Martinez Refinery
Renewable Fuels Project

Draft

ENVIRONMENTAL IMPACT REPORT

Vol I

Prepared for
Contra Costa County Department
of Conservation and Development

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Martinez Renewable Fuels Project

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Prepared for:

Contra Costa County
Department of Conservation and Development
30 Muir Road
Martinez, CA 94553

STATE CLEARINGHOUSE NO. 2021020289

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ACRONYMS

Acronym	Definition
2WWT	Stage 1 Wastewater Treatment Unit
AB	Assembly Bill
ABAG	Association of Bay Area Governments
AF	Acre-foot
AFY	Acre-foot per year
ALG	Ashworth Leininger Group
ART	Adapting to Rising Tides
ATC	authorities to construct
ATCM	Airborne Toxics Control Measure
BAAQMD	Bay Area Air Quality Management District
BACT	Best Available Control Technology
BARCT	best available retrofit control technology
BARR	Bay Area Regional Reliability
BART	Bay Area Rapid Transit District
Bay Plan	San Francisco Bay Plan
bbls	barrels
BCDC	Bay Conservation and Development Commission
bpd	barrels per day
BRTR	Biological Resources Technical Report
CAA	Clean Air Act
CAAQS	California ambient air quality standards
CalARP	California Accident Release Prevention
Cal e-GRRT	California Electronic Greenhouse Gas Reporting Tool
Cal Fire	California Department of Forestry and Fire Protection
Cal/OSHA	California Division of Occupational Health and Safety
CalRecycle	California Department of Resources Recycling and Recovery
Caltrans	California Department of Transportation
CAO	Cleanup and Abatement Order
CAP	Clean Air Plan or Climate Action Plan
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CBD	central business district
CBPP	Countywide Bicycle and Pedestrian Plan
CCC	Contra Costa County
CCCFPD	Contra Costa County Fire Protection District
CCCSD	Central Contra Costa Sanitary District
CCCTA	Central Contra Costa Transit Authority
CCR	California Code of Regulations
CCTA	Contra Costa Transportation Authority
CCWD	Contra Costa Water District
CDFW	California Department of Fish and Wildlife
CDMG	California Department of Mines and Geology
CEC	California Energy Commission
CESA	California Endangered Species Act
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFC	Chlorofluorocarbon
CFR	Code of Federal Regulations

Acronym	Definition
CHP	California Highway Patrol
CHRIS	California Historic Resources Information System
CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Survey
CO	carbon monoxide
CO_2e	Carbon dioxide equivalents
COe	Carbon monoxide equivalents
CPT	Cone Penetration Testing
CPUC	California Public Utilities Commission
CRHR	California Register of Historic Resources
CRPR	California Rare Plant Rank
CSLC	California State Lands Commission
CSU	California State University
CUPA	Certified Unified Permitting Agencies
CVP	Central Valley Project
CVPIA	Central Valley Project Improvement Act
CWA	Clean Water Act
cy	cubic yards
dB	Decibels
dBA	A-weighted decibels
DCO	Distillers corn oil
DEIR	Draft Environmental Impact Report
DMMs	demand management measures
DOC	California Department of Conservation
DOF	California Department of Finance
DOP	California Department of Parks and Recreation
DPM	diesel particulate matter
DPS	Distinct Population Segment
DTSC	Department of Toxic Substance Control
DWD	Diablo Water District
DWR	Department of Water Resources
EBRPD	East Bay Regional Park District
ECCID	East Contra Costa Irrigation District
EECBG	Energy Efficiency and Conservation Block Grant
EEZ	exclusive economic zone
EFH	essential fish habitat
EIR	Environmental Impact Report
EPCRA	Emergency Planning and Community Right-to-Know Act
ESA	Endangered Species Act
ESU	Evolutionarily significant unit
FAA	Federal Aviation Administration
FCCU	Fluid Catalytic Cracking Units
FE	Listed as Endangered under the Federal Endangered Species Act
FEIR	Final Environmental Impact Report
FEMA	Federal Emergency Management Agency
FMMP	Farmland Mapping and Monitoring Program
FMP	fishery management plans
FRC	facility reserve charges
FRP	facility response plans
FP	California Fish and Game Code Fully Protected Species

Acronym	Definition
FT	Listed as Threatened under the Federal Endangered Species Act
FTA	Federal Transit Administration
GHG	Greenhouse Gas
GHGRP	Greenhouse Gas Reporting Program
GIS	Geographic Information System
GMP	Groundwater Management Plans
GSAs	groundwater sustainability agencies
GWP	global warming potential
H_2S	Hydrogen sulfide
HAPCs	Habitat Areas of Particular Concern
HARP	Hot Spots Analysis & Reporting Program
HCFC	Hydro-chlorofluorocarbon
HDO	hydrodeoxygenation
HDS	Hydrodesulfurization
H-I	Heavy Industrial
HI	Heavy Industry
HMTA	Hazardous Materials Transportation Act
HOV	high occupancy vehicle
HRA	health risk assessment
I-680	Interstate 680
IPCC	Intergovernmental Panel on Climate Change
IRTC	Interstate Technology & Regulatory Council
ISO	Industrial Safety Ordinances
LCFS	low carbon fuel standard
LI	Light Industry
LOS	Level of service
LPG	liquefied petroleum gas
LTMS	Long Term Management Strategy
MACT	Maximum Achievable Control Technology
Magnuson-Stevens Act	Magnuson-Stevens Fishery Conservation and Management Act
Main SPRR	Union Pacific/BNSF/Amtrak railroad line
MBTA	Migratory Bird Treaty Act
MDUSD	Mt. Diablo Unified School District
MISA	Marine Invasive Species Act
MISP	Marine Invasive Species Program
MMBtu	Metric Million British Thermal Units
MMC	Martinez Municipal Code
MMHW	mean higher high water
MMPA	Marine Mammal Protection Act of 1972
MMscf/year	million standard cubic feet per year
MMT	million metric tons
MMscfd	million standard cubic feet per day
MMTCO2e	million metric tons of carbon dioxide equivalents
MOT	Marine Oil Terminal
MOTEMs	Marine Oil Terminal Engineering and Maintenance Standards
MOU	Memorandum of Understanding
MPD	Martinez Police Department
MPO	metropolitan planning organization
MSL	Mean Sea Level
MT	Metric Tons

Acronym	Definition
MUSD	Martinez Unified School District
MVSD	Mt. View Sanitary District
NAAQS	national ambient air quality standards
NAHC	Native American Heritage Commission
NANPCA	Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990
NAS	Non-aquatic Species
NESHAP	National Emission Standard for Hazardous Air Pollutants
NHTSA	National Highway Traffic Safety Administration
NMFS	National Marine Fisheries Service
NOP	Notice of Preparation
NO_X	the mixture of NO and NO2
NO_2	nitrogen dioxide
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NSPS	New Source Performance Standards
NWIC	Northwest Information Center
NWS	Naval Weapons Station
OPA	Oil Pollution Act of 1990
OPR	State Office of Planning and Research
OS	Open Space
OSFM	Office of the State Fire Marshal
OSHA	Occupational Safety and Health Administration
OSPR	Office of Spill Prevention and Response
PAH	Polycyclic Aromatic Hydrocarbons
PCB	polychlorinated biphenyl
PCE	primary constituent elements
PHMSA	Pipeline and Hazardous Materials Safety Administration
PM	Particulate Matter
PMI	Point of maximum impact
POC	precursor organic compounds
ppm	parts per million
ppt	parts per trillion
PR	Parks and Recreation
PRC	Public Resources Code
PTU	Pretreatment Unit
PVC	polyvinyl chloride
RCRA	Resource Conservation and Recovery Act
RMP	Risk Management Plan
RMP	Regional Monitoring Program
RPS	Renewable Portfolio Standard
RTP	Regional Transportation Plan
RWQCB	Regional Water Quality Control Board
SAP	Sulfuric Acid Plant
SAR	Second Assessment Report
SBO	Soybean Oil
SCS	sustainable community strategy
SEMS	Standardized Emergency Management System
SE	California Fish and Game Code Endangered Species
SFBJV	San Francisco Bay Joint Venture
SF RWMP	San Francisco Regional Water Management Group

Acronym	Definition
SFBAAB	San Francisco Bay Area Air Basin
SFEI	San Francisco Estuary Institute
S.F.. RWQCB	San Francisco Bay Regional Water Quality Control Board
SF RWMG	San Francisco Regional Water Management Group
SGH	Simpson Gumpertz & Heger Inc.
SGMA	Sustainable Groundwater Management Act
SIP	State Implementation Plan
SJVAPCD	San Joaquin Valley Air Pollution Control District
SMARA	Surface Mining and Reclamation Act of 1975
SO_2	sulfur dioxide
SPCC	Spill Prevention, Control, and Countermeasure
SR	Rare species
SR	State Route
SRP	Selenium Removal Plant
SRRE	source reduction and recycling elements
SRU	Sulfur Recovery Unit
SSC	Species of Special Concern
ST	California Fish and Game Code Threatened Species
SQOs	sediment quality objectives
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	Toxic Air Contaminants
TCR	Tribal and Cultural Resources
TMDL	Total Maximum Daily Loads
TPD	Tons per day
TPY	Tons per year
TWSA	Treated Water Service Area
UPRR	Union Pacific Railroad
USACE	United States Army Corps of Engineers
USGS	United States Geological Survey
USC	United States Code
USDOT	United States Department of Transportation
US EPA or EPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	U.S. Geological Survey
USN	United States Navy
UWMP	Urban Water Management Plan
VHFHSZ	very high fire hazard severity zones
VMT	vehicle miles traveled
VOC	volatile organic compounds
VRP	Visibility reducing particles
WA	Water
WCCSL	West Contra Costa Sanitary Landfill
WTP	Water Treatment Plant
WQOs	water quality objectives
ZEVs	zero-emission vehicles

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EXECUTIVE SUMMARY

INTRODUCTION

The Martinez Refinery Renewable Fuels Project (Project) is a request by Marathon Petroleum Corporation (Marathon or the Applicant) for entitlements to modify operations of their existing refinery at 150 Solano Way, in unincorporated lands east of the city of Martinez, east of Pacheco Creek and south of Suisun Bay. The request was submitted to the Contra Costa County Department of Conservation and Development (DCD) for land use permit approval (County File No. CDLP20-02046), and more specifically, involves equipment modifications and repurposing of the existing refinery facility to discontinue production of fossil fuels and switch to production of fuels from renewable sources including rendered fats, soybean and corn oil and other cooking or vegetable oils.

The requested physical and operational changes associated with the proposed Project constitute a "project" as defined by the California Environmental Quality Act ("CEQA," Public Resources Code Section 21000 *et seq.*), the State CEQA Guidelines (California Code of Regulations, Title 14, Section 15000 *et seq.*), and the Contra Costa County Guidelines for Administering CEQA ("County CEQA Guidelines," Contra Costa County Resolution No. 2010/402). The Project also requires discretionary action by Contra Costa County (County), wherein the County has the authority to use its judgment in deciding whether or how to carry out or approve the Project. Therefore, the Project is subject to the requirements of CEQA.

DCD is serving as the lead agency responsible for preparing this Environmental Impact Report (EIR) in compliance with CEQA to analyze the environmental impacts associated with the Project. This EIR will provide the Contra Costa County decision-making bodies and other responsible agencies the information required to exercise their respective permitting authorities with respect to the proposed Project.

PROJECT OBJECTIVES

The Applicant has identified the following objectives for the Project:

- Repurpose the Marathon Martinez Refinery to a renewable fuels production facility.
- Eliminate the refining of crude oil at the Martinez Refinery while preserving high quality jobs.
- Provide renewable fuels to allow California to achieve significant progress towards meeting its renewable energy goals.
- Produce renewable fuels that significantly reduce the lifecycle generation of greenhouse gas emissions, as well as other criteria pollutants including particulate matter.
- Reduce emissions from mobile sources by providing cleaner burning fuels.
- Repurpose/reuse existing critical infrastructure, to the extent feasible.

ORGANIZATION OF THE EIR

The EIR contains the following sections:

- **Chapter 1 – Introduction** includes a general overview of the proposed project, the environmental review process, and purpose and scope of the EIR.

- **Chapter 2 – Project Description** describes the proposed Project, its location and facilities, an overview of its operation, and schedule.

- **Chapter 3 – Environmental Impact Analysis, Methodology, and Baseline** describes existing environmental conditions within issue areas, Project-specific impacts and associated mitigation measures, and includes the reference materials used to prepare the analysis.

- **Chapter 4 – Cumulative Impacts** describes the cumulative environmental impacts of the proposed Project when combined with other projects located in the vicinity of the Project Site and lists the projects considered in the evaluation of cumulative impacts.

- **Chapter 5 – Alternatives** describes the alternatives to the Project carried forward for analysis and the alternative that was considered but eliminated from detailed evaluation.

- **Chapter 6 – Other CEQA Considerations** addresses other required CEQA elements, including significant irreversible effects and evaluation of growth-inducing impacts of the Project.

- **Chapter 7 – List of Preparers and References** presents information on the individuals who prepared the EIR and their qualifications.

PROPOSED PROJECT

The Marathon Martinez Refinery (Refinery) is located at 150 Solano Way, Martinez, California. The site is situated on the Carquinez Strait in Contra Costa County (see Figure 2-1). The Refinery is located 3.25 miles east of downtown Martinez along Solano Way between Waterfront Road and Monsanto Way. Access to the Refinery is provided from the south via gated entrance on Solano Way and from the west via gated entrance on Waterfront Road.

The Refinery is situated east of Pacheco Creek, on the southern shore of Suisun Bay. Suisun Bay is connected to San Pablo Bay via the Carquinez Strait, a narrow, 12-mile-long band of water that extends from the Benicia-Martinez Bridge westward to Mare Island. In addition to Marathon's Martinez Refinery, the Carquinez Strait, including its junction with San Pablo Bay, is host to numerous refinery facilities and their associated marine terminals. The Marathon Martinez Refinery has marine access through two marine oil terminals (MOTs) on Suisun Bay and the Carquinez Strait, namely the Avon MOT and Amorco MOT. Both MOTs are owned by Andeavor Logistics, LP, also a wholly owned subsidiary of Marathon. The Avon MOT is located on approximately 13.3 acres of leased sovereign land in the lower Suisun Bay, approximately 1.75 miles east of the Benicia-Martinez Bridge, in unincorporated Contra Costa County. The Amorco MOT is located on approximately 14.3 acres of leased sovereign land, approximately 0.6 miles west of the Benicia-Martinez Bridge in the city of Martinez. Lease agreements for both MOTs are managed by the California State Lands Commission.

The Refinery's operations are currently permitted by the Bay Area Air Quality Management District (BAAQMD), and the facility has a reported crude oil refining capacity of 161,000 barrels per day (bpd), though Marathon recently suspended refining of crude oil in April 2020. Prior to idling of the Refinery, the majority of crude oil refined at the site was received via ship, with additional crude arriving at the facility by pipeline, and other (non-crude) refinery commodities arriving by rail. Following cessation of refining operations, crude oil continued to be received at the facility's marine oil terminals for storage and distribution to other facilities for refining; however, no crude oil was processed into fuels at the Refinery. Products that can be produced at the Refinery with existing equipment include conventional diesel fuel, gasoline, distillates, petroleum coke, liquefied petroleum gas (LPG), heavy fuel oil and refinery-grade propylene. Distribution of products from the Refinery to the market can be conducted by truck, rail, ship and pipeline.

The proposed Project is a request by Marathon to repurpose the existing Refinery to discontinue refining of crude oil and switch to production of fuels from renewable feedstock sources including rendered fats, soybean and corn oil, and potentially other cooking and vegetable oils, but excluding palm oil. Construction of the proposed Project would begin as soon as all necessary permits are received, with a target date of 2022. Marathon anticipates that operations under the proposed Project would begin in 2022 with an estimated production of 23,000 bpd, ramping up to full production of 48,000 bpd expected to be achieved by the end of 2023. The repurposed Refinery would operate 24 hours per day, seven days per week.

ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

This EIR includes a detailed evaluation of the potentially significant environmental effects that could result from implementation of the Project on a variety of resource topics. The following Table ES-1 presents a summary of potential impacts of and mitigation measures for the proposed Project.

Table ES-1: Summary of Project Impacts and Mitigation Measures

SECTION	IMPACT NUMBER	IMPACT	LEVEL OF SIGNIFICANCE	MITIGATION MEASURES	LEVEL OF SIGNIFICANCE AFTER MITIGATION
3.2 Aesthetics	AES-1	Have a substantial adverse effect on a scenic vista.	Less than Significant	No mitigation required.	Less than Significant
	AES-2	Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.	Less than Significant	No mitigation required.	Less than Significant
	AES-3	Substantially degrade, in non-urbanized areas, the existing visual character or quality of public views of the site and its surroundings, where public views are those that are experienced from publicly accessible vantage points.	Less than Significant	No mitigation required.	Less than Significant
	AES-4	Conflict with applicable zoning and other regulations governing scenic quality for a project site located in an urbanized area.	Less than Significant	No mitigation required.	Less than Significant
	AES-5	Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.	Less than Significant	No mitigation required.	Less than Significant
3.3 Air Quality	AQ-1	Construction emissions or health risk below the thresholds of significance identified in the BAAQMD CEQA Guidelines.	Less than Significant	**Mitigation Measure AQ-1a:** Implement BAAQMD Basic Construction Measures. The following measures will be implemented during construction: • 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 off-site 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 once per day. 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 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of	Less than Significant

Table ES-1: Summary of Project Impacts and Mitigation Measures

SECTION	IMPACT NUMBER	IMPACT	LEVEL OF SIGNIFICANCE	MITIGATION MEASURES	LEVEL OF SIGNIFICANCE AFTER MITIGATION
				Regulations). 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.	
				Minimization and Measure AQ-1b Implement best management practices for construction activities. The following air emissions reduction BMPs shall be implemented to the maximum extent practicable by the applicant and construction contractors. The following measures shall be included as recommended practices incorporated into all construction contracts related to the Project: • Provide the necessary infrastructure to support the zero and near-zero emission technology vehicles and equipment that will be operating on-site. Necessary infrastructure may include the physical (e.g., needed footprint), energy, and fueling infrastructure for construction equipment, on-site vehicles, and medium-heavy and heavy-heavy duty trucks. • Portable equipment used during construction should be powered by electricity from the grid or onsite renewable sources, instead of diesel-powered generators. • All off-road diesel-powered equipment used during construction shall be equipped with Tier 4 or cleaner engines, except for specialized construction equipment in which Tier 4 engines are not available. In place of Tier 4 engines, off-road	Less than Significant

Table ES-1: Summary of Project Impacts and Mitigation Measures

SECTION	IMPACT NUMBER	IMPACT	LEVEL OF SIGNIFICANCE	MITIGATION MEASURES	LEVEL OF SIGNIFICANCE AFTER MITIGATION
				equipment can incorporate retrofits such that emission reductions achieved equal or exceed that of a Tier 4 engine. • All off-road equipment with a power rating below 19 kilowatts (e.g., plate compactors, pressure washers), used during project construction shall be battery powered. • All heavy-duty trucks entering the construction site, during the grading and building construction phases shall be model year 2014 or later, to the maximum extent practicable. All heavy-duty haul trucks shall also meet CARB's lowest optional low-NOx standard starting in the year 2022, to the maximum extent practicable.	
	AQ-2	Operations emissions in excess of the thresholds of significance identified in the CEQA Guidelines.	Significant and Unavoidable	No mitigation required.	Significant and Unavoidable
	AQ-3	Health risk from Project operations in excess of the thresholds of significance identified in the BAAQMD CEQA Guidelines.	Less than Significant	No mitigation required.	Less than Significant
	AQ-4	Cumulative criteria pollutant health risk in excess of the thresholds of significance identified in the BAAQMD CEQA Guidelines.	Significant and Unavoidable	Implementation of this Project would reduce overall $PM_{2.5}$ concentrations. However, additional emissions reductions from non-Project sources would be required to reduce the $PM_{2.5}$ concentration to below the significance threshold.	Significant and unavoidable
	AQ-5	Creation of objectionable odors.	Potentially Significant	**Mitigation Measure AQ-2**: During construction phase of the Project, the operational Odor Management Plan (OMP) shall be developed and implemented upon commissioning of the renewable fuels processes, intended to become an integrated part of daily operations at the Facility and other sites, so as to prevent any objectionable offsite odors and effect diligent identification and remediation of any potential objectionable odors generated by the facility and associated sites. The plan shall outline equipment that is in place and procedures that facility personnel shall use to address odor issues, facility wide. The OMP shall include continuous 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	Less than Significant

Table ES-1: Summary of Project Impacts and Mitigation Measures

SECTION	IMPACT NUMBER	IMPACT	LEVEL OF SIGNIFICANCE	MITIGATION MEASURES	LEVEL OF SIGNIFICANCE AFTER MITIGATION
				necessary. This plan shall be retained at the facility for County or other government agency inspection upon request. The following practices shall be included in the OMP to reduce the potential of objectionable odors from the storage of renewable feedstocks, operation of the wastewater treatment plant, and any other odor generating activity: • Develop operating procedures to inspect and evaluate the effectiveness of odor control equipment and operation of the wastewater treatment plant. • Inspections conducted on a semi-annual basis. • If there are fewer than an average of five confirmed complaints per year during the first 3 years of operation, then the inspection frequency can be reduced to an annual basis. • If there are more than five complaints in any single year, then the application shall develop additional mitigation strategies in consultation with the BAAQMD. The Odor Management Plan shall be submitted to the Department of Conservation and Development for review and approval prior to commissioning of the renewable fuels process.	
	AQ-6	The Project conflicts with or obstructs implementation of applicable air quality plan.	Less than Significant	No mitigation required.	Less than Significant
3.4 Biological Resources	BIO-1	Cause substantial temporary impacts to special-status species due to renovation activity.	Potentially Significant (Construction)	**Mitigation Measure BIO-1a: General Work Site Best Management Practices.** The following measures shall be included on all plans and employed by Marathon and its contractors to avoid and minimize impacts to water quality and other beneficial characteristics of wetlands at the Project Site: • No debris, soil, silt, sand, cement, concrete or washings thereof, or other construction-related materials or wastes, oil or petroleum products, or other organic or earthen material shall be allowed to enter into or be placed where it may be washed	Less than Significant

Table ES-1: Summary of Project Impacts and Mitigation Measures

SECTION	IMPACT NUMBER	IMPACT	LEVEL OF SIGNIFICANCE	MITIGATION MEASURES	LEVEL OF SIGNIFICANCE AFTER MITIGATION
				by rainfall or runoff into marshes or open water/ditches adjacent to the work areas. • All personnel and their equipment shall be required to stay within the designated construction area to perform job-related tasks and shall not be allowed to enter wetlands, drainages and habitat of listed species. • Pets shall not be allowed in or near the construction area. • Firearms shall not be allowed in or near the construction area, except for armed Marathon security officers who may periodically patrol work sites. No intentional killing or injury of wildlife shall be permitted. • The construction site shall be maintained in a clean condition. All trash (e.g., food scraps, cans, bottles, containers, wrappers, cigarette butts and other discarded items) shall be placed in closed containers and properly disposed off-Site. • After construction is completed, final cleanup shall include removal of all stakes, temporary fencing, flagging and other refuse generated by construction. Vegetation shall not be removed or disturbed in the cleanup process.	
				Mitigation Measure BIO-1b: **Spill and Accidental Discharge Prevention**. The following measures shall be included on all plans and employed by Marathon and its contractors. Marathon and its contractors shall be responsible for structure operations in a manner that minimizes the risk of spills or the accidental discharge of fuels or hazardous materials. Marathon and its contractors shall, at a minimum, ensure that: • All employees handling fuels and other hazardous materials are properly trained. • All equipment is in good operating order and inspected regularly. • Hazardous materials, including chemicals, fuels and lubricating oils, shall not be stored within 200 feet of a wetland or water body. This applies to	

Table ES-1: Summary of Project Impacts and Mitigation Measures

SECTION	IMPACT NUMBER	IMPACT	LEVEL OF SIGNIFICANCE	MITIGATION MEASURES	LEVEL OF SIGNIFICANCE AFTER MITIGATION
				storage of these materials and does not apply to normal operation or use of equipment in these areas. • If refueling is needed on-Site, it will occur at least 100 feet from a surface water feature, and in a designated refueling area with secondary containment/plastic sheeting and a spill containment kit.	
				Mitigation Measure BIO-1c: Emergency Spill and Containment Plan. The following measures shall be included on all plans and employed by Marathon and its contractors. In the event of an accidental spill, the Facility Oil Spill Contingency Plan shall be implemented. Site-specific provisions shall be listed on the Safe Work Permit and included within the job plan maintained on-Site. At a minimum, Marathon and its contractors shall: • Ensure that each construction crew (including clean-up crews) has sufficient supplies of absorbent and barrier materials on-Site to allow the rapid containment and recovery of spilled materials, and that each construction crew knows the procedure for reporting spills. • Ensure that each construction crew has sufficient tools and material on Site to stop leaks. • Know the contact names and telephone numbers for all Marathon Martinez Refinery contacts and local, state and federal agencies (including, if necessary, the U.S. Coast Guard and the National Response Center) that might need to be notified in the event of a spill. • Follow the requirements of those agencies in cleaning up the spill, excavating and disposing soils or other materials contaminated by a spill, and collecting and disposing waste generated during spill cleanup.	
				Mitigation Measure BIO-1d: Stormwater Pollution Prevention Plan (SWPPP). The Project shall adhere to and implement the requirements of the respective	

Table ES-1: Summary of Project Impacts and Mitigation Measures

SECTION	IMPACT NUMBER	IMPACT	LEVEL OF SIGNIFICANCE	MITIGATION MEASURES	LEVEL OF SIGNIFICANCE AFTER MITIGATION
				existing SWPPP for the Marathon Martinez Refinery, Avon Marine Terminal and Amorco Marine Terminal during Project construction. Applicable measures in each SWPPP shall be incorporated into the construction plans by a qualified specialist and implemented prior to construction	
				Mitigation Measure BIO-1e: In-water Work Restrictions. The following work restrictions shall be included on all plans that include in-water work, and employed by Marathon and its contractors: • To the extent feasible, in-water work shall be performed between 30 minutes after sunrise and 30 minutes before sunset. • In-water work activity shall only occur during the work window specified by the NMFS and CDFW for avoidance of potential impacts to fish species in this region of the San Francisco Bay Estuary, August 1 to November 30. If in-water work outside this time period is required, the work window may be adjusted through coordination with the CDFW, NMFS and USFWS.	
				Mitigation Measure BIO-1f: Nearshore Habitat Disturbance Minimization. The following measures shall be employed by Marathon and its contractors. The measures shall be included as recommended practices incorporated into all construction contracts related to the Project. The number of round trips made by barges during construction shall be limited to the extent feasible. Barge and support vessels shall transit through the shallows at a no-wake-producing speed to minimize disturbance to bottom sediments. Anchoring shall be minimized to the extent possible.	
				Mitigation Measure BIO-1g: Demarcation of Limits of Work. Marathon and its contractors shall clearly demarcate the limits of work in the field. All Project-related activity shall be confined to the designated work areas; no entry into adjacent areas shall be allowed by Project personnel. Upon Project completion, material used to mark the work boundary shall be removed.	

Table ES-1: Summary of Project Impacts and Mitigation Measures

SECTION	IMPACT NUMBER	IMPACT	LEVEL OF SIGNIFICANCE	MITIGATION MEASURES	LEVEL OF SIGNIFICANCE AFTER MITIGATION
				Mitigation Measure BIO-1h: Weed Spread Prevention. Marathon and its contractors shall implement measures to ensure that boots, clothing, vehicles and equipment are free of soils and plant parts prior to entering work areas.	
				Mitigation Measure BIO-1i: Preconstruction Focused Soft-Bird's Beak Surveys. Focused surveys for soft-bird's beak shall be conducted by a qualified biologist each year during the appropriate blooming period (June 1 through September 30) prior to construction to confirm its absence. Locations of rare plants in proposed construction areas will be recorded using a GPS unit and flagged for avoidance. A qualified biologist shall monitor construction activities occurring in the vicinity of the flagged plants to ensure that no direct or indirect impacts occur.	
				Mitigation Measure BIO-1j: Preconstruction Nesting Bird Surveys. No more than 5 days prior to construction during the nesting bird season (February 1 through September 15), a qualified biologist shall conduct a survey for nesting birds. If work within an area lapses for more than 14 days during the nesting season, the survey shall be repeated. The survey shall encompass all work areas and those areas within a buffer of 250 feet for passerines, 500 feet for small raptors, and 1,000 feet for large raptors. Where accessible, the location of active nests will be recorded using a handheld global-positioning system unit. Should an active nest be discovered, a biological monitor will be required on-Site during construction activities that could cause disturbance of the nest. The biologist may allow work to continue if they determine that the work activity is not likely to cause nest disturbance. The biological monitor shall have the authority to stop work should a nesting bird display signs of agitation. The qualified biologist conducting the nesting surveys should prepare a report that provides details about the nesting outcome and the removal of buffers. This report should be submitted to the County's Department of Conservation and Development	

Table ES-1: Summary of Project Impacts and Mitigation Measures

SECTION	IMPACT NUMBER	IMPACT	LEVEL OF SIGNIFICANCE	MITIGATION MEASURES	LEVEL OF SIGNIFICANCE AFTER MITIGATION
				for review and approval prior to the time that buffers are removed.	
				Mitigation Measure BIO-1k: California Ridgway's Rail and California Black Rail Surveys. Prior to construction occurring during the rail nesting season (February 1 through August 31) within 700 feet of suitable rail habitat, surveys shall be conducted for California Ridgway's rail and California black rail in accordance with the USFWS Survey protocol for California Ridgway's rail. Surveys should be initiated between January 15 and February 1. For each survey station, four surveys are to be conducted. Surveys should be spaced at least two weeks apart and should cover the time period from the date of the first survey through the end of March or mid-April. If California Ridgway's or California black rails are detected during the survey, no work within 700 feet of the rail calling centers (identified via compass bearing and distance estimate during surveys) shall occur between February 1 and August 31, unless otherwise approved by USFWS and CDFW.	
	BIO-2	Disturbance or loss of sensitive natural communities or State and Federally protected wetlands	Potentially Significant	**Mitigation Measure BIO-2:** Implement Mitigation Measure BIO-1a, Mitigation Measure BIO-1b, Mitigation Measure BIO-1c, Mitigation Measure BIO-1g and Mitigation Measure BIO-1h.	Less than Significant
	BIO-3	Interfere with wildlife migratory corridors or nursery sites.	Potentially Significant	**Mitigation Measure BIO-3:** Implement Mitigation Measure BIO-1a, Mitigation Measure BIO-1b, Mitigation Measure BIO-1c, Mitigation Measure BIO-1e, Mitigation Measure BIO-1g, Mitigation Measure BIO-1h, Mitigation Measure BIO-1j and Mitigation Measure BIO-1k	Less than Significant
	BIO-4	Conflict with any local policies or ordinances protecting biological resources or provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or State habitat conservation plan.	Less than Significant	No mitigation required.	Less than significant
	BIO-5	Cause substantial impact to special-status species or sensitive habitat due to increased fill area and bay cover.	Less than Significant	No mitigation required.	Less than significant
	BIO-6	Increase deposition or erosion of sensitive habitats along the vessel path, including marshlands within and adjacent	Less than Significant	No mitigation required.	Less than significant

Table ES-1: Summary of Project Impacts and Mitigation Measures

SECTION	IMPACT NUMBER	IMPACT	LEVEL OF SIGNIFICANCE	MITIGATION MEASURES	LEVEL OF SIGNIFICANCE AFTER MITIGATION
		to the lease area, resulting from the resuspension of sediments by calling vessels.			
	BIO-7	Cause injury or behavioral interruptions to aquatic species as a result of noise from increased number of vessels.	Potentially Significant	**Mitigation Measure BIO-7a: Vessel Strike Minimization.** The following mitigation measure shall be implemented during all on-going business operations and shall be included as part of contractual agreement language to ensure that contract vessels are informed of all on-going operational responsibilities**.** Marathon 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 NOAA. • 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. • Inform all vessel traffic of vessels 300 gross registered tons or larger to reduce speeds to 10-knots when transiting within the designated Vessel Speed Reduction zones. • Request compliance to the maximum extent feasible (based on vessel safety) with the 10-knot speed reduction zone. Understand and agree that decisions concerning safe navigation and maneuvering of participating vessels remain entirely with ship masters and crew. • Encourage participation in the Blue Whales and Blue Skies incentive program.	Less than significant
				Mitigation Measure BIO-7b: Sturgeon Action Funding. Marathon Refining and Marketing Company, LLC (Marathon) shall conduct and support the following activities to further the understanding of vessel strike vulnerability of sturgeon in San Francisco, San Pablo, and Suisun Bays and the Carquinez Strait. The support	

Table ES-1: Summary of Project Impacts and Mitigation Measures

SECTION	IMPACT NUMBER	IMPACT	LEVEL OF SIGNIFICANCE	MITIGATION MEASURES	LEVEL OF SIGNIFICANCE AFTER MITIGATION
				shall be based on criteria that establish Marathon's commensurate share taking into account the increase in vessel calls to the Avon and Amorco Marine Oil Terminals. Support shall include coordination 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.	
	BIO-8	Cause significant adverse impacts to the San Francisco Bay Estuary and associated biota as a result of spills.	Potentially Significant	Marathon would be required to update the Refinery's FRP and Spill Prevention, Control, and Countermeasure Plan (SPCC) to demonstrate preparedness to respond to vegetable oil and animal fat spills. However, there are limitations to thorough containment and cleanup of a major oil spill.	Significant and Unavoidable
	BIO-09	Introduce invasive nonindigenous aquatic species to the San Francisco Bay Estuary.	Potentially Significant	Under the terms of the terminal leases with CSLC, Marathon is required to ensure that vessels calling at Avon or Amorco MOTs are advised of California's Marine Invasive Species Act and submit forms as required by CSLC through the MISP. Mitigation Measure BIO-9b of the Avon FEIR and BIO-7b of the Amorco FEIR required the refinery's previous owner, Tesoro Refining and Marketing Company, to participate and assist in funding ongoing and future actions related to nonindigenous aquatic species at a level determined through cooperative effort with the MISP agencies.	Significant and Unavoidable
				Mitigation Measure BIO-9a: Marathon Refining and Marketing Company, LLC (Marathon) shall continue to participate and assist in funding ongoing and future actions related to nonindigenous aquatic species (NAS) as described in Mitigation Measure BIO-9B of the Tesoro Avon Marine Oil Terminal Lease Consideration Project Final Environmental Impact Report (FEIR) and Mitigation Measure BIO-7b of the Amorco Marine Terminal FEIR.	

