No Project Alternative would not involve any changes to the Rodeo Refinery and does not include the installation of a Pretreatment Unit (PTU). Without a PTU, the facility would not have the ability to process a comprehensive range of renewable feedstocks and would be restricted to pretreated feedstocks. Accordingly, this alternative would not achieve this objective.

8. **Maintain the facility's current capacity to supply regional market demand for transportation fuels, including renewable and conventional fuels.**

   The No Project Alternative provides for the continued operation of the Rodeo Refinery and would maintain the facility's capacity to supply regional market demand for both renewable and conventional fuels, although with respect to renewable fuels, to a far lesser extent than the Project. This alternative would achieve this objective.

9. **Ensure California transportation fuel supply needs are met during the transition to a renewable fuels facility by temporarily (approximately 7 months) increasing gas oil and crude deliveries at the Marine Terminal to maintain current transportation fuel production at the Rodeo Refinery.**

   The No Project Alternative provides for the continued operation of the Rodeo Refinery and would not involve any increase of deliveries to the Marine Terminal. However, given the continued operation of the Rodeo Refinery, California's transportation fuel supply needs would continue to be met. This objective is not applicable to the No Project Alternative, given that it presumes a transition to a renewable fuels facility would occur.

10. **Provide a beneficial use for recyclable FOG within the state of California.**

    Because the No Project Alternative would involve the continued operation of the Rodeo Refinery, it would not have the capacity to process recyclable FOG. This would prevent the Bay Area region from fully realizing the benefits of a local renewable resource such as used cooking oils and waste grease. Therefore, this alternative would not achieve this objective.

11. Provide a mechanism for compliance with the federal RFS and state Low Carbon Fuel Standard through processing facilities in California.

The No Project Alternative would continue the existing production of renewable fuels of up to approximately 12,000 bpd. However, the Project includes a Pretreatment Unit (PTU) with a capacity to treat up to 80,000 bpd of a broad range of renewable feedstocks, resulting in 55,000 bpd of renewable fuels and up to 25,000 bpd of pre-treated feedstocks to be exported into the market for potential further renewable fuels production at other facilities. Thus, while the facility's existing renewable fuels production provides a mechanism for compliance with the federal RFS and state Low Carbon Fuel Standard, by processing renewable feedstocks that have been pre-treated elsewhere, the No Project Alternative does not increase the facility's production of renewable fuels and does not further facilitate compliance with the RFS or the LCFS through processing facilities in California. Therefore, the No Project Alternative would not achieve this objective.

With regard to environmental impacts, the No Project Alternative would not result in changes to structures or operations (i.e., activity levels, throughput, and feedstocks and products) at any of the elements of the Project site. Accordingly, the No Project Alternative would have no impacts under CEQA because it would not differ from the CEQA baseline except to the extent that, in the future, throughputs would likely vary and air pollutant and GHG emissions and energy usage would likely decline somewhat in response to technological and regulatory changes.

The No Project Alternative would continue to emit criteria pollutants and GHGs, and to consume energy (see Section 4.6, *Energy Conservation*, and Section 4.8, *Greenhouse Gas Emissions*); the No Project Alternative's emissions would be similar to the baseline emissions in those tables). However, because there would be no incremental emissions in excess of the baseline, there would be no impact under CEQA.

5.5.2 Reduced Project Alternative

5.5.2.1 Description of the Reduced Project Alternative

Reduced project alternatives are usually considered as one means to potentially reduce the adverse effects of a project on the environment. A reduced project alternative considers components of the project that could potentially be eliminated or reduced and still meet the project objectives.

In the Reduced Project Alternative, the capacity of the Rodeo Renewed facility would be reduced compared to the Project because the Pre-Treatment Unit would consist of only two pre-treatment trains instead of three, thereby reducing overall processing capability for renewable feedstocks to 55,000 bpd (instead of 80,000 bpd) and shipping 50,000 bpd of renewable fuels (instead of 55,000 bpd). With existing (as of 2021) renewable processing capacity of 12,000 bpd (i.e., the Unit 250 production) and the reduced shipping of 50,000 bpd, the total production capacity of the facility after the Reduced Project Alternative is operational would be 62,000 bpd of renewable fuels. Like the Project, the facility would continue to receive 38,000 bpd of gasoline blendstocks, and blend and ship 40,000 bpd conventional fuels. All other elements of the Reduced Project would be identical to the Project, including demolition of the Carbon Plant and the Santa Maria Site and cleaning and decommissioning the Pipeline Sites.

5.5.2.2 Impacts and Relationship to Project Objectives

As discussed below, the Reduced Project Alternative would meet several of the objectives of the Project, but would only partially meet the remaining objectives.

1. Convert the Rodeo Refinery to a renewable transportation fuels production facility.

The Reduced Project Alternative would convert the Rodeo Refinery to a renewable transportation production facility. Although this alternative would produce smaller amounts of renewable fuels than the Project, it would nevertheless achieve this objective.

2. **Provide/maximize production of renewable fuels to assist California in meeting its goals for renewable energy, GHG emission reductions, and reduced CI for transportation fuels.**

   In the Reduced Project Alternative, the refinery would process 55,000 bpd of renewable feedstocks to produce up to 50,000 bpd of renewable fuels. In comparison, the Project would have a capacity to treat up to 80,000 bpd of a broad range of renewable feedstocks, resulting in 55,000 bpd of renewable fuels and up to 25,000 bpd of pre-treated feedstocks to be exported into the market for potential further renewable fuels production at other facilities. Thus, while the facility under the Reduced Project Alternative would assist California in meeting its goals for renewable energy, GHG emission reductions and reduced CI, it would do so to a lesser extent than the Project. The decreased production of renewable fuels compared to the Project could mean that the region's fuel demand would have to be met with greater amounts of petroleum-based fuels than with the Project. In that case, the Reduced Project would not go as far toward assisting in the attainment of California's climate and energy goals as the Project would. Therefore, the Reduced Project Alternative would partially achieve this objective.

3. **Convert existing equipment and infrastructure to produce transportation fuels from non-hazardous renewable feedstocks and discontinue the processing of crude oil at the Rodeo Refinery.**

   The Reduced Project Alternative would result in the conversion of equipment and infrastructure to produce renewable fuels and it would discontinue the processing of crude oil at the Rodeo Refinery. Accordingly, this alternative would achieve this objective.

4. **Preserve and protect existing family-wage jobs in Contra Costa County during and after the transition to a renewable transportation fuels production facility.**

   The Reduced Project Alternative would preserve most of the existing jobs (see Table 5-1). Accordingly, it would achieve this objective.

5. **Repurpose and reuse the facility's existing equipment capacity, including the marine and rail terminals.**

   The Reduced Project Alternative would repurpose and reuse the facility's existing equipment capacity to the same extent as the Project would, including the marine and rail terminals. Accordingly, this alternative would achieve this objective.

6. **Preserve marine, rail, and truck offloading facilities to access national/international renewable feedstocks to provide renewable transportation fuels and to provide conventional fuels and conventional fuel components.**

   The Reduced Project Alternative would preserve marine and rail offloading facilities to provide renewable and conventional fuels. This alternative would achieve this objective.

7. **Provide the ability to process a comprehensive range of renewable feedstocks, including treated and untreated feedstocks.**

   The Reduced Project Alternative would have the ability to process a comprehensive range of renewable feedstocks, although at a lower throughput than the Project. This alternative would achieve this objective.

8. **Maintain the facility's current capacity to supply regional market demand for transportation fuels, including renewable and conventional fuels.**

   The Reduced Project Alternative would not maintain the Rodeo Refinery's capacity to produce approximately 120,000 bpd to supply regional market demand for both renewable and conventional fuels, as it would provide an overall supply of 102,000 bpd (50,000 bpd of renewable

fuels, 40,000 bpd of conventional fuels, and 12,000 bpd of existing capacity for renewable fuels). This alternative would not achieve this objective.

9. **Ensure California transportation fuel supply needs are met during the transition to a renewable fuels facility by temporarily (approximately 7 months) increasing gas oil and crude deliveries at the Marine Terminal to maintain current transportation fuel production at the Rodeo Refinery.**

   The Reduced Project Alternative would achieve this objective because it would include increased deliveries and processing of crude oil during the construction period.

10. **Provide a beneficial use for recyclable FOG within the state of California.**

    The Reduced Project Alternative would have the capacity to process recyclable FOG, although to a lesser degree than the Project. Therefore, this alternative would partially achieve this objective.

11. **Provide a mechanism for compliance with the federal RFS and state LCFS through processing facilities in California.**

    In the Reduced Project Alternative, the facility would produce up to 50,000 bpd of renewable fuels. In comparison, the Project would have the capacity to treat up to 80,000 bpd of a broad range of renewable feedstocks, resulting in 55,000 bpd of renewable fuels and up to 25,000 bpd of pre-treated feedstocks to be exported into the market for potential further renewable fuels production at other facilities. Thus, although the facility's renewable fuels production would provide a mechanism for compliance with the federal RFS and the state LCFS, it would do so to a far lesser extent than the Project would. Therefore, the Reduced Project Alternative would partially achieve this objective.

Most of the impacts of the Reduced Project Alternative would be at similar levels of significance as those of the Project (see Chapter 4) because construction and operational activities would be similar. Accordingly, the Reduced Project Alternative would have no impacts, with respect to agriculture and forestry, mineral resources, public services, recreation, wildfires and utilities and service systems (except solid waste). As with the Project, impacts related to aesthetics, energy conservation, land use and planning, and solid waste would be less-than-significant with no mitigation required. Significant impacts requiring mitigation to reduce impacts to less than significant include cultural resources, geology and soils, noise, transportation, and tribal cultural resources. Given the lower activity levels, air emissions, energy usage, vessel activity, and truck traffic impacts would be somewhat reduced from those of the Project, resulting in lower effects. Accordingly, impacts would be less than significant, like those of the Project.

In the case of air quality, the Reduced Project Alternative would have short-term impacts related to demolition and construction emissions, although the effects would be less than those associated with the Project because one train of the PTU and its associated infrastructure would not be constructed, therefore partially reducing construction activity and related emissions. Average daily construction emissions of NO_x prior to the application of mitigation would likely exceed the CEQA threshold of significance, given that the construction activity, albeit reduced, would not be much smaller than the Project's, which would exceed the threshold (see Section 4.3, *Air Quality*, [Tables 4.3-11 through 4.3-14]); however, emissions of other criteria pollutants would not exceed the thresholds and would, like those of the Project, result in less-than-significant impacts. The construction-phase emissions of NOx would be mitigated to a less-than-significant impact.

Operation of the Reduced Project Alternative would not emit criteria pollutants in amounts that would exceed the BAAQMD's significance thresholds. As in the case of the Project, operational emissions of all criteria pollutants would be lower than the baseline and they would also be lower than the Project's (see Tables 4.3-13 and 4.3-14 in Section 4.3, *Air Quality*). However, similar to the Project, incremental emissions from rail operations would likely exceed the NO_x significance criterion outside the SFBAAB (see Table 4.3-15 in Section 4.3, *Air Quality*).

The Reduced Project Alternative would have slightly less effects related to vessel activity. Compared to the Project, the Reduced Project would result in 326 versus 362 vessels (see Table 5-1). As with the Project, most impacts would be mitigated to less than significant with the same mitigation measures proposed for the Project. The Reduced Project Alternative's effects on biological resources would be marginally less than those of the Project due to the reduced throughput and vessel calls; however, significant and unavoidable impacts would still occur to marine biological resources. All other impacts would be less than significant.

The Reduced Project Alternative would have potential impacts related to cultural resources because it would involve demolition and construction in areas with known archeological resources. However, the same mitigation measures proposed for the Project (see Section 4.5, *Cultural Resources*) would be applied to this alternative. Accordingly, impacts would be less than significant.

The Reduced Project Alternative would have potential impacts related to energy use because it would consume natural gas, electricity, and diesel fuel during construction and operation. Consumption of energy during construction would be similar to, although slightly lower than, the amounts depicted for the Project (see Section 4.6, *Energy Conservation*, [Table 4.6-5a]). These amounts would be minimal in the context of total California consumption and supplies, and the impact would be less than significant.