Table ES-1: Summary of Project Impacts and Mitigation Measures

SECTION	IMPACT NUMBER	IMPACT	LEVEL OF SIGNIFICANCE	MITIGATION MEASURES	LEVEL OF SIGNIFICANCE AFTER MITIGATION
				The level of funding shall be revisited through a cooperative effort between California State Lands Commission staff, the DWR, CDFW, and Marathon, and shall be based on criteria that establish Marathon's commensurate share NAS actions costs taking into account the increase in vessel calls to the Avon and Amorco Marine Oil Terminals.	
3.5 Cultural and Tribal Cultural Resources	CR-1	Potential to cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5.	Potentially Significant	**Mitigation Measure CR-1: Discovery of Unknown Cultural or Archaeological Resources.** The following Mitigation Measures shall be implemented during project related ground disturbance, and shall be included on all construction plans: All construction personnel, including operators of equipment involved in grading, or trenching activities will be advised of the need to immediately stop work if they observe any indications of the presence of an unanticipated cultural resource discovery (e.g. wood, stone, foundations, and other structural remains; debris-filled wells or privies; deposits of wood, glass, ceramics). If deposits of prehistoric or historical archaeological materials are encountered during ground disturbance activities, all work within 50 feet of the discovery shall be redirected and a qualified archaeologist, certified by the Society for California Archaeology (SCA) and/or the Society of Professional Archaeology (SOPA), shall be contacted to evaluate the finds and, if necessary, develop appropriate treatment measures in consultation with the County and other appropriate agencies. If the cultural resource is also a tribal cultural resource (TCR) the representative (or consulting) tribe(s) will also require notification and opportunity to consult on the findings. If the deposits are not eligible, avoidance is not necessary. If eligible, deposits will need to be avoided by impacts or such impacts must be mitigated. Upon completion of the archaeological assessment, a report should be prepared documenting the methods, results, and recommendations. The report should be submitted to the Northwest Information Center and appropriate Contra Costa County agencies.	Less than Significant

Table ES-1: Summary of Project Impacts and Mitigation Measures

SECTION	IMPACT NUMBER	IMPACT	LEVEL OF SIGNIFICANCE	MITIGATION MEASURES	LEVEL OF SIGNIFICANCE AFTER MITIGATION
				Should human remains be uncovered during grading, trenching, or other on-site excavation(s), earthwork within 30 yards of these materials shall be stopped until the County coroner has had an opportunity to evaluate the significance of the human remains and determine the proper treatment and disposition of the remains. Pursuant to California Health and Safety Code Section 7050.5, if the coroner determines the remains may those of a Native American, the coroner is responsible for contacting the Native American Heritage Commission (NAHC) by telephone within 24 hours. Pursuant to California Public Resources Code Section 5097.98, the NAHC will then determine a Most Likely Descendant (MLD) tribe and contact them. The MLD tribe has 48 hours from the time they are given access to the site to make recommendations to the land owner for treatment and disposition of the ancestor's remains. The land owner shall follow the requirements of Public Resources Code Section 5097.98 for the remains. In the event the Project design changes, and ground disturbance is anticipated beyond the Area of Potential Effect, as it is currently defined by the Cultural Resources Inventory Reports, further surveys shall be conducted in those new areas to assess the presence of cultural resources. Any newly discovered or previously recorded sites within the additional survey areas shall be recorded (or updated) on appropriate Department of Parks and Recreation (DPR) 523-series forms. If avoidance of these cultural resources is not feasible then an evaluation and/or data recovery program shall be drafted and implemented.	
	CR-2	Potential to cause a substantial adverse change in the significance of an archaeological resource as defined in CEQA Guidelines Section 15064.5.	Potentially Significant	**Mitigation Measure CR-1:** Implement Mitigation Measure CR-1.	Less than Significant
	CR-3	Potential to directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.	Less than Significant	No mitigation required.	Less than Significant
	CR-4	Potential to disturb any human remains, including those interred outside of formal cemeteries.	Less than Significant	No mitigation required.	Less than Significant

Table ES-1: Summary of Project Impacts and Mitigation Measures

SECTION	IMPACT NUMBER	IMPACT	LEVEL OF SIGNIFICANCE	MITIGATION MEASURES	LEVEL OF SIGNIFICANCE AFTER MITIGATION
	TCR-1	Potential to 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 1) listed or eligible for listing in the CRHR, or in a local register of historical resources as defined in PRC Section 5020.1(k); or 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.	Potentially Significant	Implement Mitigation Measure CR-1.	Less than Significant
3.6 Energy	EN-1	The proposed Project could result in increased energy consumption, but not in large amounts or in a wasteful manner.	Less than Significant	No mitigation required.	Less than Significant
	EN-2	Proposed Project construction or operations would not conflict with adopted energy conservation plans or standards.	Less than Significant	No mitigation required.	Less than Significant
3.7 Geology and Soils	GEO-1	Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury or death involving 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.	Less than Significant	No mitigation required.	Less than Significant
	GEO-2	Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury or death involving strong seismic ground shaking.	Potentially Significant	**Mitigation Measure GEO-2: Submittal of Final Geotechnical Evaluation Report.** Prior to issuance of a grading or building permit for the equipment changes associated with the Project, the Applicant shall submit a final geotechnical evaluation report prepared by a licensed engineer, for approval by the Department of Conservation and Development, Peer Review Geologist, along with payment for the peer review fee. The report shall specify final recommendations for seismically and structurally sound installation of new structures, equipment and foundations in accordance with the California Building Code standards in effect at the time the permit application is submitted. Construction drawings submitted with the building permit application shall include appropriate detail to demonstrate	Less than Significant

Table ES-1: Summary of Project Impacts and Mitigation Measures

SECTION	IMPACT NUMBER	IMPACT	LEVEL OF SIGNIFICANCE	MITIGATION MEASURES	LEVEL OF SIGNIFICANCE AFTER MITIGATION
				compliance of the Project with the standards of the applicable California Building Code.	
	GEO-3	Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury or death involving seismic-related ground failure, including liquefaction.	Less than Significant	No mitigation required.	Less than Significant
	GEO-4	Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury or death involving landslides.	Less than Significant	No mitigation required.	Less than Significant
	GEO-5	Result in substantial soil erosion or the loss of topsoil.	Less than Significant	No mitigation required.	Less than Significant
	GEO-6	Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse.	Potentially Significant	**Mitigation Measure GEO-6:** Implement Mitigation Measure GEO-2.	Less than Significant
	GEO-7	Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property.	Potentially Significant	**Mitigation Measure GEO-7:** Implement Mitigation Measure GEO-2.	Less than Significant
	GEO-8	Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.	No Impact	No mitigation required.	No Impact
	GEO-9	Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.	Less than Significant	No mitigation required.	Less than Significant
3.8 Greenhouse Gas Emissions	GHG-1	Generate GHG emissions that exceed the adopted BAAQMD thresholds.	Less than Significant	No mitigation required.	Less than Significant
	GHG-2	Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions.	Less than Significant	No mitigation required.	Less than Significant
3.9 Hazards and Hazardous Materials	HAZ-1	Create a hazard to workers, the public and/or the environment through the routine transport, use, and/or disposal of hazardous materials.	Less than Significant (Construction) Potentially Significant (Operation)	**Mitigation Measure HAZ-1:** The permittee shall comply with mitigation measures as outlined in the Operational Safety/Risk of Accident sections of the EIRs for both Amorco and Avon MOTs and as incorporated by reference into the leases as regulatory (lease) conditions. These measures include CLSC-established MOTEMS that have set minimum requirements for preventative maintenance, including periodic inspection of all components related to transfer operations pipelines. The permittee shall comply with those requirements, as well as with the CSLC's operational requirements, including Article 5.5 Marine Terminal Oil	Significant and Unavoidable

Table ES-1: Summary of Project Impacts and Mitigation Measures

SECTION	IMPACT NUMBER	IMPACT	LEVEL OF SIGNIFICANCE	MITIGATION MEASURES	LEVEL OF SIGNIFICANCE AFTER MITIGATION
				Pipelines 17 (California Code of Regulations, Title 2, Sections 2560-2571). The implementation of the measures, which are discussed in detail in the Avon EIR, are as follows: • Installation of Remote Release Systems • Maintaining of Tension Monitoring Systems • Maintaining of Allision Avoidance Systems • Development of a Fire Protection Assessment • Participation in USCG Ports and Waterways Safety Assessment Workshops • Response to any Vessel Spills near the Project	
	HAZ-2	Create a hazard to workers, the public, and/or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment.	Less than Significant	No mitigation required.	Less than Significant
	HAZ-3	Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.	No Impact	No mitigation required.	No Impact
	HAZ-4	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, create a significant hazard to the public or the environment.	Less than Significant	No mitigation required.	Less than Significant
	HAZ-5	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 or working in the project area.	Less than Significant	No mitigation required.	Less than Significant
	HAZ-6	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.	Less than Significant	No mitigation required.	Less than Significant
	HAZ-7	Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fire.	No Impact	No mitigation required.	No Impact
3.10 Hydrology and Water Quality	HWQ-1	Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality.	Less than Significant (Construction)	MOT lease conditions, contingency planning and required response measures are already being implemented at the Project Site. However, adherence to these protocols and spill response measures is not a guarantee that contaminants will never be released. The probability of a	Significant and Unavoidable

Table ES-1: Summary of Project Impacts and Mitigation Measures

SECTION	IMPACT NUMBER	IMPACT	LEVEL OF SIGNIFICANCE	MITIGATION MEASURES	LEVEL OF SIGNIFICANCE AFTER MITIGATION
			Potentially Significant (Operational)	serious spill would be minimized to the extent feasible with implementation of applicable lease conditions (e.g., MMs OS-1a, OS-1b, OS-1c, OS-4a, OS-4b), but the risk cannot be eliminated, and a large spill could still occur and result in impacts on water quality.	
	HWQ-2	Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.	No Impact	No mitigation required.	No Impact
	HWQ-3	Substantially alter the existing drainage pattern of area in a manner which would result in substantial erosion or siltation on- or off-site.	Less than Significant	No mitigation required.	Less than Significant
	HWQ-4	Substantially alter the existing drainage pattern of area in a manner which would substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.	Less than Significant	No mitigation required.	Less than Significant
	HWQ-5	Substantially alter the existing drainage pattern of area in a manner which would create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.	Less than Significant	No mitigation required.	Less than Significant
	HWQ-6	Substantially alter the existing drainage pattern of area in a manner which would impede or redirect flood flows.	Less than Significant	No mitigation required.	Less than Significant
	HWQ-7	In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation.	Less than Significant	No mitigation required.	Less than Significant
	HWQ-8	Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.	Less than Significant	No mitigation required.	Less than Significant
3.11 Land Use	LU-1	Physically divide an established community.	Less than Significant	No mitigation required.	Less than Significant
	LU-2	Cause significant environmental impact due to conflict with any land use plan, policy or regulation adopted for the purpose of avoiding or mitigating an environmental effect.	Less than Significant	No mitigation required.	Less than Significant
3.12 Noise	NOI-1	Generation of a substantial temporary increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.	Less than Significant	No mitigation required.	Less than Significant

Table ES-1: Summary of Project Impacts and Mitigation Measures

SECTION	IMPACT NUMBER	IMPACT	LEVEL OF SIGNIFICANCE	MITIGATION MEASURES	LEVEL OF SIGNIFICANCE AFTER MITIGATION
	NOI-2	Generation of excessive temporary groundborne vibration or groundborne noise levels.	Less than Significant	No mitigation required.	Less than Significant
	NOI-3	Generation of a substantial permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.	Less than Significant	No mitigation required.	Less than Significant
	NOI-4	Generation of excessive permanent groundborne vibration or groundborne noise levels.	Less than Significant	No mitigation required.	Less than Significant
	NOI-5	The Project Site is located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, and it would expose people residing or working in the project area to excessive noise levels.	Less than significant	No mitigation required.	Less than Significant
3.13 Public Services	PUB-1	Substantial adverse physical impacts associated with the need or provision of 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 fire protection.	Less than Significant	No mitigation required.	Less than Significant
	PUB-2	Substantial adverse physical impacts associated with the need or provision of 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 police protection.	Less than Significant	No mitigation required.	Less than Significant
	PUB-3	Substantial adverse physical impacts associated with the need or provision of new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios or other performance objectives for schools.	Less than Significant	No mitigation required.	Less than Significant
	PUB-4	Substantial adverse physical impacts associated with the need or provision of new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios or other performance objectives for parks or other public facilities.	Less than Significant	No mitigation required.	Less than Significant

Table ES-1: Summary of Project Impacts and Mitigation Measures

SECTION	IMPACT NUMBER	IMPACT	LEVEL OF SIGNIFICANCE	MITIGATION MEASURES	LEVEL OF SIGNIFICANCE AFTER MITIGATION
3.14 Transportation	TRAN-1	Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities.	Less than Significant	No mitigation required.	Less than Significant
	TRAN-2	Conflict or be inconsistent with CEQA Guidelines Section 15064.3(b).	Less than Significant	No mitigation required.	Less than Significant
	TRAN-3	Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).	Less than Significant	No mitigation required.	Less than Significant
	TRAN-4	Result in inadequate emergency access.	Less than Significant	No mitigation required.	Less than Significant
3.15 Utilities and Service Systems	UTIL-1	Need for relocation or construction of new or expanded water, wastewater treatment, or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects.	Less than Significant	No mitigation required.	Less than Significant
	UTIL-2	Adequacy of available water supplies to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years.	Less than Significant	No mitigation required.	Less than Significant
	UTIL-3	Project construction and operations result in a determination by the wastewater treatment provider that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments.	Less than Significant	No mitigation required.	Less than Significant
	UTIL-4	Impact UTIL-4: Generation of solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals.	Less than Significant	No mitigation required.	Less than Significant

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Summary of Major Potential Impacts of the Project

The proposed Project could cause potentially significant temporary impacts to special-status species during construction or as a result of the introduction of invasive nonindigenous aquatic species attached to marine vessels. Potentially significant hazardous materials and water quality impacts are also anticipated as a result of spills of feedstocks or refined products. While construction impacts of the Project would be temporary, and mitigation measures are identified that could reduce these impacts to less than significant, operational impacts to biological resources, hazards, and water quality would remain significant even with mitigation.

The Project would result in an overall reduction in air emissions from the Refinery due to the reduction in the volume of feedstock refined at the facility. However, cumulative criteria pollutant health risk (i.e., emissions from the Project plus other development in the vicinity of the Project Site) would continue to exceed regional air quality thresholds of significance, and this impact would remain cumulatively significant and unavoidable.

ALTERNATIVES TO THE PROPOSED PROJECT

CEQA requires consideration of a range of reasonable alternatives to the project or project location that: (1) could feasibly attain most of the basic project objectives; and (2) would avoid or substantially lessen any of the significant impacts of the proposed project. The following is a summary of alternatives analyzed in this EIR. A more detailed discussion is included in Chapter 5.0, Alternatives.

No Project Alternative

Under the No Project scenario, the proposed Renewable Fuels Project would not proceed. Instead, Refinery operations would resume as described in Section 2.4 of this EIR. Current permits and entitlements for crude oil refining would remain unmodified and in effect, and the Refinery would operate under those current permits and entitlements. The Refinery's operations are currently permitted by the Bay Area Air Quality Management District (BAAQMD) to have a crude oil-refining capacity of 161,000 barrels per day (bpd) maximum. For the 5 years prior to submittal of land use and air permit applications for the Project, actual Refinery throughput averaged approximately 121,000 bpd.

Reduced Renewable Feedstock Throughput Alternative

This alternative would involve conversion of the Refinery from a crude oil processing facility to a facility for the refining of renewable feedstock at a reduced capacity of 23,000 bpd maximum, the interim throughput under the proposed Refinery conversion process.

Green Hydrogen Alternative

In this alternative, "green" hydrogen would be used in the renewable fuels refining process. In contrast to the existing steam methane reforming technology that separates hydrogen atoms from hydrocarbon fuel molecules using the Refinery's existing infrastructure, green hydrogen uses electricity from renewable energy sources to produce hydrogen through the electrolysis of water molecules into its constituent elements of hydrogen and oxygen. Under this alternative, the proposed throughput would not change from the proposed Project's throughput of 48,000 bpd of

renewable feedstock, though green hydrogen from water electrolysis would be used in the refining process instead of hydrogen from the steam methane reforming process.

Environmentally Superior Alternative

A comparison of the potential environmental impacts of the proposed Project, No Project Alternative, Reduced Renewable Feedstock Throughput Alternative, and Green Hydrogen Alternative was conducted to identify an environmentally superior alternative. Because it would not result in any impacts that would be greater than the proposed Project, and in many cases would result in reduced impacts compared to the proposed Project, the Reduced Renewable Feedstock Throughput Alternative is the environmentally superior alternative. The Reduced Renewable Feedstock Throughput Alternative, however, would generate fewer jobs and result in a lower volume of renewable fuels being brought to the market to support the State's renewable energy goals, and would not achieve Project objectives as well as the proposed Project.

KNOWN AREAS OF CONTROVERSY OR UNRESOLVED ISSUES

CEQA requires a statement of issues to be resolved and areas of known controversy. The following issues were identified by resource agencies and interested parties as topics of particular interest during the EIR scoping process.

Scoping Topic	Discussion in EIR Section
Air quality and greenhouse gas emissions: Provide an analysis of criteria pollutants, toxic air contaminants, odors and health impacts resulting from changes in Project and marine, rail or truck traffic.	Section 3.3, Air Quality Section 3.8, Greenhouse Gases
Community health risk: Estimate and evaluate the potential health risk to sensitive populations near the Project Site from toxic air contaminants and fine particulate matter from Project construction and operations.	Section 3.3, Air Quality
Sea level rise: Due to proximity of the Project Site to the Suisun Bay and Carquinez Strait shorelines and local creeks, sea level rise and flooding could present vulnerabilities to public or structural safety.	Section 3.10, Hydrology and Water Quality
Water quality: Construction and operation of the Project, including marine transportation of feedstock and fuels, effluent discharges and stormwater runoff from new and repurposed facilities, could affect water quality at and around the Project Site.	Section 3.10, Hydrology and Water Quality
Hazardous materials: While renewable feedstocks to be used for the Project are deemed non-hazardous,	Section 3.9, Hazards and

Scoping Topic	Discussion in EIR Section
end products such as diesel, naphtha, propane and potentially aviation jet fuel may have environmental risks during routine use, transportation or upset.	Hazardous Materials
Feedstock production: Use of renewable feedstocks for the Project could induce pressure on existing agricultural producers to increase supply, with cascading effects on food prices, decreased biodiversity, and increased deforestation and monoculture.	Chapter 6, Other CEQA Considerations

Written and spoken comments received during the public comment period on the notice of preparation of this EIR are included in Appendix NOP.

1 INTRODUCTION

This chapter provides a brief introduction to the Martinez Refinery Renewable Fuels Project (Project) and summarizes the process for evaluation of potential environmental impacts thereof. Chapter 2, Project Description, provides a detailed description of the proposed Project, including existing conditions and proposed physical and operational changes to the Marathon Martinez Refinery (Refinery).

1.1 PROJECT OVERVIEW

The Martinez Refinery Renewable Fuels Project is a request by Marathon Petroleum Corporation (Marathon or Applicant) for entitlements to modify operations of their existing refinery at 150 Solano Way, in unincorporated lands east of the city of Martinez, east of Pacheco Creek and south of Suisun Bay. The request was submitted to the Contra Costa County Department of Conservation and Development, Current Planning Division for a land use permit approval (County File No. CDLP20-02046), and more specifically, involves equipment modifications and repurposing of the existing refinery facility to discontinue production of fossil fuels and switch to production of fuels from renewable sources including rendered fats, soybean and corn oil and other cooking or vegetable oils.

1.2 PROJECT OBJECTIVES

The Applicant has identified the following objectives for the Project:

- Repurpose the Marathon Martinez Refinery to a renewable fuels production facility.
- Eliminate the refining of crude oil at the Martinez Refinery while creating high quality jobs.
- Provide renewable fuels to allow California to achieve significant progress towards meeting its renewable energy goals.
- Produce renewable fuels that significantly reduce the lifecycle generation of greenhouse gas emissions, as well as other criteria pollutants including particulate matter.
- Reduce emissions from mobile sources by providing cleaner burning fuels.
- Repurpose/reuse existing critical infrastructure, to the extent feasible.

1.3 APPLICABILITY OF THE CALIFORNIA ENVIRONMENTAL QUALITY ACT

The requested physical and operational changes associated with the proposed Project constitute a "project" as defined by the California Environmental Quality Act ("CEQA," Public Resources Code Section 21000 *et seq.*), the State CEQA Guidelines (California Code of Regulations, Title 14, Section 15000 *et seq.*), and the Contra Costa County Guidelines for Administering CEQA ("County CEQA Guidelines," Contra Costa County Resolution No. 2010/402). The Project also requires discretionary action by Contra Costa County (County), wherein the County has the authority to use its judgment in deciding whether or how to carry out or approve the Project. Therefore, the Project is subject to the requirements of CEQA. For the purposes of CEQA, the term "project" refers to the whole of an action that has the potential to result in a direct physical

change or a reasonably foreseeable indirect physical change in the environment (CEQA Guidelines Section 15378).

As the public agency with primary land use authority over the proposed Project, the County is the "lead agency" overseeing and administering the CEQA environmental review process. The County has prepared this Environmental Impact Report (EIR) pursuant to CEQA, the State CEQA Guidelines, and the County CEQA Guidelines to provide the public and responsible and trustee agencies with information about the potential environmental effects of the proposed Project.

1.4 PURPOSE OF THE EIR

As set forth in various provisions of the CEQA Statute (e.g., Section 21080), before deciding whether to approve a project, public agencies must consider the potentially significant environmental impacts of the project. Pursuant to CEQA Guidelines Section 15064, if any aspect of the proposed project, either individually or cumulatively, may cause a significant effect on the environment which cannot be mitigated to less-than-significant levels, regardless of whether the overall effect of the project is adverse or beneficial, an EIR must be prepared. The EIR must describe the project's potentially significant environmental effects, identify alternatives to the project, and identify measures to mitigate or avoid adverse impacts that would result from implementation of the project.

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. This EIR includes a description of the Project, its environmental context, and an evaluation of the potential environmental impacts of the Project compared to an existing condition or baseline. State CEQA Guidelines section 15125, subdivision (a), states:

> *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.*

The California Supreme Court confirmed that, while conditions at the time of the notice of preparation "normally" constitute the baseline for the environmental analysis under CEQA, the lead agency has flexibility in defining the appropriate baseline (*Communities for a Better Environment v. South Coast Air Quality Mgmt. Dist.* (2010) 48 Cal.4th 310, 328). Therefore, State CEQA Guidelines allow a lead agency some leeway in its determination of the baseline by stating that the environmental setting at the time the notice of preparation is published will "generally" constitute the baseline physical conditions against which the impacts of a project are evaluated; however, historic or projected future conditions may also form the baseline for analysis if those approaches are supported by substantial evidence. In some instances, as here, where an existing operation is present, and the level of that operation can vary substantially from

year to year, a lead agency may opt to consider a more representative baseline, such as an average level of operations over a period of years to characterize that existing operation.

For any adverse environmental impact of the Project that is considered to be potentially significant when compared to the baseline condition, this EIR identifies mitigation measures to avoid or reduce the potentially significant adverse impact to less-than-significant levels. This EIR also identifies and evaluates alternative scenarios to the proposed Project, including a "no project" scenario wherein the Refinery would continue to operate under current entitlements, as well as scenarios wherein the Refinery facility is decommissioned or the Project is implemented but with a modified scope. Cumulative impacts of the Project plus other projects planned to occur in the vicinity of the Refinery are also discussed.

Before any action can be taken to approve the proposed Project, the County must make the necessary findings and certify that the County has reviewed and considered the information in the EIR, that the EIR has been completed in conformity with the requirements of CEQA, and that the EIR reflects the County's independent judgment and analysis. Certification of an EIR by the decision-making body does not constitute approval or denial of the Project.

Should the Project be approved, the County and other public agencies with permitting authority over the Project must impose mitigation measures as conditions or require Project modifications to reduce or avoid the significant adverse impacts of the Project on the environment. The Applicant may also choose to modify the Project to mitigate or avoid potentially significant adverse environmental impacts. The County and permitting agencies may only approve the Project with significant adverse environmental impacts that are not mitigated if the agency finds that specific economic, legal, social, technological or other considerations, including provision of employment opportunities for highly trained workers, make imposition of mitigation measures or Project alternatives infeasible (CEQA Guidelines Section 15091).

1.5 USE OF THIS EIR BY RESPONSIBLE AGENCIES

In addition to land use permit approval by the County, the Project requires permits from other federal, state and local agencies including the United States Army Corps of Engineers, Bay Area Air Quality Management District, San Francisco Bay Conservation and Development Commission, San Francisco Bay Regional Water Quality Control Board and California State Lands Commission. California state and regional agencies are considered to be responsible agencies under CEQA and must comply with CEQA by considering the environmental impact report prepared by the lead agency. However, responsible agencies must each reach their own conclusions on whether or how to approve their respective permits for the Project (CEQA Guidelines Section 15096).

The County as Lead Agency must certify the EIR prior to taking action on the requested land use permit. Following these actions by the Lead Agency, the Project requires permits from other federal, state and local agencies including the following agencies.

Local

- Contra Costa County Department of Conservation and Development
    - Certification of Environmental Impact Report

  - Land Use Approval
  - Mitigation Monitoring Program
  - Grading and Building Plans
  - Fire Safety Plans
- San Francisco Bay Conservation and Development Commission (BCDC)
  - Development in the San Francisco Bay or within the 100-foot shoreline band
- Bay Air Quality Management District (BAAQMD)
  - Authority to Construct / Permit to Operate
  - Title V Permit Amendment

State

- California State Lands Commission
  - Lease modification to accommodate changes to terminal uses
- Regional Water Quality Control Board (RWQCB)
  - NPDES Permit
  - Section 401 Water Quality Certification

Federal

- National Marine Fisheries Service (NMFS)
  - U.S Army Corps of Engineers Section 7 Consultation
    - Amorco Marine Terminal
- U.S. Army Corps of Engineers
  - Section 10, Rivers and Harbors Act
    - Avon and Amorco Marine Terminals
  - Section 404, Clean Water Act
    - Amorco Marine Terminal

1.6 OPPORTUNITIES FOR PUBLIC COMMENT

Notice of Preparation

The County released a Notice of Preparation (NOP) for this Project on February 18, 2021 (see Appendix NOP-1). The NOP provided notification to interested parties of the County's intent to prepare an EIR to evaluate the potential environmental impacts of the proposed Project. In accordance with State and County CEQA Guidelines Section 15082, the NOP contained a brief description of the Project and its location, as well as a list of environmental resource areas that would potentially be affected by the Project and that would be discussed in the EIR. The NOP was posted on the County website, and copies of the NOP were filed with the State Clearinghouse and the County Clerk; were sent via certified mailed or email to public agencies with permitting authority over the Project or who hold jurisdiction over natural resources that might be affected by the Project; and were mailed to interested parties requesting such notice. Copies of the NOP were also mailed via first class mail to owners of property within 300 feet of the boundaries of the Project Site.

The NOP invited interested individuals, organizations and agencies to provide comments on the scope of the environmental issues to be evaluated in the EIR. Written comments could be submitted to County staff until 5:00 p.m. on March 22, 2021. The County also accepted spoken

comments in response to the NOP, at a public hearing before the County Zoning Administrator held on March 15, 2021. The date of and means to participate virtually in the scoping public hearing were included in the NOP. The written NOP comments and the transcription of the NOP scoping public hearing are included in this EIR as Appendices NOP-2 through NOP-5.

Draft EIR

The Draft EIR for this Project will be available for a public comment period consisting of no fewer than 45 calendar days. During this public comment period, public agencies, members of the public and any other interested parties may review the Draft EIR and provide written comments to the County on the analysis contained herein. Following the close of the public comment period on the Draft EIR, the County will prepare a Final EIR, which will consist of the Draft EIR, comments received on the Draft EIR, written responses to the environmental issues raised in those comments, and revisions to the Draft EIR that may be warranted in response to comments received.

No fewer than 10 days following publication of the Final EIR, the County Planning Commission will hold at least one public hearing to consider whether to certify the Final EIR for the Project and to consider the merits of the Project and whether to approve the requested use permit. As described above, the County must certify as to the adequacy of the Final EIR before it can approve the proposed Project; certification of the EIR does not in itself signify approval or denial of the Project.

1.7 ORGANIZATION OF THE EIR

In addition to this Introduction, the EIR contains the following sections.

- **Chapter 2 – Project Description** describes the proposed Project, its location and facilities, an overview of its operation, and schedule.

- **Chapter 3 – Environmental Impact Analysis** describes existing environmental conditions within issue areas, Project-specific impacts and associated mitigation measures, and the reference materials used to prepare the analysis.

- **Chapter 4 – Cumulative Impacts** describes the cumulative environmental impacts of the proposed Project when combined with other projects located in the vicinity of the Project Site and lists the projects considered in the evaluation of cumulative impacts.

- **Chapter 5 – Alternatives** describes the alternatives to the Project carried forward for analysis and the alternatives that were considered but eliminated from detailed evaluation.

- **Chapter 6 – Other CEQA Considerations** addresses other required CEQA elements, including significant irreversible effects and evaluation of growth-inducing impacts of the Project.

- **Chapter 7 – List of Preparers** presents information on the individuals who prepared the EIR and their qualifications.

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2 PROJECT DESCRIPTION

As discussed in Chapter 1, Introduction, this Environmental Impact Report (EIR) examines the potential environmental impacts associated with the Martinez Renewable Fuels Project (Project). Chapter 2 provides a detailed description of the proposed Project, including a Project overview, Project location, description of existing facilities and operations, proposed facility modifications, and proposed operations of the Martinez Refinery once modifications are complete. This chapter includes a description of the construction phase of the Project. Potential impacts resulting from construction and operation of the Project are described in Chapter 3.

Tesoro Refining & Marketing Company LLC, an indirect, wholly owned subsidiary of Marathon Petroleum Corporation (collectively, "Marathon"), is proposing the Martinez Renewable Fuels Project (Project) at its existing Martinez Refinery (Refinery or Site). The proposed Project would convert the existing Martinez Refinery from its current production of fossil fuels (conventional diesel fuel, gasoline, distillates, propane, and various by-products) to the production of renewable fuels, including renewable diesel, renewable propane, renewable naphtha, and potentially renewable jet. Marathon has proposed the Project to allow the Martinez Refinery to help meet demand in California for renewable fuels.

2.1 REFINERY HISTORY AND PROPOSED PROJECT SUMMARY

The Refinery has operated as a facility for the production of petroleum-based fuels on the Project Site since its initial construction in 1913. Historically referred to as the Golden Eagle Refinery, and with various owners since 1913 that have included Tosco Corporation, Phillips Petroleum, Valero Refining Company, and Tesoro Refining and Marketing Company, LLC, Marathon Petroleum Corporation acquired the facility in 2018 and is the current owner of the Refinery.

The Refinery's operations are currently permitted by the Bay Area Air Quality Management District (BAAQMD), and the facility has a reported crude oil refining capacity of 161,000 barrels per day (bpd) (EIA 2021), though Marathon recently suspended refining of crude oil in April 2020. Prior to idling of the Refinery, the majority of crude oil refined at the site was received via ship, with additional crude arriving at the facility by pipeline, and other (non-crude) refinery commodities arriving by rail. Following cessation of refining operations, refined petroleum products continued to be received at the facility's marine oil terminals for storage and distribution; however, no crude oil was processed into fuels at the Refinery. Refined petroleum products would continue to be received and distributed from the facilities' marine oil terminals. Products that can be produced at the Refinery with existing equipment include conventional diesel fuel, gasoline, distillates, petroleum coke, liquefied petroleum gas (LPG), heavy fuel oil, and refinery-grade propylene. Distribution of products from the Refinery to the market can be conducted by truck, rail, ship and pipeline.

The proposed Project is a request by Marathon to repurpose the existing Refinery to discontinue refining of crude oil and switch to production of fuels from renewable feedstock sources including rendered fats, soybean and corn oil, and potentially other cooking and vegetable oils, but excluding palm oil. Current petroleum-based terminaling operations would continue but would be limited to storage and movements and not crude processing or refining. Construction of the proposed Project would begin as soon as all necessary permits are received, with a target date

of 2022. Marathon anticipates that operations under the proposed Project would begin in 2022 with an estimated production of 23,000 bpd, ramping up to full production of 48,000 bpd expected to be achieved by the end of 2023. The repurposed Refinery would operate 24 hours per day, seven days per week.

2.2 PROJECT OBJECTIVES

The Applicant has identified the following objectives for the Project:

- Repurpose the Marathon Martinez Refinery to a renewable fuels production facility.
- Eliminate the refining of crude oil at the Martinez Refinery while creating high quality jobs.
- Provide renewable fuels to allow California to achieve significant progress towards meeting its renewable energy goals.
- Produce renewable fuels that significantly reduce the lifecycle generation of greenhouse gas emissions, as well as other criteria pollutants including particulate matter.
- Reduce emissions from mobile sources by providing cleaner burning fuels.
- Repurpose/reuse existing critical infrastructure, to the extent feasible.

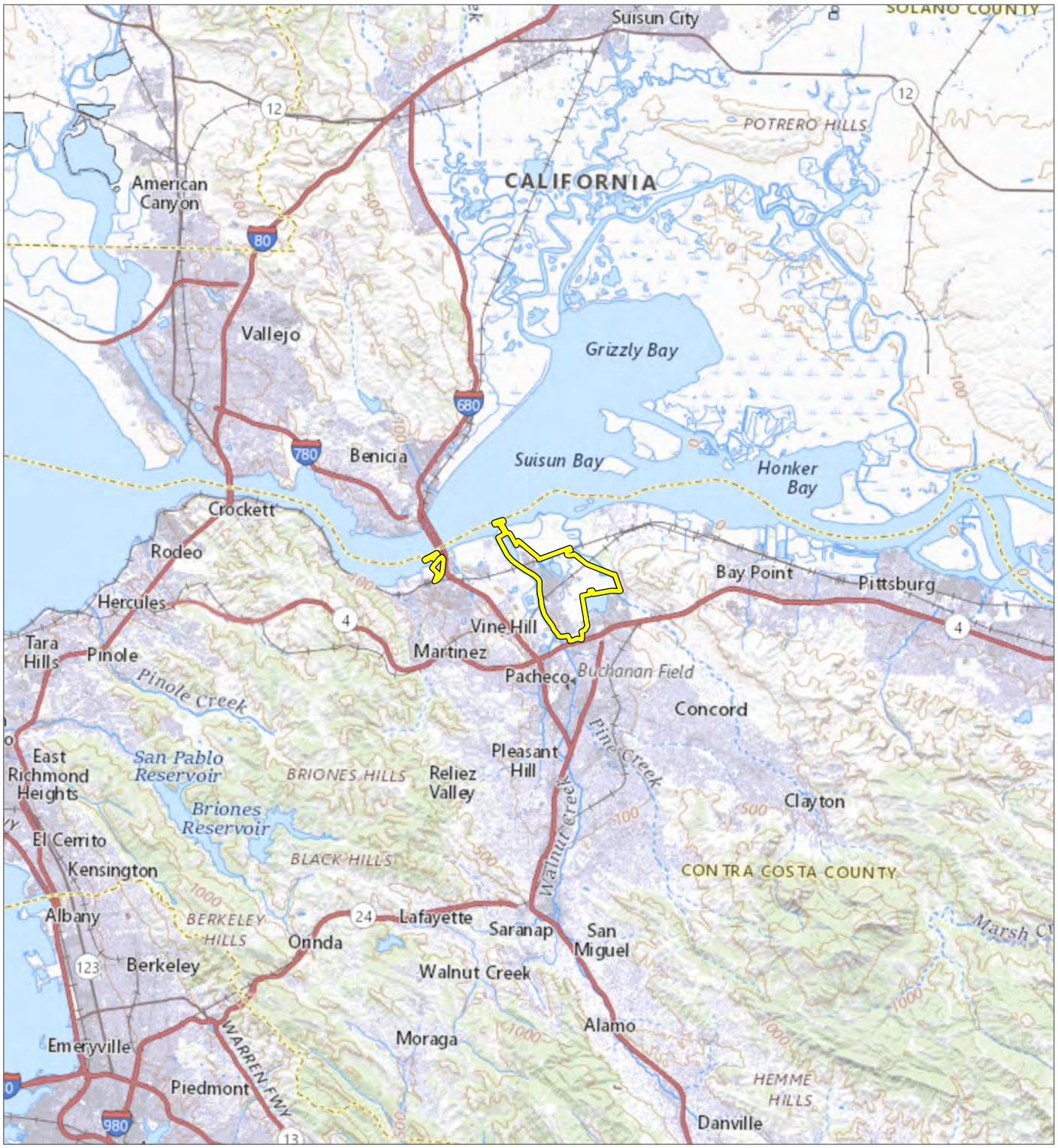
2.3 PROJECT LOCATION

2.3.1 Project Site

The Marathon Martinez Refinery is located at 150 Solano Way, Martinez, California. The site is situated on the Carquinez Strait in Contra Costa County (see **Figure 2-1**). The Refinery is located 3.25 miles east of downtown Martinez along Solano Way between Waterfront Road and Monsanto Way. Access to the Refinery is provided from the south via gated entrance on Solano Way and from the west via gated entrance on Waterfront Road.

The Refinery is situated east of Pacheco Creek, on the southern shore of Suisun Bay. Suisun Bay is connected to San Pablo Bay via the Carquinez Strait, a narrow, 12-mile-long band of water that extends from the Benicia-Martinez Bridge westward to Mare Island. In addition to Marathon, the Carquinez Strait, including its junction with San Pablo Bay, is host to numerous refinery facilities and their associated marine terminals. The Marathon Martinez Refinery has marine access through two marine oil terminals (MOTs) on Suisun Bay and the Carquinez Strait, namely the Avon MOT and Amorco MOT. Both MOTs are owned by Andeavor Logistics, LP, also a wholly owned subsidiary of Marathon. The Avon MOT is located on approximately 13.3 acres of leased sovereign land in the lower Suisun Bay, approximately 1.75 miles east of the Benicia-Martinez Bridge, in unincorporated Contra Costa County. The Amorco MOT is located on approximately 14.3 acres of leased sovereign land, approximately 0.6 miles west of the Benicia-Martinez Bridge in the city of Martinez. Lease agreements for both MOTs are managed by the California State Lands Commission.

The project area is approximately 2,000 acres owned by Marathon. Of these 2,000 acres, approximately 1,130 acres are currently developed for oil and gas refining operations, including ancillary support facilities such as administrative offices, internal roadways and parking lots. The remaining, approximately 870 acres includes undeveloped marshlands and grasslands. Mt. Diablo Creek and Seal Creek flow through the undeveloped areas on the eastern side of the site.