As in the case of the Project, the Reduced Project Alternative's consumption of electricity and natural gas during operations would be less than during baseline conditions – in the case of natural gas, substantially less (see Section 4.6, *Energy Conservation*, [Table 4.6-5b]). Similar to the Project, the Reduced Project Alternative would produce onsite over 80 percent of the electricity for the Rodeo Refinery, and natural gas would constitute a fraction of Contra Costa County consumption. Thus, the Reduced Project Alternative's consumption of those energy sources would not be wasteful, inefficient, or unnecessary, and impacts would be less than significant. The Reduced Project Alternative would consume more diesel fuel than under baseline conditions, primarily because of increased vessel traffic and assumed longer rail routes, but less fuel than the Project. The increased consumption would represent less than 0.04 percent of the statewide consumption of diesel fuel, however, and would thus be minimal and would not represent wasteful, inefficient, or unnecessary use of energy.

The Reduced Project Alternative would release GHGs during construction and operation. The construction emissions would be similar to, although slightly less than, those of the Project, and would therefore not exceed thresholds of significance. Operational GHG emissions would likewise be somewhat less than those of the Project and therefore impacts would be less than significant.

The Reduced Project Alternative would pose fewer hazards to people and the environment than baseline conditions. Specifically, the onsite hazards associated with the use and storage of hazardous materials and the hazards associated with the transportation of hazardous materials to and from the Rodeo Refinery (see Section 4.9, *Hazards and Hazardous Materials*) would be lower because of the non-hazardous nature of the feedstocks and the renewable fuels products, and because the hazards associated with operation of the Santa Maria Site would be eliminated. Onsite hazards that would be substantially lessened include the risk of fire and explosion associated with the handling of flammable and explosive substances (i.e., petroleum hydrocarbons in feedstocks, refining process intermediates, and products). Transportation risks that would be eliminated or substantially lessened under the Reduced Project Alternative include trucks transporting hazardous materials to and hazardous wastes from the Rodeo Refinery and the Santa Maria Site, and railcars transporting both hazardous (e.g., butane) and non-hazardous materials (e.g., petroleum coke) from the Rodeo and Santa Maria facilities.

The Reduced Project Alternative would no longer transport crude oil by marine vessel but instead would transport non-hazardous renewable feedstocks. Compared to the Project, significant and unavoidable impacts related to water quality and potential release of hazardous materials from a vessel spill (see Section 4.9 *Hazards and Hazardous Materials*), would be somewhat lessened under this alternative due to fewer vessels, but remain significant and unavoidable.

Under the Reduced Project Alternative, the Rodeo Refinery's use of water would be substantially the same as under baseline conditions (see Section 4.10, *Hydrology and Water Quality*). The volumes and chemical composition of the discharges would be somewhat different from baseline conditions, as described for the Project. The Santa Maria Site would no longer withdraw groundwater from the local aquifer or discharge wastewater to the Pacific Ocean. Construction, demolition, and activities at the Pipeline Sites would be substantially the same as described for the Project. Accordingly, similar to the Project, impacts related to soil erosion or siltation, surface runoff, stormwater drainage, flood flows or hazards, or groundwater management would be less than significant.

Under the Reduced Project Alternative, the transportation of petroleum coke by truck from the Rodeo Refinery and the Santa Maria Site would not occur, and the transportation of chemicals and wastes to and from the Santa Maria Site would no longer occur. Accordingly, truck traffic would be substantially reduced relative to the baseline. Specifically, truck traffic would be reduced from approximately 53,200 roundtrips per year (see Table 3-2 in Chapter 3, *Project Description*) to approximately 11,200 trips per year. The number of employees in Contra Costa County would be only slightly less than under baseline conditions. Accordingly, the Reduced Project Alternative would not have adverse effects related to the vehicle miles traveled or levels of service on area roads (which are acceptable at both the Rodeo and Santa Maria locations; see Section 4.13, *Transportation and Traffic*), and impacts, like those of the Project, would be less than significant. Because the Reduced Project Alternative would not substantially alter traffic volumes or patterns, it would not conflict with plans or policies to implement other forms of transportation or the performance of the area circulation system.

5.5.3 Terminal Only Alternative

5.5.3.1 Description of the Terminal Only Alternative

In the Terminal Only Alternative, the Rodeo Refinery would stop processing petroleum-based feedstocks and only serve as a terminal. It would receive, store, and ship petroleum-based and renewable fuels produced elsewhere. No processing of any materials would occur onsite; only storage, blending, and handling would occur.

Under the Terminal Only Alternative, the process equipment at the Rodeo Site would be demolished, likely over a period of years, leaving only the storage tankage and associated infrastructure, including the wastewater treatment plant (Unit 100), piping, pumps, and administration buildings in active service. In this alternative, as in the Project, the Carbon Plant and Santa Maria Site would be closed and demolished and the Pipeline Sites would be cleaned and removed from active service.

Operation of this alternative would involve the receipt of gasoline blendstocks, as under existing conditions, as well as renewable fuels and blendstocks, by marine vessel and potentially rail. Finished gasoline and diesel, both petroleum-based and renewable, would be distributed from the Rodeo Site by pipeline and potentially rail. The Terminal Only Alternative would result in 110 vessels per year delivering blendstocks and fuels, which is considerably less than the Project. As described in Table 5-1, the Terminal Only Alternative is assumed to handle an average of 75,000 bpd, in approximately equal amounts of gasoline and diesel fuel. This alternative would employ far fewer personnel than the Project, with employment estimated at 75.

5.5.3.2 Impacts and Relationship to Project Objectives

The Terminal Only Alternative would partially meet several of the project objectives but, as discussed below, would not meet objectives related to production of renewable fuels, maintaining facility capacity to meet regional demand, and job protection.

1. **Convert the Rodeo Refinery to a renewable transportation fuels production facility.**

   The Terminal Only Alternative would not convert the Rodeo Refinery to a renewable transportation fuels production facility and would not, therefore, achieve this objective.

2. **Provide/maximize production of renewable fuels to assist California in meeting its goals for renewable energy, GHG emission reductions, and reduced CI for transportation fuels.**

   The Terminal Only Alternative would not produce renewable fuels, and would therefore not assist California in meeting its goals for renewable energy, GHG emission reductions and reduced CI. The lack of production of renewable fuels at the Rodeo Refinery could mean that the region's fuel demand would have to be met with greater amounts of petroleum-based fuels, some portion of it imported, than with the Project. In that case, the Terminal Only Alternative would not assist in the attainment of California's climate and energy goals. Therefore, the Terminal Only Alternative would not achieve this objective.

3. **Convert existing equipment and infrastructure to produce transportation fuels from non-hazardous renewable feedstocks and discontinue the processing of crude oil at the Rodeo Refinery.**

   The Terminal Only Alternative would not convert equipment and infrastructure to produce renewable fuels, but it would discontinue the processing of crude oil at the Rodeo Refinery. Accordingly, this alternative would partially achieve this objective.

4. **Preserve and protect existing family-wage jobs in Contra Costa County during and after the transition to a renewable transportation fuels production facility.**

   The Terminal Only Alternative would result in the elimination of approximately 575 of the 650 existing jobs at the Rodeo Refinery. Although it would preserve 75 jobs (see Table 5-1), the magnitude of job reduction means that this alternative cannot be considered as achieving this objective.

5. **Repurpose and reuse the facility's existing equipment capacity, including the marine and rail terminals.**

   The Terminal Only Alternative would repurpose and reuse only a small portion of the facility's existing equipment capacity, primarily storage tanks and administrative facilities. The remainder of the refinery's equipment would not be reused. Accordingly, this alternative would partially achieve this objective.

6. **Preserve marine, rail, and truck offloading facilities to access national/international renewable feedstocks to provide renewable transportation fuels and to provide conventional fuels and conventional fuel components;**

   The Terminal Only Alternative would preserve marine and rail facilities, and possibly truck loading/offloading facilities. Those facilities would likely be used to receive, store, and distribute renewable fuels and would certainly be used to handle conventional fuels and fuel components (e.g., the existing gasoline blending operation). However, this alternative does not include accessing renewable feedstocks. Accordingly, this alternative would partially achieve this objective.

7. **Provide the ability to process a comprehensive range of renewable feedstocks, including treated and untreated feedstocks.**

   The Terminal Only Alternative would not be able to process renewable feedstocks. Accordingly, this alternative would not achieve this objective.

8. **Maintain the facility's current capacity to supply regional market demand for transportation fuels, including renewable and conventional fuels.**

   The Terminal Only Alternative would allow the Rodeo Refinery to supply regional market demand for conventional and renewable fuels. However, the capacity to supply fuels would be substantially less than the Project's (see Table 5-1) and would not maintain the facility's current capacity to produce approximately 120,000 bpd. This alternative would not achieve this objective.

9. **Ensure California transportation fuel supply needs are met during the transition to a renewable fuels facility by temporarily (approximately 7 months) increasing gas oil and crude deliveries at the Marine Terminal to maintain current transportation fuel production at the Rodeo Refinery.**

   The Terminal Only Alternative would not achieve this objective because it would not transition the Rodeo Refinery to a renewable fuels facility and would not require any increased crude oil or gasoil deliveries.

10. **Provide a beneficial use for recyclable FOG within the state of California.**

    The Terminal Only Alternative would not have the capacity to process recyclable FOG. Therefore, this alternative would not achieve this objective.

11. **Provide a mechanism for compliance with the federal RFS and state LCFS through processing facilities in California.**

    The Terminal Only Alternative would provide a mechanism for compliance with the federal RFS and state LCFS because it would likely supply some renewable and low-carbon fuels, although to a far lesser extent than the Project. Therefore, the Terminal Only Alternative would partially achieve this objective.

Most of the impacts of the Terminal Only Alternative would be at similar levels of significance as those of the Project because construction and operational activities would be similar. Accordingly, the Terminal Only Alternative would have no impacts with respect to agriculture and forestry, mineral resources, public services, recreation, wildfires and utilities and service systems (except solid waste). As with the Project, impacts related to aesthetics, energy conservation, land use and planning, and solid waste would be less-than-significant with no mitigation required. Significant impacts requiring mitigation to reduce impacts to less than significant include cultural resources, geology and soils, noise, transportation, and tribal cultural resources. Given the lower activity levels, air emissions, energy usage, and truck traffic impacts would be somewhat reduced from those of the Project, resulting in lower effects. Accordingly, impacts would be less than significant, like those of the Project.

The Terminal Only Alternative would have less effects related to vessel spills (see Section 4.4, *Biological Resources*) because there would be less vessel activity (see Table 5-1). As with the Project, with exception of impacts related to vessel spills, impacts would be mitigated to less than significant with the same mitigation measures proposed for the Project. Overall, the Terminal Only Alternative's effects on biological resources would be less than those of the Project due to the reduced throughput and vessel calls; however, significant and unavoidable impacts would still occur.

In the case of air quality, the Terminal Only Alternative would have short-term impacts related to demolition emissions. Average daily demolition emissions of NOx would likely exceed the CEQA threshold of significance, given that construction/demolition would be greater than that of the Project, the

emissions of which would substantially exceed the threshold (see Section 4.3, *Air Quality*), but emissions of other criteria pollutants would likely not exceed the thresholds. The same mitigation applied to the Project would reduce this impact to less than significant. Operation of the Terminal Only Alternative would not emit criteria pollutants in amounts that would exceed the BAAQMD's significance thresholds. The primary source of operational emissions would be marine vessels. However, operational emissions of all criteria pollutants would be lower than the baseline because although there would be marine vessel emissions, they would be offset by the fact that there would be no processing activities at the Rodeo Site, the Santa Maria Site, or the Carbon Plant.

The Terminal Only Alternative would have potential impacts related to cultural resources because it would involve demolition and construction in areas with known archeological resources. However, the same mitigation measures proposed for the Project (see Section 4.5, *Cultural Resources*) would be applied to this alternative. Accordingly, impacts would be similar in magnitude to those of the Project and therefore less than significant.

The Terminal Only Alternative would have potential impacts related to energy use because it would consume natural gas, electricity, and diesel fuel during demolition and operation. Given the scale of the demolition involved, consumption of energy during construction and demolition could be higher than the amounts depicted for the Project (see Section 4.6 *Energy Conservation*). Nevertheless, the consumption of diesel fuel and gasoline during demolition would likely be minimal in the context of total California consumption and supplies, and would not represent a significant impact.

The Terminal Only Alternative's consumption of electricity and natural gas during operations would be substantially less than during baseline conditions. The decrease would be the result of closing the Santa Maria Site and the Carbon Plant and discontinuing refining operations at the Rodeo Site. The Terminal Only Alternative would consume small amounts of electricity, relative to the baseline consumption of 520,000 MWh (see Section 4.6, *Energy Conservation*), to operate lighting, pumps, generators, and similar support equipment, and minimal amounts of natural gas for minor uses such as hot water and building heating. This alternative would consume less diesel fuel than under baseline conditions, primarily because of decreased numbers of trucks and marine vessels at the Rodeo Site and the elimination of truck and rail traffic at the Carbon Plant and Santa Maria Site. Because the Terminal Only Alternative would not increase use of energy sources above baseline levels, energy use would not be inefficient or unnecessary, and impacts would be less than significant.