PROJECT BOUNDARY

BASE MAP: USGS/TNM "USGS TOPO"
DATA SOURCES: TRC, ESRI

N

0 2 4

MILES

1:250,000 1" = 20,833'

PROJECT:
CONTRA COSTA COUNTY
MARTINEZ RENEWABLE FUELS EIR
150 SOLANO WAY, CONTRA COSTA COUNTY, CALIFORNIA

TITLE:
REGIONAL LOCATION MAP

DRAWN BY:	D.SWEENEY	PROJ. NO.:	CDLP20-02046
CHECKED BY:	R. SPRING		
APPROVED BY:	D. AYERS		**FIGURE 2-1**
DATE:	SEPTEMBER 2021		

FILE: MARATHONRENEWABLESFUEL.APRX

Approximately 76 acres at the southern end of the Project site is developed with a complex of recreational baseball, softball and soccer fields that are used by local sports clubs and teams but are part of the property owned by Marathon.

The Amorco MOT is on Contra Costa Assessor's Parcel numbers 378-010-010 and 378-010-030 in the City of Martinez. The Refinery and Avon MOT encompass the following Contra Costa Assessor's Parcels located in unincorporated Contra Costa County:

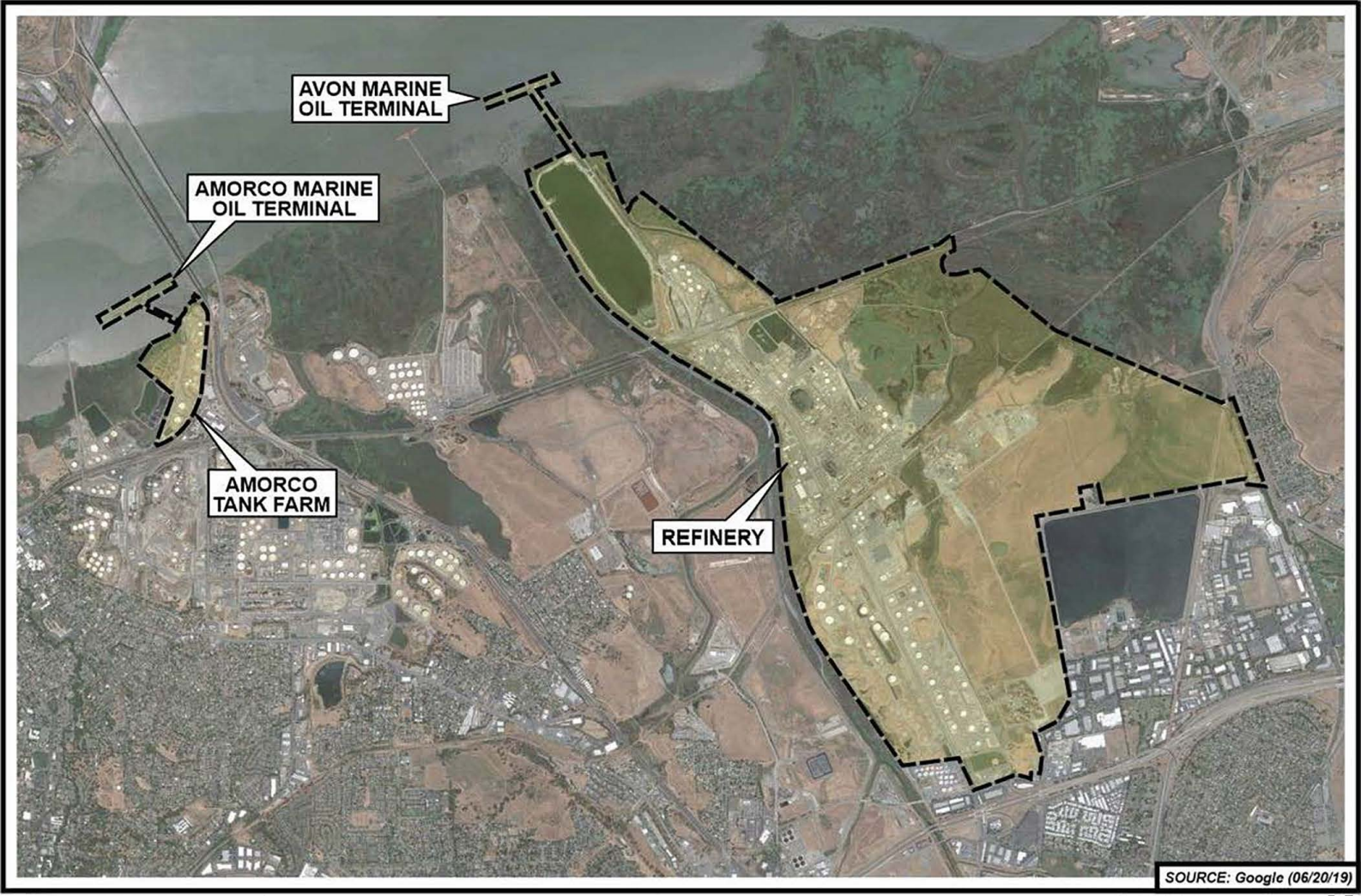
159-010-005	159-120-031	159-130-031
159-020-001	159-120-036	159-140-036
159-040-048	159-120-037	159-260-012
159-100-008	159-120-038	159-260-013
159-100-028	159-120-039	159-260-014
159-110-030	159-120-040	159-270-003
159-120-001	159-130-006	159-270-005
159-120-006	159-130-017	159-270-006
159-120-007	159-130-018	159-280-010
159-120-009	159-130-024	159-280-011
159-120-016	159-130-026	159-280-012
159-120-018	159-130-027	159-290-002
159-120-019	159-130-028	
159-120-023	159-130-029	

2.3.2 Surrounding Area

The open waters of the Carquinez Strait and lower Suisun Bay are offshore to the north of the Project site. Onshore, undeveloped lands on and around the Project site include marsh habitats between open water and onshore facilities and ruderal/upland habitat onshore between the marsh habitat and developed lands. Developed lands in the immediate and general vicinity of the Project site include a variety of residential, commercial, industrial and public uses (see **Figure 2-2**).

Just east of the Refinery and Avon MOT are several hundred acres of undeveloped marshlands. This area includes the Point Edith Wildlife Preserve, a 761-acre tidal area accessible to the public for wildlife viewing and hunting. The Preserve is managed by the California Department of Fish and Wildlife and located north of the Refinery's on-site marshlands. The unincorporated residential community of Clyde is east of the Refinery's on-site marshlands, on the opposite side of Port Chicago Highway from the Refinery's eastern property line. The Contra Costa Water District's Mallard Reservoir, and multiple complexes of light industrial warehouse buildings are also located east of the Project site.

The Refinery property's southern boundary adjoins the city of Concord municipal limit at Solano Way. The property's western boundary is as close as 0.25 mile eastward of the city of Martinez municipal limit at the northern end of the Refinery property. Development in the city of Concord south of the Project site includes a car dealership, retail and light industrial warehouses, a drive-in movie theater, the Buchanan Airfield and residential neighborhoods including a community park (Hillcrest). The closest residence in these neighborhoods is approximately 700 feet south of the site's southern property line, in the Dalis Gardens Mobilehome Park.



Audit, Inc.
@Environmental

0 3,600'

N

MARATHON MARTINEZ REFINERY
150 Solano Way
Martinez, CA 94553

Project No. 3192

Figure 1-2

N:\3192\PlotPlan (rev.1).cdr

Floyd I. Marchus, a public school operated by the Contra Costa County Office of Education and the closest public school to the site, is located in the neighborhood southwest of the mobile home park and is approximately 2,900 feet south of the Refinery's southern property line.

Pacheco Creek adjoins the Project site's western property line. Other single-family residential neighborhoods in the city of Martinez are approximately 2,900 feet or further west of the Refinery property's western boundary. Much of the land between the Refinery property and these neighborhoods is undeveloped, though several parcels have industrial land uses including a rock quarry, a concrete batch plant, a waste transfer station, and the treatment plant of the Central Contra Costa Sanitation District. Similarly, lands immediately adjacent to the Amorco MOT are developed with industrial uses including warehouses and tanks and equipment of the Shell Refinery. The closest non-industrial developments to the Amorco MOT are the public Waterfront Park and single-family residences, both of which are approximately 2,500 feet west and southwest, respectively, of the property line of the terminal.

State Route 4, a state-managed, east-west freeway extends through the Project area, south of the Project site and 500 feet south of the Refinery's southern boundary. State Route 4 currently has two travel lanes in each direction but is currently being widened to add one lane in each direction. Interstate 680 is a north-south freeway that extends through the Project area approximately 1.25 miles west of the Refinery's western property line. Both freeways provide regional access to and from the Refinery. On-ramps to and off-ramps from State Route 4 are just southeast of the Refinery's Solano Avenue entrance, and on-ramps to and off-ramps from Interstate 680 are on Waterfront Road approximately 2 miles west of the site.

Two railroad lines run through the Refinery property: the Union Pacific Railroad (UPRR) line, which runs in an eastwest direction through the Refinery along Waterfront Road and the BNSF Railway line, which also runs in an eastwest direction through the Refinery, roughly parallel to and north of Monsanto Way.

The Refinery is entirely within the service areas of the Contra Costa Water District and Contra Contra Costa County Sheriff's Department. Approximately 950 acres in the southeastern portion of the site is within the service area of the Contra Costa County Fire Protection District (CCCFPD); this acreage includes undeveloped lands and the sports fields near the south end of the property. The Refinery equipment and production facilities are outside of the service area of CCCFPD, and the Refinery has its own fire response teams for these areas of the site. The Refinery is also wholly outside the service area of the Central Contra Costa Sanitary District and operates its own on-site facilities for treatment of wastewater.

2.4 EXISTING FACILITIES

2.4.1 Overview

The Marathon Martinez Refinery is the second-largest refinery in Northern California and is currently permitted to refine crude oil. The Refinery has capacity to process up to 161,000 bpd of crude oil originating from within California, Alaska, and foreign sources. The facility features multiple refining units and produces cleaner-burning California Air Resources Board (CARB) gasoline, CARB diesel, conventional gasoline, distillates, petroleum coke, LPG, heavy fuel oil, and refinery-grade propylene. Existing refinery equipment includes three main hydroprocessing units: the No. 3 Hydrodesulfurization (HDS) Unit , the No. 2 HDS Unit, and a Hydrocracking Unit.

2.4.2 Project Site

2.4.2.1 Martinez Refinery

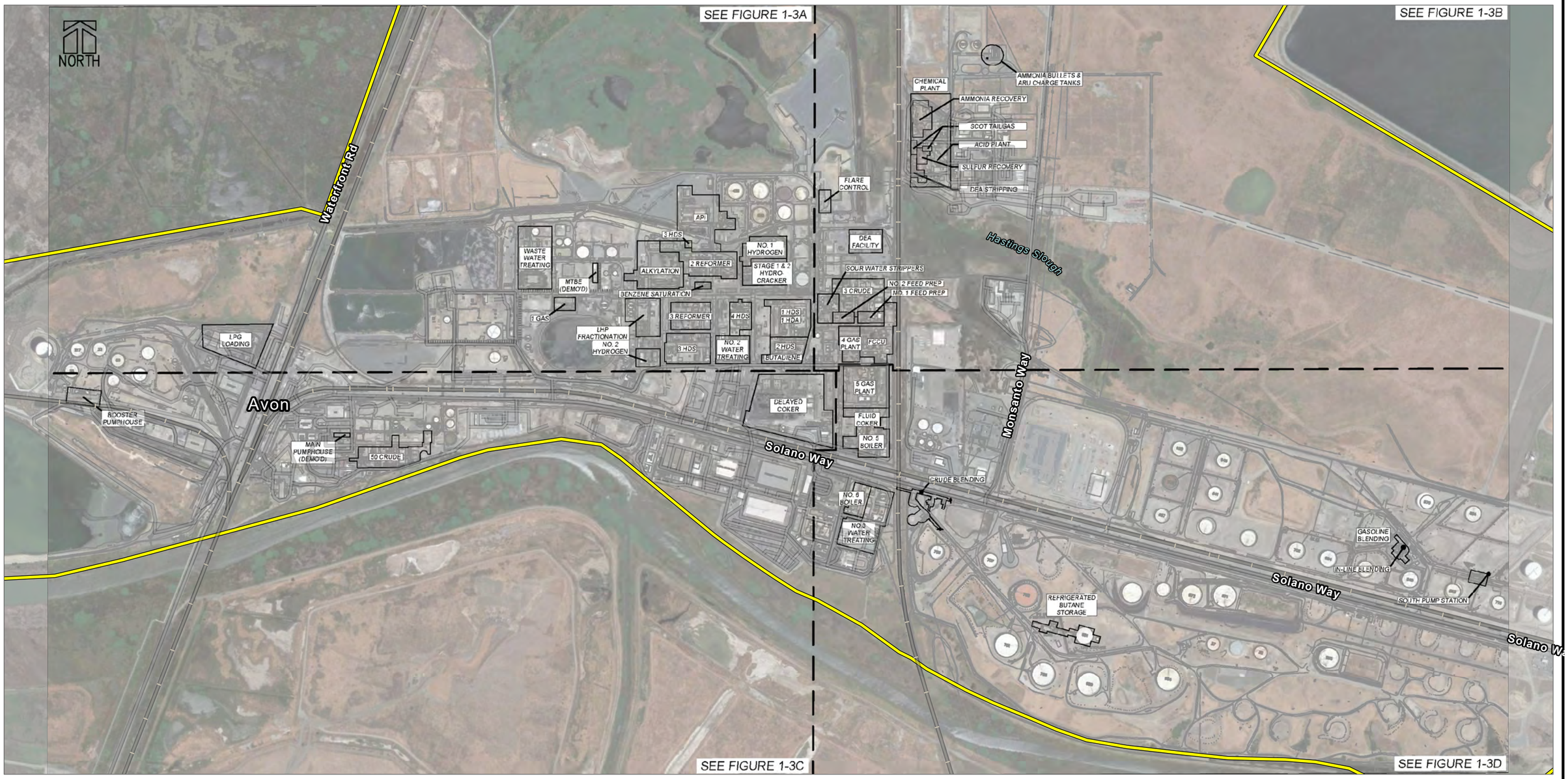
The Refinery is permitted to process as many as 161,000 bpd of fresh crude oil originating from within California, as well as from Alaska and other global sources. When the Refinery was operating, approximately 120,000 to 130,000 bpd of crude oil was delivered to the Refinery by vessel at the Amorco MOT, with approximately 34,000 to 38,000 bpd originating in the California San Joaquin Valley and delivered to the Refinery by pipeline. **Figure 2-3a** to **Figure 3e** depict the Refinery's existing layout.

When in operation, the Refinery processed crude oil to make gasoline, diesel, distillates, petroleum coke, LPG, heavy fuel oil and refinery-grade propylene. Existing Refinery units used in production include three main hydroprocessing units: Hydrodesulfurization (HDS) Unit Nos. 2 and 3 and a Hydrocracking unit. Other refining units used in processing of crude oil include a delayed coker, fluidized catalytic cracker, hydrocracker, catalytic reformer, and units used for atmospheric distillation, vacuum distillation, desulfurization (for naphtha, gasoline, diesel and gas oil) and sulfur recovery. (Main units proposed to be maintained, modified or taken offline are in discussed in Section 2.5, Project Description. A complete listing of units to be shut down can be found in Chapter 3.3, Air Quality of this EIR).

The Refinery has 67 aboveground oil storage tanks, the largest of which has a capacity of 11,886,000 gallons of oil. Total oil storage capacity among the 67 tanks is 260,442,252 gallons.

During peak operation of the Refinery, up to 27 railcars per day deliver loads of butane and iso-butane to the Refinery from within California, and from Utah and the Midwest. Other chemicals used in processing including ethanol, propane, acid, chemicals for cooling towers, sulfur, ammonia, caustic, biodiesel, diatomaceous earth, potassium hydroxide, and cetane are also delivered by rail. The Avon MOT has been used for daily shipment of distillate and gasoline from the Refinery.

Marathon recently suspended refining of crude oil in April 2020. For the 5-year period between 2015 and 2020, the Refinery processed an average of 121,000 bpd of crude oil. During periods of production, the Refinery operated 24 hours a day, seven days a week, and was staffed by an estimated 520 workers per day, consisting of production employees on rotating 12-hour shifts and maintenance, managerial and administrative support employees on standard 8- to 10-hour shifts.



PROJECT BOUNDARY

NOTES:

BASE MAP: GOOGLE IMAGERY AND ASSOCIATES/ESRI.
DATA SOURCES: MARATHON PETROLEUM CORPORATION

0 850 1,700 FEET

1:10,200 1" = 850'

PROJECT:	CONTRA COSTA COUNTY MARTINEZ RENEWABLE FUELS EIR 150 SOLANO WAY, CONTRA COSTA COUNTY, CALIFORNIA
TITLE:	CURRENT SITE PLAN
DRAWN BY: R. SPRING	PROJ. NO.: CDLP20-20046
CHECKED BY: P. DEMICHELE	FIGURE 2-3A
APPROVED BY: D. AYERS	
DATE: SEPTEMBER 2021	
FILE:	MarathonRenewablesFuel.aprx

PROJECT BOUNDARY

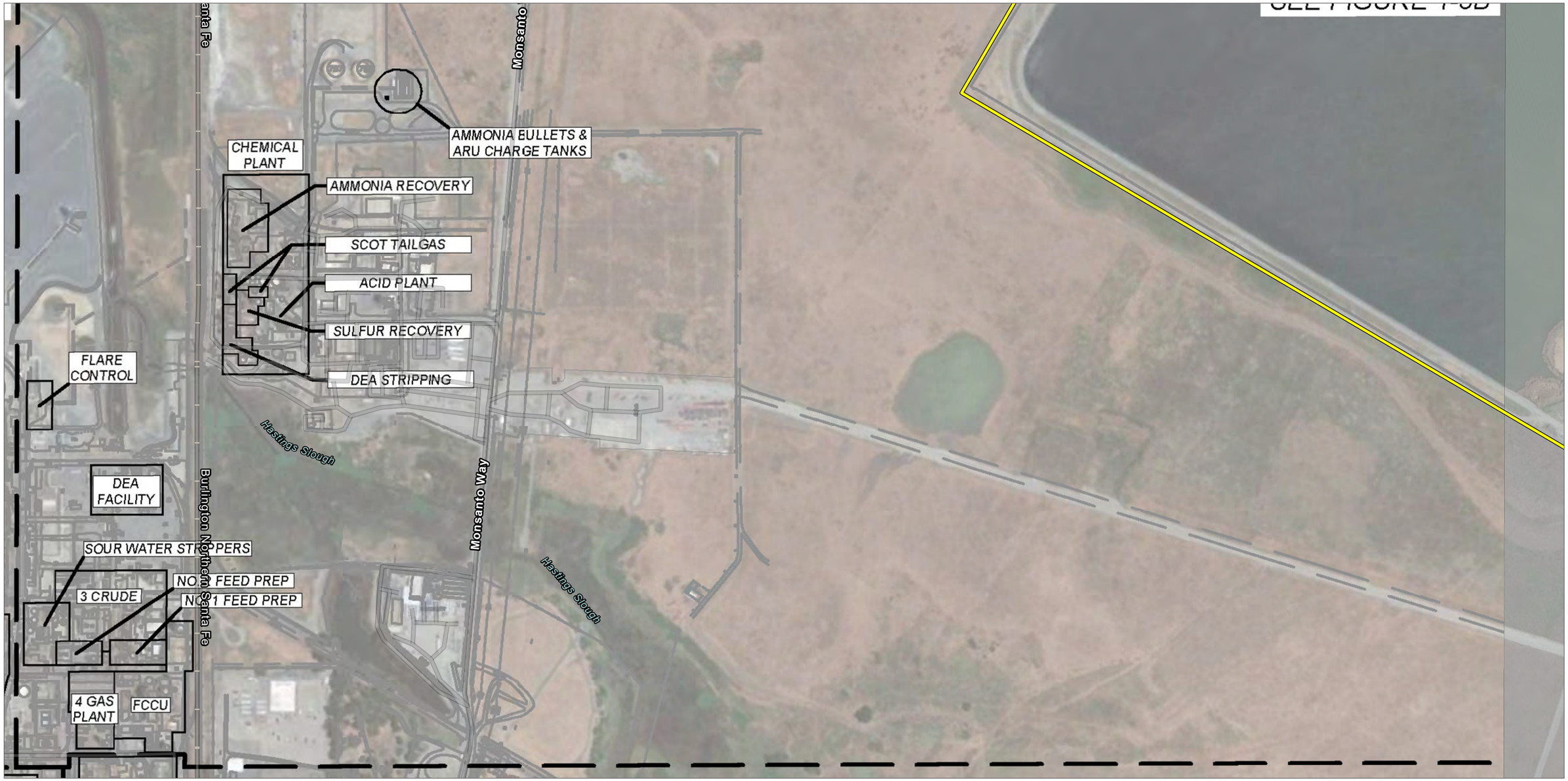
NOTES:

BASE MAP: GOOGLE IMAGERY AND ASSOCIATES/ESRI.
DATA SOURCES: MARATHON PETROLEUM CORPORATION

0 400 800 FEET

1:4,800 1" = 400'

PROJECT:	CONTRA COSTA COUNTY MARTINEZ RENEWABLE FUELS EIR 150 SOLANO WAY, CONTRA COSTA COUNTY, CALIFORNIA
TITLE:	CURRENT SITE PLAN
DRAWN BY: R. SPRING	PROJ. NO.: CDLP20-20046
CHECKED BY: P. DEMICHELE	FIGURE 2-3B
APPROVED BY: D. AYERS	
DATE: SEPTEMBER 2021	
FILE:	MarathonRenewablesFuel.aprx



PROJECT BOUNDARY

NOTES:

BASE MAP: GOOGLE IMAGERY AND ASSOCIATES/ESRI.
DATA SOURCES: MARATHON PETROLEUM CORPORATION

0 400 800 FEET

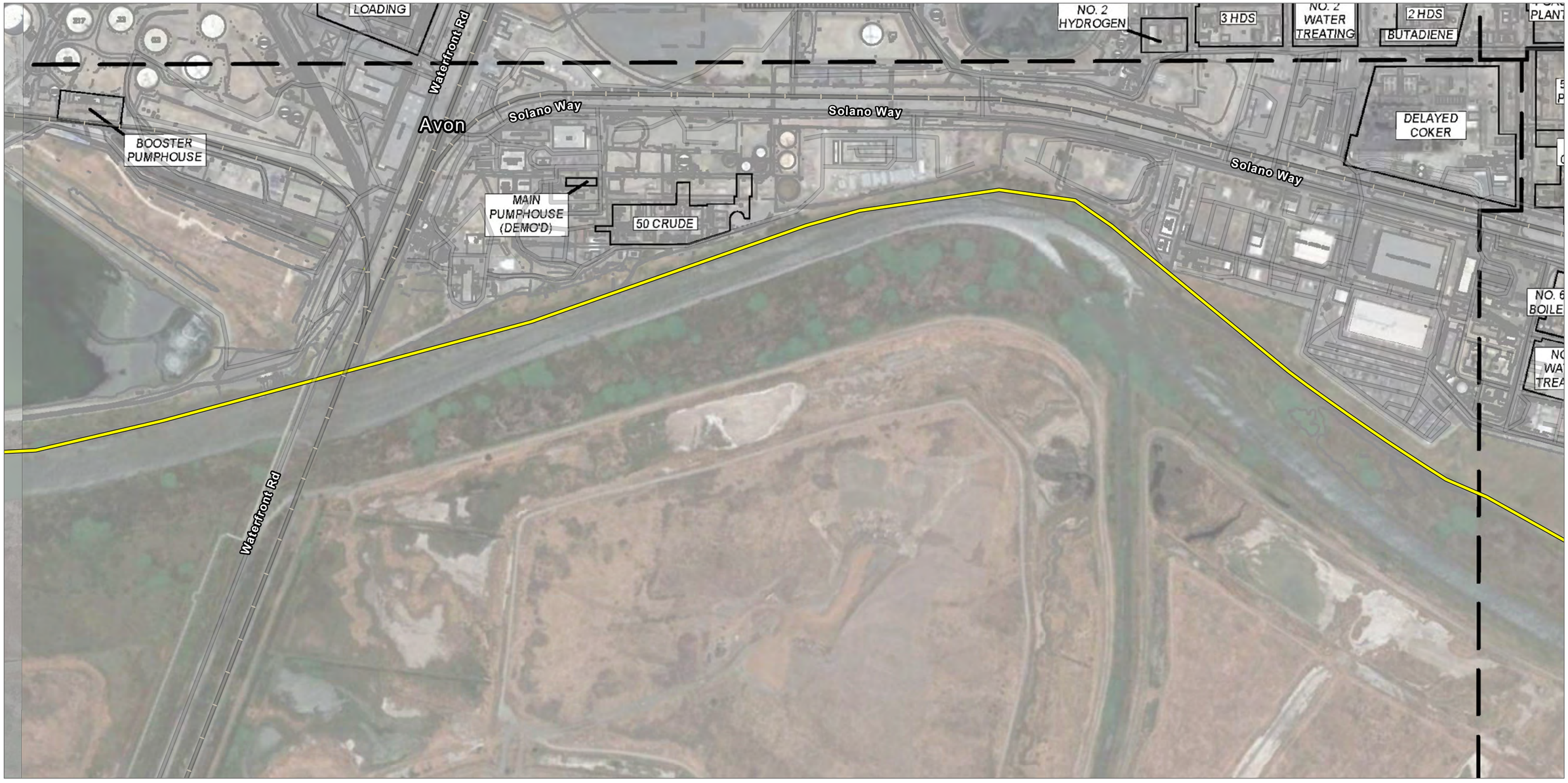
1:4,800 1" = 400'

PROJECT:
CONTRA COSTA COUNTY
MARTINEZ RENEWABLE FUELS EIR
150 SOLANO WAY, CONTRA COSTA COUNTY, CALIFORNIA

TITLE:
CURRENT SITE PLAN

DRAWN BY:	R. SPRING	PROJ. NO.:	CDLP20-20046
CHECKED BY:	P. DEMICHELE		**FIGURE 2-3C**
APPROVED BY:	D. AYERS		
DATE:	SEPTEMBER 2021		

FILE: MarathonRenewablesFuel.aprx



PROJECT BOUNDARY

NOTES:

BASE MAP: GOOGLE IMAGERY AND ASSOCIATES/ESRI.
DATA SOURCES: MARATHON PETROLEUM CORPORATION

0 450 900 FEET

1:5,400 1" = 450'

PROJECT: CONTRA COSTA COUNTY
MARTINEZ RENEWABLE FUELS EIR
150 SOLANO WAY, CONTRA COSTA COUNTY, CALIFORNIA

TITLE: CURRENT SITE PLAN

DRAWN BY:	R. SPRING	PROJ. NO.:	CDLP20-20046
CHECKED BY:	P. DEMICHELE		FIGURE 2-3D
APPROVED BY:	D. AYERS		
DATE:	SEPTEMBER 2021		

FILE: MarathonRenewablesFuel.aprx

Coordinate System: NAD 1983 StatePlane California III FIPS 0403 Feet; Map Rotation: -50
Saved By: RSPRING on 9/14/2021 11:45:13 AM; File Path: \\entryvss\gis\arcgis\pro1.1_PROJECTS\Contra_Costa_County\430721_Marathon_Renewable_Fuels_EIR\2.2\APRX\MarathonRenewablesFuel.aprx; Layout Name: 2-3 Current Site Plan 11x17L

PROJECT BOUNDARY

NOTES:

BASE MAP: GOOGLE IMAGERY AND ASSOCIATES/ESRI.
DATA SOURCES: MARATHON PETROLEUM CORPORATION

0 400 800 FEET

1:4,800 1" = 400'

PROJECT:	CONTRA COSTA COUNTY MARTINEZ RENEWABLE FUELS EIR 150 SOLANO WAY, CONTRA COSTA COUNTY, CALIFORNIA
TITLE:	CURRENT SITE PLAN
DRAWN BY:	R. SPRING
CHECKED BY:	P. DEMICHELE
APPROVED BY:	D. AYERS
DATE:	SEPTEMBER 2021
PROJ. NO.:	CDLP20-20046
	FIGURE 2-3E
FILE:	MarathonRenewablesFuel.aprx

2.4.2.2 Avon Marine Oil Terminal

The Avon MOT has been an existing point of distribution for distillate and gasoline produced at the Refinery. The facility has been in use since the 1920s and currently consists of one active berth (Berth 1A). The Avon MOT is permitted to transfer 30,000,000 barrels per 12 consecutive months pursuant to an air permit from the BAAQMD. Berth 1A is used for product shipments and feedstock deliveries, loading approximately 42,000 bpd of distillate and 5,000 bpd of gasoline for distribution. The wharf at the Avon MOT is currently equipped with a marine vapor recovery system to capture hydrocarbon vapors from loading operations, in compliance with BAAQMD Regulation 8, Rule 44. Any changes to the MOT must be compliant with Marine Oil Terminal Engineering and Maintenance Standards (MOTEMS) regulations.

2.4.2.3 Amorco Marine Oil Terminal

The Amorco MOT has been used by the Refinery primarily for receiving of approximately 108,000 bpd of crude oil and 5,000 bpd of heavy fuel oil for refining. The facility has received an average of 60 to 90 tanker vessels each year and consists of one active berth located on the eastern end of the wharf. The Amorco MOT is permitted to transfer 70,080,000 barrels per 12 consecutive months pursuant to its air permit from the BAAQMD. The Amorco MOT has 6 aboveground oil storage tanks, the largest of which has a capacity of 5,040,000 gallons of oil. Total oil storage capacity among the 6 tanks plus rented temporary storage tanks is 17,351,098 gallons.

The Avon and Amorco MOTs together received approximately 210 ships per year, on average between 2015 and 2020.

2.4.2.4 Pipeline, Truck and Rail Transportation

Additional crude not received by ship is received at the Refinery via pipeline. Petroleum products made at the Refinery have been distributed via truck, rail, pipeline, and by ship vessels.

Historic Refinery operations included transport of a number of commodities via rail, including ammonia, propane/propylene, butanes, spent caustic, and sulfuric acid. The UPRR line is the primary railroad line serving the facility and is used for the majority of deliveries and shipments by rail. The balance of the Refinery deliveries and shipments use the BNSF Railway line. Railcars are moved from the main line to spurs within the Refinery in trains of variable length, from one car to 10 or more cars. Rail deliveries and shipments occur as needed and in coordination with BNSF, and there is no set schedule. Refinery rail traffic has averaged approximately 13 railcars per day with a peak of 27 railcars per day, mostly receiving loads of butane and iso-butane from California, Utah, and occasionally the Midwest. In 2019, the Refinery transported commodities in approximately 5,300 railcars or an average of 15 railcars per day, which were primarily loaded or unloaded at the Refinery.

An average of 205 delivery and distribution truck shipments have occurred daily, with a peak of 310 trucks per day. Truck shipments primarily have been comprised of outbound shipments—approximately 40 percent of Refinery truck traffic associated with petroleum fuel production has been for transportation of gasoline to nearby cities, and another 30 percent of truck trips has been for hauling of petroleum coke (a product derived from the crude oil refining process) to a marine terminal in the city of Pittsburg approximately 10 miles east of the Refinery. Other chemicals

used in processing or resulting byproducts including ethanol, propane, acid, chemicals for cooling towers, sulfur, ammonia, caustic, biodiesel, diatomaceous earth, potassium hydroxide, and cetane are also transported by truck. Trucks access the Refinery using both the North Gate on Waterfront Road and the South Gate on Solano Way.

2.4.2.5 Existing Utilities

The Refinery currently collects and treats its refining process wastewater, sanitary wastewater, and most storm runoff from the Refinery on-site, using a treatment system that is regulated by a National Pollutant Discharge Elimination System (NPDES) permit issued by the San Francisco Bay Regional Water Quality Control Board (S.F. RWQCB). Components of the on-site wastewater treatment system include oil-water separators that remove oil and sediment from the effluent, lagoons for biological treatment of effluent, clarifiers for additional solids settling, and filters. Oil that is recovered from these separators is shipped off-site to another Refinery for processing. Treated effluent is discharged to Suisun Bay, though a portion of the effluent volume is reused at the Refinery.

Potable water to the Refinery is used to supply fixtures in restrooms and employee break areas; for landscaping irrigation, including irrigation of the on-site recreation fields at the southern end of the property; and in Refinery units used for cooling and treatment of wastewater from the fuel production process. Potable water used at the Refinery is purchased from the Contra Costa Water District (CCWD) and would continue to be purchased from CCWD with implementation of the Project.

Marathon operates a groundwater monitoring network of over 150 wells, located within and around the perimeter of the Refinery. These wells monitor the migration of historic groundwater contamination and have been installed in an effort to contain the contamination within the boundaries of the Refinery property. Marathon and Texaco Downstream Properties, Inc. (TDPI) work cooperatively together as the Avon Remediation Team (ART) under the supervision of the S.F. RWQCB and California Department of Toxic Substances Control (DTSC) for corrective action cleanup of portions of the facility where historical soil or groundwater contamination is present.

2.5 DESCRIPTION OF PROPOSED PROJECT

2.5.1 Overview

The proposed Project would repurpose the Refinery for production of fuels from renewable sources rather than from crude oil. Some existing Refinery equipment would be altered or replaced, and additional new equipment units and tanks would be installed, to facilitate production of fuels from renewable feedstock. Crude oil processing equipment that cannot be repurposed for processing of renewable feedstock would be shut down and removed from the Refinery based on an event-based decommissioning plan. Upon completion of facility changes, the Refinery is anticipated to process approximately 48,000 bpd of fresh renewable feeds and would produce renewable diesel fuel, renewable propane, renewable naphtha, and potentially, renewable aviation fuel. Initially, product from the Refinery would be distributed by truck to the Bay Area as well as Central and Northern California. Future regulatory changes may allow the facility to utilize existing petroleum-based product pipelines. Product would also be transported to destinations outside of the Bay Area by ship via the Avon MOT and Amorco MOT, located

approximately 0.5 mile north of the Refinery and approximately 2.5 miles west of the Refinery, respectively. Both terminals would undergo modifications to facilitate receipt of renewable feedstocks and distribution of renewable fuels associated with the proposed Project. Refined petroleum products would continue to be received, stored and distributed through the Project Site but would not be further processed at the facility.

2.5.2 Renewable Fuels Production

Production of renewable fuels involves three main hydroprocessing units, two hydrogen supply units, a hydrocracker gas plant for fractionation, and waste and byproduct systems including systems for treating ammonia and hydrogen sulfide-contaminated water (sour water), and a conventional wastewater treatment plant. Conversion of the Refinery to a renewable fuels production facility would primarily involve the alteration and addition of refinery equipment to process non-petroleum feedstocks into renewable diesel fuel, renewable propane, renewable naphtha, and potentially renewable aviation fuel. Changes would also be made to the Avon Marine Terminal to equip it for receiving renewable feedstocks for hydroprocessing and additional petroleum-based materials for storage and distribution, although processing of petroleum feedstocks into finished products would cease. Specifically, the hydrogen plants at the Refinery would provide hydrogen to the Hydrotreating and Hydrocracking Units to support the hydrodeoxygenation (HDO) and isomerization reactions, the principal processes required for creating renewable fuels. The production of renewable fuels would primarily use existing process equipment, although some construction for new and modified equipment would be necessary.

Marathon anticipates phasing in the project over a period of three years starting in 2022 with a maximum of 23,000 bpd and achieving full production capacity of 48,000 bpd of renewable feedstocks by the end of 2023. The Refinery would continue to operate 24 hours per day, seven days per week, and would be staffed by an estimated 110 workers per day on a rotating shift basis.

2.5.3 Site Preparation

Clearing, grading, and other site preparation work would be completed prior to commencement of construction. Equipment to be used in site preparation and demolition for the Project would include lifts, air compressors, industrial saws, cranes, excavators, forklifts, tractors, loaders and welders, as well as light-duty vehicles (passenger cars and trucks) and heavy-duty vehicles (cement, dump and water trucks). Approximately 2.4 acres of grading would be necessary for the proposed Project, with grading limited to 48- to 60-inch deep trenches to install utilities to new work units and foundations for new units and facilities.

2.5.4 Project Site and Equipment Modifications

2.5.4.1 Project Modifications at Refinery

Conversion of the Refinery to a facility for processing of renewable feedstocks would require installation of new equipment and modification of some existing units currently used for processing of crude oil. Other units that cannot be converted for production of renewable fuels would be taken out of operation and demolished. Once all equipment modifications have been completed, and due to limitations in the production of the on-site hydrogen plant, the Refinery

would have capacity to receive and process up to 48,000 bpd of fresh renewable feedstock. See **Table 2-1, Refinery Equipment Modifications** summarizes the equipment modifications associated with the proposed Project and shown **in Figure 2-4a through Figure 2-4e**. Proposed design and layout drawings are in **Figure 2-5 to Figure 2-8**. Interconnecting piping (for transmission of hydrogen, conveyance of wastewater, etc.) between new and modified Refinery units would also be installed, in addition to the new and modified units described in the table. Additionally, new adsorption vessels would be installed to remove hydrogen sulfide from the recovered fuel gas. An existing vessel will be converted to store sulfiding agent. Metering pumps are required to serve the No. 3 HDS Unit, the No. 2 HDS Unit, and the Hydrocracker 1st Stage. Sulfiding agent is continually injected to sulfide the catalysts used in the HDO Process Units, which include No. 3 HDS Unit, No. 2 HDS Unit, and Hydrocracker 1st Stage.

Emissions of vapors at product loading and offloading facilities of the Refinery would continue to be collected in the Refinery's existing vapor recovery system. Tanks that are not on the vapor recovery system would be vented through carbon canisters to capture any aromatics in the vapor space. Facility operators would continue to use third-party contractors to patrol odors occurring at the facility and in surrounding communities.

In addition to equipment changes at the Project Site, the conversion of the Martinez Refinery and development of a renewable fuels market in the Bay Area would require off-site equipment modifications at third-party facilities. These changes include the operation of new equipment or modifications to existing equipment at off-site terminals within the San Francisco Bay Area and in the San Joaquin Valley. The equipment anticipated for use includes small natural gas fired heaters to maintain the temperature of the renewable feedstock, piping components, renewable feedstock storage tanks, and unloading/loading racks to transfer the renewable feedstock from/to rail or vessel. Specific details of these modifications would be dependent on future market conditions and contracts executed following implementation of the Project.

2.5.4.2 Project Modifications at Avon MOT

At the Avon MOT, part of the system of pipes and hoses would be reconfigured to keep the finished petroleum products separate from the renewable feedstocks, and to facilitate transmission of the renewable feedstock through receiving pipelines. This renovation work would primarily occur on the Avon MOT's 26 Line pipeline, which extends from offshore on the east side of the paved access road and wharf, to an aboveground pipe rack on the east side of a pedestrian walkway onshore. The 26 Line would be equipped with heat tracing, wrapped in insulation, and then placed in a metal sleeve, the joints of which would be sealed with silicone, all of which is intended to keep the feedstock in a transmissible liquid state. While the offshore work in the 26 Line would occur over water, no in-water work is proposed as part of the Project.

2.5.4.3 Project Modifications at Amorco MOT

As part of the Project, modifications are proposed at the Amorco MOT to accommodate the smaller marine vessels (25,000- to 50,000-barrel capacities) expected to dock there. These modifications include a fender that would be mounted at Dolphin A-81, between the existing fenders on Dolphins A-76 and A-77. The new super cone fender, approximately 15 feet long and 7 feet wide, would be attached to the dolphin above the high water line, with the fender panel extending into the water but not into the substrate below. (See **Figure 2.10, Typical Super Code Fender**.) The Project would also include maintenance activities on Dolphins A-76 and A-77 consisting of repairs to the concrete and five of the pilings.

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Table 2-1: Refinery Equipment Modifications

Refinery Unit	New, Modified or Maintained	Utilization with Proposed Project
Pretreatment Unit	**New**	Removes impurities such as minerals (e.g. phosphorus, some metals), gums and fatty acids from raw renewable feedstocks (e.g., distillers corn oil, soybean oil, tallow) before the feedstocks are processed in hydrodeoxygenation units. New equipment purchased and installed with this unit would include a raw feed surge drum and charge pump, a wash water surge drum and charge pump, a weak acid surge drum and pump, heat exchangers and coolers as required to meet Pretreatment Unit operating conditions, a water/oil separator, and wash water effluent pH neutralization and cooling equipment. The oil layer from the oil/water separator is routed to renewable diesel processing. The water layer, approximately 300 to 400 gallons per minute of neutralized wash water, is sent to a new Stage 1 Wastewater Treatment Unit and subsequent treatment in the existing wastewater system.
Stage 1 Wastewater Treatment Unit	**New**	Initial stage of wastewater treatment to reduce biological oxygen demand in effluent from the Pretreatment Unit. Existing tanks would be utilized and repurposed for equalization and biological treatment of the waste stream.
Sour Water Stripper	**Maintained**	Provides treatment of ammonia and hydrogen sulfide-contaminated water (sour water) from the HDS and Hydrocracker processing units as well as the 5 Gas Plant. The stripped sour water is sent to wastewater treatment. The gases from the stripper are sent to the new Thermal Oxidizer.
Thermal Oxidizer	**New**	A three-stage, low NOx unit for control of emissions from the sour water stripper vent stream.

Table 2-1: Refinery Equipment Modifications

Refinery Unit	New, Modified or Maintained	Utilization with Proposed Project
No. 3 HDS	**Modified**	One among the first three units to be modified for the Project. Two reactors internal to unit would be lined with high chemical resistant steel, and new vessels installed for removal of hydrogen sulfide. Feed pipelines, pumps, and cooling and sour water handling systems would also be replaced or upgraded for processing of renewable feedstock. Processing capacity of the unit would be 17,000 bpd average, up to 23,000 bpd, excluding recycled feedstock volumes. This unit would be designed to be capable of independent operation, startup, and shutdown.
Hydrocracker 2nd Stage	**Modified**	One among the first three units to be modified for the Project. Three internal reactors would be converted to Diesel Isomerization Unit. This unit would receive and "dewax" product from No. 2 HDS and No. 3 HDS and Hydrocracker 1st Stage units and is one of the final processes in production of diesel fuel prior to storage. This unit would be designed to be capable of independent operation, startup, and shutdown.
No. 5 Gas Plant	**Modified**	One among the first three units to be modified for the Project. Processes gases and light hydrocarbon liquids from No. 2 HDS and Nos. 3 HDS and Hydrocracker 1st Stage units. Produces renewable naphtha, renewable propane, and treated fuel gas to be used in Refinery heaters and combustion equipment. This unit would be designed to be capable of independent operation, startup, and shutdown.
Hydrocracker 1st Stage	**Modified**	Reactors for the "cracking" of feedstock molecules in the fuel production process. Reactors would be lined with high chemical resistant steel to accommodate the renewable feedstock. Physical changes to the unit would include minor pump and pipe modifications; metallurgical upgrades to cooling, water handling, and sour water equipment; and upgrades to the temperature monitoring systems. New equipment would include a high-pressure cold separator and treat gas-effluent heat exchangers. Processing capacity of the unit would be 14,700 bpd average, up to 24,000 bpd, excluding recycled feedstock volumes.

Table 2-1: Refinery Equipment Modifications

Refinery Unit	New, Modified or Maintained	Utilization with Proposed Project
No. 2 HDS	**Modified**	A replacement reactor would be installed in the unit for removal of hydrogen sulfide. New equipment installed in the unit would include a reactor effluent air cooler. Water handling and product separation equipment would be lined with high chemical resistant steel to accommodate the renewable feedstock. Processing capacity of the unit would be 16,000 bpd average, up to 20,000 bpd, excluding recycled feedstock volumes.
No. 1 Hydrogen Plant	**Maintained**	Produces hydrogen for the No. 1 HDS, No. 2 HDS, and Hydrocracker 1st and 2nd Stage Units. Hydrogen is produced on-site and piped to reactors where it is immediately consumed in the deoxygenation and cracking reactions. No hydrogen is stored at the plant. Marathon is maintaining the hydrogen plant limit of 31,025 million standard cubic feet per year (MMscf/yr).
No. 1 Gas Plant	**Maintained**	Recovers vapor from marine loading operations, loading rack, and tanks for use in the fuel gas system. Marathon proposes to increase the compression to deliver fuel gas to the 100# fuel gas system; however, there would be no physical modification of the existing equipment.
No.1 HDS	**Modified**	The processing unit would be shut down, but the existing propane dryers would be repurposed for renewable LPG. Proposed new, modified, and replaced components would be installed as part of the Project.
No. 2 Hydrogen Plant (3rd-party owned & operated)	**Maintained**	No physical changes to this unit would be necessary for renewable fuels production.

Table 2-1: Refinery Equipment Modifications

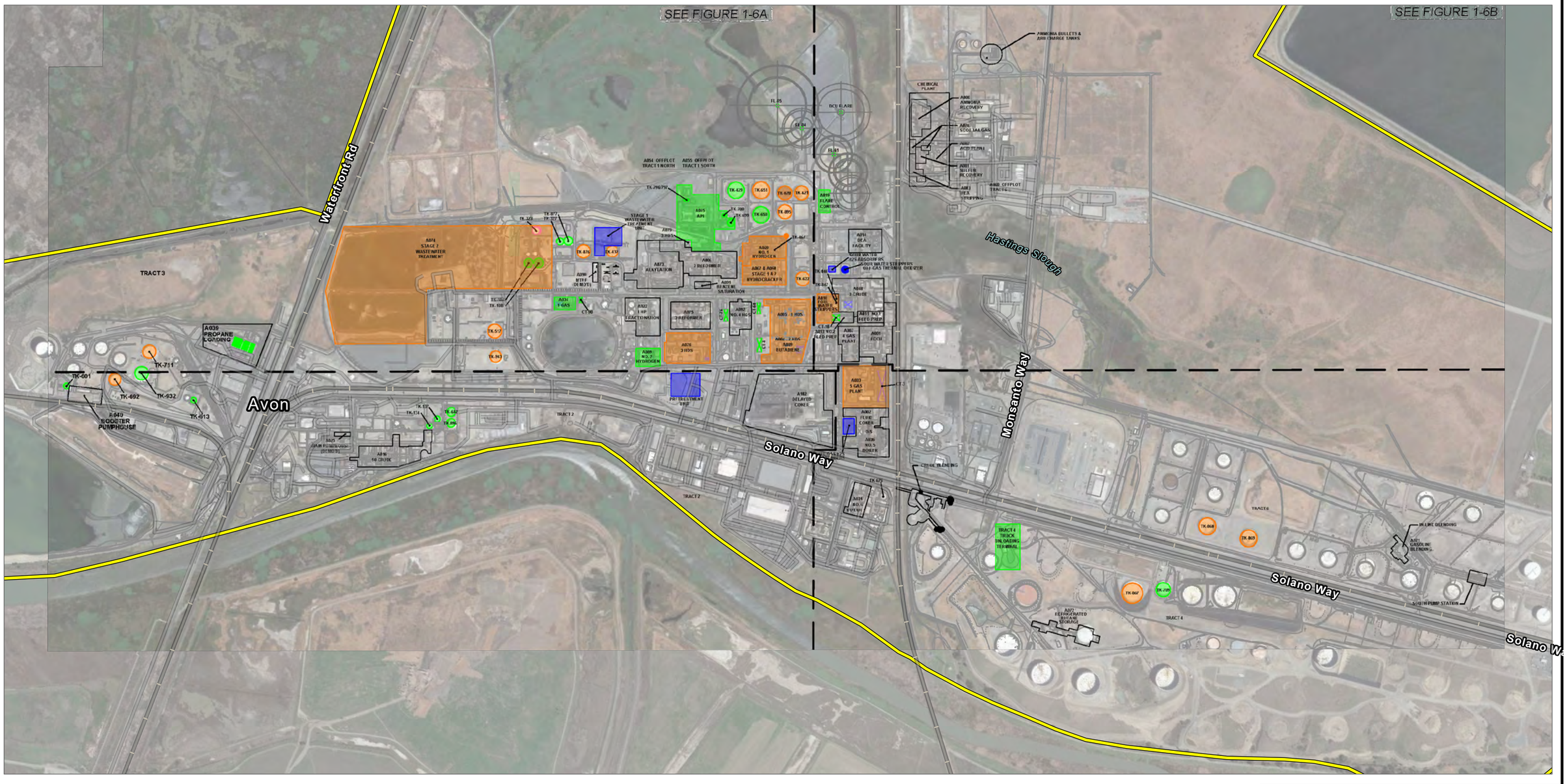
Refinery Unit	New, Modified or Maintained	Utilization with Proposed Project
Cogeneration Plant (3rd-party owned & operated)	**Maintained**	No physical changes to this electricity and steam source for the Refinery would be necessary for renewable fuels production.
Flare System and Flare Control	**Maintained**	No physical changes to these units would be necessary for renewable fuels production.
Stage 2 Wastewater Treatment Units	**Maintained**	No physical changes to this unit would be necessary for renewable fuels production.
Cooling Towers	**Maintained**	No physical changes to these units would be necessary for renewable fuels production.
Loading/Unloading Facilities	**Maintained**	No physical changes to existing rail and truck loading/unloading facilities would be necessary for renewable fuels production, though administrative Air District permit modifications may be necessary due to change to renewable diesel and renewable propane versus diesel and propane used on loading racks.
Storage Tanks	**Maintained or Modified**	As many as 29 existing aboveground tanks on the Refinery property would be repurposed for storage of renewable fuels and other commodities used in the process of fuel production. Fifteen of these tanks would receive upgrades or modifications to accommodate the proposed Project, including installation of heating units and mixers to keep renewable feedstocks in liquid form. Remaining tanks on the property would be maintained and utilized according to their pre-Project usage for petroleum-based materials storage prior to distribution to the market.
Delayed Coker	**Not applicable**	This unit would be taken offline; however, **Delayed Coker Heater No. 1** and **Delayed Coker Heater No. 2** would be **Maintained** and reused for the Project.
Booster Pumphouse	**Not applicable**	This unit would be taken offline.

Table 2-1: Refinery Equipment Modifications

Refinery Unit	New, Modified or Maintained	Utilization with Proposed Project
Chemical Plant (Ammonia and Sulfur Recovery, Acid Plant)	**Not applicable**	This unit would be taken offline.
Crude Units No. 3 and 50	**Not applicable**	These units would be taken offline.
Crude Building	**Not applicable**	This unit would be taken offline.
No. 4 HDS	**Not applicable**	This unit would be taken offline.
Gasoline Blending	**Not applicable**	This unit would be taken offline.
Refrigerated Butane Storage	**Not applicable**	This unit would be taken offline.
South Pump Station	**Not applicable**	This unit would be taken offline.
Fluidized Catalytic Cracking Unit	**Not applicable**	This unit would be taken offline.
Alkylation Unit	**Not applicable**	This unit would be taken offline.
No. 4 Gas Plant	**Not applicable**	This unit would be taken offline.
No. 2 Catalytic Reformer	**Not applicable**	This unit would be taken offline.

Table 2-1: Refinery Equipment Modifications

Refinery Unit	New, Modified or Maintained	Utilization with Proposed Project
No. 3 Platforming Unit	**Not applicable**	This unit would be taken offline.
Sulfur Recovery Unit	**Not applicable**	This unit would be taken offline.
Benzene Saturation Unit	**Not applicable**	This unit would be taken offline.
Boiler Nos. 6 and 7	**Not applicable**	This unit would be taken offline.
Vacuum Units	**Not applicable**	This unit would be taken offline.


SEE FIGURE 1-6A
SEE FIGURE 1-6B
Waterfront Rd
Avon
Solano Way
Monsanto Way
Hastings Slough
TRACT 3
TRACT 2
TRACT 4
TRACT 6
A039 PROPANE LOADING
A040 BOOSTER PUMPHOUSE
A054 STAGE 2 WASTEWATER TREATMENT
A055 STAGE 1 WASTEWATER TREATMENT
A085 API
A086 FLARE CONTROL
A001 BUTENE SATURATION
A002 DELAYED COKER
A003 5 GAS PLANT
A004 FLUID COKER
A005 NO. 4 HDS
A006 AMMONIA RECOVERY
A007 SCOTFAM GAS
A008 ACID PLANT
A009 SULFUR RECOVERY
A010 SEA STRIPPING
A011 NO.1 HDS
A012 NO.2 HDS
A013 NO.3 HDS
A014 NO.5 HDS
A015 NO.1 HYDROGEN
A016 NO.2 HYDROGEN
A017 NO.3 HYDROGEN
A018 GEA FACILITY
A019 FLUE GAS DESULFURIZATION
A020 SOUR WATER STRIPPERS
A021 OFFPLOT TRACT 1
A022 OFFPLOT TRACT 2
A023 OFFPLOT TRACT 3
A024 OFFPLOT TRACT 4
A025 OFFPLOT TRACT 5
A026 OFFPLOT TRACT 6
A027 GASOLINE BLENDING
A028 NO.1 HYDROCRACKER
A029 NO.2 HYDROCRACKER
A030 NO.1 FCCU
A031 NO.2 FCCU
A032 NO.1 CRUDE
A033 NO.2 CRUDE
A034 NO.3 CRUDE
A035 NO.4 CRUDE
A036 NO.5 CRUDE
A037 REFRIGERATED BUTANE STORAGE
A038 3 CRUDE
A039 NO.1 FCC PREP
A040 NO.2 FCC PREP
A041 NO.3 FCC PREP
A042 NO.4 FCC PREP
A043 NO.5 FCC PREP
A044 NO.1 GAS PLANT
A045 NO.2 GAS PLANT
A046 NO.3 GAS PLANT
A047 NO.4 GAS PLANT
A048 NO.5 GAS PLANT
A049 NO.1 BUTADIENE
A050 NO.2 BUTADIENE
A051 NO.1 3 HDS
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A988 NO.2 CRUDE
A989 NO.3 CRUDE
A990 NO.4 CRUDE
A991 NO.5 CRUDE
A992 NO.1 GAS PLANT
A993 NO.2 GAS PLANT
A994 NO.3 GAS PLANT
A995 NO.4 GAS PLANT
A996 NO.5 GAS PLANT
A997 NO.1 BUTADIENE
A998 NO.2 BUTADIENE
A999 NO.3 BUTADIENE
A1000 NO.4 BUTADIENE
A1001 NO.5 BUTADIENE
A1002 NO.1 HYDROCRACKER
A1003 NO.2 HYDROCRACKER
A1004 NO.3 HYDROCRACKER
A1005 NO.4 HYDROCRACKER
A1006 NO.5 HYDROCRACKER
A1007 NO.1 DELAYED COKER
A1008 NO.2 DELAYED COKER
A1009 NO.3 DELAYED COKER
A1010 NO.4 DELAYED COKER
A1011 NO.5 DELAYED COKER
A1012 NO.1 FLUID COKER
A1013 NO.2 FLUID COKER
A1014 NO.3 FLUID COKER
A1015 NO.4 FLUID COKER
A1016 NO.5 FLUID COKER
A1017 NO.1 BOILER
A1018 NO.2 BOILER
A1019 NO.3 BOILER
A1020 NO.4 BOILER
A1021 NO.5 BOILER
A1022 NO.1 SULFUR
A1023 NO.2 SULFUR
A1024 NO.3 SULFUR
A1025 NO.4 SULFUR
A1026 NO.5 SULFUR
A1027 NO.1 AMINE
A1028 NO.2 AMINE
A1029 NO.3 AMINE
A1030 NO.4 AMINE
A1031 NO

SEE FIGURE 1-6A

TRACT 3

A039 PROPANE LOADING

TK-711

A074 STAGE 2 WASTEWATER TREATMENT

TK-323

TK-877
TK-327

TK-876

STAGE 1 WASTEWATER TREATMENT UNIT

TK-432

TK-10A
TK-10B

TK-517

TK-943

A090 MTBE (DEMO'D)

A034 1 GAS

CT-90

A054 OFFPLOT TRACT 1 NORTH

A055 OFFPLOT TRACT 1 SOUTH

TK-796/797

A045 API

TK-429

TK-651

TK-620

TK-621

TK-700

TK-699

TK-650

TK-895

A076 3 HDS

TK-467

A069 NO. 1 HYDROGEN

A073 ALKYLATION

A006 2 REFORMER

A067 & A068 STAGE 1 & 2 HYDROCRACKER

TK-622

A091 BENZENE SATURATION

A022 LHP FRACTIONATION

A075 3 REFORMER

A092 NO. 4 HDS

CT-76

CT-68

A005 - 1 HDS

A004 - 2 HDS
A009 BUTADIENE

CT-4

A089 NO. 2 HYDROGEN

A076 3 HDS

FL-05

FL-04

erfront Rd

PROJECT BOUNDARY

NOTES:

BASE MAP: GOOGLE IMAGERY AND ASSOCIATES/ESRI.
DATA SOURCES: MARATHON PETROLEUM CORPORATION

0 400 800 FEET

1:4,800 1" = 400'

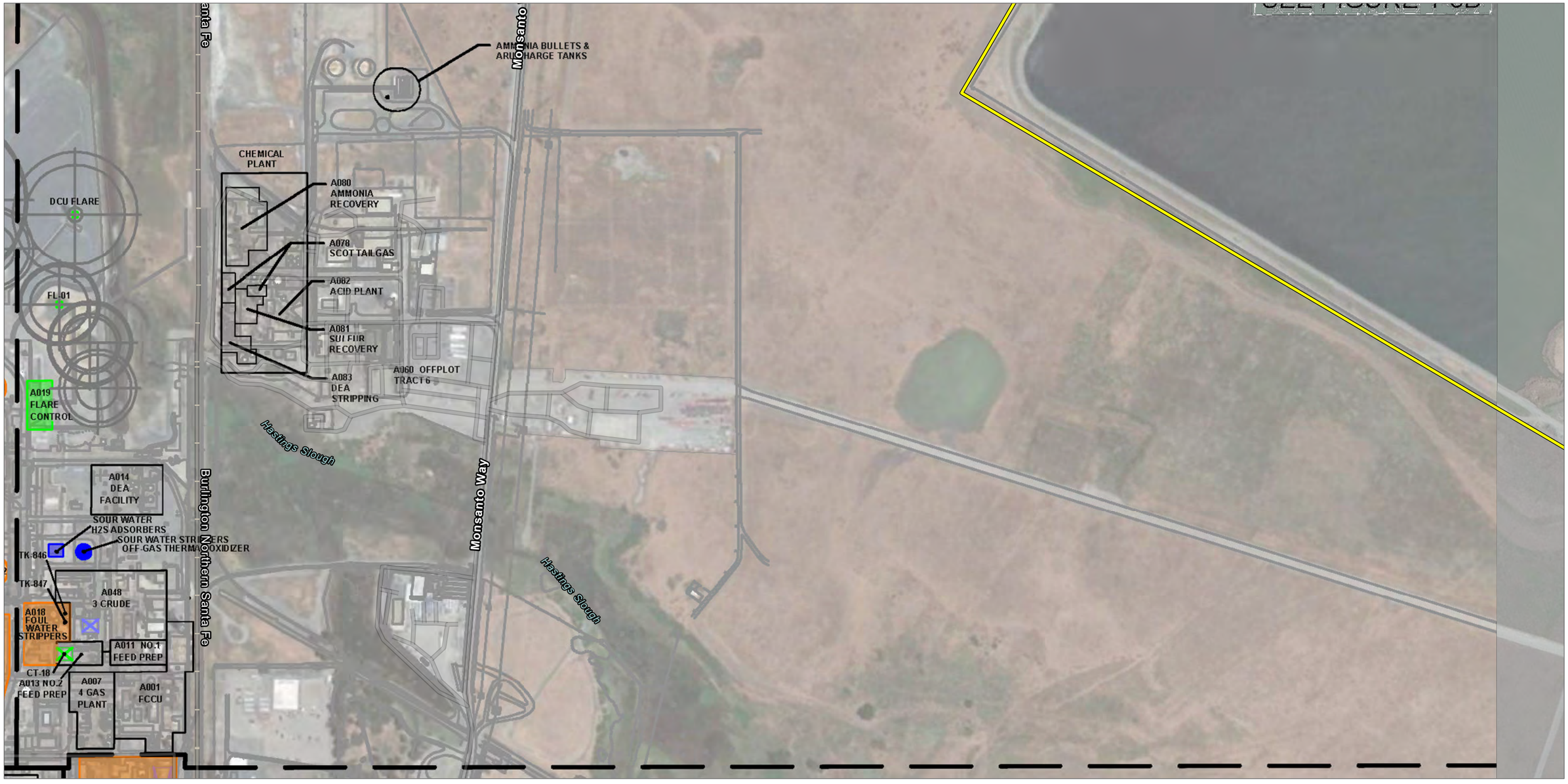
PROJECT:
CONTRA COSTA COUNTY
MARTINEZ RENEWABLE FUELS EIR
150 SOLANO WAY, CONTRA COSTA COUNTY, CALIFORNIA

TITLE:
PROPOSED REFINERY MODIFICATIONS

DRAWN BY:	R. SPRING	PROJ. NO.:	CDLP20-20046
CHECKED BY:	P. DEMICHELE		FIGURE 2-4B
APPROVED BY:	D. AYERS		
DATE:	SEPTEMBER 2021		

FILE: MarathonRenewablesFuel.aprx

Coordinate System: NAD 1983 StatePlane California III FIPS 0403 Feet - Map Rotation: -50
Saved By: RSPRING on 9/15/2021 - 11:52:24 AM - File Path: \\employees\groups\cad\PROJECTS\Contra_Costa_County\430721_Marathon_Renewable_Fuels_EIR\2-4PRX\MarathonRenewableFuel.aprx - Layout Name: 2-4 Proposed Refinery Modifications 11x17L



PROJECT BOUNDARY

NOTES:

BASE MAP: GOOGLE IMAGERY AND ASSOCIATES/ESRI.
DATA SOURCES: MARATHON PETROLEUM CORPORATION

0 400 800 FEET

1:4,800 1" = 400'

PROJECT:	CONTRA COSTA COUNTY MARTINEZ RENEWABLE FUELS EIR 150 SOLANO WAY, CONTRA COSTA COUNTY, CALIFORNIA
TITLE:	PROPOSED REFINERY MODIFICATIONS
DRAWN BY:	R. SPRING
CHECKED BY:	P. DEMICHELE
APPROVED BY:	D. AYERS
DATE:	SEPTEMBER 2021
PROJ. NO.:	CDLP20-20046
	FIGURE 2-4C
FILE:	MarathonRenewablesFuel.aprx

PROJECT BOUNDARY

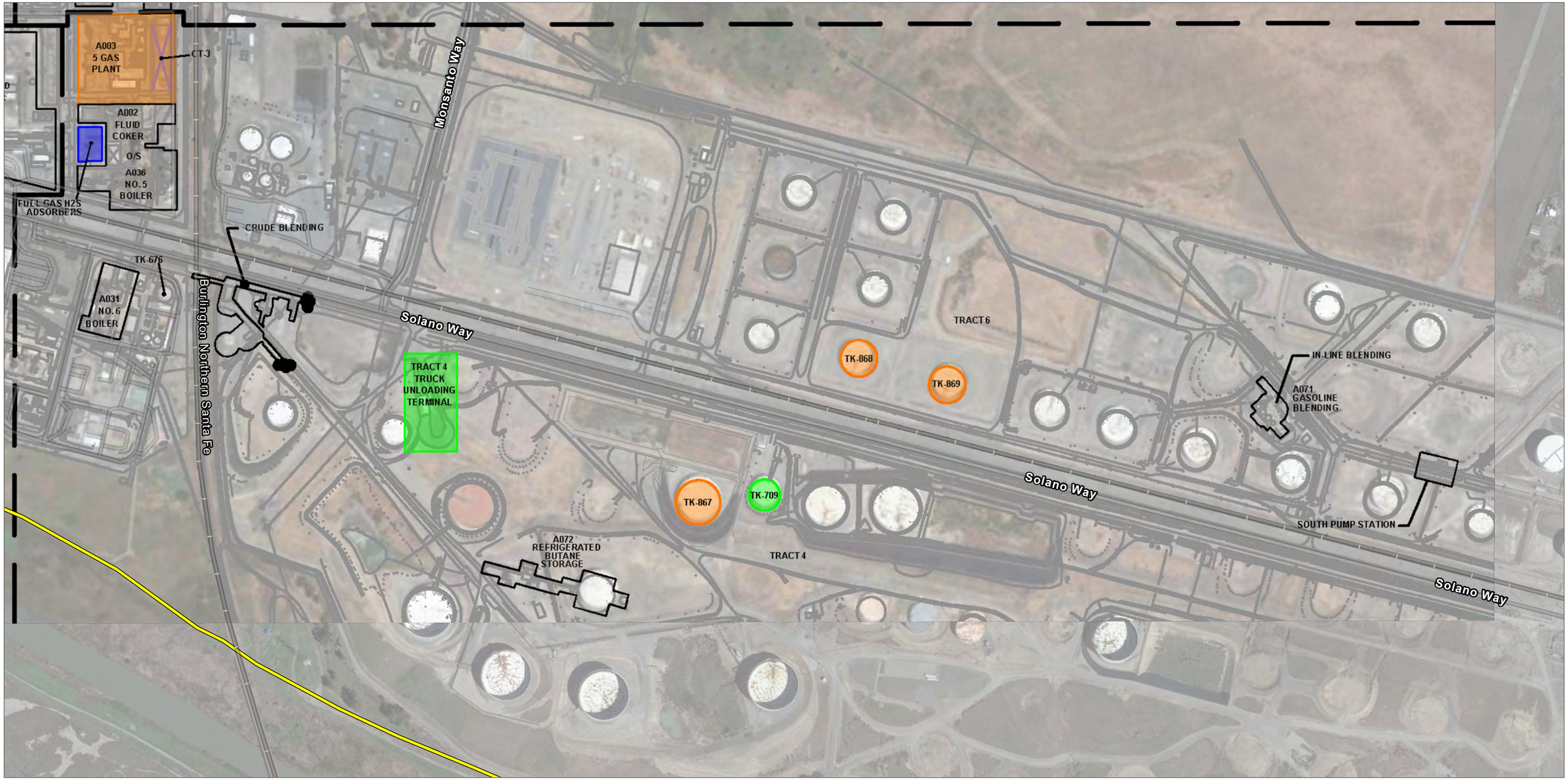
NOTES:

BASE MAP: GOOGLE IMAGERY AND ASSOCIATES/ESRI.
DATA SOURCES: MARATHON PETROLEUM CORPORATION

0 450 900 FEET

1:5,400 1" = 450'

PROJECT:	CONTRA COSTA COUNTY MARTINEZ RENEWABLE FUELS EIR 150 SOLANO WAY, CONTRA COSTA COUNTY, CALIFORNIA
TITLE:	PROPOSED REFINERY MODIFICATIONS
DRAWN BY:	R. SPRING
CHECKED BY:	P. DEMICHELE
APPROVED BY:	D. AYERS
DATE:	SEPTEMBER 2021
PROJ. NO.:	CDLP20-20046
	FIGURE 2-4D
FILE:	MarathonRenewablesFuel.aprx



PROJECT BOUNDARY

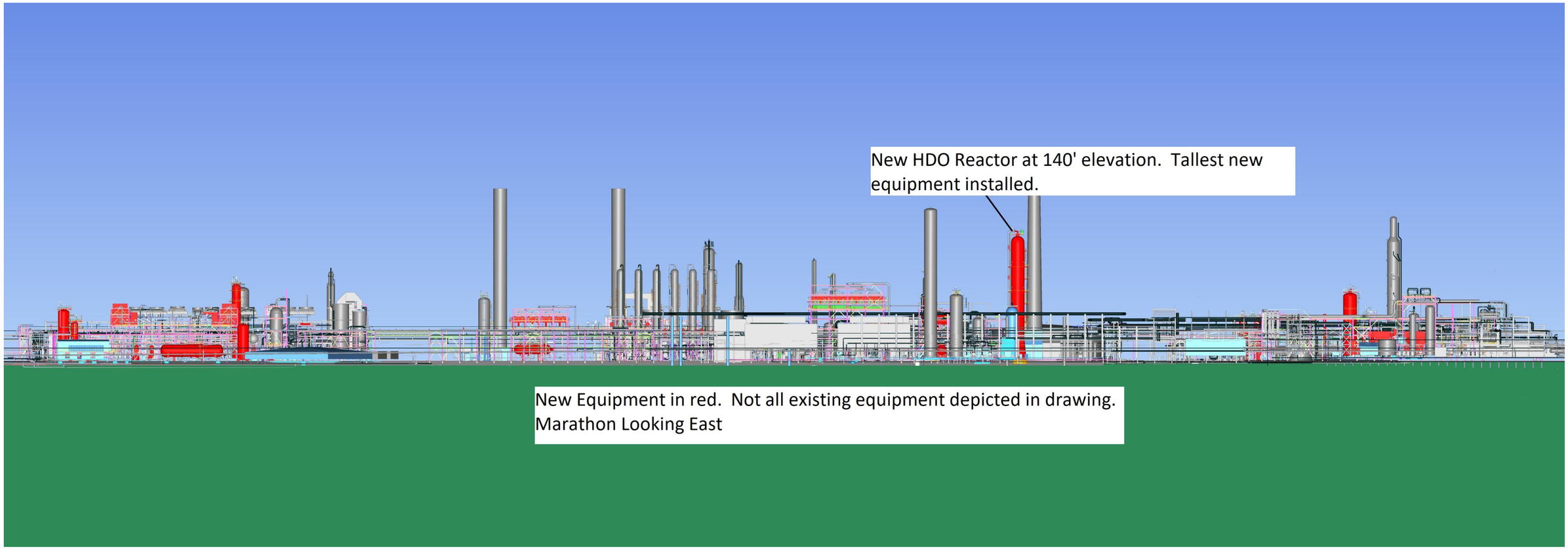
NOTES:

BASE MAP: GOOGLE IMAGERY AND ASSOCIATES/ESRI.
DATA SOURCES: MARATHON PETROLEUM CORPORATION

0 400 800 FEET

1:4,800 1" = 400'

PROJECT:	CONTRA COSTA COUNTY MARTINEZ RENEWABLE FUELS EIR 150 SOLANO WAY, CONTRA COSTA COUNTY, CALIFORNIA
TITLE:	PROPOSED REFINERY MODIFICATIONS
DRAWN BY:	R. SPRING
CHECKED BY:	P. DEMICHELE
APPROVED BY:	D. AYERS
DATE:	SEPTEMBER 2021
PROJ. NO.:	CDLP20-20046
	FIGURE 2-4E
FILE:	MarathonRenewablesFuel.aprx



New Equipment in red. Not all existing equipment depicted in drawing.
Marathon Looking East

NOTES:

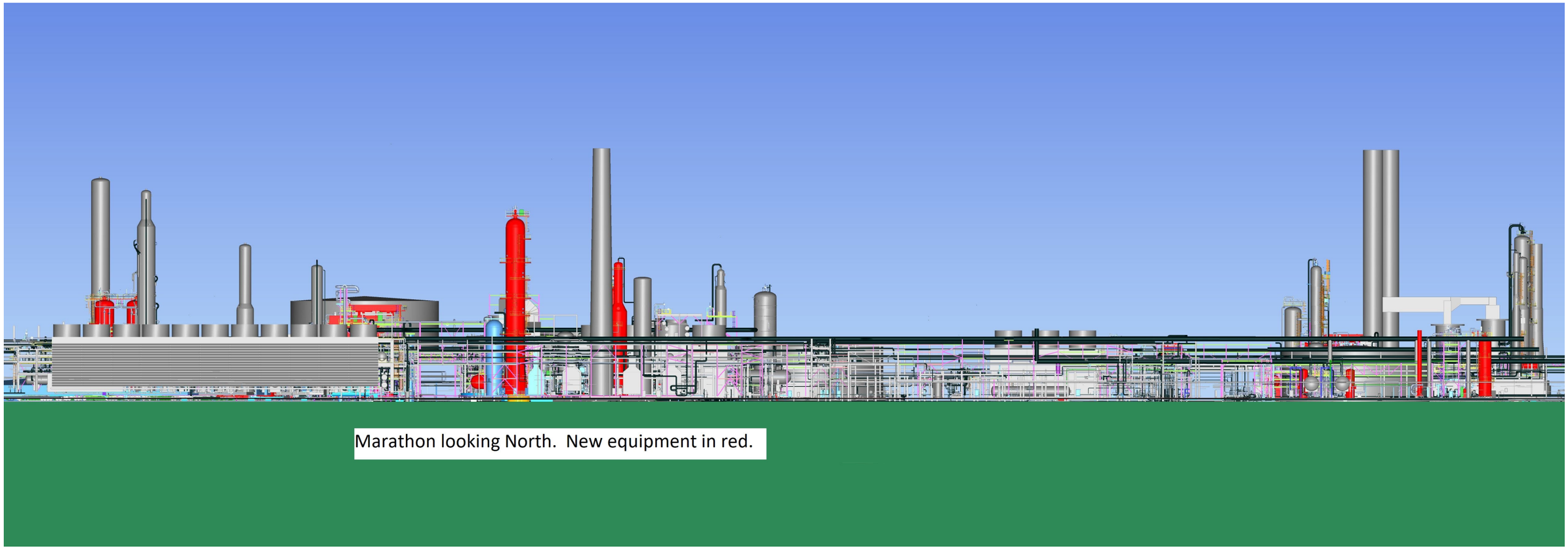
DATA SOURCES: MARATHON PETROLEUM CORPORATION

PROJECT:
CONTRA COSTA COUNTY
MARTINEZ RENEWABLE FUELS EIR
150 SOLANO WAY, CONTRA COSTA COUNTY, CALIFORNIA

TITLE:
PROPOSED DESIGN AND EQUIPMENT LAYOUT
(WEST LOOKING EAST)

DRAWN BY:	R. SPRING	PROJ. NO.:	CDLP20-20046
CHECKED BY:	P. DEMICHELE		**FIGURE 2-5**
APPROVED BY:	D. AYERS		
DATE:	SEPTEMBER 2021		

FILE: MarathonRenewablesFuel.aprx

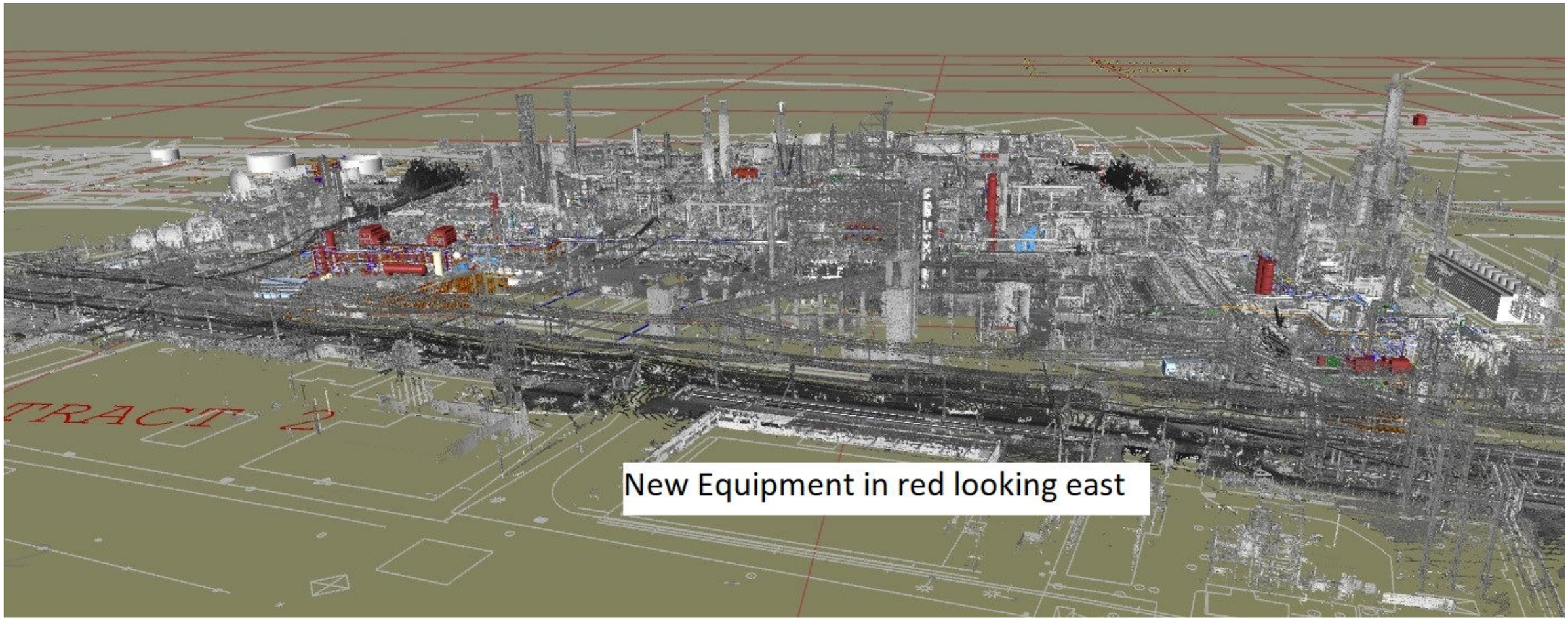


Marathon looking North. New equipment in red.