The Terminal Only Alternative would release GHGs during construction and operation. The construction emissions would likely be greater than those of the Project (see Section 4.8, *Greenhouse Gas Emissions*), given the scale of demolition, and would likely exceed thresholds of significance. However, the same mitigation measure applied to the Project would be applied to this alternative. Operational GHG emissions would be substantially less than those of the Project (see Section 4.8, *Greenhouse Gas Emissions*) because no processing activities would take place. Accordingly, impacts would be less than significant.

The Terminal Only Alternative would pose fewer onsite hazards to people and the environment than either baseline conditions or the Project. Specifically, the onsite hazards associated with the use of hazardous materials in the refining process and the hazards associated with the transportation of hazardous materials to and from the Rodeo Refinery (see Section 4.9 *Hazards and Hazardous Materials*) would be lower because the refining processes at the Rodeo Site and the Santa Maria Site would no longer occur. Other onsite hazards that would be eliminated or substantially lessened include the risk of fire and explosion associated with the handling of flammable and explosive substances such as crude oil, hydrogen, and refinery process intermediates.

Under the Terminal Only Alternative, the Rodeo Refinery would cease to withdraw cooling water from San Pablo Bay and to use East Bay MUD water for refinery processes, although it would continue to use small amounts of East Bay MUD water for sanitary, drinking, and some industrial functions. Stormwater and wastewater would continue to be treated in the wastewater treatment plant and discharged to San Pablo

Bay (see Section 4.10, *Hydrology and Water Quality*). The Santa Maria Site would no longer withdraw groundwater from the local aquifer for process and cooling purposes, treat it, and discharge it to the Pacific Ocean. Demolition at the Carbon Plant and the Santa Maria Site would be substantially the same as described for the Project, and demolition at the Rodeo Site would involve above-ground equipment. Accordingly, impacts related to soil erosion or siltation, surface runoff, stormwater drainage, flood flows or hazards, or groundwater management at the Rodeo Refinery, the Santa Maria Site, and the Pipeline Sites would be less than significant.

The Terminal Only Alternative would no longer transport crude oil by marine vessel, but instead would transport petroleum-based blendstocks, renewable fuels, and other refined products. Accordingly, the risk of water pollution from vessel spills, either in transit or at the Marine Terminal, would be slightly above baseline conditions. Compared to the Project, significant and unavoidable impacts related to water quality and potential release of hazardous materials from a vessel spill (see Section 4.9 *Hazards and Hazardous Materials*), would be somewhat lessened, but remain significant and unavoidable.

Under the Terminal Only Alternative, the transportation of petroleum coke by truck from the Rodeo Refinery and the Santa Maria Site would not occur. The transportation of chemicals and wastes to and from the Santa Maria Site would no longer occur. The number of employees would be substantially less than under baseline conditions, (see Table 5-1). Accordingly, the Terminal Only Alternative would not have adverse effects related to the vehicle miles traveled or levels of service on area roads (which are acceptable at both the Rodeo and Santa Maria locations; see Section 4.13, *Transportation and Traffic)*, and impacts would be less than significant. Because the Terminal Only Alternative would not alter traffic volumes or patterns, it would not conflict with plans or policies to implement other forms of transportation or the performance of the area circulation system.

5.5.4 No Temporary Increase in Crude Oil Alternative

5.5.4.1 Description of the No Temporary Increase Alternative

This alternative would be identical to the Project except that it would not include a temporary increase in crude oil and gas oil deliveries via the Marine Terminal during the transitional phase (last 7 months of the construction period) in excess of the permit limit of approximately 51,000 bpd. Specifically, some additional visits of barges and ships would occur during the interim period to deliver the permitted amount of crude oil and gasoil, but the number of vessels would be lower than under the Project. The lower vessel traffic would mean that the Rodeo Refinery would operate at a lower level of production than the Project during that interim period.

Under this alternative, it is reasonable to expect that the decreased vessel traffic to the Marine Terminal during the 7-month interim period, and therefore the decreased production of refined products by the Rodeo Refinery, would be offset by imports to other regional fuels facilities and possibly, where feasible, increased production by the other three regional refineries. Imports would likely come primarily by vessel, as happened in 2020 during the Marathon Martinez refinery shutdown (CEC 2021a), and increased production, should some excess capacity be available, would require imports of crude oil, also likely primarily by marine vessel. Accordingly, some or all of the vessel traffic that would not come to the Rodeo Refinery would come to other regional facilities.

Under operating conditions, however, the No Temporary Increase in Crude Oil Alternative would result in the same significant and unavoidable impacts associated with vessel spills as the Project.

5.5.4.2 Impacts and Relationship to Project Objectives

As discussed below, the No Temporary Increase in Crude Oil Alternative would meet most of the project objectives because it would result in a facility that would provide the same amounts and types of renewable fuels as the Project (except during a portion of the construction period) and that would

maintain the same level of employment. It would not, however, meet Project objectives designed to ensure that the regional transportation fuels supply is met and uninterrupted during Project construction.

1. **Convert the Rodeo Refinery to a renewable transportation fuels production facility.**

   The No Temporary Increase in Crude Oil Alternative would convert the Rodeo Refinery to a renewable transportation production facility that would produce the same amounts of renewable fuels as the Project. Accordingly, it would achieve this objective.

2. **Provide/maximize production of renewable fuels to assist California in meeting its goals for renewable energy, GHG emission reductions, and reduced CI for transportation fuels.**

   The No Temporary Increase in Crude Oil Alternative would produce renewable fuels in the same quantities as the Project. Accordingly, the facility would assist California in meeting its goals for renewable energy, GHG emission reductions, and reduced CI. The decreased production of conventional fuels during the construction period compared to the Project would mean that the region's fuel demand would have to be met with imported petroleum-based fuels, but such an eventuality would be of short duration (7 months) and would not interfere with the long-term supply of renewable fuels. Therefore, the No Temporary Increase in Crude Oil Alternative would achieve this objective.

3. **Convert existing equipment and infrastructure to produce transportation fuels from non-hazardous renewable feedstocks and discontinue the processing of crude oil at the Rodeo Refinery.**

   The No Temporary Increase in Crude Oil Alternative would result in the conversion of equipment and infrastructure to produce renewable fuels to the same extent as the Project would, and it would discontinue the processing of crude oil at the Rodeo Refinery. Accordingly, this alternative would achieve this objective.

4. **Preserve and protect existing family-wage jobs in Contra Costa County during and after the transition to a renewable transportation fuels production facility.**

   The No Temporary Increase in Crude Oil Alternative would preserve the existing jobs (see Table 5-1). Accordingly, it would achieve this objective.

5. **Repurpose and reuse the facility's existing equipment capacity, including the marine and rail terminals.**

   The No Temporary Increase in Crude Oil Alternative would repurpose and reuse the facility's existing equipment capacity, including the marine and rail terminals to the same extent as the Project. Accordingly, this alternative would achieve this objective.

6. **Preserve marine, rail, and truck offloading facilities to access national/international renewable feedstocks to provide renewable transportation fuels and to provide conventional fuels and conventional fuel components;**

   The No Temporary Increase in Crude Oil Alternative would preserve marine, rail, and truck offloading facilities to access renewable feedstocks to the same extent as the Project. Accordingly, this alternative would achieve this objective.

7. **Provide the ability to process a comprehensive range of renewable feedstocks, including treated and untreated feedstocks.**

   The No Temporary Increase in Crude Oil Alternative would have the same ability to process a comprehensive range of renewable feedstocks as the Project. This alternative would achieve this objective.

8. **Maintain the facility's current capacity to supply regional market demand for transportation fuels, including renewable and conventional fuels.**

   The No Temporary Increase in Crude Oil Alternative would maintain the Rodeo Refinery's capacity to supply regional market demand for both renewable and conventional fuels in the long term. However, during 7 months of the construction period, the Rodeo Refinery would not be able to supply its historic share of the regional market for conventional fuels, which could result in either increased imports or regional shortages of transportation fuels. Accordingly, this alternative would partially achieve this objective.

9. **Ensure California transportation fuel supply needs are met during the transition to a renewable fuels facility by temporarily (approximately 7 months) increasing gas oil and crude deliveries at the Marine Terminal to maintain current transportation fuel production at the Rodeo Refinery.**

   The No Temporary Increase in Crude Oil Alternative would not achieve this objective because it would not include increased deliveries and processing of crude oil during the construction period to maintain current fuel production.

10. **Provide a beneficial use for recyclable FOG within the state of California.**

    The No Temporary Increase in Crude Oil Alternative would achieve this objective because it would have the capacity to process recyclable FOG.

11. **Provide a mechanism for compliance with the federal RFS and state LCFS through processing facilities in California.**

    The No Temporary Increase in Crude Oil Alternative would provide a mechanism for compliance with the federal RFS and state LCFS by producing renewable fuels at the maximum capacity of the Project. Therefore, the No Temporary Increase in Crude Oil Alternative would achieve this objective.

Most of the impacts of the No Temporary Increase in Crude Oil would be at similar levels of significance as those of the Project (see Chapter 4) because construction and operational activities would be similar. Accordingly, the No Temporary Increase in Crude Oil would have no impacts, with respect to agriculture and forestry, mineral resources, public services, recreation, wildfires and utilities and service systems (except solid waste). As with the Project, impacts related to aesthetics, energy conservation, land use and planning, and solid waste would be less-than-significant with no mitigation required. Significant impacts requiring mitigation to reduce impacts to less than significant include cultural resources, geology and soils, noise, transportation, and tribal cultural resources. Given the lower activity levels, air emissions, energy usage, and truck traffic impacts would be somewhat reduced from those of the Project, resulting in lower effects. Accordingly, impacts would be less than significant, like those of the Project.

In the case of air quality, the No Temporary Increase in Crude Oil Alternative would have significant impacts related to construction emissions but, similar to the Project, excess NO_x emissions would be mitigated to constitute a less-than-significant impact. Operation of this alternative would not emit criteria pollutants in amounts that would exceed the BAAQMD's significance thresholds. Operational emissions of all criteria pollutants, which would be identical to those of the Project, would be lower than the baseline (see Section 4.3, *Air Quality*), and thus impacts would be less than significant. However, similar to the Project, incremental emissions from rail operations would likely exceed the NO_x significance criterion outside the SFBAAB (see Table 4.3-15 in Section 4.3, *Air Quality*). During the transitional phase, the No Temporary Increase in Crude Oil Alternative would have potential impacts on biological resources related to transporting crude oil. Although the marine vessel traffic to the Rodeo Refinery would increase over baseline, it would not allow the refinery to operate at its capacity, and vessel traffic to other regional facilities likely would increase, so that overall, construction-phase impacts would be similar to those of the Project.

During operation, this alternative would have potential impacts related to transporting renewable feedstocks and renewable fuels by tanker vessel. As with the Project, the No Temporary Increase in Crude Oil Alternative would result in significant and unavoidable impacts to marine biological resources as a result of an accidental spill of renewable feedstocks enroute, at or near the Marine Terminal since the amount of vessel traffic would be the same (see Table 5-1). In addition, significant and unavoidable impacts would occur related to increased vessel traffic that would increase the presence of nonindigenous species. Despite recommended mitigation measures, these substantial adverse impacts on special-status marine species or their habitat cannot be eliminated. Similarly, the No Temporary Increase in Crude Oil Alternative would have the same effects as the Project with regard to vessel noise and vessel strikes on marine mammals (see Section 4.4, *Biological Resources*) when compared to baseline conditions. As with the Project, impacts would be mitigated to less than significant with the same mitigation measures proposed for the Project. All other impacts would be less than significant.

The No Temporary Increase in Crude Oil Alternative would have impacts related to cultural resources because it would involve demolition and construction in areas with known archeological resources. However, the same mitigation measures proposed for the Project (see Section 4.5, *Cultural Resources*) would be applied to this alternative. Accordingly, impacts would be less than significant.