NOTES:

DATA SOURCES: MARATHON PETROLEUM CORPORATION

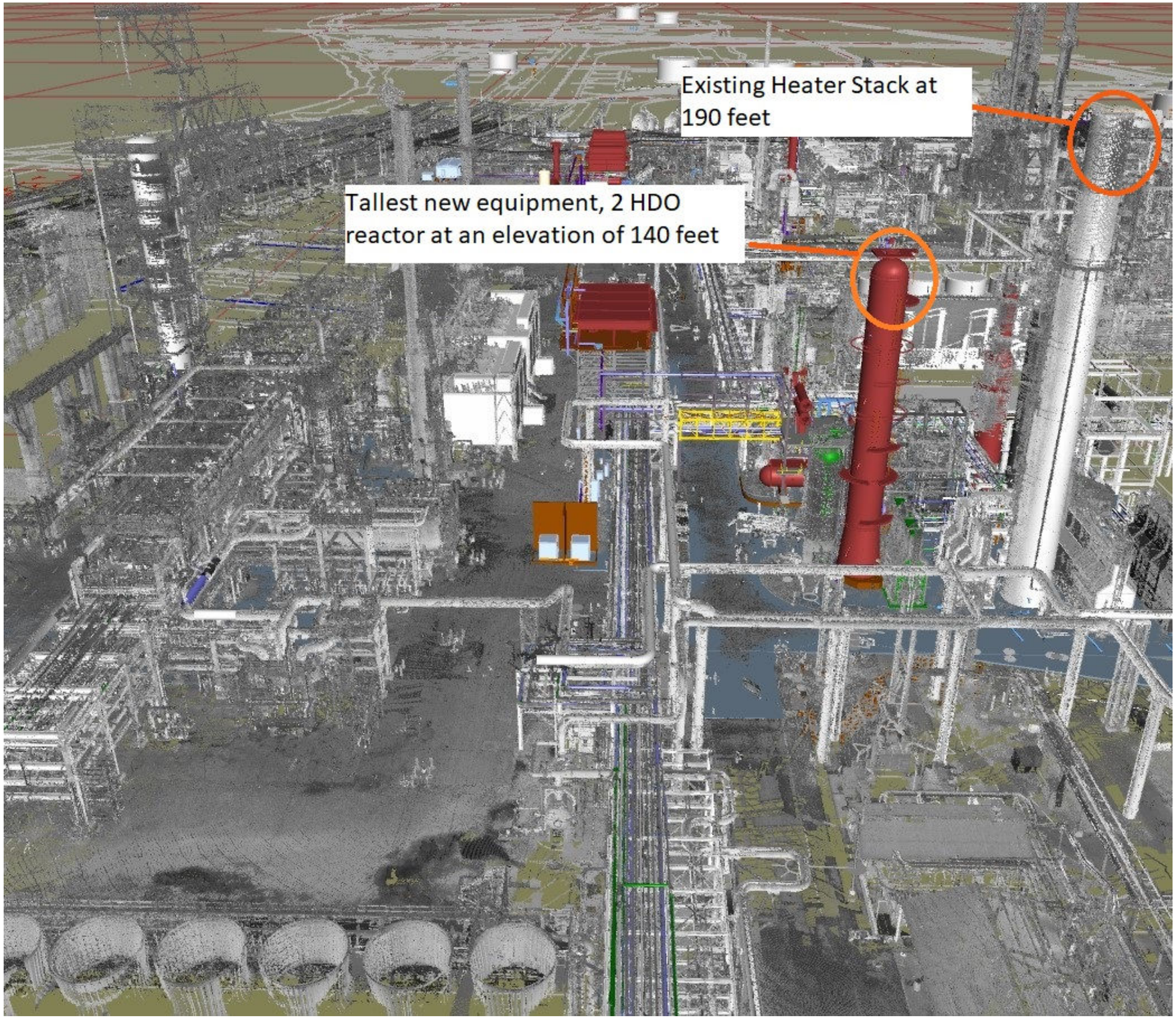
PROJECT:	CONTRA COSTA COUNTY MARTINEZ RENEWABLE FUELS EIR 150 SOLANO WAY, CONTRA COSTA COUNTY, CALIFORNIA
TITLE:	PROPOSED DESIGN AND EQUIPMENT LAYOUT (SOUTH LOOKING NORTH)
DRAWN BY:	R. SPRING
CHECKED BY:	P. DEMICHELE
APPROVED BY:	D. AYERS
DATE:	SEPTEMBER 2021
PROJ. NO.:	CDLP20-20046
	FIGURE 2-6
FILE:	MarathonRenewablesFuel.aprx



NOTES:

DATA SOURCES: MARATHON PETROLEUM CORPORATION

PROJECT:	CONTRA COSTA COUNTY MARTINEZ RENEWABLE FUELS EIR 150 SOLANO WAY, CONTRA COSTA COUNTY, CALIFORNIA
TITLE:	PROPOSED DESIGN AND EQUIPMENT LAYOUT (LOOKING EAST)
DRAWN BY:	R. SPRING
CHECKED BY:	P. DEMICHELE
APPROVED BY:	D. AYERS
DATE:	SEPTEMBER 2021
PROJ. NO.:	CDLP20-20046
	FIGURE 2-7
FILE:	MarathonRenewablesFuel.aprx



NOTES:

DATA SOURCES: MARATHON PETROLEUM CORPORATION

PROJECT:	**CONTRA COSTA COUNTY MARTINEZ RENEWABLE FUELS EIR 150 SOLANO WAY, CONTRA COSTA COUNTY, CALIFORNIA**		
TITLE:	**PROPOSED DESIGN AND EQUIPMENT LAYOUT (LOOKING NORTH)**		
DRAWN BY:	R. SPRING	PROJ. NO.:	CDLP20-20046
CHECKED BY:	P. DEMICHELE		**FIGURE 2-8**
APPROVED BY:	D. AYERS		
DATE:	SEPTEMBER 2021		
FILE:	MarathonRenewablesFuel.aprx		

Figure 2-9

Martinez Renewable Fuels Facility Block Flow Diagram

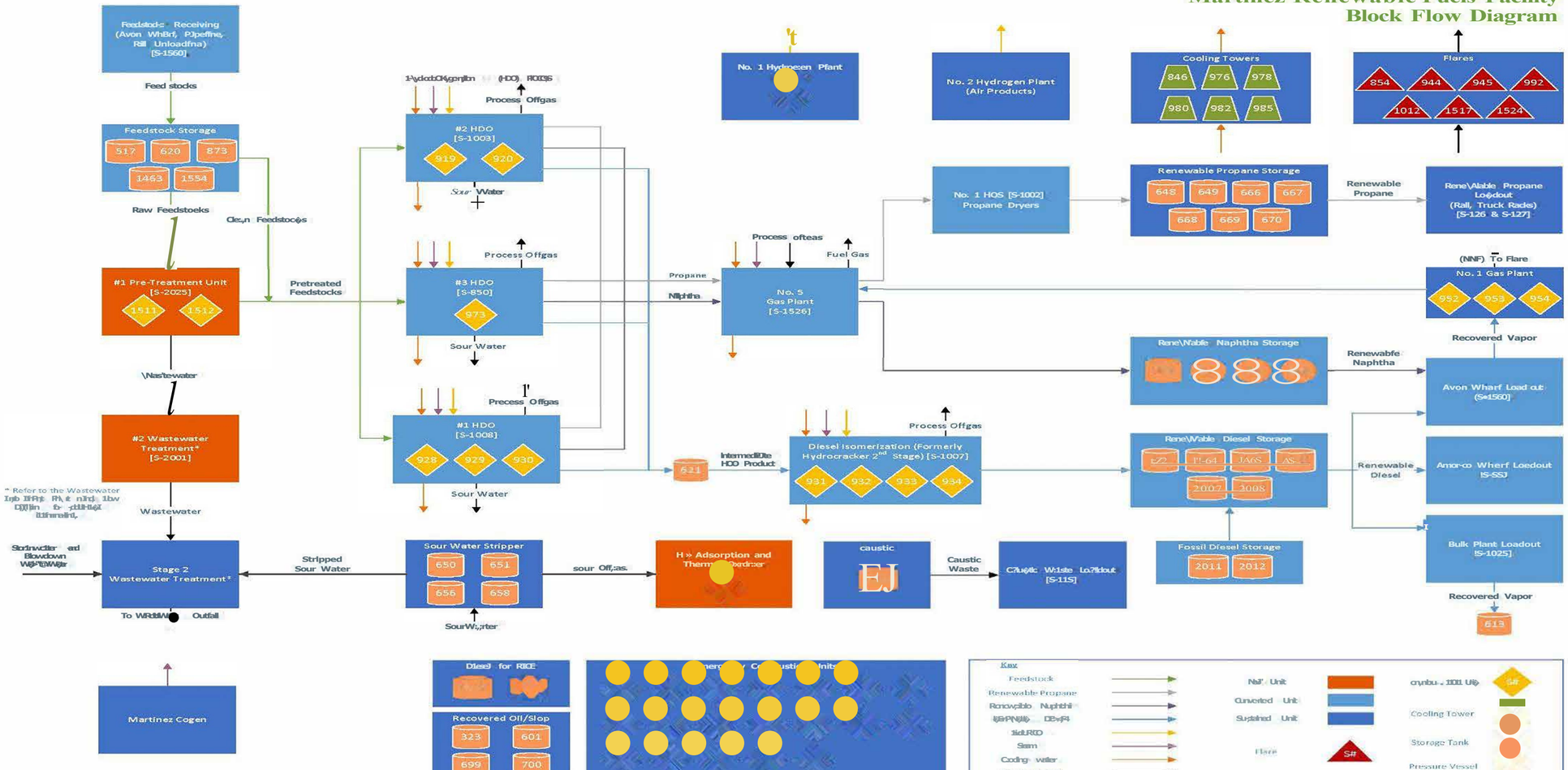


Figure 2.10 – Typical Super Cone Fender
Source: Marathon Petroleum Corporation, 2021

2.5.5 Project Operations

2.5.5.1 Refinery

Under the proposed Project, the Refinery would produce fuels (renewable diesel, propane, naptha, aviation) from renewable feedstock. Feedstock that would be processed at the Refinery is expected to include the following:

- Distillers corn oil (DCO), a by-product of the manufacture of grain/corn alcohols such as ethanol, and the result of the separation of the naturally-occurring oils in corn from the grain alcohol;
- Soybean oil (SBO), derived from the processing of soybeans, is used in food but can also be processed into renewable fuels and renewable plastics; in the process of crushing of soybeans, roughly 80 percent of the soybean content processed is meal used in food products, and the remaining 20 percent is oil; and
- Previously-rendered fats (tallow), a greasy, lard substance produced from the rendering of animal tissue.

It is noted that the processes of rendering, crushing and distillation of biological products, as described above, to create renewable feedstock would not occur at the Refinery. These processes occur at various facilities prior to sourcing the feedstock, such as at ethanol plants (DCO), Soybean Crushing facilities (SBO), and Rendering Plants (tallow). While the exact location is not known for every shipment of feedstock, these facilities are usually in the region of the initial agricultural suppliers such as the Midwest.

As technology evolves, other biological fuel sources such as used cooking oils, and plant and animal processing by-products, may also be used as feedstock using substantially the same equipment and processes as those proposed under the proposed Project.

Marine transportation of renewable feedstock and fuels produced at the Refinery would continue to use the Avon and Amorco MOTs in the proposed, modified operations of the Refinery. In addition, the Project would utilize the Stockton Terminal located a 3003 Navy Drive in Stockton, California. The Stockton Terminal is also owned by Marathon.

Under the proposed Project, the majority of the renewable feedstock is expected to be delivered in smaller barges with capacities of 25,000 to 50,000 barrels per vessel, thus resulting in a higher number of smaller marine vessels (up to approximately 400 vessels per year) calling at the marine terminals. Of these estimated 400 marine vessels per year, or approximately seven per week on average, the Avon MOT would receive about four ships each week and the Amorco MOT would have an estimated three ships per week. Up to six roundtrip barge trips are estimated to transport renewable feedstock and renewable fuel to the Stockton terminal, though the exact location to which feedstock would be transported has not yet been defined. To be conservative, Marathon has assumed Stockton as the furthest distance out that could be used in order to establish the reasonable worst case transportation by barge/vessel scenario.

2.5.5.2 Avon Marine Oil Terminal

Under the proposed Project, the use of the Avon MOT would change from a point of distribution to primarily a facility for receiving of renewable feedstocks, and modifications to the MOTs

existing system of pipes and hoses would be necessary for this change. The Avon MOT would still be used secondarily for receipt of finished petroleum products, though these petroleum products would not be processed at the Refinery and would instead be distributed to the market using Refinery loading facilities. In total, the Avon MOT would receive an average of 70,000 bpd of renewable feedstocks, gasoline product for distribution, and naptha for transfer.

2.5.5.3 Amorco Marine Oil Terminal

During Refinery operations, the Amorco Marine Terminal has been used for receiving approximately 108,000 bpd of crude oil and 5,000 bpd of heavy fuel oil for refining. Under the proposed Project, use of the Amorco MOT would change from a receiving facility to primarily a distribution facility for loading of renewable diesel product for outbound shipments from the Refinery. Product from the Refinery would be distributed from the Amorco MOT at an average rate of 27,000 bpd of renewable fuel, with the balance distributed by pipeline and trucks. It is expected that the actual daily maximum loading would fluctuate dependent on the size of the vessel being loaded, but that throughput across the wharf would remain within permitted levels.

2.5.5.4 Pipelines

Existing pipeline infrastructure in and around the Refinery is not well-suited to the movement of renewable fuels. Pipelines would be insulated with fiberglass insulation material and equipped with heat tracing to ensure that product stays fluid enough to flow through the pipeline. However, under the proposed Project, the renewable fuels Refinery would continue to use trucks and rail in addition to marine vessels for transportation of commodities and products, and pipelines would continue to be used to distribute finished petroleum products received at the Avon MOT.

2.5.5.5 Trucks

Under the proposed Project, trucks would continue to be used for distribution of finished fuels but not for hauling of petroleum coke from the Refinery because petroleum-based products would no longer be produced. The Project would utilize an estimated 180 trucks per day to transport renewable diesel, gasoline, and other finished renewable fuels to their distribution locations. Most trucks would have origins and distribution destinations within the Bay Area, though origins and destinations may also include other locations in Central & Northern California. Truck trips associated with hauls of petroleum coke and molten sulfur produced at the Refinery typically comprised 224 per day with a peak of 310; these trips would not occur with the Project because the Refinery would no longer process crude oil, and the existing coker and sulfur plant would be shut down.

2.5.5.6 Rail

The Project would utilize existing railcar loading racks. Railcars have been used at the Refinery to transport various commodities over longer distances, typically outside of the San Francisco Bay Area and state. With the Project, some commodities such as ammonia and sulfuric acid, would no longer be transported via rail as they would not be used for processing of renewable feedstock. However, rail transport is anticipated to increase post-project due to the movement of the renewable feedstock, which includes vegetable oils (e.g., soybean oil and corn oil), rendered fats, and other miscellaneous renewable feedstocks. Following completion of construction of the proposed project, the Facility is expected to require approximately 22,191 railcars per year or an

average of 63 per day, the majority of which are expected to be renewable feedstock coming from the mid-western area of the United States.

The Project would include transportation of renewable fuels feedstock via rail into third-party terminals in the region because the Refinery is not equipped to unload renewable feedstock from trains. The third-party terminals could be as far away as Stockton, at which point the renewable feedstock would be transferred onto a barge or other marine transport vessel and delivered to the Marathon facility via the Avon Terminal. Other third-party facilities closer to Martinez, at specific locations to be determined subject to contractual agreements, could also be used and could include facilities where railcars could be transported to, unloaded, and the feedstock delivered to Marathon via existing transportation infrastructure. To be conservative, Marathon has assumed Stockton as the furthest distance out that could be used in order to establish the reasonable worst case transportation scenario for analysis.

Propane and butane would continue to be transported via rail, although in reduced quantities with the Project. Railcars containing propane and butane would continue to be directly loaded/unloaded at the Refinery.

2.5.5.7 Utilities

Under the proposed Project, existing on-site wastewater treatment systems would continue to be used but would be augmented with new equipment (Pretreatment Unit and Stage 1 Wastewater Treatment Unit, also referred to as 2WWT) necessary for the purification of renewable feedstocks. The Stage 1 Wastewater Treatment Unit would receive washwater from the feedstock pretreatment unit only. Approximately 300 to 400 gallons per minute would be treated to primarily reduce chemical oxygen demand (COD) and biochemical oxygen demand (BOD). Other constituents, such as phosphorus, nitrogen, and metals would also be removed in the process. Effluent from this system would be commingled with other wastewater and stormwater from the rest of the facility and routed to the existing wastewater treatment plant for further treatment and polishing before discharge through a permitted outfall to Suisan Bay.

Potable water to the Refinery is purchased from the CCWD and would continue to be purchased from CCWD with implementation of the Project. Water would be required for the operation of the new Pretreatment Unit as described above; other crude oil processing units that require water would be taken offline with the Project. Under the Project, areas within the Refinery that historically contained waste materials would remain within Marathon's control, would continue to be monitored through the Refinery's network of groundwater monitoring wells, and would be managed in accordance with the closure plans approved by the S.F. RWQCB and DTSC.

2.6 PROPOSED PROJECT CONSTRUCTION

Construction activities for the proposed Project are projected to begin in Winter 2022 and to continue for approximately 22 months. Construction would require a supplemental workforce of up to 1,400 workers over multiple shifts and standard equipment such as crane trucks, cutting and welding equipment, forklifts, manlifts, portable generators, and material delivery trucks.

Construction would proceed as soon as appropriate permits are received, with the conversions of the No. 3 HDS Unit, the Hydrocracker 2nd Stage Unit, and the No. 5 Gas Plant constituting the first of the existing units to be modified for the Project. Other equipment modifications necessary

to facilitate the conversion from petroleum-based feedstock to renewable feedstock processing include:

- Complete revamp of No. 3 HDS to Renewable HDO Unit service to process average of 17,000 bpd of fresh feedstocks (short term maximum 23,000 bpd).
- Complete revamp of Hydrocracker 2nd Stage to the Diesel Isomerization Unit.
- Installation of a Renewable Feedstock Pretreatment system to process raw feedstock and increase the availability of low carbon intensity (CI) feedstocks (rendered fats, crude vegetable oils, etc.).
- Complete revamp of No. 2 HDS to Renewable HDO Unit service to process average of 16,000 bpd of fresh feedstocks (short term maximum 20,000 bpd).
- Complete revamp of Hydrocracker 1st Stage to Renewable HDO Unit service to process average of 14,700 bpd of fresh feedstocks (short term maximum 24,000 bpd)

The Renewable HDO Units, the Diesel Isomerization Unit, and the gas plant would be designed to be capable of independent operation, startup, and shutdown.

2.6.1 Marine Oil Terminal Construction

Pipeline modification work to the 26 Line at the Avon MOT would not require in-water work. Where the pipeline extends along the wharf over water from the shoreline to the end of the wharf, scaffolding would be installed to provide a safe platform for the over-water work on the pipeline, and a tarp would be secured to the underside of the scaffolding and pipe rack to catch any tools or material that may inadvertently fall. From the shoreline southward (inland), the aboveground pipeline would be accessed from the pedestrian walkway, with scaffolding used where needed to bridge gaps. A tarp would be secured underneath where work occurs over wetlands. Access to work areas would be directly from the developed areas of the Refinery and Avon MOT to avoid foot traffic in wetland areas. Upon completion of the work, the scaffolding will be removed using the same technique as its installation and using the existing pedestrian walkway and access road, to avoid equipment and foot traffic entering any wetland areas. Installation of heat tracing and application of insulating materials would be conducted using hand tools. Any repairs that may be necessary ahead of applying insulation may require use of a portable welder.

At the Amorco MOT, the repairs to the concrete and pilings of Dolphins A-76 and A-77 would be performed from scaffolding suspended from the deck. The piling repairs would be performed by placing a fiberglass (Fox) sleeve around the piling that is then filled with grout. The piling damage at Dolphin A-76 is close to the deck, and the jacket is not anticipated to extend below the mean higher high water (MHHW) level. Repairs to the three pilings at Dolphin A-77 are all expected to be below MHHW level, and the jacket installed on one of the pilings would likely extend to the substrate, but not into it. A marine construction barge with mooring spuds would be used for installing the fender and completing the repairs to the pilings. The mooring hooks at Dolphins A-76 and A-77 may also be rotated depending on mooring layouts.

2.6.2 Termination and Decommissioning

As summarized in Table 2-1, several units used in the processing of petroleum products would be taken offline with the Project. The equipment that would not be reused as part of the

Renewable Fuels project, logistics operations, and continuing terminal operation would be decommissioned and disposed of according to local, state, and federal laws and regulations. The long-term scheduling of this decommissioning and demolition would be based on several factors, including seismic codes, structural integrity, minimization of demolition emissions, and proximity to operating assets. Because much of the reused equipment is intertwined with equipment that would no longer be required, demolition of unused units must be deliberate and planned around safe periods where shutdowns can occur (i.e., maintenance outages/turnarounds). Any demolished equipment would be either preferentially recycled or disposed of according to all applicable waste regulations and would occur in accordance with a demolition and decommissioning program submitted to the County prior to the first demolition permit.

2.7 REFERENCES

United States Energy Information Administration (EIA), 2021, Full List of Refineries spreadsheet. Online: https://www.eia.gov/energyexplained/oil-and-petroleum-products/refining-crude-oil-refinery-rankings.php. Site accessed May 26, 2021.

3 ENVIRONMENTAL IMPACT ANALYSIS, METHODOLOGY AND BASELINE

Chapter 3 of this Draft Environmental Impact Report (Draft EIR or DEIR) examines the potential environmental impacts of the proposed Marathon Martinez Renewable Fuels Project (Project). This chapter begins with Section 3.1, a discussion of resource areas for which the Project is not anticipated to have any impacts, followed by analyses of the environmental issue areas listed below:

3.2 – Aesthetics
3.3 – Air Quality
3.4 – Biological Resources
3.5 – Cultural Resources and Tribal Cultural Resources
3.6 – Energy
3.7 – Geology and Soils
3.8 – Greenhouse Gases
3.9 – Hazards and Hazardous Materials
3.10 – Hydrology and Water Quality
3.11 – Land Use and Planning
3.12 – Noise
3.13 – Public Services
3.14 – Transportation
3.15 – Utilities and Service Systems

Each environmental issue area analyzed in this DEIR provides background information and describes the environmental setting to help the reader understand the conditions that exist currently, prior to Project implementation, and the relationship between those existing conditions and potential Project-related impacts. The effects of the Project are defined as changes to the environmental setting that are attributable to Project components or operation. In addition, each section describes the approach to analysis that results in a determination of whether an impact is "significant" or "less than significant." Finally, individual sections recommend mitigation measures to reduce significant impacts. Throughout Chapter 3, both impacts and the corresponding mitigation measures are identified by a **bold letter-number designation** (e.g., **Impact BIO-1** and **MM BIO-1**).

ASSESSMENT METHODOLOGY

CEQA Requires a Baseline for Impact Analysis

The purpose of an EIR is "to provide public agencies and the public in general with detailed information about the effect which a proposed project is likely to have on the environment; to list ways in which the significant effects of such a project might be minimized; and to indicate alternatives to such a project" (Public Resources Code Section 21061). With an existing facility or operation for which an applicant is seeking entitlements to continue activities (rather than to initiate new activities), both the project and the baseline condition against which significant impacts are to be measured must be defined carefully to ensure that the environmental analysis focuses on the proposed changes that constitute the project. With respect to the environmental

setting assumed for the impact analysis, State CEQA Guidelines Section 15125, subdivision (a) states:

> *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.*

The California Supreme Court confirmed that, while conditions at the time of the notice of preparation "normally" constitute the baseline for the environmental analysis under CEQA, the lead agency has flexibility in defining the appropriate baseline (*Communities for a Better Environment v. South Coast Air Quality Mgmt. Dist.* (2010) 48 Cal.4th 310, 328). Therefore, State CEQA Guidelines allow a lead agency some leeway in determining the baseline by stating that the environmental setting at the time the notice of preparation is published will "generally" constitute the baseline physical conditions against which the impacts of a project are evaluated. However, State CEQA Guidelines recognize that a point-in-time snapshot of environmental conditions at the time environmental review begins does not always provide an accurate or informative baseline against which to measure a proposed project's environmental effects. In circumstances "[w]here 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," provided that choice is supported by substantial evidence in the record (CEQA Guidelines Section 15125(a)(1)).

In a 2010 California Supreme Court, Communities for a Better Environment v. South Coast Air Quality Management District, 48 Cal. 4th 310 (2010) ("CBE"), the Court explained that "[a] temporary lull or spike in operations that happens to occur at the time environmental review for a new project begins should not depress or elevate the baseline; overreliance on short-term activity averages might encourage companies to temporarily increase operations artificially, simply in order to establish a higher baseline." The Court concluded by reiterating that it was not its place, but rather that of the lead agency, "to decide, in the first instance, exactly how the existing physical conditions without the project can most realistically be measured, subject to review, as with all CEQA factual determinations, for support by substantial evidence." (CBE at 328.) Since the CBE Supreme Court decision, California Courts have applied the CBE framework numerous times since 2010. See Cherry Valley Pass Acres & Neighbors v. City of Beaumont, 190 Cal. App. 4th 316 (2010); North County Advocates v. City of Carlsbad, 241 Cal. App. 4th 94 (2015).

CEQA establishes similar, but distinct rules where changes are proposed to a project previously subject to environmental review. In these circumstances, the lead agency may look to and rely on a prior environmental analysis prepared for the project in assessing whether proposed changes involve any new previously unconsidered significant effects, provided the prior analysis retain informational value.

Determination of Project Baseline

CEQA Guidelines Section 15125(a)(1) provides guidance on how the lead agency should describe baseline setting. State CEQA Guidelines Section 15125, subdivision (a)(1) states:

> *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.*

Product manufacturing facilities such as refineries, concrete batch plants, mills and food and beverage processors commonly experience fluctuations in production due to changes in availability of supply, changes in market demands, technological advancements and even weather. Use of a historical average over a specified period for Refinery crude oil processing operations recognizes such fluctuations and allows for characterization of the overall level of crude oil refining operations without singling out a specific moment in time when the Refinery throughput volumes may have been unusually high or unusually low.

The following operational data was compared in consideration of selecting a representative and reasonably conservative project baseline for purposes of the CEQA analysis. The analysis considers multiple possible baseline periods and concludes that a 5-year baseline provides the most representative and reasonable conservative baseline to provide the public and decision makers the most accurate and understandable picture practically possible of the project's likely near-term and long-term impacts.

Project Operational Data Informing Selection of Baseline

To identify fluctuations in operational intensity, the County reviewed the throughput of feedstocks, and the vehicle and vessel traffic for the Marathon refinery. **Table 3-1, Historical Throughput for the Marathon Refinery**, summarizes the average daily throughput volume for the Refinery for 5 years. Each "year" begins on October 1 of the first year and ends on September 30 of the subsequent calendar year. These five, consecutive 12-month periods between October 1, 2015, and September 30, 2020, constitute the 60 months immediately preceding submittal of the land use permit application to the County in October 2020. This timeframe also immediately precedes Marathon's submittal of the related Authority to Construct application to the Bay Area Air Quality Management District (BAAQMD), the air permitting agency for the nine-county San Francisco Bay Area. Marathon processed crude oil during each of these five 12-month cycles, except during the fifth year. In Year 5, crude oil production occurred between January 2020 and April 2020, but after April 2020, Refinery operators suspended crude oil processing. Annual vehicle miles traveled and vessel calls for the same 5-year period are summarized in **Table 3-2, Annual Vehicle and Vessel Traffic for Marathon Refinery**.

Table 3-1 Historical Throughput for Marathon Refinery

Type	Units	Year 1 (2015-2016)	Year 2 (2016-2017)	Year 3 (2017-2018)	Year 4 (2018-2019)	Year 5 (2019-2020)
Feedstocks	**bpd**	128,340	137,590	140,590	135,287	61,397
Products	**bpd**	144,013	147,013	151,185	151,894	71,858

Source: Marathon Petroleum Corporation, 2021

Table 3-2 Annual Vehicle and Vessel Traffic for Marathon Refinery

Vessel or Vehicle	Units	Year 1 (2015-2016)	Year 2 (2016-2017)	Year 3 (2017-2018)	Year 4 (2018-2019)	Year 5 (2019-2020)
Truck	Miles Traveled	4,290,831	4,524,176	4,518,547	4,559,507	2,837,991
Train	Miles Traveled	5,604	4,961	5,261	4,820	2,380
Vessel	Calls	116	149	166	161	124

Source: Marathon Petroleum Corporation, 2021

Within these 5 years, a comparison of 1-year, 3-year, and 5-year daily average Refinery throughput and production was conducted. **Table 3-3, Comparative Throughput and Production for Marathon Refinery**, summarizes the daily averages for each timeframe, and **Table 3-4, Vehicle and Vessel Traffic for Marathon Refinery**, summarizes the mean vehicle miles traveled and vessel calls for each timeframe.

Table 3-3 Comparative Throughput and Production for Marathon Refinery, 1-year, 3-year Average, and 5-year Average

Type	Units	1-year (2019-2020)	1-year (2018-2019)	3-year Average (2017-2020)	5-year Average (2015-2020)
Feedstocks	**bpd**	61,397	135,287	112,425	120,641
Products	**bpd**	71,858	151,894	124,979	133,193

bpd = barrels per day

Source: Marathon Petroleum Corporation, 2021

Table 3-4 Comparative Vehicle and Vessel Traffic for Marathon Refinery, 1-year, 3-year Average, and 5-year Average

Vessel or Vehicle	Units	1-year (2019-2020)	1-year (2018-2019)	3-year Average (2017-2020)	5-year Average (2015-2020)
Truck	**Miles Traveled**	2,837,991	4,559,507	3,972,015	4,146,210
Train	**Miles Traveled**	2,380	4,820	4,154	4,605
Vessel	**Calls**	124	161	150	143

Source: Marathon Petroleum Corporation, 2021

In addition to throughput and production, Refinery operations include major turnarounds consisting of cyclical shutdown of refining equipment for approximately 40-80 days to perform maintenance activity on a unit or units. Depending on the equipment that is shut down in a given year, average daily throughput or annual air emissions can be reduced, resulting in anomalously low throughput or emissions data for that year. Conversely, in a non-turnaround year, throughput and air emissions can be atypically high because all refining equipment was in operation during that year. Because different equipment units have different emissions, each turnaround conducted within a year does not necessarily result in equivalent emissions reductions as in other years.

Most major equipment at the Refinery goes through a turnaround once every 5 years. Turnarounds conducted at the Refinery for the most recent 5 years excluding 2020 are listed in **Table 3-5, Refinery Turnaround Schedule, 2015-2019**. No turnarounds occurred in 2016 or 2020. The Refinery was idled starting in April 2020.

Table 3-5 Refinery Turnaround Schedule, 2015-2019

Turnaround Year	2015	2016	2017	2018	2019
Equipment Shutdown	• Crude • No. 3 HDS • No. 6 Boiler	n/a	• Catalytic Cracker	• HCK • No.1 HDA • LHP C-14 • East Flare • West Flare • DCU • No. 5 Gas • SRU • DEA	• No. 2 Hydrogen Plant • Acid Plant • Ammonia Recovery

Notes:
HDS = hydrodesulfurization unit
HCK = Hydrocracker
HDA = Hydrodearomatization
LHP = Light Hydrocarbon Processing
DCU = Delayed Coker Unit
SRU = Sulfur Recovery Unit
DEA = Diethylamine

Source: Marathon Petroleum Corporation, 2021

Selection of EIR Baseline for Impact Analysis

The two primary factors for baseline selection were representativeness and conservativeness. Based on the 5-year turnaround, reduced pandemic production, and interest in a conservative baseline, the County has selected the 5-year average as the baseline.

The other three potential baseline timeframes considered above are not as representative and/or do not conservatively represent the environmental setting.

As shown in Table 3.3 above comparing the other three potential baseline periods, the lowest daily throughput and production average among the 1-year, 3-year, and 5-year timeframes was the 1-year period of 2019 to 2020. When comparatively evaluated against the 1-year (2018-2019), 3-year and 5-year averages, use of this lowest 2019-2020 1-year baseline would reflect that Project increases in impacts above this baseline would be larger than the other averages, and Project decreases in impacts below the baseline would be smaller. This lower average is not representative of the full environmental setting, however, because it is deflated by a half-year of zero-production. As is shown in the proceeding four years, typical production is much higher. Thus, though the 2019-2020, 1-year would be the most conservative, it is not representative of the environmental setting.

Similarly, the 2018-2019 1-year is not descriptive of operations at the refinery. As noted above, manufacturing production quantities typically vary from year to year for a variety of market and environmental reasons, and thus, a 1-year baseline does not adequately capture the fluctuations common in industrial operations over time. Furthermore, the 2018-2019 1-year period is the least conservative since that was a particularly high production year. The 2018-2019 1-year is therefore not the most appropriate baseline against which to analyze the environmental impacts of the Project.

The 3-year throughput and production volumes are the lowest daily averages after the 2019-2020 1-year volumes. While the 3-year period encompasses a larger timespan and therefore better represents production fluctuations across multiple years, the 3-year period does not fully capture the 5-year cycle of turnarounds and equipment shutdowns that occur at the Refinery. Thus, it does not adequately capture all of the years during which emissions could be higher or lower due to equipment shutdowns. The 3-year baseline, therefore, is also not the most appropriate environmental baseline against which to analyze the environmental impacts of the Project.

Because it captures multiple years of production and the full cycle of equipment turnarounds, the 5-year baseline is selected as the baseline for this EIR. Within these five years between October 1, 2015, and September 30, 2020, the 5-year baseline captures a high throughput year (Year 3) as well as two comparably lower throughput years (Year 1 and Year 5) and thus, better represents the variation in production at the Refinery. Likewise, the 5-year baseline captures the Refinery's turnaround cycle, 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.

This environmental setting will constitute the baseline physical conditions by which the County will determine whether or not impacts from the proposed Project and alternatives are significant. The impacts of the Project are defined as changes to the environmental setting that are attributable to Project components, modifications or continued operations.

Additional Project Baseline Data Sources

The Amorco and Avon Marine Oil Terminals were both subject to comprehensive environmental review in 2014 and 2015, respectively (State Clearinghouse Numbers 2012052030 and 2014042013). The EIRs for the marine oil terminals assessed the potential impacts associated with the renewal of the California State Lands Commission leases for additional 30-year terms through 2044 and 2045. These EIRs remain informative, relevant, and are an appropriate reference for evaluating the impacts of the proposed physical and operational changes to the marine oil terminals that are proposed with the Project.

Significance Criteria

Significance criteria are identified for each environmental issue area; these criteria serve as benchmarks for determining if a component action would result in a significant adverse environmental impact when evaluated against the baseline. According to State CEQA Guidelines Section 15382, a significant effect on the environment means "a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project."

Project Impacts Analysis

Once identified, impacts are classified according to one of the following categories:

- **No Impact** – the Project would not result in any impact to the resource area considered;
- **Beneficial** – the Project would have a beneficial impact;
- **Less than Significant** – the Project would have adverse impact that does not meet or exceed an issue area's significance criteria; or
- **Potentially Significant** – the Project would have a significant adverse impact that meets or exceeds an issue area's significance criteria.

If an action creates an adverse impact above the baseline condition, but such impact does not meet or exceed the pertinent significance criteria, the impact is determined to be "less than significant." An action that provides a significant improvement to an environmental issue area in comparison to baseline conditions is recognized as a "beneficial" impact.

For each impact identified as "potentially significant," a subsequent determination will be made, based on the analysis of the identified environmental impact and compliance with any recommended mitigation measure, of the level of impact remaining in comparison to pertinent significance criteria. If, after this analysis, a significant adverse impact can be reduced to a less-than-significant level with application of identified mitigation measures, then the impact is deemed "less than significant" after mitigation. If the impact remains significant, at or above the significance criteria even after mitigation, or if mitigation is infeasible or rejected by the applicant, the impact is deemed to be "significant and unavoidable."

Formulation of Mitigation Measures

When significant impacts are identified, feasible mitigation measures are formulated to eliminate or reduce the severity of impacts and focus on the protection of sensitive resources. The effectiveness of a mitigation measure is subsequently determined by evaluating the impact

remaining after its application. Impacts that still meet or exceed the impact significance criteria after mitigation are considered residual impacts that remain significant. Implementation of more than one mitigation measure may be needed to reduce an impact below a level of significance. The mitigation measures recommended in this document are identified in the respective impact sections.

If any mitigation measures are ultimately incorporated into a project's design, they are no longer considered as mitigation measures under CEQA. If they eliminate or reduce a potentially significant impact to a level below the significance criteria, they eliminate the potential for that significant impact since the "measure" is now a component of the action. Such measures incorporated into the project design have the same status as any "applicant-proposed measures."

Cumulative Impacts Analysis

Each issue area in Chapter 4 presents the cumulative impact scenario, the focus of which is to identify the potential impacts of the Project that might not be significant when considered alone, but that might contribute to a significant impact when viewed in conjunction with other concurrent projects.

Impacts of Alternatives

Chapter 5 describes alternatives to the Project. Presentation of each issue area in Chapter 5 includes the impact analysis for each alternative scenario. A summary of collective impacts of each alternative in comparison with the impacts of the Project is included within the Executive Summary.

Federal, State and Local Regulations and Policies

Each of the issue areas is considered in terms of the federal, state, regional and local laws, regulations and policies that apply to the issue area. Applicable federal, state, regional and local laws, regulations and policies are summarized in each of the sections.

3.1 RESOURCES WITH NO PROJECT IMPACTS

This section addresses the resource areas of Agriculture and Forestry, Mineral Resources, Population and Housing, Recreation, and Wildfire. Construction and operation of the Project has been found not to have potential impacts in these five resource areas. Each section includes summaries of regulatory setting and existing conditions for each resource area, followed by a brief evaluation in support of the conclusions that the Project would have no impacts. The resource areas discussed in this section will not be discussed further in this Environmental Impact Report.

Guidelines and key sources of data used in the preparation of this section include the following:

- Aerial photography
- Site plans
- Online resource maps
- Local government plans

3.1.1 Agricultural Resources

3.1.1.1 Regulatory and Policy Context

Federal

There are no federal agricultural and forestry regulations that are applicable to the proposed Project.

State

Pursuant to Government Code Section 65570, the California Department of Conservation (DOC) Farmland Mapping and Monitoring Program (FMMP) is required to collect and acquire information on the amount of land converted to or from agricultural use or between agricultural categories. FMMP also maintains the Important Farmland Series maps and an automated map and database system. FMMP produces maps and statistical data used for analyzing impacts on California's agricultural resources.

The California Land Conservation Act of 1965, codified in Government Code Section 51200 *et seq.* and also known as the Williamson Act, enables local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space use in exchange for tax benefits to the landowner.

Local

Figure 8-2 of the Contra Costa County General Plan designates areas of the County as important agricultural land. Chapter 8, Conservation Element, of the General Plan contains goals and policies relevant to the preservation of agricultural lands and encouraging the economic viability of said lands. These include Goals 8-G, 8-H and 8-I, and Policies 8-32, 8-36 and 8-39, which call upon the County to promote a healthy agricultural economy, preserve productive agricultural lands outside the County's Urban Limit Line, and to protect agricultural operations in the County by minimizing land use conflicts between agricultural and non-agricultural activities.

3.1.1.2 Existing Conditions

The Project Site is situated on the southern shore of the Carquinez Strait in Contra Costa County, California. The surrounding areas consist of marshland, open space, recreation areas, industrial areas and public lands. There are no existing agricultural land uses on the Project Site or in the immediate vicinity.

The Project Site has a General Plan land use designation of Heavy Industry (HI) and is zoned H-I Heavy Industrial District (CCC 2010, CCC 2021). The California DOC FMMP online mapper designates the Project Site as Urban and Built-Up Land.

3.1.1.3 Significance Criteria

For the purposes of this analysis, the Project is considered to have a significant agriculture and forestry impact if the Project Site is located on state or county-designated farmland or land with protected forestry resources and if the Project would:

- 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;
- Conflict with existing zoning for agricultural use, or a Williamson Act contract;
- Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)) or timberland (as defined in Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g));
- Result in the loss of forest land or conversion of forest land to non-forest use; or
- Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use.

3.1.1.4 Impacts Analysis

The FMMP online mapper and the Contra Costa County Important Agricultural Lands Map were used to determine the agricultural designation of the Project Site and vicinity. There are no lands designated by the DOC as Prime Farmland, Unique Farmland or Farmland of Statewide Importance on or adjacent to the Project Site (DOC 2021a).

The FMMP map designates the Project Site as Urban and Built Up Land, a designation that encompasses land occupied by a structure with a building density of at least one residential unit per 1.5 acres, or approximately six structures to a 10-acre parcel. Lands adjacent to the Refinery to the east and west are other industrial lands or are undeveloped marshlands; these lands are also designated as Urban and Built Up Lands or are designated as Other Lands, a category that includes low-density rural developments, wetland and riparian areas not suitable for livestock grazing, and 40-acre or larger vacant areas surrounded by urban development. Approximately 600 acres on the southern end of Marathon property, as well as 80,600 acres to the east of the Marathon property are designated as Grazing land, where existing vegetation is suited to grazing of livestock. The lands east of the Marathon property are also identified by the County as Important Agricultural Lands.

There are no existing or proposed agricultural land uses on the Project Site. As described in the General Plan, the Heavy Industry land use designation of the property is intended for heavy and light industrial uses on large areas of land proximate to truck, ship or rail facilities; agricultural or forestry uses are not among those listed as consistent with the Heavy Industry designation (CCC 2005). According to General Plan Figure 8-2, the Contra Costa County Important Agricultural Lands Map, the Project Site is not located on important agricultural land (CCC 2005). The Project Site is zoned as Heavy Industrial (H-I) on the County's Zoning Map. The allowable uses of property zoned H-I Heavy Industrial, as listed in Section 84-62.402 of the County Ordinance Code, excludes agricultural uses.

There is no Williamson Act contract applicable to the Project Site (CCC 2016). There is no zoning for forest land, timberland or timberland production currently on the Project Site or on surrounding properties. There are no existing forest land or timberland resources on the Project Site. The Project would not include conversion of Prime Farmland, Unique Farmland, Farmland of Statewide Importance, forested land or timberland resources, to other uses. The Project would not develop on any lands designated by the State as Grazing lands or designated by the County as Important Agricultural Lands; as such, the Project would not impair opportunities for future use of those lands for livestock grazing. Therefore, the proposed Project would have no impact to agricultural or forest resources.

3.1.2 Mineral Resources

3.1.2.1 Regulatory and Policy Context

Federal

There are no federal mineral resources regulations that are applicable to the proposed Project.

State

The Surface Mining and Reclamation Act of 1975 (SMARA, Public Resources Code Sections 2710-2796) provides a comprehensive surface mining and reclamation policy with the regulation of surface mining operations to assure that adverse environmental impacts are minimized and mined lands are reclaimed to a usable condition. SMARA requires the State Geologist to classify land into mineral resource zones based on the known or inferred mineral resource potential of that land. The primary goal is to ensure that important mineral resources do not become inaccessible due to uninformed land-use decisions.

Local

Chapter 8, Conservation Element, of the Contra Costa General Plan contains goals and policies relevant to the mineral resources in the County. These include Goals 8-M, 8-N and 8-O, and Policies 8-56, 8-57 and 8-59, which call upon the County to ensure continued viability of mineral extraction operations while ensuring that surrounding land uses and the natural environment are not negatively impacted by mining activities. Figure 8-4 of the General Plan Conservation Element designates areas of the County as important mineral resources areas.

3.1.2.2 Existing Conditions

The Project Site is currently developed and has operated as an existing crude oil refinery for over 100 years. Crude oil that is processed or stored at the Refinery is imported from off-site locations, and no mineral resource extraction activities occur on the Project Site.

3.1.2.3 Significance Criteria

For the purposes of this analysis, the Project is considered to have a significant impact to mineral resources if the Project Site is located on a state- or county-designated mineral resource, if the Project would disrupt mineral extraction operations and if the Project would:

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

3.1.2.4 Impact Analysis

The Project Site has been developed for several decades as an oil refinery, and there is no history of mineral resources being found on the Project Site. According to the DOC Mines Online Mapper, there are no active or retired mines on or near the Project Site (DOC 2021b). The California DOC under SMARA has not designated any areas in the County as areas of regional significance for construction aggregate (DOC 2021b).

The Contra Costa General Plan identified three regionally significant areas of mineral resources in the County. The areas of important mineral resources that are currently mined in the County include crushed rock near Mt. Zion, on the north side of Mt. Diablo, in the Concord area; shale in the Port Costa area; and sand and sandstone deposits, mined from several locations, but focused in the Byron area of southeast County. The closest mineral resource to the Project Site is the crushed rock found near Mt. Zion, which is approximately 10 miles southeast of the Project Site (CCC 2005). Neither the State Geologist nor the DOC has classified any other areas near the Project Site as containing mineral deposits that are either of statewide significance or the significance of which requires further evaluation.

The proposed Project would not result in the loss of a known commercially valuable or locally delineated important mineral resource. Therefore, there would be no impact to mineral resources.

3.1.3 Population and Housing

3.1.3.1 Regulatory and Policy Context

Federal

There are no federal population and housing regulations that are applicable to the proposed Project.

State

There are no state population and housing regulations that are applicable to the proposed Project.

Local

Association of Bay Area Governments (ABAG) Plan Bay Area 2040 Projections is the most recent in the ABAG series of statistical compendia on demographic, economic and land use changes in the coming decades. The projections illustrate how the region will accommodate growth if local jurisdictions adopt a set of policies consistent with the vision of Plan Bay Area 2040, the regional transportation plan and sustainable growth strategy for the nine-county San Francisco Bay Area. They make reasonable assumptions about the Bay Area's share of national economic growth informed by an understanding of the region's changing demographic characteristics.

The Contra Costa County General Plan Chapter 6, Housing Element, discusses the housing needs, constraints, resources and solutions for the unincorporated areas' residents. Each city and county must update its general plan housing element periodically, pursuant to the requirements of Government Code Section 65580 *et seq*. The Housing Element focuses on providing an assessment of both current and future housing needs and constraints in meeting these needs, and it includes a strategy for implementing housing goals, policies and programs in the County's unincorporated areas.

To facilitate and help fund construction of housing across various income levels, consistent with Housing Element goals and state law, the County offers developers of residential projects an increase in maximum densities permitted under zoning for residential projects that include an affordable housing component. Since 2006, the County has also enforced an inclusionary housing ordinance, which requires developers of applicable housing developments to restrict a percentage of the units for occupancy by low- or moderate-income households. Alternatives to providing inclusionary units, including dedication of land or payment of an in-lieu fee, are also provided in the ordinance. The density bonus allowance and inclusionary housing requirement are codified in Chapter 822-2 of the County Ordinance Code.

3.1.3.2 Existing Conditions

Contra Costa County is the tenth most populous county in California with an estimated 1,153,854 residents as of January 2021 (DOF 2021). In the County's unincorporated areas, single-family dwellings comprise 80 percent of the housing stock, multi-family units account for 15.5 percent of the housing stock, and the remaining 4.5 percent are mobile homes (CCC 2014). The unincorporated area of Contra Costa County has a household population of 167,980 (ABAG 2013). The ABAG Plan Bay Area 2040 projects the population of unincorporated Contra Costa County to reach a population of 197,375 people with 53,285 single-family households by 2040 (ABAG 2013).

The Project Site is developed as an existing oil refinery, and there are no existing housing units on the Project Site.

3.1.3.3 Significance Criteria

For the purposes of this analysis, the Project is considered to have a significant impact to population and housing if the Project would:

- Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure); or
- Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere.

3.1.3.4 Impact Analysis

The proposed Project occurs on a developed and currently industrial site. The Project does not include construction of new housing nor demolition of existing housing units, and therefore, the Project would not directly cause unplanned population growth in the region. Because the Project does not include construction of any residential units, the allowances and obligations of the County's density bonus and inclusionary housing ordinances are not applicable.

Indirect population growth occurs when a project creates substantial employment opportunities. The proposed Project consists primarily of changes in operation rather than construction of new facilities. The change in operation would consist of modifications to existing refining equipment and transportation terminals, and construction would last up to 3 years. The modifications would require approximately 1,400 temporary construction workers, who would work during different shifts each day but not necessarily for the entire construction period. Due to the lack of permanency in the construction and demolition phases of the Project, workers are anticipated to come from the existing labor pool in the County. Due to the change in Refinery production, the Refinery operators anticipate a reduction in the number of employees, from an average of 520 per day to 110 per day for ongoing operations under the Project. Therefore, there would be a net decrease in the workforce needed for the Project. The Project's modifications would not result in any change in the population, housing or employment projections that would exceed the County's population projections or conflict with County's Housing Element. Therefore, the Project would have no impact to population and housing.

3.1.4 Recreation

3.1.4.1 Regulatory and Policy Context

Federal

There are no federal recreation regulations that are applicable to the proposed Project.

State

There are no state recreation regulations that are applicable to the proposed Project.

Local

The Contra Costa County General Plan Chapter 9, Open Space Element, analyzes open space categorized as Scenic Resources, Historic/Cultural Resources and Park and Recreational Facilities. The Open Space Element contains a policy framework for preservation of open space lands, open space maps identifying lands and facilities subject to the policies contained therein and an implementation program.

General Plan Goal 9-J calls upon the County to promote active and passive recreational opportunities for the health, safety and welfare of the County's citizens, while Goal 9-K sets a

target of 4 acres of park facilities per 1,000 County residents. Policies 9-35 and 9-36 are specific to protection and development of public recreational opportunities along the Delta and waterfront.

To further the objectives of the General Plan, and in particular that of Goal 9-K, County Ordinance Code Chapter 920-6 imposes a requirement for developers to dedicate parkland or pay fees in lieu of dedication of parkland. The Parkland Dedication Fee Ordinance applies to certain residential projects but does not apply to industrial projects.

3.1.4.2 Existing Conditions

The California Department of Parks and Recreation manages and preserves 280 parks and 4,500 miles of trails (DPR 2021). There is one State Park located approximately 13 miles southeast of the Project Site, Mount Diablo State Park. The Project Site is located within unincorporated Contra Costa County. The East Bay Regional Park District (EBRPD) encompasses all of Contra Costa County and Alameda County and oversees 125,000 acres in 73 parks, including over 1,250 miles of trails and 55 miles of shoreline (EBRPD 2021a). The Waterbird Regional Preserve is the closest EBRPD park and is located approximately 1.5 miles west of the Project Site (EBRPD 2021b). The Waterbird Regional Preserve is open to the public and has multiple hiking trails. The Point Edith Wildlife Area neighbors the Project Site to the northeast. Point Edith Wildlife Area is a 761-acre tidal area consisting of sloughs and small ponds that flood at high tide. The area offers hunting and wildlife viewing from the outskirts (CDFW 2021). There are nearby water recreational opportunities on Suisun Bay and Carquinez Strait used by boat users and sport fishermen, including recreational marinas such as the Martinez Marina. Approximately 76 acres at the southern end of the Project Site is developed with a complex of recreational baseball, softball and soccer fields that are used by local sports clubs and teams but are part of the property owned by Marathon.

3.1.4.3 Significance Criteria

For the purposes of this analysis, the Project is considered to have a significant impact to Recreation if the Project would:

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

3.1.4.4 Impact Analysis

As stated in Section 3.1.3.4 above, the proposed Project would not induce long-term population growth to the area and, therefore, would not increase the need for parkland dedication established by County goals and policies. There would be an increase in construction workers during the 2 to 3 years of Project construction but an overall decrease in permanent workers associated with ongoing operation of the proposed Project. All proposed Project modifications would be located within the footprint of the existing Refinery or supporting marine oil terminals. Construction would not interfere with nor impair continued public access to nearby wildlife preserves and recreation areas on or off the property. Due to the overall decrease in operational workers for the

Refinery, and because there would be no expansion of existing recreational facilities proposed with the Project and no adverse effects to already existing parks and recreational facilities, the Project would have no impact to recreation.

3.1.5 Wildfire

3.1.5.1 Regulatory Context

Federal

There are no federal wildfire regulations that are applicable to the proposed Project.

State

The California Department of Forestry and Fire Protection (Cal Fire) and the Office of the State Fire Marshal publish maps that predict the threat of fire for each county within the state and are classified as either very high fire hazard severity zones (VHFHSZ) or non-VHFHSZ based on factors including fuel availability, topography, fire history and climate.

Local

The Contra Costa County Board of Supervisors, the Crockett-Carquinez Fire Protection District and the Contra Costa County Fire Protection District adopted the 2016 California Fire Code (California Code of Regulations, Title 24, Part, 9). The California Fire Code includes regulations for emergency planning and preparedness, building services and systems, fire and smoke protection features, construction requirements for existing buildings and more. Contra Costa County in cooperation with cities, towns, special districts and partners created and adopted an updated emergency operations plan on June 16, 2015, to ensure the most effective response to emergencies, including wildfire. The plan's wildfire strategy involves rural and urban fire detection and suppression, and lending expertise and support in emergency scene rescue activities (ground urban and rural search operations) by providing personnel, equipment and supplies.

3.1.5.2 Existing Conditions

The Project Site is a highly disturbed, industrial site and exists as an oil refinery. The proposed Project Site is not located within a VHFHSZ and is within a Local Responsibility Area, where local governments have financial responsibility for wildland fire protection. The closest VHFHSZ is located approximately 4.5 miles southwest of the Project Site on the west side of the City of Martinez (OSFM 2021). Adjacent to the Refinery is undeveloped open space, which includes wetlands, grasslands and marshes. Pacheco Creek borders and runs along the west side of the Project Site. Other smaller bodies of water, grasslands and marshes surround the Project Site.

3.1.5.3 Significance Criteria

For the purposes of this analysis, the Project is considered to have a significant impact to Wildfire if the Project is located in or near a State Responsibility Area or on lands classified as very high fire hazard severity zones, and if the Project would:

- Substantially impair an adopted emergency response plan or emergency evacuation plan;

- 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; or
- 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.

3.1.5.4 Impact Analysis

According to the Office of the State Fire Marshal's VHFHSZ online mapping tool, the Project Site is not within a VHFHSZ or a state or federal responsibility zone (OSFM 2021). The Project Site is located in a Local Responsibility Area and is not in or near a State Responsibility Area.

Approximately 400 acres of undeveloped grass lands and the Hastings Slough north and northeast of the on-site recreational fields are within the service area of the Contra Costa County Fire Protection District (LAFCO 2016). The closest operating fire station to the Refinery and Avon MOT is Contra Costa Fire Station 9, located at 209 Center Avenue in the unincorporated community of Pacheco, approximately 1.6 miles southwest of the Refinery; the closest fire station to the Amorco MOT is Station 14 located at 521 Jones Street in Martinez. Refinery operators maintain internal fire response teams and systems for the developed areas of the Refinery and MOTs. On-site fire suppression systems include fire pumps, foam systems, firefighting engines and trucks, and fire hydrants spaced 200 feet apart in refining process areas and tank farms (Marathon 2021). Due to the developed nature and relatively flat topography of the Project Site, the Project would not exacerbate fire risks. There are some seasonal grasses on-site that could burn if ignited in dry weather. However, because the Project Site is not within or near a VHFHSZ, is not adjacent to heavily forested wildlands, and maintains multiple on-site fire suppression systems, the Project would not lead to the exacerbation of wildland fire risks. The proposed Project does not include any aspects that would impede the Emergency Operation Plan or other emergency responses for the County, such as lane closures, impeding necessary resources or services or disrupting communication procedures. Therefore, the Project would have no wildfire impact.

3.1.6 References

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3.2 AESTHETICS

This section describes the visual quality effects of Marathon's proposed conversion of its Martinez Refinery (Refinery) from processing crude oil to processing renewable feedstocks. The conversion would include modifications to existing processing units, the installation of new units and removal of obsolete units. This section analyzes the potential changes to the visual landscape due to the proposed modifications.

The key sources of data used to assess the visual quality effects include aerial views from Google Earth (March 2021), a Site visit conducted in March 2021, and figures presented in Chapter 2, Project Description, including:

- Figure 2-3: Current Site Plan
- Figures 2-4a to 2-4e: Proposed Refinery Modifications
- Figure 2-5: Proposed Design and Equipment Layout (West looking East)
- Figure 2-6: Proposed Design and Equipment Layout (South looking North)
- Figure 2-7: Proposed Design and Equipment Layout (looking East)
- Figure 2-8: Proposed Design and Equipment Layout (looking North)

3.2.1 Environmental Setting

3.2.1.1 Regulatory and Policy Context

Federal

There are no federal plans, policies or regulations that are applicable to this resource area.

State

The California Scenic Highway Program was created in 1963 to preserve and protect highway corridors in areas of outstanding natural beauty from changes that would diminish the aesthetic value of the adjacent lands. The California Department of Transportation (Caltrans) designates highways as scenic highways based on how much of the landscape can be seen by travelers, the scenic qualityof the landscape, and the extent to which views are compromised by development.

The California Scenic Highway Program is governed by the regulations found in the Streets and Highways Code, Section 260 *et seq*. Section 261 requires local government agencies to take the following actions to protect the scenic appearance of the scenic corridor:

- Regulate land use and density of development
- Provide detailed land and site planning
- Prohibit off-site outdoor advertising and control on-site outdoor advertising
- Pay careful attention to and control earthmoving and landscaping
- Scrutinize the design and appearance of structures and equipment

Local

The following goals, policies and implementation measures for scenic resources are stated in the Contra Costa County, General Plan 2005-2020, Chapter 9: Open Space Element (CCC 2010), and are applicable to the proposed Project.

Scenic Resources Goals

9-D To preserve and protect areas of identified high scenic value, where practical, and in accordance with the Land Use Element Map.

9-F To preserve the scenic qualities of the San Francisco Bay/Delta estuary system and the Sacramento-San Joaquin River/Delta shoreline.

Scenic Resources Policies

9-10 In areas designated for urban development, the principles outlined below shall be applied in the review of development proposals.

9-13 Providing public facilities for outdoor recreation should remain an important land use objective in the county, as a method of promoting high scenic quality, for air quality maintenance, and to enhance outdoor recreation opportunities of all residents.

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.

9-25 Maintenance of the scenic waterways of the county shall be ensured through public protection of the marshes and riparian vegetation along the shorelines and delta levees, as otherwise specified in this Plan.

9-27 Physical and visual public access to established scenic routes shall be protected.

Scenic Resources Implementation Measures

9-b Carefully study and review any development projects which would have the potential to degrade the scenic qualities of major significant ridges in the county or the bay and delta shoreline.

3.2.2 Existing Conditions

The Contra Costa County General Plan 2005 – 2020, Chapter 9: Open Space Element identifies the San Francisco Bay/Delta estuary system as one of the County's main visual resources, along with scenic ridges and hillsides. Throughout much of Contra Costa County, there are significant topographic variations in the landscape. The largest and most prominent of these hills form the backdrop for much of the developed portions of the area. Views of these major ridgelines help to reinforce the rural feeling of the County and provide an important balance to development.

The General Plan identifies the Sacramento River Delta as another prominent visual resource in the County. Specifically, the General Plan states:

> *The other major scenic resource of Contra Costa County is the extensive water and delta system of San Francisco, San Pablo, and Suisun Bays. The bays extend along the entire western and northern perimeter of the county. This waterway system provides a pleasant contrast to the landforms of the area. Where the water reaches the shoreline, a mix of land uses occur: salt marshes, railroad tracks, industrial activities, housing and parkland. (9-5)*

The Refinery is located at 150 Solano Way, Martinez, California (the Site). The Site is situated on the Carquinez Strait in Contra Costa County (see Figure 2-1). The Refinery is located 3.25 miles east of downtown Martinez along Solano Way between Waterfront Road and Monsanto Way. Access to the Refinery is provided from the south via a gated entrance on Solano Way and from the west via a gated entrance on Waterfront Road.

The property is generally flat, with elevations ranging from a high of 130 feet above mean sea level just north of Arnold Industrial Way, down to 10 feet above mean sea level near the Suisun Bay shoreline just over 2 miles north of the high point. Views of the Carquinez Strait are in the background to the north of the Refinery property, and views of the Diablo Mountain Range and East Bay Hills are in the background to the southwest.

The developed portions of the property are primarily devoted to petroleum refining and associated uses, including oil processing units, raw material and product storage tanks, aboveground pipelines, wastewater treatment facilities, railroad lines and spurs and a receiving wharf and pipeline at the Suisun Bay shoreline. Refining equipment extends as high as 190 feet above sea level and is illuminated for nighttime safety and security. The Site also includes administrative support functions housed in single-story and low-rise buildings, vehicle parking, and internal access roads.

The undeveloped land on the Marathon property includes open fields on the eastern and southeastern portion of the Project Site and wetlands in the northeastern portion of the Project Site north of Waterfront Road. The undeveloped portions of the Refinery property extend east to Port Chicago Highway. Recreational club baseball, softball and soccer fields are at the south end of the property.

The visual character in the immediate vicinity of the Project Site is industrial in nature. Proximate industrial businesses include a landfill and transfer station, concrete recycling plant, and the Central Contra Costa Sanitary District wastewater treatment plant. Other industrial uses in the vicinity include: shipping terminals, including the Amorco Marine Oil Terminal, Avon Marine Oil Terminal, and TransMontaigne Operating Terminal; refineries, including the PBF (formerly Shell) Martinez Refinery, Valero Benicia Refinery, and Phillips 66 San Francisco Refinery (in Rodeo); the port of Benicia; C&H Sugar in Crockett; and other industrial uses in Benicia and Martinez. From Interstate Highway 680 to the Point Edith Wildlife Area on the east of the Project Site, the visual setting is open space, characterized by views of the marsh and shoreline. The marshland includes wetland grasses, low-level shrubs, and small ponds. The Contra Costa Water District's Mallard Reservoir is east of the property.

3.2.3 Impact Analysis

3.2.3.1 Methodology for Impact Analysis

The visual impact analysis is based on field observations conducted in March 2021, a review of the Project plans and drawings provided by Marathon and presented in the Project Description, and aerial views from Google Earth (March 2021). The analysis performed for this section, while qualitative in nature, takes into consideration the three criteria as described below:

- **Visual Quality:** The measure of the overall impression or appeal of an area or existing

view as determined by a particular landscape characteristic.

- **Viewer Sensitivity:** Defined as both the viewer's concern for scenic quality and the viewer's response to change in the visual resources that compose the view.

- **Viewer Exposure:** Typically assessed by measuring the number of viewers exposed to the source change, type of viewer activity, duration of their view, speed at which the viewers are moving and position of the viewer.

This analysis also incorporates relevant local land use plans and policies related to visual and scenic resources. No state-designated scenic highways are within the vicinity of the Project Site.

3.2.3.2 Significance Criteria

For the purposes of this analysis, the Project is considered to have a significant aesthetic impact if it would:

- Have a substantial adverse effect on a scenic vista;
- Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings and historic buildings within a state-designated scenic highway;
- Substantially degrade, in non-urbanized areas, the existing visual character or quality of public views of the site and its surroundings, where public views are those that are experienced from publicly accessible vantage points;
- Conflict with applicable zoning and other regulations governing scenic quality for a project site located in an urbanized area; or
- Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.

3.2.4 Impacts and Mitigation Measures

Construction-related Impacts

Impact AES-1. Have a substantial adverse effect on a scenic vista. (Less than Significant)

The Project Site is not in a location considered to be a scenic vista based on the Contra Costa County General Plan. The Project would not impact views of the Carquinez Strait nor the scenic ridgeways in Contra Costa County. The property has low visual quality and sensitivity. Construction activities within the Project Site would not impact a scenic vista.

Mitigation Measure: No mitigation would be required.

Impact AES-2. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway. (Less than Significant)

There are no scenic highways within the Project vicinity. Caltrans, under authority of Streets and Highways Code Sections 260 through 263, designates qualifying state-maintained highways as

listed or eligible for listing in the State Scenic Highway Program. Although Interstate Highway 680 and State Route 4 are both less than 1 mile from the western and southern property lines, respectively, of the Refinery, neither segment of freeway near the Project Site is listed or eligible to be listed as a State Scenic Highway.

Construction activities would take place within the existing Refinery property. Project plans show that new equipment for the Project would be installed among existing refining equipment in the industrially developed portion of the Marathon property. Installation of new equipment or decommissioning of existing equipment not needed for the Project would not require removal of trees or grading of hilly terrain or rock outcroppings because of the location of the equipment within the developed Refinery footprint. While the Project Site is visible from Solano Way, Waterfront Road, Imhoff Drive and State Route 4, the perspectives toward the Project Site from these public roadways are not considered to be of high visual quality because of the presence of intervening industrial developments, including commercial building complexes, a wastewater treatment plant, rail spurs, solid waste management facilities and building material yards.

Mitigation Measure: No mitigation would be required.

Impact AES-3. Substantially degrade, in non-urbanized areas, the existing visual character or quality of public views of the site and its surroundings, where public views are those that are experienced from publicly accessible vantage points. (Less than Significant)

The Project Site is partially visible from nearby State Route 4, Arnold Industrial Way, Solano Way and Waterfront Road and from vessels on Suisun Bay. Waterbird Regional Preserve is approximately 1 mile west of the Project Site, and the immediate topography blocks direct views of the Project Site. The existing visual character of the facility from public viewpoints is of an industrial facility within an industrial area. Construction activities within the Project boundary would not change the existing visual character of the Site as viewed from public vantage points but rather would be consistent with the current on-site industrial operations.

Mitigation Measure: No mitigation would be required.

Impact AES-4. Conflict with applicable zoning and other regulations governing scenic quality for a project site located in an urbanized area. (Less than Significant)

The Project Site is located on unincorporated land zoned H-I Heavy Industrial District and designated Heavy Industry (HI) in the County General Plan. The Contra Costa General Plan 2005 – 2020, Chapter 9: Open Space Element has goals and policies for maintaining and enhancing the scenic quality of natural resources and lands within the County. Applicable Scenic Resources goals, policies and implementation measures within the General Plan are intended to preserve recreational and natural resources for their visual quality, and they encourage the use of large setbacks and landscaping to buffer the potential visual impacts of development.

The Project does not conflict with any applicable zoning or regulations and policies governing scenic quality for the Site. The Project is consistent with the industrial uses envisioned for the H-I District, and there are no maximum height or minimum yard standards specified in County Ordinance Code Section 84-62-602 with which the Project must comply. Project construction

and demolition would occur within the developed areas of the Refinery, would not expand the Refinery's existing footprint, and would not affect existing visual or public access to recreational and natural amenities on or off the Marathon property.

Mitigation Measure: No mitigation would be required.

Impact AES-5. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area. (Less than Significant)

The lighting and glare analysis in this section addresses the two issues of nighttime illumination and reflected light (glare). Nighttime illumination impacts are evaluated in terms of the Project's net change in ambient lighting conditions and proximity to light sensitive land uses. Reflected light impacts are analyzed to determine if Project-related glare would create a visual nuisance or hazard.

The Refinery currently operates 24 hours per day, and the Site is lighted for nighttime work activities. If nighttime construction was to occur, it would not be noticeably different from what currently occurs, nor would it increase night lighting at the Project Site.

The construction of the new equipment units would take place within the currently developed portions of the Project Site and are not expected to introduce significant new sources of glare during the daytime hours that would create a visual nuisance or hazard.

Mitigation Measure: No mitigation would be required.

Operational Impacts

Impact AES-1. Have a substantial adverse effect on a scenic vista. (Less than Significant)

The existing Refinery is located in an industrial area in Contra Costa County and near a number of other industrial facilities in Martinez and Benicia. New unit construction activities (e.g., feedstock pretreatment unit, thermal oxidizer and Stage 1 wastewater treatment) would occur within the operating portions of the existing Refinery. While several new units would be constructed, the views of the Refinery would remain essentially unchanged and continue to include views of heavy industrial equipment. Because the scenic vistas in the area are limited to the Benicia-Martinez Bridge, the proposed Project is not expected to change the views from this bridge or of the area in general.

The Project Site is not in a location considered to be a scenic vista based on the Contra Costa County General Plan. New construction activities would occur within the operating portions of the existing Refinery. While several new units would be constructed, the tallest new structure (HDO Reactor) would have an elevation of 140 feet and would be shorter than the tallest structure currently on the property. Views of the Refinery would, therefore, remain essentially unchanged and continue to include views of heavy industrial equipment. The new units within the Project Site would not impact a scenic vista.

Mitigation Measure: No mitigation would be required.

Impact AES-2. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic building within a state scenic highway. (Less than Significant)

There are no scenic highways within the Project vicinity. The Project Site does not contain trees, rock outcroppings, historic buildings or other scenic resources. New units at the Refinery would not be visible from a State Scenic Highway.

Mitigation Measure: No mitigation would be required.

Impact AES-3. Substantially degrade, in non-urbanized areas, the existing visual character or quality of public views of the site and its surroundings, where public views are those that are experienced from publicly accessible vantage points. (Less than Significant)

The Project Site is partially visible from nearby roads: State Route 4, Arnold Industrial Way, Solano Way and Waterfront Road. It is also visible from vessels on Suisun Bay. Waterbird Regional Preserve is approximately 1 mile west southwest of the Project Site, and the immediate topography blocks direct views of the Project Site. The existing visual character of public views is one of an industrial facility within an industrial area. The new units within the Project boundary would blend in with the other units at the Refinery and they would not change the existing visual character of the Site as viewed from public vantage points.