The No Temporary Increase in Crude Oil Alternative would have impacts related to energy use because it would consume natural gas, electricity, and diesel fuel during construction and operation. Consumption of energy during construction would be similar to, although lower than (because of the lower vessel traffic during the last 7 months) the amounts depicted for the Project (see Section 4.6 *Energy Conservation*). These amounts would be minimal in the context of total California consumption and supplies, and the impact would be less than significant. This alternative's consumption of energy during operations would be the same as the Project's (see Section 4.6 *Energy Conservation*), and energy use would not be inefficient or unnecessary. Accordingly, impacts would be less than significant.

The No Temporary Increase in Crude Oil Alternative would release GHGs during construction and operation. The construction-phase emissions would be less than those of the Project (see Section 4.6, *Energy Conservation*) because of the lower vessel traffic, and would therefore not exceed thresholds of significance. Operational GHG emissions would be the same as those of the Project, and therefore impacts would be less than significant.

As compared to baseline conditions, the onsite hazards associated with the use and storage of hazardous materials, and the hazards associated with the transportation of hazardous materials to and from the Rodeo Refinery (see Section 4.9, *Hazards and Hazardous Materials*), would be lower because of the non-hazardous nature of the feedstocks and the renewable fuels products, and because the hazards associated with operation of the Santa Maria Site would be eliminated. Onsite hazards that would be eliminated or substantially lessened include the risk of fire and explosion associated with the handling of flammable and explosive substances such as crude oil. Transportation risks that would be eliminated or substantially lessened under operation of the No Temporary Increase in Crude Oil Alternative include spills from trucks transporting hazardous materials to and hazardous wastes from the Santa Maria Site, and railcars transporting both hazardous (e.g., butane) and non-hazardous materials (e.g., petroleum coke) from the Rodeo and Santa Maria facilities. Compared to the Project, significant and unavoidable impacts related to water quality and potential release of hazardous materials from a vessel spill (see Section 4.9 *Hazards and Hazardous Materials*), would remain significant and unavoidable.

Under the No Temporary Increase in Crude Oil Alternative, the Rodeo Refinery's use of water would be substantially the same as under baseline conditions (see Section 4.10, *Hydrology and Water Quality*). The Santa Maria Site would no longer withdraw groundwater from the local aquifer or discharge wastewater to the Pacific Ocean. Construction and demolition activities would be identical to those of the Project. Accordingly, impacts related to soil erosion or siltation, surface runoff, stormwater drainage, flood flows or hazards, or groundwater management would be less than significant. Under the No Temporary

Increase in Crude Oil Alternative, the transportation of petroleum coke by truck from the Rodeo Refinery and the Santa Maria Site would not occur, and the transportation of chemicals and wastes to and from the Santa Maria Site would no longer occur. Accordingly, truck traffic would be substantially reduced relative to the baseline. Specifically, truck traffic would be reduced from approximately 53,200 roundtrips per year to approximately 16,000 truck trips per year (see Chapter 1. *Project Description*, [Table 1-2]). The number of employees would be the same as under baseline conditions. Accordingly, this alternative would not have adverse effects related to the vehicle miles traveled or levels of service on area roads (which are acceptable at both the Rodeo and Santa Maria locations; see Section 4.13, *Transportation and Traffic*), and impacts would be less than significant. Because the No Temporary Increase in Crude Oil Alternative would not substantially alter traffic volumes or patterns, it would not conflict with plans or policies to implement other forms of transportation or the performance of the area circulation system.

5.5.4.3 Comparison of Alternatives

The following discussion compares the impacts of the four alternatives to those of the Project in each of the key resource areas considered in Section 5.5, *Alternatives to the Project*; the comparisons are summarized in Table 5-2. Most of the impacts of the Project would be less than significant or could be mitigated to a less-than-significant level with implementation of recommended mitigation measures. However, the Project would result in significant and adverse impacts that even with recommended mitigation measures the impacts would remain significant and adverse. These significant and unavoidable impacts relate to water quality, hazardous materials, and marine biological resources that would occur as a result of increased marine vessel traffic, and potentially significant increased NO_x emissions from rail operations outside the San Francisco Bay Area Air Basin that would exceed air quality thresholds.

The magnitude of the impacts of the alternatives (other than the No Project Alternative) would be similar to or lower than those of the Project. The No Project Alternative would have no impacts under CEQA, but in a number of resource areas the magnitude of its environmental effects would be greater than those of the Project.

Table 5-2. Summary Comparison of the Environmental Effects of Alternatives Relative to the Project

Resource Area	Project	No Project	Reduced Project	Terminal Only	No Temporary Increase in Crude Oil
Air Quality					
Construction	LTS with mitigation	Reduced (No Impact)	Similar (LTS with mitigation)	Greater (LTS with mitigation	Reduced (LTS with mitigation)
Operation	LTS	Greater (No Impact)	Similar (LTS)	Reduced (LTS)	Same (LTS)
Rail NOx emissions outside SFBAAB	SU	Reduced (No Impact)	Same (SU)	Reduced (SU)	Same (SU)

Resource Area		Project	No Project	Reduced Project	Terminal Only	No Temporary Increase in Crude Oil
Biology						
Spills	Construction	LTS	Similar (No Impact)	Similar (LTS)	Similar (LTS)	Similar (LTS)
	Operation	SU	Reduced (No Impact)	Reduced (SU)	Reduced (SU)	Same (SU)
Noise / Vessel Strikes	Construction	LTS	Similar (No Impact)	Similar (LTS)	Reduced (LTS)	Similar (LTS)
	Operation	LTS	Reduced (No Impact)	Reduced (LTS)	Reduced (LTS)	Same (LTS)
Cultural Resources						
Construction		LTS with mitigation	Reduced (No Impact)	Similar (LTS with mitigation)	Similar (LTS with mitigation)	Same (LTS with mitigation)
Operation		N/A[a]	N/A	N/A	N/A	N/A
Energy						
Construction		LTS	Reduced (No Impact)	Reduced (LTS)	Greater (LTS)	Similar (LTS)
Operation		LTS	Similar (No Impact)	Reduced (LTS)	Reduced (LTS)	Same (LTS)
Greenhouse Gases						
Construction		LTS	Reduced (No Impact)	Similar (LTS)	Greater (LTS)	Similar (LTS)
Operation		LTS	Greater (No Impact)	Reduced (LTS)	Reduced (LTS)	Same (LTS)
Hazards & Hazardous Materials						
Construction		LTS	Reduced (No Impact)	Similar (LTS)	Greater (LTS)	Similar (LTS)
Operation		SU	Reduced (No Impact)	Reduced (SU)	Reduced (SU)	Same (SU)
Hydrology and Water Quality						
Construction		LTS	Reduced (No Impact)	Same (LTS)	Greater (LTS)	Similar (LTS)
Operation		SU	Reduced (No Impact)	Reduced (SU)	Reduced (SU)	Same (SU)
Transportation						
Construction		LTS	Reduced (No Impact)	Similar (LTS)	Similar (LTS)	Same (LTS)
Operation		LTS	Greater (No Impact)	Reduced (LTS)	Reduced (LTS)	Same (LTS)

Note: LTS = less than significant
SU = Significant and Unavoidable

[a] Cultural impacts are only applicable to the construction phase, as they involve the potential for encountering archeological or other cultural artifacts during excavation.

5.5.5 Air Quality

The No Project Alternative would avoid the Project's significant short-term impacts of emissions associated with construction and demolition. For operational emissions, the No Project Alternative would not have a CEQA impact as compared to baseline conditions. However, given that the Project reduces operational emissions as compared to baseline conditions, the No Project Alternative's operational emissions of criteria pollutants would be greater – in the case of NO_x and SO_2 substantially greater – than the Project's emissions after implementation of the Project (see Section 4.3, *Air Quality*).

The Reduced Project Alternative would have similar air quality impacts related to construction as the Project and would be similarly mitigated. Operational emissions would be somewhat lower than those of the Project, although essentially similar, because of the lower activity levels, and impacts would remain less than significant.

The Terminal Only Alternative would potentially have substantially greater construction impacts than the Project, although those impacts potentially could be mitigated in a similar manner as the Project's to less than significant. The operational emissions would be lower than those of the Project, and thus its impacts would be less than significant, similar to the Project.

Under the No Temporary Increase in Crude Oil Alternative, impacts related to construction emissions would be very similar to those of the Project (see Section 4.3, *Air Quality*) except during 7 months of the construction period, when reduced vessel traffic relative to the No Temporary Increase Alternative would result in lower air emissions relative to the Project. Operational emissions would be identical to those of the Project, and therefore impacts would be less than significant.

5.5.6 Biological Resources

The No Project Alternative would not have a CEQA impact to biological resources as compared to baseline conditions as it would transport materials that are less toxic than the petroleum-based feedstocks and products. Compared to the Project the total number of vessels would decrease under the No Project Alternative (70 versus 362; see Table 5-1). Impacts related to noise and vessel strikes would be less than significant, the same as the Project. Additionally, the No Project Alternative would not result in significant and unavoidable impacts to water quality, hazards and marine biological impacts related to vessel spills and nonindigenous species since vessel activity would be the similar to baseline conditions.

The Reduced Project Alternative would have very similar impacts on biological resources as the Project. The only difference would be that, because there would be somewhat fewer marine vessels (326 versus 362; see Table 5-1), potential impacts related to spills, underwater noise, and collisions would be marginally less, but remain the same as the Project.

The Terminal Only Alternative would, as compared to the Project, potentially transport and handle more petroleum-based materials (gasoline and gasoline blendstocks), which are more toxic than the renewable feedstocks and fuels. Accordingly, adverse effects on biological resources, including sensitive habitats, migratory species, and marine mammals, from a spill could be more serious than those of the Project. However, vessel traffic would be lower than that of the Project (110 versus 362; see Table 5-1). Impacts related to noise and vessel strikes would continue to be less than significant, the same as the Project. The Terminal Only Alternative would result in similar impacts to marine biological impacts related to vessel spills and nonindigenous species since vessel activity would be the similar to baseline conditions.

Vessel traffic related to the No Temporary Increase in Crude Oil Alternative would be somewhat less than that of the Project during 7 months of the construction period. Operational impacts related to vessel activity, however, would be the same as the Project. Impacts related to noise and vessel strikes would continue to be less than significant, but significant and unavoidable impacts to marine biological resources related to vessel spills and nonindigenous species would be the same as the Project.

5.5.7 Cultural Resources

Because the No Project Alternative would not involve construction or demolition of structures or ground-disturbing activities, it would have no impacts on cultural resources. Accordingly, impacts would be less than those of the Project, which could adversely affect cultural resources (see Section 4.5, *Cultural Resources*), but with mitigation, Project impacts are less than significant.

The Reduced Project Alternative would involve similar construction, demolition, and ground-disturbing activities as the Project, and would therefore have the same potentially significant impact. As with the Project, the potentially significant impact would be reduced to less than significant by the application of mitigation measures.

The Terminal Only Alternative, like the Project, would involve demolition of the Carbon Plant and Santa Maria Site, and thus would have the same potential impacts related to cultural resources. It is assumed to involve demolition of most or all of the process equipment at the Rodeo Site, and would have the same potential for an impact to cultural resources as the Project, the level of impact relative to the Project would not be materially increased and would therefore be less than significant.

The No Temporary Increase in Crude Oil Alternative would not differ in its construction and demolition elements from the Project (except for the increase of vessels at the Marine Terminal). Accordingly, it would have exactly the same impacts as the Project with respect to cultural resources, less than significant.

5.5.8 Energy

The No Project Alternative would not have a CEQA impact with respect to energy usage as compared to baseline conditions. Because there would be no construction, the No Project Alternative would have reduced environmental effects regarding energy usage as compared to the Project. The Project would reduce electricity and natural gas usage as compared to baseline conditions, and therefore, the No Project Alternative would use approximately 6 times as much natural gas and somewhat more electricity than the Project. The No Project Alternative, based on existing conditions, would use substantially less diesel fuel than the Project, largely because of the lower vessel and rail traffic. The greater usage of diesel fuel in the Project could be considered offset by the Project's lower usage of electricity and natural gas, such that the energy use of the No Project Alternative would be similar in magnitude to the Project.

The Reduced Project Alternative would use somewhat less energy than the Project (see Section 4.6, *Energy Conservation*) during both construction and operation. Accordingly, its impacts would be somewhat lower than those of the Project, and remain less than significant.

The Terminal Only Alternative would use more energy during demolition of existing facilities than the Project would use for construction, although impacts are assumed to be less than significant given the likely timeframe of demolition. However, this alternative would use substantially less energy than the Project during operation. Accordingly, its operational impacts related to energy would be less than those of the Project, and remain less than significant, similar to the Project.