Mitigation Measure: No mitigation would be required.

Impact AES-4. Conflict with applicable zoning and other regulations governing scenic quality for a project site located in an urbanized area. (Less than Significant)

The Project would take place on land zoned H-I Heavy Industrial District. The Contra Costa General Plan, Chapter 9: Open Space Element has goals and policies for maintaining and enhancing the scenic quality of natural resources and lands within the County. The Project does not conflict with applicable zoning or development regulations, such as building height, that govern scenic quality for the Site.

Mitigation Measure: No mitigation would be required.

Impact AES-5. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area. (Less than Significant)

The proposed Project would result in the construction of several new process units, including the Pretreatment Unit, which may require lighting for nighttime operations. The new units would be installed in the operating portions of the Refinery, which are already lighted for nighttime operations and would not be expected to result in a noticeable change to the overall lighting at the Refinery. The new equipment units would be installed within the currently developed portions of the Project Site and are not expected to introduce significant new sources of glare during the daytime hours that would create a visual nuisance or hazard. Therefore, the proposed

Project is not expected to result in significant light or glare impacts or have adverse aesthetic impacts to the surrounding community.

Mitigation Measure: No mitigation would be required.

3.2.5 References

California Department of Transportation. List of eligible and officially designated State Scenic Highways and List of Officially Designated County Scenic Highways. Online: https://dot.ca.gov/programs/design/lap-landscape-architecture-and-community-livability/lap-liv-i-scenic-highways. Accessed online: July 6, 2021.

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3.3 AIR QUALITY

Chapter 3.3 describes the existing air quality conditions and setting for the Martinez Refinery Renewable Fuels Project (Project), at the existing Tesoro Refining & Marketing Company, LLC facility, which currently operates as a fossil fuels-processing site. The regulatory background section includes a discussion of the potentially applicable federal, state and local air quality regulations. The impact analysis and methodology section discussion includes significance criteria, anticipated air pollutants, risks to human health and impacts on the surrounding environment.

Some information included in this section has been adapted from the Project Applicant's Authority to Construct permit application submitted to the Bay Area Air Quality Management District (BAAQMD [ALG and Barr 2020]) and Air Quality and Greenhouse Gas Technical Analysis (ALG and Barr 2021a), included as Appendix AQ in this EIR.

The Marathon Martinez Refinery (the Refinery) is currently permitted to process approximately 161,000 barrels per day (bpd) of crude oil. After completion of the project, the facility's capacity would be approximately 48,000 bpd of renewable feedstocks. Many of the facility's other operations, including the receipt, storage and distribution of petroleum products, would continue, although with some modification of existing equipment. The major change would be the elimination of crude oil processing and the use of renewable feedstocks to manufacture renewable fuels. The renewable feedstocks are expected to include biological-based oils (e.g., soybean oil and corn oil), rendered fats and other miscellaneous renewable feedstocks including but not limited to used cooking oils, other vegetable oils and alternative biologically-derived feedstocks. Equipment that is not needed for the production of renewable fuels would be shut down and eventually removed from the Project Site. Sources that would be permanently shut down would include several refinery process units, storage tanks, cooling towers, heaters and boilers.

As described in Chapter 2 Project Description, most of the changes to the Refinery are associated with upgrading existing equipment so that it can process renewable feedstocks (e.g., soybean oil, corn oil, rendered fats, and other miscellaneous renewable feedstocks). Certain new units would be installed, including a new renewable feedstock pretreatment unit and new wastewater treatment equipment. Refinery equipment not associated with the proposed Project or product distribution activities would be shut down (see **Table 3.3-1** below). The Project is expected to continue to use certain existing units, including storage tanks, interconnecting piping, wastewater treatment, hydrogen plants, cogeneration units, some cooling towers, flares, loading/unloading facilities and existing gas plant equipment.

Table 3.3-1: Existing Emissions Sources to be Shut Down

Source Number	Source Description	Source Category
97	Fluid Catalytic Cracking Units (FCCU) Catalyst Fines Hopper, Abated by A30 Electrostatic Precipitator or by A3 and A4 (Cyclone and Baghouse)	Fluid Catalytic Cracking Unit
98	FCCU East Catalyst Hopper, Abated by A30 ESP or by A3 and A4 (Cyclone and Baghouse)	Fluid Catalytic Cracking Unit
99	FCCU West Catalyst Hopper, Abated byA30 ESP or by A3 and A4 (Cyclone and Baghouse)	Fluid Catalytic Cracking Unit
606	50 Unit Wastewater Air Stripper A [Brine Stripper], Abated by S950 (F50)	Wastewater
607	50 Unit Wastewater Air Stripper B [Brine Stripper], Abated by S950 (F50)	Wastewater
771	Tank 2-A-713, White, Diethylamine (Alcohol, Amine)	Storage Tanks
795	#3 Reformer V-307, Tan Perchloroethylene, Abated by A-796 Vapor Balance during loading	Storage Tanks
802	FCCU Fluid Catalytic Cracker Regenerator, Abated by S-901 CO Boiler and A-30 ESP	Fluid Catalytic Cracking Unit
804	FCCU Blowdown Tower	Fluid Catalytic Cracking Unit
815	No. 1 Feed Prep	Equipment Leaks
816	No. 2 Feed Prep	Equipment Leaks
821	Coke Storage Pile	Fugitive Dust
822	Cracker Area Blowdown	Equipment Leaks
834	No. 50 Crude Unit Blowdown Drum	Equipment Leaks
851	Ammonia Recovery Unit	Equipment Leaks
853	FCCU Feed Surge Drum	Equipment Leaks
856	Spare DEA Stripper	Equipment Leaks
901	No. 7 Boiler, Refinery Fuel Gas, FCCU Flue Gas, Abates: S802	Stationary Combustion
902	FCCU Startup Heater, (Startup use only),Refinery Fuel Gas, Natural Gas	Stationary Combustion

Table 3.3-1: Existing Emissions Sources to be Shut Down

Source Number	Source Description	Source Category
904	No. 6 Boiler, Refinery Fuel Gas	Stationary Combustion
908	No. 3 Crude Heater (F8), Natural Gas, Refinery Fuel Gas, Abated by A-908 Selective Catalytic Reduction	Stationary Combustion
909	No. 1 Feed Prep Heater (F9), Refinery Fuel Gas, Natural Gas	Stationary Combustion
913	No. 2 Feed Prep Heater (F13), Refinery Fuel Gas, Natural Gas	Stationary Combustion
915	Platformer Intermediate Heater (F15), Refinery Fuel Gas, Natural Gas	Stationary Combustion
916	No. 1 HDS Heater (F16), Natural Gas, Refinery Fuel Gas	Stationary Combustion
917	No. 1 HDS Prefract Reboiler (F17), Refinery Fuel Gas, Natural Gas	Stationary Combustion
921	No. 2 HDS Charge Heater (F21), RefineryFuel Gas, Natural Gas	Stationary Combustion
926	No. 2 Reformer Splitter Reboiler (F26), Refinery Fuel Gas, Natural Gas	Stationary Combustion
927	No. 2 Reformer Heat/Reheating (F27), Refinery Fuel Gas, Natural Gas, Abated by A-1431 SCR	Stationary Combustion
950	50 Unit Crude Heater (F50), Refinery Fuel Gas, Natural Gas, Abated by A-1432 SCR, Abates: S-606; S-607	Stationary Combustion
951	No. 2 Reformer Aux Reheater (F51), Refinery Fuel Gas, Natural Gas	Stationary Combustion
955	Internal Combustion Engine: No. 4 Gas Plant Vapor Compressor No. 4064, Natural Gas, Abated by A-955 SCR	Stationary Combustion
956	Internal Combustion Engine; No. 4 Gas Plant Vapor Compressor No. 4065, Natural Gas, Abated by A-956 SCR	Stationary Combustion
957	Internal Combustion Engine; No. 4 Gas Plant Vapor Compressor NO. 4066, Natural Gas, Abated by A-957 SCR	Stationary Combustion

Table 3.3-1: Existing Emissions Sources to be Shut Down

Source Number	Source Description	Source Category
958	Internal Combustion Engine; No. 4 Gas Plant Vapor Compressor No. 4067, Natural Gas, Abated by A-958 SCR	Stationary Combustion
959	Internal Combustion Engine, No. 4 Gas Plant Vapor Compressor No. 4068, Natural Gas, Abated by A-959 SCR	Stationary Combustion
960	Internal Combustion Engine; No. 4 Gas Plant Vapor Compressor No. 4096, Natural Gas, Abated by A-960 SCR	Stationary Combustion
971	No. 3 Reformer Furnace (F53), Refinery Fuel Gas, Natural Gas, Abated by A-1433 SCR. A-1433 vents to combined stack with S-972	Stationary Combustion
972	No. 3 Reformer Debutanizer Reboiler (F54), Refinery Fuel Gas, Natural Gas, S-972 shares stack with S-971, but flue gas from S-972 is not abated by A1433.	Stationary Combustion
974	No. 3 HDS Fract Feed Heater (F56), Refinery Fuel Gas, Natural Gas, Abated by A-31 SCR on combined stack (P79) with S-973	Stationary Combustion
975	No. 4 Gas Plant Cooling Tower	Cooling Towers
977	No. 3 Crude Unit Cooling Tower	Cooling Towers
979	No. 2 Feed Prep Cooling Tower	Cooling Towers
983	Alky/No. 2 Reformer Cooling Tower	Cooling Towers
987	No. 50 Unit Cooling Tower	Cooling Towers
988	No. 3 Reformer Cooling Tower	Cooling Towers
990	Rich DEA Tank, Tank 749, Green, Abated by A-1526 packed bed scrubber and A- 1525 Sulfur Recovery Unit (SRU) Stack Incinerators	Storage Tanks
1001	No. 50 Crude Unit	Equipment Leaks
1004	No. 2 Catalytic Reformer	Catalytic Reforming Unit
1006	No. 1 HDA Unit	Equipment Leaks
1009	Alkylation Unit	Equipment Leaks
1020	No. 3 UOP Reformer	Catalytic Reforming Unit

Table 3.3-1: Existing Emissions Sources to be Shut Down

Source Number	Source Description	Source Category
1038	Benzene Saturation/Pentane-Hexane Isomerization	Equipment Leaks
1040	Butadiene Unit	Equipment Leaks
1105	No. 4 HDS Unit	Equipment Leaks
1106	No. 4 HDS Reactor Feed Heater (F72), Natural Gas	Stationary Combustion
1401	Sulfur Recovery Unit, Abated by A-1402 Shell Claus Off-gas Treatment (SCOT) Tail Gas Unit and A-1525 SRU Stack Incinerators	Sulfur Recovery Unit
1404	Sulfur Storage Tank A-756, Abated by A-1422 Venturi Scrubber	Storage Tanks
1405	Sulfur Collection Pit, Abated by SRU (S1401) or Sulfuric Acid Plant (SAP) (S1411)	Storage Tanks
1418	Rich DEA Tank A-750, Abated by A-1418Packed Bed Scrubber and Abated by A- 1525 SRU Stack Incinerators	Storage Tanks
1422	Sour Water Feed Tank M-782 Ammonia Recovery Unit Feed Tank	Storage Tanks
1470	No. 3 Crude Vacuum Distillation Heater (F71), Refinery Fuel Gas, Natural Gas, Abated by A-908 SCR	Stationary Combustion
1484	Oil Water Separator; Pressure Vessel, 50 Unit Desalter Brine, A-14 Vapor Recovery	Wastewater
1510	Delayed Coker	Equipment Leaks
1513	Coke Screen/Crusher	Fugitive Dust
1514	Coke Silo #1, Abated by A-1514 Baghouse	Fugitive Dust

Source: ALG/Barr 2021: Table 3-1: Preliminary Draft Air Quality and Greenhouse Gas Technical Analysis, Martinez Renewable Fuels Project. April 2021

3.3.1 Environmental Setting

The proposed Project would occur within Contra Costa County, in the San Francisco Bay Area Air Basin (SFBAAB) that encompasses Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, Napa, southwestern Solano and southern Sonoma counties.

The proposed Project would be constructed primarily within the jurisdiction of the BAAQMD, which incorporates the same area as the SFBAAB. The proposed Project is also located within the San Francisco Bay Area Interstate Air Quality Control Region as defined by the federal Clean Air Act (CAA) of 1971. This Project also includes changes at offsite terminals located within the San Joaquin Valley Air Pollution Control District (SJVAPCD) jurisdiction. Emissions from marine vessels, trucks, and rail associated with the transport of feed materials and finished product would occur within the SFBAAB, state of California, and other states.

3.3.1.1 Local Climatology

The Project Site is within the Diablo and San Ramon valleys, which are geographically situated northeast of San Francisco. The valleys have a northwest to southeast orientation, with the northern portion known as Diablo Valley and the southern portion as San Ramon Valley. The Diablo Valley is bordered in the north by the Carquinez Strait and in the south by the San Ramon Valley. The San Ramon Valley is long and narrow and extends southward from the City of Walnut Creek to the City of Pleasanton.

The mountains on the west side of these valleys block much of the marine air from reaching the valleys. During the daytime, there are two predominant flow patterns: an upvalley flow from the north and a westerly flow (wind from the west) across the lower elevations of the Coast Range. On clear nights, surface inversions separate the flow of air into two layers: the surface flow and the upper layer flow. When this happens, there are often drainage surface winds that flow downvalley toward the Carquinez Strait.

Wind speeds in these valleys generally are low. Monitoring stations in Concord and Danville report annual average wind speeds of 5 miles per hour. Winds can increase in the afternoon near San Ramon because it is located at the eastern edge of the Crow Canyon gap. Through this gap, polluted air from cities near the Bay travels to the valley in the summer months. Air temperatures in these valleys are cooler in the winter and warmer in the summer than are temperatures further west, as these valleys are far from the moderating effect of the Bay and ocean. Mean summer maximum temperatures are in the low- to mid-80s. Mean winter minimum temperatures are in the high-30s to low-40s (BAAQMD 2017b).

The air pollution potential is lowest for those regions closest to the bay, due largely to instability and strong atmospheric mixing characteristics created by onshore winds. During summer and fall, air emissions generated within the Bay Area, especially inland, can combine with sunshine under the restraining influences of topography to create conditions that are conducive to the buildup of photochemical pollutants, such as ozone (O_3), and secondary pollutants, such as sulfates and nitrates. Also, stable conditions characterized by low wind speeds contribute to increased concentrations of air pollutants due to accumulation in the air mass. However, pollution potential is relatively high within the Diablo-San Ramon valleys. On winter evenings, light winds combined with surface-based inversions and terrain that restricts air flow can cause pollutant levels to build up. San Ramon Valley can experience high pollution concentrations due to motor vehicle emissions and emissions from fireplaces and wood stoves. In the summer months, ozone and ozone precursors are often transported into the valleys from both the central San Francisco Air Basin and the Central Valley (BAAQMD 2017).

3.3.1.2 Site Setting and Sensitive Receptors

The Project Site is located on the Carquinez Strait and lower Suisun Bay. The Refinery is located at 150 Solano Way, 3.25 miles east of downtown Martinez in unincorporated Contra Costa County. The Avon Marine Oil Terminal (MOT) is located on the lower Suisun Bay, approximately 1.75 miles east of the Benicia-Martinez Bridge, also in unincorporated Contra Costa County. The Amorco MOT is located approximately 0.25 miles west of the Benicia-Martinez Bridge in an industrial area of the City of Martinez. The Carquinez Strait is the only sea-level gap between the San Francisco Bay and the Central Valley. Elevations in excess of 900 feet are reached in the surrounding hills of the Franklin Ridge, located west of Martinez. Topography to the north, across the Carquinez Strait, is also hilly. These topographical features create a high-pressure gradient causing high wind flows through the Carquinez Strait. Mount Diablo is also a major topographical feature with an elevation of over 3,800 feet, located approximately 15 miles to the southeast in Mount Diablo State Park.

For the purposes of air quality, sensitive receptors are generally defined as land uses with population concentrations that would be particularly susceptible to disturbance from dust or air pollution associated with the operation of the Marathon Refinery. These receptors generally include schools, day care centers, hospitals, residential care centers, parks and churches. The nearest school to the property lines of the Refinery or MOTs is the Floyd I. Marchus School, located 0.53 miles southwest of the Project Site. Refer to Table E-1 in Appendix C of the *Air Quality and GHG [Greenhouse Gas] Technical Analysis* (ALG and Barr 2021a) for a list of other sensitive receptors.

3.3.1.3 Air Quality Standards and Criteria Pollutants

Criteria Air Pollutants

Criteria air pollutants are those pollutants for which federal and state governments have established air quality standards for outdoor or ambient concentrations to protect public health. The national and state ambient air quality standards have been set at levels to protect human health with a determined margin of safety. For some pollutants, there are also secondary standards to protect the environment.

The United States Environmental Protection Agency (U.S. EPA) has established ambient air quality standards for the following air pollutants:

- ozone (O_3)
- carbon monoxide (CO)
- nitrogen dioxide (NO_2)
- sulfur dioxide (SO_2)
- lead
- particulate matter (PM_{10} and $PM_{2.5}$)

The California Air Resources Board (CARB) has also established ambient air quality standards for the six pollutants regulated by the U.S. EPA. Some of the California ambient air quality standards (CAAQS) are more stringent than the national ambient air quality standards (NAAQS). In addition, California has established ambient air quality standards for the following pollutants or air quality conditions:

- hydrogen sulfide (H_2S)
- sulfates
- vinyl chloride
- particulates reducing visibility

Table 3.3-2: Criteria Air Pollutants summarizes the most prevalent sources of air pollution known to cause serious health effects (BAAQMD 2017b). The U.S. EPA and CARB currently focus on the following air pollutants as indicators of ambient air quality: O_3, NO_2, CO, SO_2, particulate matter (PM) and lead. Because these are the most prevalent air pollutants known to be deleterious to human health and extensive health-effects criteria documents are available, they are commonly referred to as "criteria air pollutants."

Table 3.3-2: Criteria Air Pollutants

Pollutant	Averaging Time	CAAQS[a]	NAAQS[b]	
			Primary[c]	Secondary[d]
Ozone (O_3)	1 hour 8 hours	0.09 ppm 0.070 ppm	-- 0.070 ppm	-- 0.070 ppm
Carbon monoxide (CO)	1 hour 8 hours	20 ppm 9.0 ppm	35 ppm 9 ppm	-- --
Nitrogen dioxide (NO_2)	1 hour Annual Arithmetic Mean	0.18 ppm 0.030 ppm	0.100 ppm e 0.053 ppm	-- 0.053 ppm
Sulfur dioxide (SO_2)	1 hour 3 hours 24 hours Annual Arithmetic Mean	0.25 ppm -- 0.040 ppm --	0.075 ppm [f] -- 0.014 ppm 0.030 ppm	-- 0.5 ppm -- --
Particulate matter less than 10 microns (PM_{10})	24 hours Annual Arithmetic Mean	50 µg/m^3 20 µg/m^3	150 µg/m^3 --	150 µg/m^3 --
Particulate matter less than 2.5 microns ($PM_{2.5}$)	24 hours Annual Arithmetic Mean	-- 12 µg/m^3	35 µg/m^3 12 µg/m^3	35 µg/m^3 15 µg/m^3
Lead [g]	30-day Average Calendar Quarter	1.5 µg/m^3 --	-- 1.5 µg/m^3	-- 1.5 µg/m^3

Table 3.3-2: Criteria Air Pollutants

Pollutant	Averaging Time	CAAQS[a]	NAAQS[b]	
			Primary[c]	Secondary[d]
	Rolling 3-month Average	--	0.15 µg/m^3	0.15 µg/m^3
Visibility reducing particles (VRP) [g]	8 hours	[h]	--	--
Sulfates	24 hours	25 µg/m^3	--	--
Hydrogen sulfide (H_2S)	1 hour	0.03 ppm	--	--
Vinyl chloride	24 hours	0.01 ppm	--	--

Notes:
ppm = parts per million
µg/m3 = micrograms per cubic meter
-- = No standard has been adopted for this averaging time

a CAAQS for ozone, CO (except 8-hour Lake Tahoe), SO2 (1 and 24 hour), NO2, and PM (PM10, PM2.5 and VRP), are values that are not to be exceeded. All others are not to be equaled or exceeded.

b NAAQS (other than ozone, PM and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over 3 years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m3 is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard.

c Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.

d Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

e To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 0.100 ppm.

f To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 0.075 ppm.

g CARB has identified Pb and vinyl chloride as “toxic air contaminants” with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

h Particles in sufficient amount to produce an extinction coefficient of 0.23 per kilometer due to particles when the relative humidity is less than 70 percent.

Source: CARB 2016

The Bay Area is in attainment of the CAAQS for CO, NO_2 and SO_2. However, the Bay Area is not in compliance with the state’s 24-hour PM_{10} standard, annual PM_{10} standard and annual $PM_{2.5}$ standard. Federal attainment for CO, NO_2, SO_2, lead and PM_{10} standards is not classified. A designation of unclassifiable/attainment means that the U.S. EPA has determined there is insufficient evidence to find the area either is attaining or is likely attaining the NAAQS.

The ambient air quality in the County is monitored at a series of air quality monitoring stations operated by the BAAQMD. The monitoring stations that are closest to the Project Site are located at 521 Jones Street in Martinez (3.0 miles from the Project Site) and 2956-A Treat

Boulevard in Concord (4.8 miles from the Project Site). The Martinez station monitors SO_2, and the Concord station monitors O_3, CO, NO_2, SO_2, PM_{10} and $PM_{2.5}$. Table 3.3-3 below provides a summary of the monitoring data from 2019 (BAAQMD 2020b) and shows the highest recorded concentrations and the number of days exceeding the CAAQS and NAAQS.

Table 3.3-3: Monitoring Data Summary - 2019

Pollutant	Concord Monitoring Station	Martinez Monitoring Station
Ozone		
Max 1-hr (ppb)	92	
Cal 1-hr Days	0	
Max 8-hr (ppb)	74	
Nat 8-hr Days	2	
Cal 8-hr Days	2	
3-yr average (ppb)	62	
Carbon Monoxide		
Max 1-hr (ppm)	3.3	
Max 8-hr (ppm)	0.8	
Nat/Cal Days	0	
Nitrogen Dioxide		
Max 1-hr (ppb)	41	
Annual Average (ppb)	6	
Nat 1-hr Days	0	
Cal 1-hr Days	0	
Sulfur Dioxide		
Max 1-hr (ppb)	8.4	22.4
Max 24-hr (ppb)	2.1	4.2
Nat 1-hr Days	0	0
Cal 24-hr Days	0	0
PM_{10}		
Annual Avg (µg/m^3)	11.4	
Max 24-hr (µg/m^3)	36	
Nat 24-hr Days	0	
Cal 24-hr Days	0	
$PM_{2.5}$		
Max 24-hr (µg/m^3)	28.2	
Nat 24-hr Days	0	
3-yr Avg (µg/m^3)	40	
Ann Avg (µg/m^3)	6.8	
3-yr Avg (µg/m^3)	10.8	

Notes:

Max hr/Max 8-hr/Max 24-hr: The highest average pollutant concentration over a one-hour period, an eight-hour period (on any given day), or a 24-hour period (from midnight to midnight).

Ann Avg: The yearly average (arithmetic mean) of the readings taken at a given monitoring station.

Table 3.3-3: Monitoring Data Summary - 2019

Pollutant	Concord Monitoring Station	Martinez Monitoring Station

Nat Days: The number of days during the year for which the monitoring station recorded pollutant concentrations exceeding the national standard.

Cal Days: The number of days during the year for which the station recorded pollutant concentrations exceeding the California standard.

3-yr avg (Nat. 8-hr ozone standard): The 3-year average of the fourth highest 8-hour average ozone concentrations for each monitoring station.

3-yr avg ($PM_{2.5}$ 24-hr standard): The 3-year average of the annual 98th percentiles of the individual 24-hour concentrations of $PM_{2.5}$. 3-year average greater than 35 $\mu g/m^3$ at any monitoring station means that the region does not meet the standard and may be designated non-attainment by the EPA.

3-yr avg ($PM_{2.5}$ annual standard): The 3-year average of the quarterly averages of $PM_{2.5}$. A 3-year average greater than 12.0 $\mu g/m^3$ at any monitoring station means that the region does not meet the standard and may be designated non-attainment by the U.S. EPA.

Ozone. O_3 is one of a number of substances called photochemical oxidants that are formed when volatile organic compounds (VOCs) and NOx (a mixture of nitric oxide [NO] and NO_2) react in the presence of ultraviolet sunlight. The damaging effects of photochemical smog, which is a popular name for a number of oxidants in combination, are generally related to concentrations of O_3. Individuals exercising outdoors, children, and people with preexisting lung disease, such as asthma and chronic pulmonary lung disease, are considered to be the subgroups most susceptible to O_3 effects. Short-term exposures (lasting for a few hours) to O_3 at elevated levels can result in breathing pattern changes, reduction of breathing capacity, increased susceptibility to infections, inflammation of the lung tissue and some immunological changes.

Carbon Monoxide. CO is a colorless, odorless gas formed by the incomplete combustion of fuels. Motor vehicles are the main source of this gas. CO competes with oxygen, often replacing it in the blood, thus reducing the blood's ability to transport oxygen to vital organs in the body. The ambient air quality standard for CO is intended to protect persons whose medical condition already compromises their circulatory system's ability to deliver oxygen. These medical conditions include certain heart ailments, chronic lung diseases and anemia. Persons with these conditions have reduced exercise capacity even when exposed to relatively low levels of CO. Smokers are also at risk from ambient CO levels because smoking increases the background level of CO in their blood.

Hydrogen Sulfide. H_2S is a colorless gas known for its pungent "rotten egg" odor at low concentrations. It is extremely flammable and highly toxic. H_2S is used or produced in a number of industries, such as oil and gas refining, mining and pulp and paper processing. H_2S also occurs naturally in sewers, manure pits, well water, oil and gas wells and volcanoes. Because it is heavier than air, H_2S can collect in low-lying and enclosed spaces, such as manholes, sewers and underground telephone vaults. Its presence makes work in confined spaces potentially very dangerous. The health effects of H_2S depend on how much H_2S a worker breathes and for how long. However, many effects are seen even at low concentrations. Effects range from mild, headaches or eye irritation, to very serious, unconsciousness and death (U.S. Department of Labor / OSHA 2021).

Nitrogen Dioxide. NO_2 is a byproduct of fuel combustion. The principal form of nitrogen oxide produced by combustion is NO, but NO reacts quickly to form NO_2, creating the mixture of NO and NO_2 commonly referred to as NOx. NO_2 acts as an acute irritant and, in equal concentrations, is more injurious than NO. At atmospheric concentrations, however, NO_2 is only potentially irritating. There is some indication of a relationship between NO_2 and chronic pulmonary fibrosis. Some increase in bronchitis in young children has also been observed at concentrations below 0.3 parts per million. NO_2 absorbs blue light, which results in a brownish-red cast to the atmosphere and reduced visibility. NOx emissions are also of concern because of their contribution to the formation of O_3 and PM.

Sulfur Dioxide. SO_2 is a colorless, pungent gas formed primarily by the combustion of sulfur-containing fossil fuels. Health effects include acute respiratory symptoms and difficulty in breathing for children. Individuals with asthma may experience constriction of airways with exposure to SO_2. Though SO_2 concentrations have been reduced to levels well below state and federal standards, further reductions in SO_2 emissions are needed because SO_2 is a precursor to sulfate and PM_{10}.

Respirable Particulate Matter. Respirable particulate matter (PM_{10}) consists of particulate matter (fine dusts and aerosols) 10 microns or smaller in diameter. When inhaled, particles larger than 10 microns generally are caught in the nose and throat and do not enter the lungs. PM_{10} can enter the large upper branches of the lungs just below the throat, where they are caught and removed (by coughing, spitting or swallowing). Inhalable fine particulate matter consists of extremely small suspended particles or droplets 10 microns or smaller in diameter that can lodge in the lungs, contributing to respiratory problems. PM_{10} arises from such sources as re-entrained road dust, diesel soot, combustion products, tire and brake abrasion, construction operations and fires. It is also formed in the atmosphere from NOx and SO_2 reactions with ammonia. PM_{10} scatters light and significantly reduces visibility. Inhalable particulates pose a serious health hazard, alone or in combination with other pollutants. More than half of the smallest particles inhaled will be deposited in the lungs and can cause permanent lung damage. Inhalable particulates can also have a damaging effect on health by interfering with the body's mechanism for clearing the respiratory tract or by acting as a carrier of an absorbed toxic substance.

Fine Particulate Matter: In 1997, the U.S. EPA established a new particulate matter standard, $PM_{2.5}$, in addition to the PM_{10} standard. $PM_{2.5}$ particles are emitted from activities such as industrial and residential combustion processes, wood burning and from diesel and gasoline-powered vehicles. They are also formed in the atmosphere from gases such as sulfur dioxide, nitrogen oxides, ammonia and reactive organic compounds (ROCs) that are emitted from combustion activities and then become particles as a result of chemical transformations in the air (secondary particles). $PM_{2.5}$ is considered even more dangerous to human health than PM_{10} due to its ability to lodge more deeply into lung tissue.

Volatile Organic Compounds. Volatile Organic Compounds (VOCs) are not true criteria pollutants in that there are no state or federal ambient air quality standards established. VOCs are regulated, however, because a reduction in VOC emissions reduces certain chemical reactions that contribute to the formation of ozone. VOCs are also transformed into organic aerosols in the atmosphere, contributing to higher PM_{10} and lower visibility levels. Although health-based standards have not been established for VOCs, health effects can occur from exposures to high

concentrations of VOCs. Some hydrocarbon components classified as VOC emissions are hazardous air pollutants. Benzene, for example, is a hydrocarbon component of VOC emissions that is known to be a human carcinogen.

Vinyl Chloride: Vinyl chloride is a colorless gas that burns easily. It does not occur naturally and must be produced industrially for its commercial uses. Vinyl chloride is used primarily to make polyvinyl chloride (PVC); PVC is used to make a variety of plastic products, including pipes, wire and cable coatings and packaging materials. Vinyl chloride is also produced as a combustion product in tobacco smoke. Workers at facilities where vinyl chloride is produced or used may be exposed primarily through inhalation. The general population may be exposed by inhaling contaminated air or tobacco smoke. In the environment, the highest levels of vinyl chloride are found in air around factories that produce vinyl products. If a water supply is contaminated, vinyl chloride can enter household air when the water is used for showering, cooking or laundry. Vinyl chloride exposure is associated with an increased risk of a rare form of liver cancer (hepatic angiosarcoma), as well as brain and lung cancers, lymphoma and leukemia (The National Cancer Institute 2021).

3.3.1.4 Toxic Air Contaminants

Toxic Air Contaminants (TACs), as classified by the State of California, are often referred to as "non-criteria" air contaminants because ambient air quality standards have not been established for these pollutants. There are hundreds of TACs (e.g. formaldehyde, hydrogen sulfide, xylenes, etc.), and exposure to these pollutants is associated with elevated risk of cancer and non-cancer health effects such as birth defects and genetic damage. The USEPA has a list of toxic substances referred to as Hazardous Air Pollutants (HAPs). Effects may be chronic (i.e., of long duration) or acute (i.e., of short duration) on human health. Acute health effects are attributable to short-term exposure to air toxics. These effects include nausea, skin irritation, respiratory illness and, in extreme cases, death. Chronic health effects result from long-term exposure. The effect of major concern for this type of exposure is cancer, which may develop up to 30 years after exposure.

Diesel exhaust is the predominant contributor to human health risk from TACs statewide and is estimated to represent approximately about 84 percent of the total risk (SCAQMD 2016). Diesel exhaust is a complex mixture of gases, vapors and fine particles, and the evaluation of health effects of diesel exhaust is a complex scientific issue. Some of the chemicals in diesel exhaust, such as benzene and formaldehyde, have been previously identified as TACs by the CARB. Diesel exhaust is not on USEPA's list of hazardous air pollutants.

3.3.1.5 Nuisance Odors and Fugitive Dust

BAAQMD CEQA Guidelines require an assessment of the potential for a proposed project to cause a public nuisance by subjecting surrounding land uses (receptors) to objectionable odors. Pursuant to BAAQMD Regulation 1, "No person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or the public; or which endangers the comfort, repose, health or safety of any such persons or the public, or which causes, or has a natural tendency to cause, injury or damage to business or property" (BAAQMD 2006). An objectionable odor problem is defined by BAAQMD Regulation 7 as when the Air Pollution Control Officer "receives odor complaints from 10 or more complainants within a 90-day period,

alleging that a person has caused odors perceived at or beyond the property line of such person and deemed to be objectionable by the complainants in the normal course of their work, travel, or residence" (BAAQMD 1982).

Some refinery projects have the potential to cause odors or to subject potential sensitive receptors to nearby existing or proposed land uses that emit objectionable odors. The primary source of odors from the pre-Project operations include the treatment of sour gas streams on the Project Site and the recovery and production of sulfur. Feedstock storage may contribute to odors under Project operations.

3.3.1.6 Emissions Summary

As discussed in the introduction to Chapter 3, the baseline period used in this EIR for air quality impacts analysis consists of the five consecutive 12-month periods between October 1, 2015, and September 30, 2020. This timeframe captures multiple years of production including a high throughput year (Year 3) as well as two comparably lower throughput years (Year 1, and Year 5 when refining activities were idled for 7 months). Thus, the 5-year baseline period better represents the variation in production at the Refinery. Likewise, the 5-year baseline captures the Refinery's turnaround cycle, 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.

Table 3.3-4, Table 3.3-5 and Table 3.3-6 summarize the annual emissions for stationary and mobile sources for each of the 5 baseline years. For informational purposes, Table 3.3-7 provides a summary comparison of the 1-year and 3-year average annual emissions against the average annual emissions for the 5-year period that is the baseline timeframe for this EIR.

Table 3.3-4: Marathon Refinery, Annual Stationary Source Emissions (tons per year)

Pollutant	Year 1 (2015-2016)	Year 2 (2016-2017)	Year 3 (2017-2018)	Year 4 (2018-2019)	Year 5 (2019-2020)
NO_X	385.62	451.72	405.54	419.39	218.39
SO_2	253.49	319.21	324.00	317.39	161.07
CO	452.00	641.44	846.13	751.27	394.76
POC/Hydro-carbons	109.65	170.96	200.96	210.14	168.07
PM_{10}	199.67	226.02	226.32	327.93	187.33
$PM_{2.5}$	186.62	226.02	214.62	324.02	187.32
CO_2	1,803,452.00	2,107,344.42	2,147,840.46	2,233,534.04	1,108,669.54
N_2O	12.33	14.49	14.46	14.64	7.27

Source: Marathon Petroleum Corporation, 2021

Table 3.3-5: Marathon Refinery, Annual Mobile Source Emissions (tons per year)

Pollutant	Year 1 (2015-2016)	Year 2 (2016-2017)	Year 3 (2017-2018)	Year 4 (2018-2019)	Year 5 (2019-2020)
NO_X	374.81	375.38	375.44	375.40	368.16
SO_2	404.63	404.64	404.64	404.64	404.61
CO	54.16	54.39	54.36	54.35	51.62
POC/Hydro-carbons	24.77	24.79	24.79	24.79	24.55
PM_{10}	36.15	36.21	36.21	36.22	35.68
$PM_{2.5}$	14.72	14.74	14.74	14.74	14.59
CO_2	46,133.27	46,437.98	46,454.35	46,262.31	42,597.68
N_2O	3.59	3.65	3.65	3.62	3.11

Source: Marathon Petroleum Corporation, 2021

Table 3.3-6: Marathon Refinery, Total Emissions (Stationary and Mobile, tons per year)

Pollutant	Year 1 (2015-2016)	Year 2 (2016-2017)	Year 3 (2017-2018)	Year 4 (2018-2019)	Year 5 (2019-2020)
NO_X	760.43	827.10	780.97	794.79	586.55
SO_2	658.12	723.84	728.64	722.03	565.68
CO	506.15	695.82	900.49	805.62	446.38
POC/ Hydro-carbons	134.42	195.74	225.74	234.93	192.62
PM_{10}	235.82	262.23	262.54	364.15	223.01
$PM_{2.5}$	201.34	240.75	229.36	338.75	201.91
CO_2	1,849,585.27	2,153,782.40	2,194,294.80	2,279,796.34	1,151,267.22
N_2O	15.92	18.14	18.11	18.26	10.38

Source: Marathon Petroleum Corporation, 2021

Table 3.3-7: Comparison of Average Annual Emissions, 1 year, 3 years and 5 years

Pollutant	Unit	1-year Average (2019-2020)	1-year Average (2018-2019)	3-year Average (2017-2019)	5-year Average (2015-2020)
NO_X	Ton	586.55	794.79	720.77	749.97
SO_2	Ton	565.68	722.03	672.12	679.66
CO	Ton	446.38	805.62	717.50	670.89
POC/ Hydrocarbons	Ton	192.62	234.93	225.74	196.69
PM_{10}	Ton	223.01	364.15	262.54	269.55
$PM_{2.5}$	Ton	201.91	338.75	229.36	242.42
CO_2	Metric Ton	1,151,267.22	2,279,796.34	1,875,119.45	1,925,745.20
N_2O	Metric Ton	10.38	18.26	15.58	16.16

Source: Marathon Petroleum Corporation, 2021

3.3.2 Regulatory Setting

CARB oversees air quality regulatory requirements, carried out by one of nine regional air quality control boards. As applicable, generators of emissions sources in California must apply for operating permits as required under Title V Part 70 of the Federal CAA. Permits include emission requirements from federal and state regulations that apply to an emissions source. The Refinery is currently covered by Title V operation permits for its refinery (Facility No. B2758) and the Amorco Terminal (Facility No. B2759).