During 7 months of the construction period, the No Temporary Increase in Crude Oil Alternative would use less energy than the Project because there would be fewer vessels delivering crude oil, although the likely increase of vessel traffic to other refineries could offset that difference. Otherwise, operational energy use under the two scenarios would be identical, and impacts would be less than significant.

5.5.9 Greenhouse Gases

The No Project Alternative would not have a CEQA impact with respect to GHGs as compared to baseline conditions. However, the Project would reduce GHGs relative to baseline conditions, and therefore, the operational GHG emissions of the No Project Alternative would be somewhat greater than those of the Project (see Section 4.8, *Greenhouse Gas Emissions*).

The Reduced Project Alternative's construction emissions of GHGs would be similar to those of the Project, but its operational emissions would be proportionately less, based on reduced throughput compared to the Project. Accordingly, impacts related to operational GHG emissions would be lower than those of the Project, and less than significant.

The Terminal Only Alternative would have greater construction-phase GHGs than the Project, given the scale of demolition, but substantially lower operational GHG emissions than the Project because there would be no onsite processing activities and substantially less vessel traffic. Accordingly, impacts, like those of the Project, would be less than significant.

The No Temporary Increase in Crude Oil Alternative's operational impacts related to GHGs would be identical to those of the Project except during 7 months of the construction period, when reduced vessel traffic and refinery activity could result in somewhat lower GHG emissions, although increased traffic to other refineries could offset that decrease.

5.5.10 Hazards and Hazardous Materials

The No Project Alternative would not have a CEQA impact with respect to hazards and hazardous materials as compared to baseline conditions. The Project would no longer handle crude oil, whereas the No Project Alternative would continue to handle large quantities of crude oil. The No Project would not result in increased vessel activity over the baseline condition. The Reduced Project Alternative would have very similar impacts on biological resources as the Project (326 versus 362 vessels; see Table 5-1). Potential impacts related to spills, would be marginally less, but remain the same as the Project. Construction impacts would be very similar to those of the Project, as they differ only in the installation of one pre-treatment train.

The Terminal Only Alternative would, given the differing scales of construction and demolition at the Rodeo Site, have greater construction-phase impacts than the Project related to the generation and transportation of hazardous construction wastes. This alternative and the Project would handle, store, and transport hazardous materials (gasoline and diesel fuel), but this alternative would have less vessel traffic (110 versus 362 vessels) and no truck traffic. As a result, Terminal Only Alternative would lessen impacts of the Project related to spills, but remain significant and unavoidable.

During 7 months of the construction period, the No Temporary Increase in Crude Oil Alternative would have fewer vessels delivering crude oil, which could result in marginally lower risks related to the transport of hazardous materials (i.e., crude oil) than the Project. However, as discussed above, any reduced vessel traffic the Rodeo Refinery would likely be offset by more traffic to other regional refineries, so that there might not be any net reduction in risk. During operations, hazards and impacts associated with the use, storage, and transport of hazardous materials under the two scenarios would be the same. Although this alternative would result in decreased vessel activity, it would have the same significant and unavoidable impacts of the Project related to spills.

5.5.11 Hydrology and Water Quality

The No Project Alternative would not have a CEQA impact with respect to hydrology and water quality as compared to baseline conditions. With respect to construction, the Project would have less-than-significant impacts, whereas the No Project Alternative would have no impacts. Impacts related to discharge of larger volumes of treated wastewater and cooling water to San Pablo Bay and the Pacific Ocean (from the Santa Maria Site), the No Project Alternative would increase impacts compared to the Project.

The Reduced Project Alternative would have impacts related to both onsite and offsite hazards that would be similar in nature to those of the Project, because the materials and activities involved would be identical, and from a risk perspective, similar to the Project. However, the risk impacts could be marginally lower than those of the Project because of the lower activity levels (particularly throughput and vessel

traffic). Construction impacts would be very similar to those of the Project, as they differ only in the installation of one pre-treatment train.

The Terminal Only Alternative's construction effects on water quality could be greater than those of the Project, given the scale of demolition at the Rodeo Site, but the standard construction controls would minimize those effects and it is likely that impacts would be less than significant. Both the Project and this alternative would handle, store, and transport toxic materials (gasoline and diesel fuel). The Terminal Only Alternative would result in lower vessel traffic than the Project, but increase over baseline conditions. As a result, the Terminal Only Alternative would lessen impacts related to a vessel spill, but remain same significant and unavoidable. The Terminal Only Alternative would have no truck or rail traffic, which would lower impacts, with the exception of vessel spills.

For a 7-month period during construction, the No Temporary Increase in Crude Oil Alternative's impacts on water quality would be similar in magnitude compared to the Project. The significant and unavoidable impact related to vessel spills would be the same as the Project. Other operational impacts of this alternative would be identical to those of the Project.

5.5.12 Transportation

The No Project Alternative does not have a CEQA impact with respect to transportation as compared to baseline conditions. In addition, the No Project Alternative would avoid the less-than-significant impacts of Project's temporary construction traffic. However, the Project would reduce the facility's operational traffic by more than 50 percent as compared to baseline conditions and would completely eliminate truck traffic at the Santa Maria Site. Therefore, although the No Project Alternative's operational traffic has no CEQA impact, its traffic would be greater than that of the Project.

The Reduced Project Alternative's construction-phase effects on local traffic conditions would be very similar to those of the Project, given that the workforce is expected to be the same. Operation of this alternative would have somewhat less impact related to transportation than the Project because truck traffic would be approximately one-third less than with the Project. Impacts related to the vehicle miles traveled would be similar to those of the Project (i.e., less than significant), because worker commuting traffic would be nearly identical in both scenarios.

The Terminal Only Alternative's construction-phase impacts on traffic conditions would likely be similar to those of the Project, because although the scale of demolition would be greater than the scale of construction of the Project, the workforce would likely be similar in size, the primary difference being the duration of construction/demolition activities. Because operation of the Terminal Only Alternative would involve far fewer workers and less truck traffic than the Project (see Table 5-1), overall traffic would be substantially less than that of the Project, and impacts would be less than significant, similar to the Project.

The No Temporary Increase in Crude Oil Alternative's impacts related to traffic would be identical to those of the Project in both construction and operation, as the increase in vessel traffic would not affect truck or worker traffic.

5.5.13 Summary

Normally, the No Project Alternative is expected to be environmentally superior to the other alternatives and the proposed project. In this case, the No Project Alternative does not have any impacts under CEQA because impacts are evaluated against a baseline very similar to the alternative's future operations. Nevertheless, the Project and other alternatives reduce effects on the environment as compared to baseline conditions in many resource areas, and thus, the facility operating under the No Project Alternative could have greater environmental effects than the Project.

Specifically, although the No Project Alternative does not have CEQA impacts, the continued transport, use, and storage of flammable and toxic materials under the No Project Alternative would still present

certain risks of spills, fires, and explosions, would use substantially more energy than the other alternatives, and would emit substantially more criteria air pollutants and GHGs than the other alternatives. The Project, the Reduced Project Alternative, and the No Temporary Increase in Crude Oil Alternative, on the other hand, would substantially reduce some of those risks as compared to baseline conditions, but the significant and unavoidable impacts related to vessel spills would be similar or the same as the Project. The Terminal Only Alternative would further reduce those risks, but vessel traffic would still be slightly above the baseline condition, and therefore, still result in significant and unavoidable impacts from a vessel spill.

Potentially significant increased NO_x emissions from rail operations would be lessened under the No Project and Terminal Only Alternative compared to the Project, but the impact would remain significant and unavoidable in air basins outside the SFBAAB. The No Project Alternative would have fewer impacts than the Project and the other alternatives related to construction activities.

The Reduced Project Alternative and the No Temporary Increase in Crude Oil Alternative would have very similar impacts to the Project, given that all three scenarios would handle similar types and quantities of materials and would have similar levels of construction. The impacts of the Reduced Project Alternative related to air quality, biology, energy, GHGs, hazards and hazardous Materials, and hydrology and water quality would be somewhat smaller than those of the Project, largely because the lower throughput and the resulting smaller or fewer marine vessels, which would lower emissions of air pollutants and GHGs. The impacts of the No Temporary Increase in Crude Oil Alternative during the 7-month transitional phase, would be less because there would be fewer marine vessels than under the Project. However, during operation the No Temporary Increase in Crude Oil would result in the same significant and adverse impacts of the Project related to vessel spills. These significant and unavoidable impacts would not occur under the No Project Alternative and would be substantially lessened under the Terminal Only Alternative since vessel activity would be considerably less than the Project, and lower or similar to the baseline condition.

Accordingly, selecting one of these two alternatives over the Project would provide only marginal reductions in impacts while not meeting the project objectives to the same extent as the Project. The Reduced Project Alternative would partially meet the objectives of maximizing production of renewable fuels to assist California in meeting its goals for renewable energy, GHG emission reductions, and reduced CI for transportation fuels, and would not maintain the facility's current capacity to supply regional market demand for transportation fuels, including renewable and conventional fuels. The No Temporary Increase in Crude Oil Alternative would not meet the objectives of maintaining current capacity to supply regional market demand for transportation fuels, or of ensuring an adequate supply of transportation fuels during the transition to a renewable fuels facility, but would still result in significant and unavoidable impacts.

The Terminal Only Alternative would have the least environmental impacts of the alternatives considered. This is because the throughput and activity levels of this alternative would be substantially lower than any of the other scenarios. The Terminal Only Alternative would not process either crude oil or renewable feedstocks at the site. Accordingly, emissions and energy use associated with those activities would not occur. Furthermore, the much lower marine vessel and truck traffic of this alternative would further reduce air emissions and would also reduce hazards associated with the transport of hazardous materials.

Although selecting the Terminal Only Alternative would provide reductions in impacts compared to the Project, that alternative would not meet objectives related to converting the Rodeo Refinery to a renewable fuels production facility or of maintaining family-wage jobs in Contra Costa County. It would only partially meet the objective related to supporting local, state, and national goals and policies related to transitioning California to renewable, low-carbon-intensity fuels.

5.6 Environmentally Superior Alternative

Identification of an environmentally superior alternative is required under CEQA. The purpose of identifying such an alternative is to examine ways to eliminate or substantially reduce significant adverse impacts to lower levels of significance.

The Reduced Project Alternative would be the Environmentally Superior Alternative under CEQA. This alternative would meet or partially meet all but one of the Project objectives. The only objective not met is to maintain the facility's current capacity to supply regional market demand for transportation fuels, including renewable and conventional fuels. The Reduced Project Alternative would not maintain the capacity to produce approximately 120,000 bpd to supply regional market demand for both renewable and conventional fuels, as it would provide an overall supply of 102,000 bpd (50,000 bpd of renewable fuels, 40,000 bpd of conventional fuels, and 12,000 bpd of existing capacity for renewable fuels). However, this alternative would reduce the number of annual marine vessels to 326 instead of 362, as proposed under the Project. Other elements of the Reduced Project would be identical to the Project, including demolition of the Carbon Plant and the Santa Maria Site, and cleaning and removal from active service of the Pipeline Sites.

Because the Reduced Project Alternative would include two pre-treatment trains as opposed to three, and reduce the number of vessel calls at the Marine Terminal, impacts would be similar or lessened with the Reduced Project Alternative since less product is received and produced. Therefore, the Reduced Project Alternative is the Environmentally Superior Alternative.

5.7 References

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6 CEQA Statutory Sections

CEQA requires an EIR to consider the significant environmental effects of a proposed project (CEQA Guidelines Section 15126.2). Direct and indirect, short- and long-term effects of the Project are analyzed in Chapter 4 of this document. This chapter considers significant unavoidable impacts in Section 6.1, significant irreversible environmental effects in Section 6.2, growth-inducing impacts in Section 6.3, cumulative impacts in Section 6.4, and effects found not be significant in Section 6.5.

6.1 Significant Unavoidable Impacts

Section 21100(b)(2)(A) of CEQA requires an EIR to identify significant environmental effects that cannot be avoided if the Project is implemented. Most of the impacts of the Project would be less than significant or could be mitigated to a less-than-significant level with implementation of recommended mitigation measures. However, the Project would result in significant and adverse impacts that even with recommended mitigation measures (refer to Mitigation Measure AQ-3, BIO-2, BIO-4, BIO-6, BIO-7, HAZ 1, and HAZ-2) the impacts would remain significant and adverse. These significant and unavoidable impacts relate to water quality, hazardous materials, and marine biological resources that would occur as a result of increased marine vessel traffic, and potentially significant increased nitrogen oxide (NO_x) emissions from rail operations outside the San Francisco Bay Area Air Basin that would exceed air quality thresholds.

6.2 Significant Irreversible Environmental Effects

Section 21100(b)(2)(B) of CEQA requires that an EIR identify any significant effect on the environment that would be irreversible if the project were implemented. CEQA Guidelines Section 15126.2(c) describes irreversible environmental changes as follows:

> *Uses of nonrenewable resources during the initial and continued phases of the project may be irreversible since a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as highway improvement which provides access to a previously inaccessible area) generally commit future generations to similar uses. Also irreversible damage can result from environmental accidents associated with the project.*

Construction and operations associated with the Project would require some non-renewable resources, such as diesel and gasoline for construction vehicles and equipment, and marine vessel diesel and residual fuel oil for shipping. However, use of non-renewable resources during construction would be limited to the approximate 21-month construction period. The temporary, construction-related increase would not result in significant use of non-renewable resources and would not commit future generations to similar uses. With regard to long-term operations, use of marine vessel diesel and residual fuel oil for increased shipping would not represent a significant use of non-renewable resources and would not commit future generations to similar uses.

Accidents, such as a spill during Marine Terminal operations or vessel transit, could trigger irreversible environmental damage. During operation, the potential for an accidental spill from vessels enroute, at, or near the Marine Terminal could cause significant irreversible changes to the environment within the San Pablo Bay, San Francisco Bay, and Coastal Ocean Waters adversely affecting marine biological species and their habitats. All marine mammals are afforded protection under the Marine Mammal Protection Act. Threatened, endangered, and protected marine mammals observed within the past five years or that could potentially occur within San Francisco Bay are listed on Table 4.4-2. If managed properly, the frequency and size of potential spills could be lessened but not completely eliminated (refer to Mitigation Measure BIO-3, BIO-6 and BIO-7, which require implementation of HAZ-1 and HAZ-2).

6.3 Growth-Inducing Impacts

Section 15126.2(d) of the CEQA Guidelines states that an EIR should discuss "the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment." Growth can be induced in a number of ways, including through the elimination of obstacles to growth, through the stimulation of economic activity within the region, or through precedent-setting action. CEQA requires a discussion of how a project could increase population, employment, or housing in the areas surrounding the project as well as an analysis of the infrastructure and planning changes that would be necessary to implement the project. The following provides the discussion supporting that the Project would not be growth-inducing.

6.3.1 Rodeo Refinery

At the Rodeo Refinery, approximately 500 construction workers would be required at its peak over the approximate 21-month construction period, and a smaller number to accomplish demolition at the Santa Maria Site. It is estimated that approximately 80 construction workers would be expected to relocate temporarily to the area, with fewer to the Santa Maria Refinery area. This would not contribute to any significant increase in the local population because there is a well-established worker base in the area that serves the five Bay Area refineries. Furthermore, because there would be no permanent increase in the labor force for operations, no long-term impact to population would be likely to occur.

The Project would not result in a long-term change in workforce at the Rodeo Refinery since employees currently assigned to the Carbon Plant would be reassigned to other positions within the refinery. Future operation and maintenance of units affected by the proposed process changes would not require additional workers.

6.3.2 Santa Maria Site

It is not expected that demolition activities would require substantial numbers of people living outside the region. Any increase in workers would be temporary and would not substantially contribute to an increase in the local population or create any substantial demand for increased local housing.

With demolition of the Santa Maria facility, operation and maintenance activities would cease and the existing workforce would no longer be required. No activities associated with the Santa Maria Site would displace housing, necessitating the construction of replacement housing elsewhere.

6.3.3 Pipeline Sites

There would be no construction or demolition associated with the Pipeline Sites. The pipelines would be cleaned and decommissioned or sold. No activities associated with the Pipeline Sites would displace housing, necessitating the construction of replacement housing elsewhere.

Therefore, construction/demolition, and maintenance and operations associated with the Project would not encourage new development or induce population growth.

6.4 Cumulative Impacts

PRC Section 21083(b)(2) states that a significant effect on the environment includes the possible effects of a project "that are individually limited but cumulatively considerable." As defined by CEQA, "cumulatively considerable" means that the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects." Stated another way, "a cumulative impact is created as a result of a combination of the project evaluated in the EIR together with other projects causing related impacts" (CEQA Guidelines Section 15130(a)(1)). The CEQA Guidelines require that:

- Cumulative impacts shall be discussed when they may be significant;

- The discussion may be more general than that for the individual project impacts, but that the discussion should reflect the potential extent, severity, and probability of the impact;
- The cumulative impact analysis may be based on either a list of past, present, and probable future projects or a summary of projections from an adopted general plan or other adopted planning document; and
- Reasonable options for mitigating or avoiding the project's contribution to significant cumulative impacts shall be discussed, noting that for some cumulative impacts the only feasible mitigation may involve the adoption of ordinances or regulations rather than the imposition of conditions on a project-by-project basis.

The approach to the cumulative analysis for the Project uses a combination of specific projects in the vicinity of the sites, and projections contained in adopted local and regional plans or related planning documents, to determine whether any significant cumulative impact would occur.

In reaching a conclusion for each resource area, five factors were considered:

1. The geographic scope of the cumulative impact area for that resource;
2. The timeframe within which Project-specific impacts could interact with the impacts of other projects;
3. Whether a significant cumulative impact would result from the other projects identified in combination with the Project;
4. Whether the incremental impacts of the Project, before mitigation, are cumulatively considerable; and
5. The ability of Project-specific mitigation measures, including those identified for and direct and indirect impacts, to render the Project's incremental impact less than cumulatively considerable.

6.4.1 Projects Considered in the Cumulative Analysis

Incremental Project-specific impacts could interact with the impacts of other reasonably foreseeable future projects. Since no physical changes would occur at the Pipeline Sites, and Project activities involve only cleaning and decommissioning or being sold, resulting in no impacts, the Pipeline Sites are not evaluated in the cumulative impact analysis.

In the vicinity of the Rodeo Refinery and Santa Maria Site future projects could cause similar, potentially overlapping impacts with those of the Project. The environmental effects of the proposed Project were considered in conjunction with the potential environmental effects of buildout anticipated for the Project areas, which includes future projects within a 3-mile radius of the Rodeo Refinery and Santa Maria Site. The following development projects were identified as either having been approved or is in the environmental review stages.

6.4.1.1 Contra Costa County

Crockett Waterfront Park (File# CDLP19-02017) is an application for an LUP located at 1909 Dowrelio Drive in Crockett. The project includes an LUP to establish a public park on a 3-acre lot and is a component of the Crockett Recover the Waterfront plan.

- Application Status: currently incomplete.

3-Story Mixed-Use Building (File# CDDP18-03021) is a development plan application to construct a 22-unit, three-story, mixed-use building, with approximately 1,710 square-feet of ground level retail space located at 375 Parker Avenue, Rodeo. The proposed building will be 43 feet tall and set back 2 feet from the property line adjacent to Parker Avenue and 22 feet from the property line adjacent to Fourth Street.

In accordance with the County's inclusionary housing ordinance, 3 of the 22 units will be affordable units. Development involves complete site improvements, including landscaping improvements, frontage improvements along Fourth Street, the construction of two carports along the northern property line, and a trash enclosure along the eastern property line.

- Application Status: approved by the Zoning Administrator on January 4, 2021.

Martinez Refinery Renewable Fuels Project (File# CDLP20-02046) is an application for an LUP to implement the Martinez Refinery Renewable Fuels Project located at 150 Solano Way, Martinez. The project would allow the conversion of Marathon's Martinez Refinery facility from the processing of crude oil to the processing of treated and untreated renewable feedstocks. The renewable feedstocks are expected to include biological based oils (i.e., soybean oil and corn oil), rendered fats, and other miscellaneous renewable feedstocks including used cooking oils or other vegetable oils. The feedstocks would be processed into renewable diesel, naphtha, propane and treated fuel gas. The conversion would include modifications to existing processing units, the installation of new units, and removal of obsolete units. New facilities include a renewable feedstock pretreatment unit, wastewater treatment equipment, and an advanced 3-stage low-NO_x thermal oxidizer. All construction, demolition, and addition of new equipment would be within the existing boundaries of the refinery.

- Application Status: EIR preparation in progress. NOP issued.

Chevron Pipe Line Company (File #CDLP18-02027);, a wholly-owned subsidiary of Chevron Corporation, proposes the Avon Connectivity Project (Project), the purpose of which is to connect two existing pipelines, the Bay Area Products Line and the TransMontaigne Partners pipeline 191 to the existing Chevron Avon Terminal. The Project will enable Chevron to directly transport refined liquid product to Kinder Morgan's Concord Terminal from the Project site - the Chevron Avon Terminal. The Avon Terminal address is: 611 Solano Way, Martinez CA, 94553. The applicant, Chevron Products Company[1] (Chevron), currently transports refined products from the Chevron Richmond Refinery (Richmond Refinery) to the Kinder Morgan Concord Terminal (Kinder Morgan Terminal) located in unincorporated Contra Costa County near the City of Concord using a two-step process. The refined products are initially transported by barge from the Richmond Refinery to the TransMontaigne Partners Martinez Oil Terminal in the City of Martinez, and then the products are transported via TransMontaigne Partners Pipeline 191 from the TransMontaigne Partners Terminal to the Kinder Morgan Terminal. From the Kinder Morgan Terminal, the refined products are distributed to various destinations throughout the Bay Area via Kinder Morgan's existing San Francisco Bay Area Distribution System. The proposed Avon Connectivity Project is designed to enable the transport of refined products more efficiently, by pipeline from the Richmond Refinery to Chevron's Avon Terminal (Avon Terminal) via the existing Bay Area Products Line, and then by pipeline to Kinder Morgan's Terminal and the TransMontaigne Partners Terminal via a new connection to the existing TransMontaigne Partners Pipeline.

- The Avon Terminal is a Chevron-owned[2] facility entirely surrounded by the Marathon Martinez Refinery in unincorporated Contra Costa County, near the City of Martinez. The Avon Terminal receives refined products (gasoline and diesel) from the Richmond Refinery via the Bay Area Products Line. The products are stored in existing tanks which are off-loaded to a truck rack, and then delivered via truck to service stations throughout the Bay Area.
- The Bay Area Products Line originates at the Richmond Refinery, is owned by Chevron, and is operated and maintained by Chevron Pipe Line Company.

[1] Chevron Products Company is a division of Chevron U.S.A. Inc.

[2] The Avon Terminal is owned by Chevron U.S.A. Inc.

- The TransMontaigne Partners Pipeline is an existing bi-directional pipeline located immediately adjacent to the western boundary of the Avon Terminal. Presently, neither the Bay Area Products Line nor the facilities at the Avon Terminal connect to the TransMontaigne Partners Pipeline.
- Application Status: Initial Study in process.

6.4.1.2 San Luis Obispo County

Dana Reserve Specific Plan (San Luis Obispo County File# ED21-094, LRP2020-00007) is an application for a Specific Plan, Vesting Master Tentative Tract Map No. 3149, Conditional Use Permit, and Development Agreement to allow for the phased development of a master planned community. The project would allow for the future phased development of Residential (215.9 acres), Commercial (4.4 acres), Educational/Recreational (49.8 acres), Other (17.9 Acres), and transportation improvements. The area is located within the South County Inland sub area of the South County Planning Area approximately 5 miles east of the Santa Maria Site.

- Application Status: NOP issued.

Central Coast Blue Project regional advanced purified water project intended to enhance supply reliability by reducing the Santa Maria Groundwater Basin's vulnerability to drought and seawater intrusion. The proposed project consists of an advanced treatment facility complex (including an equalization basin, an advanced purified water storage tank, and a pump station), water distribution pipelines, injection wells, monitoring wells, one new production well, and potential agricultural irrigation pipelines. The project is located approximately 4 miles north of the Santa Maria Site.

- Application Status: EIR preparation in progress. NOP issued.

6.4.2 Cumulative Impact Analysis

6.4.2.1 Aesthetics

As discussed in Section 4.2, *Aesthetics*, the Project would have less-than-significant impacts on visual resources because it is located at an existing Refinery and is in consistent with surrounding land uses. Demolition of the Santa Maria Site would improve the visual quality of the area. The proposed Project's incremental effects are not cumulatively considerable when viewed in connection with the effects of the other projects evaluated.

6.4.2.2 Air Quality

As discussed in Section 4.3, *Air Quality*, Project construction exhaust emissions for activities at the Rodeo Refinery were found to be significant for NO_x, mainly related to construction vehicles in Year 1 and background Marine Terminal incremental traffic during the Transitional Phase in Year 2. Mitigation Measure AQ-1 includes implementation of BAAQMD basic control measures that address not only fugitive dust emissions, but also NO_x emissions. Mitigation Measure AQ-2 requires Phillips 66 to prepare and implement a NO_x Mitigation Plan (NM Plan) prior to the issuance of construction-related permits for site preparation. The purpose of the NM Plan is to document expected construction and transitional phase NOx emissions in detail; and, if necessary, to identify feasible and practicable contemporaneous measures to reduce aggregated construction and transition NOx emissions to below the BAAQMD's 54 pounds per day threshold of significance. With implementation of both Mitigation Measures AQ-1 and AQ-2, NO_x impacts would be less than significant in the SFBAAB. Thus, because impacts would be less than significant or less than significant with mitigation incorporated, impacts would not be cumulatively considerable.

Decommissioning and demolition activities at the Santa Maria site would involve use of off-road construction equipment and on-road vehicles that produce exhaust emissions of criteria pollutants including ROG, NO_x, PM_{10}, and $PM_{2.5}$, along with ROG emissions from decommissioning of associated

tanks and pipeline segments located within San Luis Obispo County. Daily and quarterly emissions from construction activities would not exceed San Luis Obispo County APCD significance thresholds, and impacts would be less than significant and not cumulatively considerable. Emissions from cleaning and removal from service of pipeline segments and associated tanks at Pipeline Sites located in the San Joaquin Valley APCD and Santa Barbara County APCD would not exceed the applicable significance thresholds recommended by the respective air districts. Therefore, impacts from these activities would also be less than significant and not cumulatively considerable.

Construction impacts in San Luis Obispo County (SCCAB), Santa Barbara County (SCCAB) and the San Joaquin Valley (SJVAB) would be geographically independent of impacts in Contra Costa County (SFBAAB). Because the four sites are in different air basins, emissions are not additive and would be less than significant and not cumulatively considerable on a statewide basis.

In Contra Costa County, which is within the SFBAAB, operation of the proposed Project would result in a net emissions decrease of all pollutants compared to baseline levels. Thus, the operational impact would be less than significant, no mitigation would be required (i.e., the proposed Project in itself would encompass mitigation), and aggregated (negative) impacts would not be cumulatively considerable. Operations in San Luis Obispo County (SCCAB), Santa Barbara County (SCCAB) and the San Joaquin Valley (SJVAB) would permanently cease, emissions would cease, and impacts would not be cumulatively considerable.

There could be potentially significant offsite impacts for NO_x with respect to rail operations outside of the SFBAAB. However, any mitigation measures to address potentially significant impacts from rail transport operations, whether within or outside the SFBAAB, would be legally infeasible because of preemption by federal law governing rail transportation. Because rail transport emissions would occur in different air basins and cannot be mitigated at the state level, no determination can be made whether emissions would be cumulatively considerable or otherwise.

Neither Project construction nor operation would result in exceedances of applicable cancer risk, non-cancer chronic hazard index, annual average $PM_{2.5}$ concentration, and acute hazard index thresholds at the project-level or community cumulative-level. Thus, HRA results are less than significant, no mitigation would be required, and health impacts would not be cumulatively considerable.

6.4.2.3 Biological Resources

Impacts on biological resources are typically limited to an individual project site and possibly the immediate surroundings and would not be substantially compounded by the construction or operation impacts of other, more distant projects. An important exception to this is when a project eliminates a significant portion of a regional wildlife corridor or eliminates one of the few remaining pockets of habitat supporting a sensitive species in the same region. As discussed in Section 4.4, *Biological Resources*, the Project would not result in significant impacts related to terrestrial resources since all Project activities would occur within existing refinery boundaries. Therefore, the proposed Project's incremental effects are not cumulatively considerable when viewed in connection with the effects of the other projects evaluated.

However, the Project would result in significant and unavoidable impacts to marine biological resources as a result of an accidental spill of renewable feedstocks enroute, at or near the Marine Terminal. The frequency and size of potential spills could be lessened but not completely eliminated (refer to Mitigation Measure BIO-3, BIO-6 and BIO-7, which require implementation of HAZ-1 and HAZ-2). In addition, significant and unavoidable impacts would occur related to increased vessel traffic that would increase the presence of nonindigenous species. Mitigation Measure BIO-4 would reduce impacts but not to a less-than-significant level. Despite these recommended mitigation measures, the potential for a substantial adverse impact on special-status marine species or their habitat cannot be eliminated. The Project, in combination with specifically the Martinez Refinery Renewable Fuels Project, which identifies the same significant and adverse impacts, would be cumulatively considerable.

6.4.2.4 Cultural Resources

A project's impacts with respect to cultural resources are generally site specific and will not affect or be affected by other development in the region. Given past investigations in the region, cultural resources are likely to be present at some of the Project sites evaluated for cumulative impacts. As stated in Section 4.5, *Cultural Resources*, the proposed Project would not impact historical resources as defined by CEQA and would implement Mitigation Measures CUL-1 and CUL-2 to reduce impacts associated with inadvertent discovery of archaeological resources, paleontological resources, or human remains.

Other future projects would likely require grading and excavation during construction, which could disturb subsurface archaeological resources or human remains. As a result, the other projects throughout could result in cumulatively significant impacts to cultural resources if these resources are not protected upon their discovery. However, these developments would be required to undergo environmental review pursuant to CEQA and would be subject to Section 7050.5(b) of the California Health and Safety Code for treatment of human remains; Section 21083.2 of the CEQA Statute for treatment of archaeological resources; and local codes that establish protections for historic, cultural, and natural resources of special historic interest. Therefore, because subsurface cultural resources are protected upon discovery by law, the combined effects from the proposed Project and related projects would not be cumulatively significant.

6.4.2.5 Energy Conservation

As discussed in Section 4.6, *Energy Conservation*, in statewide context, the amounts of diesel and gasoline consumed during the construction phases of the Project would be considered de minimis because Project construction fuel usage would represent only 0.041 percent of the state's transportation sector diesel fuel consumption and only 0.001 percent of the state's transportation sector gasoline consumption. Grid-sourced electric power usage associated with Project demolition and construction activities would be intermittent and negligible, given construction equipment are largely diesel-powered. Therefore, energy impacts of construction and demolition activities would be less than significant and impacts would not be cumulatively considerable, no mitigation would be required, and impacts would not be cumulatively considerable.

The Project would eliminate operations of the Santa Maria Site and Pipeline Sites, and equipment at those sites would permanently cease consumption of energy. Because the Project would demolish the Carbon Plant, there would be no further operational energy usage there. The consumption of diesel fuel at the Rodeo Site would increase due to increases in marine vessel and rail traffic. This increase would be partially offset by the discontinuance of truck and rail traffic at the Carbon Plant and Santa Maria Site. The consumption of gasoline, which is attributable mainly to worker vehicles, would not substantially change because employment at the Rodeo Site would not substantially change. Operation of the Project as a whole would result in decreases in the consumption of electricity, relative to the baseline, primarily as a result of the closure of the Santa Maria Site. Due to the closure of the Carbon Plant cogeneration system, the Carbon Plant site would no longer export electricity to PG&E. The Rodeo Site would continue to import electricity from PG&E, subject to availability of other electricity sources, such as Air Liquide, including renewable sources.

The Project's use of electricity, natural gas, and diesel fuel would be minimal relative to total state and regional supplies, and would therefore have no substantial adverse effect on energy resources or represent wasteful, inefficient, or unnecessary use of energy. Importantly, the Project would create renewable fuels that would contribute to the state's LCFS requirements and would continue to contribute to the state and regional supplies of energy in the form of "green" transportation and heating fuels made from renewable feedstocks. Impacts related to the use of energy in Project operation would be less than significant, no mitigation would be required, and impacts would not be cumulatively considerable.

6.4.2.6 Geology and Soils

A project's impacts with respect to geology and soils are generally site specific and will not affect or be affected by other development in the region. As discussed in Section 4.7, *Geology and Soils*, erosion could occur during construction grading or other site preparation activities associated with other projects, which could cumulatively contribute to localized soil erosion. In addition, the potential for impacts related to the area's seismicity could occur. Environmental review has been or will presumably be conducted for each of the other identified projects as was done for the proposed Project. Impacts of individual projects will be mitigated by compliance with city and county development standards. In addition, implementation of Mitigation Measure GEO-1 would reduce the Project's contribution to less than cumulatively considerable.

6.4.2.7 Greenhouse Gas Emissions

As discussed in Section 4.8, *Greenhouse Gas Emissions*, construction of the Project would occur over a period of approximately 21 months to construct the Project features at the Rodeo Site and to demolish the Carbon Plant and the Santa Maria Site using off-road equipment and on-road vehicles that emit GHGs. The Transitional Phase would be a 7-month period of increased vessel traffic to the Marine Terminal, and those incremental marine vessel GHG emissions are counted towards the Rodeo Site construction. Total construction GHG emissions at all sites amortized over a 30-year period would represent approximately 481 MT per year of CO_2e.

The net Project operational emissions (i.e., Project minus baseline) combined with the amortized construction emissions is evaluated against the operational threshold of 10,000 MT CO_2e per year for industrial stationary source projects. The net aggregated Project operational emissions reduction of 24,077 MT CO_2e per year plus amortized construction emissions of 481 MT CO_2e per year results in a net GHG reduction (i.e., negative change), which is below the 10,000 MT CO_2e per year threshold. Thus, relative to baseline emissions, the Project would result in decreases in annual GHG emissions and therefore have a beneficial impact. However, the CEQA impact evaluation does not include the operational Santa Maria and Pipeline GHG reductions (historical data) and therefore underestimates the GHG decrease when compared to the actual decrease of GHG emissions that would occur statewide due to the Project. Because the aggregated net construction and operational GHG emissions are below the 10,000 MT CO_2e per year threshold, i.e., negative, the impact associated with GHG emissions from the Project would be less than significant and would not be cumulatively considerable.

6.4.2.8 Hazards and Hazardous Materials

Hazardous materials released from a project site would most likely be caused by disturbance of contaminated soils or contaminated groundwater from a past use during construction activities, or mishandling of hazardous materials and wastes during routine use. In almost every instance, the environmental and health hazards associated with ground disturbance, construction and subsequent operations of a project are localized to the project site and the immediate surroundings, unless the project involves a large-scale facility that handles and/or generates large quantities of volatile hazardous substances and wastes.

Other future projects could use, store, transport, and dispose of hazardous materials, which could cumulatively increase the community-wide risk of accidental releases of such materials that could become a threat to the environment or human health. As discussed in Section 4.9, *Hazards and Hazardous Materials*, the proposed Project would not result in significant and adverse impacts from construction and demolition activities since the Project is required to comply with federal, state, and local laws, which are designed to avoid and minimize adverse impacts on public health, safety, and the environment. As with the proposed Project, each project will be subject to environmental review pursuant to CEQA. If significant impacts related to hazards or hazardous materials are still identified, each project would be required to implement mitigation measures to avoid or reduce the impacts.

With the Project, routine disposal of hazardous materials and waste would decrease compared to baseline conditions, and truck traffic related to feedstock transportation would also have a reduction in hazards. There would be an overall reduction in hazards and potential impacts associated with truck transport. The Marine Terminal would continue to transport feedstock and refinery products, but the hazards to the public of the feedstocks would be reduced over the baseline transportation of crude oil. Generally, these renewable feedstocks are not identified as marine pollutants by the USDOT, the United Nations, or the International Maritime Organization, which regulate the movement of materials throughout the world. Impacts from a spill and subsequent fire at the Marine Terminal would be located a substantial distance away from any public receptors, and impacts would therefore be less than significant. Therefore, Project impacts would not be cumulatively considerable.

However, the transitional phase and operational phase of the Project could result in discharges into waters of the San Pablo and San Francisco Bays from vessels (barges and tankers) transporting feedstocks and blending stocks to, and refined products from, the Marine Terminal. A marine vessel spill could impact a range of areas, depending on the tide, the wind and other factors. The spill sizes could cover a substantial range, with the worst-case discharge volume at the Marine Terminal estimated to be 3,976 bbls.

Although compliance with existing regulations and implementation of Mitigation Measures HAZ-1 and HAZ-2 for the Project would reduce the frequency and size of spills the potential for a substantial adverse impact on water quality cannot be eliminated. Therefore the Project, in combination with other projects, specifically the Martinez Refinery Renewable Fuels Project, which identifies the same significant and unavoidable impacts, would result in adverse impacts that would be cumulatively considerable.

6.4.2.9 Hydrology and Water Quality

The proposed Project and future cumulative projects are located in the Suisun Basin within the San Francisco Bay Area Hydrologic Basin, and watershed of Oso Flaco Creek in San Luis Obispo County. Projects could result in incremental effects on the water quality of these watersheds. However, the proposed project and cumulative projects are subject to state, regional, and local/county requirements that are designed to prevent regional development from adversely affecting surface and groundwater water quality. Future projects would be evaluated on a project-by-project basis to determine the most appropriate BMPs and other stormwater treatment measures to be implemented. Compliance with construction permits would be verified by the respective jurisdiction to ensure that construction activities would not significantly impact surface or ground water quality. As such, due to required compliance with state, regional, and local regulations protecting water quality, the combined impact of the proposed Project and related projects would be cumulatively less than significant.

The Project would have no impact related to seiche, tsunami, or mudflow.

However, the Project would result in a significant and unavoidable impact due to the potential to violate water quality standards affecting surface water quality from the transitional and operational phases of the Project. Accidental discharges into waters of the San Pablo and San Francisco Bays from vessels transporting feedstocks and blending stocks to, and refined products from, the Marine Terminal could occur. A marine vessel spill could impact a range of areas, depending on the tide, the wind and other factors. The spill sizes could cover a substantial range, with the worst-case discharge volume at the Marine Terminal estimated to be 3,976 bbls.

Although compliance with existing regulations and implementation of Mitigation Measures HAZ-1 and HAZ-2 for the Project would reduce the frequency and size of spills the potential for a substantial adverse impact on water quality cannot be eliminated. Therefore the Project, in combination with other projects, specifically the Martinez Refinery Renewable Fuels Project, which identifies the same significant and unavoidable impacts, would result in adverse water quality impacts that would be cumulatively considerable.

6.4.2.10 Land Use and Planning

As discussed in Section 4.11, *Land Use and Planning*, The Project would have less-than-significant impacts on land use and planning because it is located at an existing refinery, and the Project would be consistent with the adopted general plan and its applicable land use designations and policies adopted for the purpose of avoiding or mitigating environmental effects. The proposed Project's incremental effects are not cumulatively considerable when viewed in connection with the effects of the other projects evaluated.

6.4.2.11 Noise and Vibration

As discussed in Section 4.12, *Noise and Vibration*, Contra Costa County restricts construction to typical daytime or normal working hours as a standard condition of approval for development projects. Short-term noise level increases from construction activities at the Rodeo Site would be considered substantial if construction noise conducted outside normal working hours is distinctly audible. However, because noise and vibration does not persist or accumulate in the environment, sources of noise or vibration must occur simultaneously to be perceived as cumulative.

Due to long attenuation distances, any increases in ambient noise from construction at the Rodeo Site would be barely perceptible or imperceptible and would thus not represent a substantial increase or a nuisance to the surrounding community. During approximately 7 months of the construction period, the number of vessels calling at the Marine Terminal would increase above baseline levels, but the number of vessels calling at the Marine Terminal on a peak day would not increase. Accordingly, there would be no increase in noise levels due to peak-day vessel activity during construction. Noise impacts related to demolition of the Carbon Plant would not be perceptible by most persons and would thus not represent a substantial increase or a nuisance. Therefore, impacts of onsite noise from these three sites would be less than significant, and no mitigation would be required. Further, Carbon Plant demolition-related vehicle and truck traffic would not pass by existing sensitive receptors. With demolition of the Carbon Plant, there would be no operation and maintenance noise (or vibration) impacts at that site associated with the completed Project. Construction-related noise impacts at the County sites would not be cumulatively considerable.

At the Santa Maria Site, demolition activities could result in a 6-dBA increase over ambient noise levels, which would be just perceptible by most persons. Demolition activities are expected to occur during daytime hours that are exempt per the San Luis Obispo County noise ordinance. Demolition-related vehicle and truck traffic would not pass by existing sensitive receptors on residential streets. The impact would be less than significant, no mitigation would be required. With demolition of the Santa Maria Site, there would be no operation and maintenance noise (or vibration) impacts at that site associated with the completed Project. Construction-related noise impacts at the Santa Maria Site would not be cumulatively considerable.

The Pipeline Sites would be emptied and cleaned and then abandoned in place. Decommissioning activities at the Pipeline Sites would closely resemble existing routine maintenance activities, e.g., vehicles and potable equipment use. Accordingly, noise and vibration levels would not be increased above baseline levels and would therefore not exceed applicable standards during operation and maintenance. Therefore, no net impact would occur from decommissioning of the Pipeline Sites and impacts would not be cumulatively considerable.

At the Rodeo Site, cumulative operational noise from new process equipment would not cause the existing noise to increase by more than 1 dBA at sensitive receptors, which is below the 5 dBA incremental threshold. Operation of the Project would not result in an increase of the number of permanent employees and, therefore, no increase in commuter traffic. Shutting down the Carbon Plant would reduce total daily trucks from the Rodeo Refinery by more than half. Accordingly, traffic noise related to the Project would be reduced from baseline levels, although the reduction would be too small to be perceptible by most persons at sensitive receptors. Because there would be no additional daily train visits, the Project would not result in additional noise events from rail operations. The rail operations at the Carbon Plant Site would permanently

cease. Accordingly, the Project would result in a slight, likely imperceptible, decrease in rail-related noise. The Project would not result in an increased number of vessels calling at the Marine Terminal on a peak day. Accordingly, noise levels would not increase as a result of peak-day vessel activity. Operational noise impacts at the County sites would not be cumulatively considerable.

No strong sources of vibration would be employed during demolition activities at the Carbon Plant or Santa Maria Site. The long attenuation distances from these sites to receptors, ranging from 1,500 to 2,000 feet respectively, would render any vibrational energy imperceptible. At the Rodeo Site, a pile driver would represent the greatest vibration source. The nearest sensitive receptor to the Rodeo Site is located at least 1,475 feet from the proposed work area. Groundborne vibration associated with a pile driver at that distance would not be expected to be perceived at sensitive receptors. Thus, vibration impacts at the County sites would not be cumulatively considerable.

6.4.2.12 Transportation and Traffic

No significant project-level impacts were identified with respect to geometric design hazards, conflicts with transit, bicycle or pedestrian plans or programs, or conflict with CEQA Guidelines Section 15064.3 subdivision (b) or other plans, ordinances or policies related to the transportation system. Environmental review has been or will presumably be conducted for each of the other identified projects as was done for the proposed Project. Impacts of individual projects will be mitigated by compliance with city and county development standards. Therefore, the Project's incremental effects are not cumulatively considerable when viewed in connection with the effects of the other projects evaluated.

The Project would result in a significant impact related to emergency access during construction and demolition. However, with implementation of TRA-1, which requires implementation of a Traffic Management Plan to ensure emergency access is maintained, the impact would be less than significant. Therefore, the proposed Project's incremental effects are not cumulatively considerable when viewed in connection with the effects of the other projects evaluated.

6.4.2.13 Tribal Cultural Resources

A project's impacts with respect to tribal cultural resources are generally site specific and will not affect or be affected by other development in the region. As discussed in Section 4.14, *Tribal Cultural Resources*, the Project would have a significant impact on undiscovered tribal archeological resources, paleontological resources, or human remains. As discussed in Section 4.14, Tribal Cultural Resources, the Project would have a potentially significant impact on undiscovered tribal cultural resources, or human remains; however, implementation of recommended Mitigation Measures TRC-1 through TRC-4 would reduce the Project's contribution to less than cumulatively considerable because unanticipated discoveries would be treated appropriately.

Other pending and future projects could result in cumulative impacts to tribal cultural resources if these resources are not protected upon their discovery. However, these other projects would also be subject to compliance with the provisions of AB 52 involving Native American notification and consultation, and would be subject to compliance with Section 7050.5(b) of the California Health and Safety Code for treatment of human remains that might be discovered during excavation work. Continued compliance with these regulatory standards will avoid significant cumulative impacts to tribal cultural resources.

6.4.2.14 Wildfire

Wildfire risks depend greatly on site-specific characteristics, such as fuel load, terrain, and weather conditions, and if project sites are located in high fire hazard zones. Depending on the location of the projects listed above and the project area's potential for wildland fire, other projects may increase the risk of wildfire if protection and prevention measures are not implemented. Environmental review has been or is expected to be conducted for each of the cumulative projects, as was done for the proposed Project.

Because related projects located in high fire hazard zones would be required to comply with all applicable building safety codes and county regulations pertaining to fire prevention and suppression, and would be reviewed to ensure adequate emergency access is provided, the combined wildfire the proposed Project's incremental effects are not cumulatively considerable when viewed in connection with the effects of the other projects evaluated.

6.4.2.15 Solid Waste

As discussed in Section 4.16, *Solid Waste,* based on the short term construction and demolition period, compliance with CalGreen requirements, and the local landfills having adequate capacity to support the daily solid waste disposal needs of the Project, the Project would not substantially affect the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals, and would comply with solid waste management and reduction regulations. Therefore, the proposed Project's incremental effects are not cumulatively considerable when viewed in connection with the effects of the other projects evaluated.

6.4.2.16 Environmental Justice

Environmental Justice impacts depend on the location of the project in relation to existing disadvantaged communities. The proposed Project's construction and operations at the Rodeo Refinery result in less-than-significant impacts, or less-than-significant impacts with mitigation, that could disproportionally affect disadvantaged communities as identified in Section 4.3, *Air Quality* (criteria pollutants, toxics, health risk. odor), Section 4.4, *Biological Resources* (terrestrial), Section 4.8, *Greenhouse Gas Emissions*, Section 4.9, *Hazards and Hazardous Materials* (terrestrial), Section 4.12, *Noise and Vibration*, and Section 4.13, *Transportation and Traffic*. With respect to air quality and GHGs in particular, there would be a reduction of criteria air pollution exposure to the public, including disadvantaged communities. This reduction occurs in part as a result of the conversion of the Rodeo Refinery to a renewable fuels facility, the termination of Carbon Plant operations and significantly reduced truck traffic.

As described in Section 4.4, *Biological Resources*, Section 4.9, *Hazards and Hazardous Materials*, and Section 4.10, *Hydrology and Water Quality*, significant and unavoidable impacts could occur due to the increased risk of accidents resulting from increased vessel traffic. However, as explained in Section 4.9, *Hazards and Hazardous Material*, the effects of any such incident would not result in a corresponding public health or safety impact based on the separation distance between the Marine Terminal and public receptor locations, and the comprehensive regulatory programs and project-specific mitigation measures to address any such accidents.

Other pending and future projects could disproportionally affect disadvantaged communities resulting in environmental justice impacts. However, as with the proposed Project, these other projects would also be subject to compliance with federal, state, and local regulations that would minimize potentially significant environmental impacts that could disproportionately affect disadvantaged communities. Therefore, the proposed Project's incremental effects are not cumulatively considerable when viewed in connection with the effects of the other projects evaluated.

6.5 Effects Found Not to be Significant

The environmental effects of the Project are identified and discussed in detail in Chapter 4, *Environmental Setting, Impacts, and Mitigation Measures*. Except for those impacts discussed in Section 6.1, *Significant Unavoidable Impacts*, all identified significant environmental effects of the Project can be mitigated to less than significant with the implementation of the mitigation measures identified in this EIR. As discussed in Section 4.1, *Resources Areas Eliminated from Further Analysis,* the EIR further concludes that the Project would not have any effects in the following environmental areas:

- Agricultural and Forest Resources,
- Mineral Resources,
- Population and Housing,
- Public Services,
- Recreation, and
- Utilities and Service Systems (except Solid Waste).

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7 Report Preparation

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About Cardno

Cardno is an ASX-200 professional infrastructure and environmental services company, with expertise in the development and improvement of physical and social infrastructure for communities around the world. Cardno's team includes leading professionals who plan, design, manage, and deliver sustainable projects and community programs. Cardno is an international company listed on the Australian Securities Exchange [ASX:CDD].

Cardno Zero Harm

Cardno ZERO HARM EVERY JOB. EVERY DAY.

At Cardno, our primary concern is to develop and maintain safe and healthy conditions for anyone involved at our project worksites. We require full compliance with our Health and Safety Policy Manual and established work procedures and expect the same protocol from our subcontractors. We are committed to achieving our Zero Harm goal by continually improving our safety systems, education, and vigilance at the workplace and in the field. Safety is a Cardno core value and through strong leadership and active employee participation, we seek to implement and reinforce these leading actions on every job, every day.

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