3.3.2.1 Federal

CAA

The CAA of 1970 (42 United States Code 7401 *et seq*., as amended in 1977 and 1990) is a federal law that regulates air emissions from area, stationary and mobile sources. The law authorizes the U.S. EPA to set primary and secondary NAAQS to protect human health and the environment. Standards have been established for six criteria pollutants that have been linked to potential health concerns (see Section 3.3.1.1, Air Quality Standards and Criteria Pollutants).

The CAA's goal was to set and achieve NAAQS in every state by 1975. States were directed to develop state implementation plans (SIPs) to achieve attainment of NAAQS. The CAA was amended in 1977 to set new dates for attainment (since many areas of the country had failed to meet the deadlines) and again in 1990 to meet unaddressed or insufficiently addressed problems such as acid rain, ground-level ozone, stratospheric ozone depletion and air toxics.

In 1997, the U.S. EPA adopted stricter NAAQS for O_3 and PM. The U.S. EPA replaced the existing 1-hour ozone standard with a new 8-hour averaging time and lowered the concentration level from 0.12 to 0.08 part per million (ppm). However, while the 8-hour ozone standard has been implemented, the U.S. Court of Appeals prohibited the U.S. EPA from enforcing the new

PM_{10} standard in May 1999. The court removed the new PM_{10} standard, and the previous standard of 150 micrograms per cubic meter (µg/m3) for a 24-hour period continues to apply. The court left in place the new annual $PM_{2.5}$ standard, which is set at 15 µg/m3 spatially averaged across an area. The new 24-hour $PM_{2.5}$ standard is based upon the three-year average of the 98th percentile of the 24-hour concentrations measured at a monitoring station.

New Source Performance Standards (NSPS)
NSPS, contained in 40 CFR Part 60, regulate emissions of criteria air pollutants and cover many different industrial source categories. Enforcement of most NSPS has been delegated to local air districts, and most NSPS are incorporated by reference into BAAQMD regulations. Refer to Appendix G of the *Air Quality and GHG Technical Analysis* (ALG and Barr 2021a) for a list of NSPS regulations that are applicable to this Project.

National Emission Standard for Hazardous Air Pollutants (NESHAP)
Under Title III of the CAA, U.S. EPA was required to identify and list as "hazardous air pollutants" (HAPs) all air pollutants not already identified as criteria pollutants that "may reasonably be anticipated to result in an increase in mortality or an increase in serious irreversible or incapacitating reversible illness". The emissions standards are to be promulgated in two phases, and U.S. EPA has promulgated NESHAPs for a variety of industrial sources. In the first phase (1992–2000), the U.S. EPA developed technology-based emission standards designed to produce the maximum emission reduction achievable. These federal rules are also commonly referred to as MACT standards, because they reflect the Maximum Achievable Control Technology. In the second phase (2001–2008), the U.S. EPA is required to promulgate health risk–based emissions standards, when deemed necessary to address risks remaining after implementation of the technology-based NESHAP standards. Refer to Appendix G of the *Air Quality and GHG Technical Analysis* (ALG and Barr 2021a) for a list of NESHAP regulations that are applicable to this Project.

3.3.2.2 State

California Air Resources Board

The California Air Resources Board (CARB) was created by the Mulford-Carrell Air Resources Act in 1968. The CARB's primary responsibilities include:

- Developing, adopting, implementing, and enforcing the state's motor vehicle pollution control program
- Administering and coordinating the state's air pollution research program
- Adopting and updating the state's ambient air quality standards
- Reviewing the operations of the local air pollution control districts
- Reviewing and coordinating the SIPs for achieving NAAQS

CARB regulates mobile sources of air pollution in the State of California. Self-propelled nonroad construction equipment is considered a vehicle, as defined by the Vehicle Code. A vehicle may have an engine that both propels the vehicle and powers equipment mounted on the vehicle. However, not included in exemption provisions is any equipment mounted on a vehicle that would otherwise require a permit under the district rules and regulations.

In 1992 and 1993, CARB requested delegation of authority for the implementation and enforcement of specified NSPS and NESHAPS to the Bay Area and South Coast Air Districts. The U.S. EPA's review of the State of California's laws, rules, and regulations showed them to be adequate for the implementation and enforcement of these federal standards, and U.S. EPA granted the delegations as requested. Refer to Appendix G of the *Air Quality and GHG Technical Analysis* (ALG and Barr 2021a) for a list of state regulations that are applicable to this Project.

Toxic Air Contaminant Programs

California regulates Toxic Air Contaminants (TACs) primarily through the Tanner Air Toxics Act (Assembly Bill [AB] 1807) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588). The Tanner Act sets forth a formal procedure for CARB to designate substances as TACs. This includes research, public participation and scientific peer review before CARB can designate a substance as a TAC. Once a TAC is identified, CARB then adopts an Airborne Toxics Control Measure (ATCM) for sources that emit that particular TAC. If there is a safe threshold for a substance at which there is no toxic effect, the control measure must reduce exposure below that threshold. If there is no safe threshold, the measure must incorporate best available control technology for toxics (TBACT) to minimize emissions. None of the TACs identified by CARB have a safe threshold.

The Hot Spots Act requires that existing facilities that emit toxic substances above specified level:

1. Prepare a toxic emission inventory;
2. Prepare a risk assessment if emissions are significant;
3. Notify the public of significant risk levels; and
4. Prepare and implement risk reduction measure.

The following ATCMs would apply to the construction of the Project:

- Portable Equipment Registration Program: ATCM enforced for CARB by the BAAQMD for proposed portable equipment to be used for the Project.
- Off-Road Equipment: ATCM enforced for CARB by the BAAQMD for diesel-powered equipment greater than 25 horsepower.

Ocean-Going Vessels at Berth Regulation

CARB's current Ocean-Going Vessels at Berth Regulation was approved in December 2007 and applies to three vessel categories (container ships, passenger ships, and refrigerated cargo ships) at six California Ports. A new At-Berth-Regulation is being developed to apply to smaller fleets and additional vessel types such as those at the Amorco and Avon Terminals. When this rule is

implemented in northern California in 2027, it will result in reductions of diesel particulate matter and oxides of nitrogen from Marathon's operations.

3.3.2.3 Regional

The BAAQMD implements federal and state air quality programs and regulations, and maintains a comprehensive program of permitting, planning, enforcement, technical innovation and promotion of the understanding of air quality issues. The clean air strategy of the BAAQMD includes the preparation of plans for the attainment of ambient air quality standards, adoption and enforcement of rules and regulations concerning sources of air pollution, and issuance of permits for stationary sources of air pollution.

BAAQMD shares responsibility with the CARB and the U.S. EPA for ensuring that the CAAQS and NAAQS are met within the SFBAAB. State law assigns local air districts the primary responsibility for control of air pollution from stationary sources while the State presides over control of mobile sources. The BAAQMD is responsible for developing regulations that govern emissions of air pollution, permitting and inspecting stationary sources and monitoring air quality and air quality planning activities.

The CAA mandates that states submit and implement a State Implementation Plan (SIP) for areas (air basins) not meeting air quality standards. The SIP includes pollution control measures and a demonstration of how the standards will be met through those measures. The SIP is established by incorporating measures established during the preparation of an Air Quality Management Plan or Clean Air Plan (CAP) and adopted rules and regulations by each local district, which are submitted for approval to the CARB and the U.S. EPA. The goal of an Air Quality Management Plan or CAP is to reduce pollutant concentrations below the CAAQS and NAAQS through the implementation of air pollutant emissions controls.

The BAAQMD provides advisory guidance for analyzing air quality impacts under CEQA. These advisory documents provide the lead agencies, consultants and project applicants with uniform procedures for addressing air quality in environmental documents. The handbook contains the following applicable components: criteria and thresholds for determining whether a project may have a significant adverse air quality impact; specific procedures and modeling protocols for quantifying and analyzing air quality impacts; methods available to mitigate air quality impacts; and information for use in air quality assessments and environmental documents that will be updated more frequently such as air quality data, regulatory setting, climate and topography. Contra Costa County as the Lead Agency has determined the use of the BAAQMD guidance is appropriate for the project. Project-level thresholds of significance are shown in Table 3.3.8 below.

Table 3.3-8: BAAQMD CEQA Project-Level Thresholds of Significance

Pollutant	Construction-Related	Operational-Related	
Criteria Air Pollutants and Precursors (Regional)	**Average Daily Emissions (lbs./day)**	**Average Daily Emissions (lbs./day)**	**Maximum Annual Emissions (tons/year)**
Reactive Organic Gases (ROG)	54	54	10
NO_X	54	54	10
PM_{10}	82 (exhaust)	82	15
$PM_{2.5}$	54 (exhaust)	54	10
$PM_{10}/PM_{2.5}$ (fugitive dust)	Best Management Practices	None	
Local CO	None	9.0 ppm (8-hour average), 20.0 ppm (1-hour average)	
GHGs – Projects other than Stationary Sources	None	Compliance with Qualified GHG Reduction Strategy OR 1,100 MT of CO_2e/yr OR 4.6 MT CO_2e/SP/yr (residents + employees)	
GHGs –Stationary Sources	None	10,000 MT/yr	
Risk and Hazards for new sources and receptors (Individual Project)*	Same as Operational Thresholds**	Compliance with Qualified Community Risk Reduction Plan OR Increased cancer risk of >10.0 in a million Increased non-cancer risk of > 1.0 Hazard Index (Chronic or Acute) Ambient PM2.5 increase: > 0.3 µg/m3 annual average Zone of Influence: 1,000-foot radius from property line of source or receptor	
Risk and Hazards for new sources and receptors (Cumulative Threshold)*	Same as Operational Thresholds**	Compliance with Qualified Community Risk Reduction Plan OR Cancer: > 100 in a million (from all local sources) Non-cancer: > 10.0 Hazard Index (from all local sources) (Chronic) $PM_{2.5}$: > 0.8 µg/m3 annual	

Table 3.3-8: BAAQMD CEQA Project-Level Thresholds of Significance

Pollutant	Construction-Related	Operational-Related	
Criteria Air Pollutants and Precursors (Regional)	**Average Daily Emissions (lbs./day)**	**Average Daily Emissions (lbs./day)**	**Maximum Annual Emissions (tons/year)**
		average (from all local sources) Zone of Influence: 1,000-foot radius from property line of source or receptor	
Accidental Release of Acutely Hazardous Air Pollutants*	None	Storage or use of acutely hazardous materials locating near receptors or new receptors locating near stored or used acutely hazardous materials considered significant	
Odors*	None	5 confirmed complaints per year averaged over three years	

Source: Table 2-1 BAAQMD CEQA Guidelines, 2017

BAAQMD Rules

The following paragraphs outline pertinent BAAQMD rules and regulations applicable to operation of the Project:

- Regulation 2 – Permits: This regulation specifies the requirements for ATC and permits to operate. An ATC application for the Project was submitted to BAAQMD for approval (ALG and Barr 2020). The ATC application addressed compliance with New Source Review, Best Available Control Technology (BACT), Offsets, Prevention of Significant Deterioration (PSD), Emissions Banking, toxic air contaminants and Title V permitting requirements.

  The project does not meet the definition of a "major modification" under Rule 2-1-234.2 or Rule 2-2-218, and does not meet the definition of a "PSD Project" under Rule 2-2-224, because the project's emission increases are less than the significance thresholds in these rules. Therefore, this project is not subject to PSD or major nonattainment New Source Review.

  The toxic air contaminant emissions from this project are below the thresholds in Regulation 2, Rule 5 that would trigger a Toxics Best Available Control Technology (TBACT) analysis. Refer to the Regulation 2-5 Health Risk Assessment submitted as part of the ATC application.

- Regulation 6, Rule 5 – Particulate Emissions from Refinery Fluid Catalytic Cracking Units (FCCUs): This rule limits the emissions of condensable PM emissions from petroleum refinery FCCUs as well as emissions of precursors of secondary PM. The requirements of Rule 6-5 apply specifically to FCCU operated at petroleum refineries. As the facility would no longer be classified as a petroleum refinery, and Marathon proposes

to decommission the FCCU as part of the Renewable Fuels Project, the requirements of this rule would no longer apply to the facility.

- Regulation 7 – Odorous Substances: This regulation places general limitations on odorous substances and specific emission limitations on certain odorous compounds.
- Regulation 8 – Organic Compounds: This regulation includes several rules pertaining to emissions from storage of organic liquids, organic liquid bulk terminals and bulk plants, wastewater collection and separation systems, equipment leaks, valves and flanges at chemical plants, episodic releases from pressure relief devices at petroleum refineries and chemical plants, gasoline bulk terminals and gasoline delivery vehicles and marine tank vessel operations.
- Regulation 9 – Inorganic Gaseous Pollutants: This regulation includes rules pertaining to the emissions of SO_2, H_2S, NOx and CO from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters and NOx and CO from Boilers, Steam Generators and Process Heaters in Petroleum Refineries.
- Regulation 10 – Standard of Performance for New Stationary Sources: This regulation incorporates by reference all the Federal NSPS standards in 40 CFR Part 60.
- Regulation 11 – Hazardous Air Pollutants: This regulation places limits on emissions of benzene (Rule 7) and incorporates the federal NESHAP requirements in 40 CFR Parts 61 and 63.

The reader may refer to Appendix G of the Air Quality and GHG Technical Analysis (ALG and Barr 2021) for details regarding the requirements of the rules listed above and how they impact the Project.

Construction of the Project would also be subject to the following BAAQMD regulations:

- Regulation 6, Rule 6: Prohibition of Trackout for construction sites where the total land area covered by construction activities and/or disturbed surfaces at the site are 1 acre or larger.
- Regulation 11, Rule 2, Asbestos Demolition, Renovation and Manufacturing, which entails but is not limited to a thorough asbestos survey by a certified asbestos consultant, removal of all regulated asbestos if present, and post a renovation and/or demolition notification.

Air Quality Plans

The 2017 Bay Area CAP (BAAQMD 2017a) was developed as a multi-pollutant plan - an integrated control strategy to reduce ozone, particulate matter (PM), toxic air contaminants and greenhouse gases. The Plan contains the following primary goals:

- Protect air quality and health at the regional and local scale: attain all state and national air quality standards, and eliminate disparities among Bay Area communities in cancer health risk from toxic air contaminants; and
- Protect the climate: reduce Bay Area GHG emissions to 40 percent below 1990 levels by 2030 and 80 percent below 1990 levels by 2050.

The 2017 CAP represents the most current applicable air quality plan for the air basin. Consistency with this plan is the basis for determining whether the proposed project would conflict with or obstruct implementation of air quality plans.

3.3.2.4 Contra Costa County

The Conservation Element of the Contra Costa County General Plan 2005-2020 includes goals to improve air quality, including meeting federal air quality standards, supporting efforts to reduce air pollution, restoring air quality to a more healthful level and reducing the percentage of traffic trips at peak hours (Contra Costa County 2010).

3.3.3 Impact Analysis

3.3.3.1 Methodology for Impact Analysis

Multiple methods were used to evaluate the air quality impact of this Project. Air pollutant emissions of precursor organic compounds (POC), CO, NO_x, SO_x, PM_{10} and $PM_{2.5}$ were quantified for both the construction and operations of the proposed Project. Using the Project's construction and operational emissions estimates, an air dispersion modeling analysis was performed to predict the maximum offsite concentrations of $PM_{2.5,}$ diesel particulate matter (DPM) (in the form of PM_{10}) and other TACs from the proposed Project. A health risk assessment (HRA) was then performed using the output from the dispersion modeling analysis to evaluate the potential public health impacts associated with the TAC emissions that could be generated by the construction and operations of the proposed Project.

Maximum predicted air quality impact and public health risk potentials associated with the proposed Project were assessed quantitatively in comparison to the significance criteria identified in Section 3.3.3.2. The potential for odors generated by the proposed Project at sensitive receptors in the vicinity and the impact of CO emissions associated with vehicle traffic were assessed qualitatively. Finally, mitigation measures were recommended to further reduce the impacts of Project activities.

The emission estimates, dispersion modeling and health risk estimates presented in this document were obtained from the *Martinez Renewable Fuels Project Air Quality and Greenhouse Gas Technical Analysis (*ALG and Barr 2021a). Emission calculations and the HRAs were completed using available data, assumptions and emission factors at the time that document was prepared. The following sections summarize the methodology behind the impact analysis of air quality and health risk for the construction and operations of the proposed Project.

Project Construction Emissions

The Project would require the construction of new equipment or changes to existing equipment both on the Refinery Site and MOTs as well as at off-site locations located within both the BAAQMD and San Joaquin Valley Air Pollution Control District (SJVAPCD) jurisdictions. Construction activities for the proposed Project would require the use of various off-road heavy construction equipment, on-road trucks and construction worker vehicles, asphalt-paving equipment and surface-coating equipment. This equipment is considered the primary source of construction emissions because these sources are typically powered by diesel fuel, which generates exhaust emissions in the form of $NO_{x,}$ PM_{10}, $PM_{2.5}$, POC, CO and SO_2. In addition, off-road vehicles, on-road vehicles and construction equipment traveling over unpaved surfaces or

other earth-moving activities, such as grading and paving, would generate fugitive dust emissions in the form of PM_{10} and $PM_{2.5}$.

On-Site Construction

On-site construction for the proposed Project includes activities at the Refinery, Avon MOT, Amorco MOT and Avon Rail Extension. Construction at the Refinery is estimated to last for approximately 22 months. Construction activities for the Avon MOT, Amorco MOT and Avon Rail Extension are expected to last 12 months, 6 weeks and 9 months, respectively. Operation of off-road equipment was assumed to be up to 8 hours/day and 6 days/week (or 24 days/month). Operation of on-road vehicles was determined based on the number of workers necessary to operate the off-road equipment each day, plus the movement of materials and maintenance of the construction site (e.g., cement trucks, dump trucks, water trucks). The number and length of daily trips for each type of vehicle was used to calculate the miles traveled per day.

Emission factors for the off-road equipment came from the CARB OFF-ROAD 2017 – Orion emission inventory (CARB 2017a). Factors were selected for each equipment category, based on an average expected horsepower for each equipment category, with operation during the anticipated construction period from 2022 to 2024. Equipment load factors and horsepower were based on Appendix D of the *CalEEMod User's Guide* (CAPCOA 2017). Emission factors from the 2022 – 2024 period were averaged to result in a composite emission factor for each vehicle and off-road equipment category considered.

Emission factors for the on-road vehicles were obtained from the CARB EMFAC2017 emission inventory (CARB 2017b). Factors were selected based on the vehicle class and operation in the BAAQMD jurisdiction and were aggregated for all potential engine model years that could be in use during the anticipated construction period between 2022 and 2024. Dust entrainment emissions from on-road vehicles traveling on paved roads were calculated using U.S. EPA's *Compilation of Air Pollutant Emission Factors (AP-42)*, Section 13.2.1, Equation 1.

Fugitive dust emissions associated with material movement were calculated using an 88-week construction period and 6 construction work days per week with the exception of bulldozers, which were assumed to be used over a 90-day period. The amounts of material handled were provided by Marathon and the grading miles were estimated using the approach in the *CalEEMod User's Guide*, February 2011, Appendix A, Section 4.3 (CAPCOA 2013). Emission factors for grading and bulldozing were obtained from U.S. EPA's *Compilation of Air Pollutant Emission Factors (AP-42),* Section 11.9 (U.S. EPA).

Emissions from offgassing during asphalt paving were based on the area being paved and emission factors from *CalEEMod User's Guide*, Section 4.8 (CAPCOA 2017). Emissions from offgassing when applying architectural coatings were based on the gallons of coatings to be applied and emission factors from *CalEEMod User's Guide*, Section 4.7 (CAPCOA 2017).

Daily emissions from off-road and on-road diesel construction equipment were calculated for each month and then averaged to obtain the daily average emissions for the construction period. Total emissions associated with material movement, asphalt paving and application of architectural coatings were divided by the number of days in the construction period to obtain the average daily emissions.

Off-Site Construction

Construction of new equipment or changes to existing equipment would be required at off-site locations within the BAAQMD and SJVAPCD and is expected to last 8 months 1 week and 15 months 3 weeks, respectively. Off-site construction emissions were calculated separately for BAAMQD and SJVAPCD locations. As detailed in *Air Quality and GHG Technical Analysis*, (ALG and Barr 2021a) off-site construction would include installation of small natural gas-fired heaters, piping components, renewable feedstock storage tanks and unloading/loading racks to transfer the materials from/to rail or vessels. The same emission calculation methodology as that used for on-site construction was used for off-site construction.

Refer to Appendix E of the *Air Quality and GHG Technical Analysis* (ALG and Barr 2021a) for detailed emissions calculations for both on-site and off-site construction activities.

Operational Emissions

Operation of the Project would result in emissions from stationary sources located both on and off Site. There would also be emissions from mobile sources that transport raw materials and finished product and are used for employee commutes. Refer to Appendix A of the *Air Quality and GHG Technical Analysis* (ALG and Barr 2021a) and the *Application for Authority to Construct and Title V Operating Permit Amendment* (ALG and Barr 2020) for detailed emission calculations. A summary of the methods and references used to estimate emissions is presented below.

On-Site Stationary Sources

On-site stationary sources that are part of this Project are the Refinery, Avon MOT and Amorco MOT. Current terminal operations for petroleum-based materials will continue, but will be limited to storage and transfer only. The refinery will no longer process crude petroleum. Emissions units impacted by this Project include new sources, modified sources and existing sources. Pre-Project emissions were calculated based on a 5-year baseline period from October 2015 through September 2020 using the same methodologies used to prepare the annual emission inventory required per BAAQMD Regulation 12, Rule 15.

New emission units include the sour water stripper offgas thermal oxidizer, fugitive emissions components (valves, pumps, compressors, connectors, etc.) added to existing process units and a Stage 1 wastewater treatment unit. Emissions from new sources are estimated based on the potential to emit and pre-Project emissions of zero. Emissions for the thermal oxidizer were calculated using emission factors provided by the manufacturer or U.S. EPA's AP-42 (U.S. EPA). A mass balance approach was used to estimate SO_2 emissions. Fugitive equipment leaks were estimated using component counts, emission factors and process stream composition data. Emissions from the Stage 1 wastewater treatment unit were calculated using the Toxchem wastewater treatment air emission estimation software (Hydromantis 2019).

Existing emission units include those that are physically changed or undergo a change in the method of operations as well as units that would realize a change in utilization (process throughput) or be shutdown. Emission units that are unaffected by this Project (e.g., firewater pumps) are not included in the pre-Project and post-Project emissions. The change in emissions for existing sources would be a decrease or increase depending on the specific piece of equipment. Post-Project emissions for modified equipment is based on the potential to emit.

Modified equipment includes storage tanks and wastewater treatment equipment. Emissions for storage tanks were based on permit limits or the equations in AP-42 Section 7.1 (U.S. EPA). Emissions from the wastewater treatment equipment were calculated using the Toxchem wastewater treatment air emission estimation software (Hydromantis 2019).

Sources that would experience a change in utilization include the hydrogen plant and stationary combustion units (process heaters). Post-Project emissions are based on anticipated future operations. Previous stack test results were used to estimate POC emissions from the hydrogen plant. Emissions for the process heaters were calculated by applying emission factors to the projected actual firing rate of each heater. Emission factors vary by process heater and pollutant and are based on emission limits, manufacturer data, stack testing or U.S. EPA emission factors.

Several existing sources would be shut down including the catalytic reforming unit, fluid catalytic cracking unit and sulfur recovery unit as well as select cooling towers, equipment leak sources, fugitive dust sources, stationary combustion units, storage tanks and wastewater units. The post-Project emissions for sources being shut down is zero. The complete list of equipment to be shutdown is provided in Table 3.3-1 above.

Off-Site Stationary Sources

New equipment or changes to existing equipment would be required at off-site terminals located in both the BAAQMD and SJVAPCD jurisdiction. Sources of emissions at the off-site terminals would include small natural gas-fired heaters, piping components, renewable feedstock storage tanks and unloading/loading racks to transfer the materials from/to rail or vessels. Emissions from the heater were based on the methodology used for similar heaters in the ATC permit application for the Project. The heater was assumed to have a heat input rating of 10.0 million British Thermal Units per hour, and emissions were estimated using a combination of AP-42 emission factors, anticipated Best Available Control Technology (BACT) limits (for NOx and CO emissions), and engineering estimates. Emissions for the off-site storage tank were estimated based on the renewable feedstock properties defined for the Project feedstock tanks and the same number of turnovers as the renewable feedstock tanks at the Martinez Refinery location. A storage tank size of 30,000 barrels was assumed. Emissions from piping components were estimated following BAAQMD fugitive emissions calculation procedures (CAPCOA 1995). Loading/unloading emissions were calculated using equations from AP-42 Section 5.2 (U.S. EPA).

In addition, there would be increased emissions from the reformer furnace at the neighboring Air Products facility that would provide hydrogen to the Marathon Refinery. Emission estimates are based on stack test data, monitoring data, and emission factors shown in Table A.2-5 of the *Air Quality and GHG Technical Analysis* (ALG and Barr 2021a).

Mobile Sources

Mobile sources used to transport raw materials and finished product include trucks, rail and marine vessels. Pre-Project emissions for trucking, rail operations and employee commutes are based on average activity level that occurred during the 5-year baseline period. Pre-Project emissions from the Amorco MOT vessel operations are based on the level of activity and emissions presented in the *Final Environmental Impact Report for the Tesoro Amorco Marine Oil Terminal Lease Consideration* (CSLC 2014). The pre-Project emissions from the Avon MOT

vessel operations are based on the *Final Environmental Impact Report for the Tesoro Avon Marine Oil Terminal Lease Consideration* (CSLC 2015). Refer to Appendix B of the *Air Quality and GHG Technical Analysis* (ALG and Barr 2021a) for detailed pre- and post-Project emission calculations.

Truck emissions were calculated using emission factors from the EMFAC2017 Web Database (V1.0.3) for the T7 Tractor truck type heavy-duty vehicles (CARB 2017b). Truck mileage was estimated using known locations for receipt and delivery of materials and assuming trucks travel primarily via freeways. Truck transport can occur on Site, within the BAAQMD, or within California as follows:

- *On-Site:* movement of trucks through the facility to support renewable fuels processing;
- *BAAQMD:* movement of trucks outside facility boundaries, within the BAAQMD;
- *California:* total movement of trucks outside facility boundaries, inclusive of all air districts within the state of California.

Railcars would be used to transport commodities over longer distances than transport by truck. Similar to truck transport, railcar transport would also occur on Site, within the BAAQMD and within California. Railcar transport would also be used for long-haul transport outside California. While the number of railcars required to transport materials is expected to increase as a result of this project, the railcar miles may decrease since some railcars will travel to Stockton where the contents will be transferred to barges. Train route locations, mileage and number of railcars needed were estimated for each commodity being transported and, to be conservative, emissions were estimated based on line-haul locomotives which are the largest category of locomotives. Up to four line-haul duty locomotives per train were assumed, and each locomotive was assumed to be rated at 4,400 brake horsepower (bhp).

The facility owns the switch car engine which is equipped with a Tier 3 engine. Emissions from switch cars used at the Avon rail spur were calculated using the emission factors for Tier 3 Switch Duty-Cycle locomotives in *Locomotives: Exhaust Emission Standards* (EPA 2016). Typically, railcar switching occurs up to four times a day with each switch taking roughly 30 minutes to complete.

Emissions from on-site rail operation and rail travel within the BAAQMD and 10 other air district jurisdictions were calculated. The facility does not own the locomotives associated with offsite rail travel and baseline and post-project emissions are based on the average of emission factors for years 2022 to 2024. This is a conservative approach and does not take credit for future U.S. EPA-mandated emission reductions from locomotive operations that would be implemented by the owners of the locomotives. Refer to Tables B-4 through B-6 in Appendix B of the *Air Quality and GHG Technical Analysis* (ALG and Barr 2021a) for additional details regarding calculating emissions from rail cars.

Marine tankers and barges are also used to transport feedstocks and products to and from the facility. The Avon and Amorco MOTs are used for docking and loading/unloading of materials. Overall, the number of vessel calls at the Amorco MOT is expected to decrease, and the number of vessel calls at the Avon MOT is expected to increase compared to past actual operations. However, this Project does not change the unloading/loading capacities of these two MOTs.

Barges may be used to transport feedstocks from third party terminals. The specific terminals have not yet been identified. To be conservative shipping distances were based on use of Stockton terminals which would be the farthest location from the Avon and Amorco terminals. Therefore, emissions from marine vessels would occur in both the BAAQMD and SJVAPCD jurisdictions. Emissions were estimated based on the use of articulated tug/barges (ATB) or traditional barge operations with up to two barges in tow. Activities associated with barge emissions include transit, maneuvering, hoteling, boiler operations, and tug operations.

Ocean-going vessels would be used for delivery of some feedstocks and transport of finished products. The vessel type used for estimating emissions is a HandyMax Tanker and there would be 40 round trips per year from the Amorco Terminal and 36 round trips per year from the Avon Terminal. Activities included in the emission estimates include escort tug operations, hoteling, transit, and maneuvering. Refer to Section 3.2.3 of the *Air Quality and GHG Technical Analysis* (ALG and Barr 2021a) for additional details regarding travel distances, type and size of marine vessels. Refer to Tables B-7 through B-12 in Appendix B of the *Air Quality and GHG Technical Analysis* (ALG and Barr 2021a) for details regarding the emission factors, load factors and emission calculation methods.

Pre-Project emissions due to employee commutes are based on 520 employees traveling an average of 20 miles each way. Post-Project employment is estimated to decrease to 110 employees traveling the same distance of 20 miles each way. Emissions associated with employee transportation have been calculated using EMFAC2017 Web Database (V1.0.3) (CARB 2017b) assuming half the employees drive a standard light-duty passenger vehicle, with the other half driving a light-duty truck.

Air Dispersion Model

Air dispersion modeling analysis was performed per the BAAQMD *Health Risk Assessment Protocol* (BAAQMD 2020) and *CEQA Air Quality Guidelines* (BAAQMD 2017). The modeling was performed using the American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD [Version 21112, U.S. EPA 2021]), and the results were used to prepare HRAs for toxic air contaminants and predict ambient air concentrations of fine particulate matter ($PM_{2.5}$). The Hot Spots Analysis & Reporting Program (HARP) tool for risk assessments (Version 21081) was used to calculate cancer, chronic, and acute risk (CARB 2021).

AERMOD simulates the atmospheric transport and dilution of emissions from Project sources. This mathematical model estimates dilution of emissions by diffusion and turbulent mixing with ambient air as the emissions travel downwind from a source. AERMOD can predict the resulting concentrations at specified locations of interest (commonly referred to as receptors). The model is capable of predicting impacts from any combination of point, area, and volume sources in terrain ranging from flat to complex.

Refer to Appendix C of the *Air Quality and GHG Technical Analysis* (ALG and Barr 2021a) for details regarding the selection of terrain parameters, building downwash, meteorological data and receptor selection and spacing.

3.3.3.2 Health Risk Assessment

HRAs were performed for both construction and operation of the proposed Project in addition to cumulative impacts. The HRAs estimated cancer and non-cancer chronic and acute risk from toxic air contaminants. Risk values were estimated using the HARP risk assessment tool (Version 21081) (CARB 2021) and were calculated at each fenceline, grid and sensitive receptor included in the AERMOD analysis. Refer to Appendix C of the *Air Quality and GHG Technical Analysis* (ALG and Barr 2021a) for details regarding the HRA calculations and the AERMOD modeling.

Construction

The HRA for construction activities was based on emissions from on-road and off-road diesel-fired equipment. Off-road diesel equipment includes lifts, air compressors, cranes, forklifts, generators and tractors. On-road diesel vehicles include pickup trucks, cement trucks, dump trucks and water trucks. Off-road equipment was modeled as area sources, with a single area source encompassing construction activity. On-road vehicles were modeled as line sources located along roads where travel is expected.

DPM was the only pollutant modeled. As no acute health risk assessment values have been developed for DPM, only cancer and chronic risk were evaluated. DPM emissions were estimated by assuming they were equal to PM_{10} emissions.

Construction activities at the Refinery were estimated to occur over a 22-month duration. A 3-month duration was assumed for construction activities at the Avon and Amorco MOTs. Construction equipment is expected to operate intermittently during each day of construction. Construction emission sources were assumed to operate an average of 8 hours per day during any 24-hour period. Due to the different construction durations, separate model runs were performed for the facility and terminal sources, and results were added together.

Operation

The HRA for operation of the proposed Project was based on emissions from stationary sources (Refinery and MOTs) and on-site mobile sources. For the cancer and chronic risk evaluation, the impact was determined by subtracting pre-Project risk modeling results from post-Project risk modeling results at off-site receptors. This methodology was used to evaluate the impact of the Project itself and to determine if the Project increased or reduced off-site risk. Since the Project reduced off-site risk at all receptors, it was not necessary to calculate the risk on a source-by source basis.

Acute risk was based on post-Project emissions only. The maximum acute risk at any receptor could occur under different meteorological conditions for the pre-Project and the post-Project scenarios; therefore, subtracting pre-Project maximum acute risk from post-Project maximum acute risk could provide inaccurate estimates of the increase (or decrease) in risk. Therefore, a conservative approach of only considering post-Project emissions was taken. Note that employees at the Air Products facility were not identified as offsite workplace receptors since the Air Products facility is located within the boundaries of the Marathon facility.

Pre-Project sources included all equipment associated with the Project, including those that would be shut down, equipment that would be physically changed and equipment that would

undergo a change in the method of operation. Post-Project sources included all new sources, equipment that would be physically changed and equipment that would undergo a change in the method of operation. Mobile sources of DPM, along with ship hoteling at the Avon and Amorco wharfs, were also included. Stationary and mobile sources were assumed to emit 24 hours per day and 7 days per week. Hourly emission rates were calculated by dividing annual emission rates by 8,760 hours per year.

3.3.3.3 Cumulative

A cumulative impact analysis was completed for the proposed Project. The Project-generated $PM_{2.5}$ emissions and risk estimates were combined with the values from other non-Project-related emission sources within a 1,000-foot radius of the Project's fence. Since the Project reduced health risk and $PM_{2.5}$ concentrations at all receptors within a 1,000-foot radius, it was not necessary to extend the impact radius.

Source-by-source $PM_{2.5}$ emissions from the Project are provided in Appendix A-1 of the *Air Quality and GHG Technical Analysis* (ALG and Barr 2021a). The BAAQMD provided mobile source cancer risk and $PM_{2.5}$ concentration data for highways, major streets and rail lines. No additional high-volume roadways (over 10,000 average annual daily traffic) within 1,000 feet of the Project were identified. The BAAQMD also provided cancer risk, chronic risk and $PM_{2.5}$ concentration data for stationary sources within 1,000 feet of the facility. Refer to the *CEQA Cumulative Impact Analysis* report (ALG and Barr 2021b) for a list of sources included in the risk assessment and additional details regarding the HRA methodology.

3.3.3.4 Significance Criteria

For the purposes of this analysis, the Project was considered to have a significant impact requiring mitigation if it would:

- Conflict with or obstruct implementation of the applicable air quality plan.
- Result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non-attainment under an applicable federal or state ambient air quality standard.
- Expose sensitive receptors to substantial pollutant concentrations.
- Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

3.3.4 Impacts and Mitigation Measures

Impact AQ-1: Construction emissions or health risk below the thresholds of significance identified in the BAAQMD CEQA Guidelines. (Less than Significant)

Construction of the proposed Project would generate emissions from construction equipment and (POC, NOx, PM_{10}/$PM_{2.5}$) and fugitive dust from material handling and vehicle traffic. See **Table 3.3-9** below for a comparison of the average daily unmitigated on-site construction-related emissions to the BAAQMD CEQA thresholds. The on-site construction emissions are estimated to be less than the significance thresholds.

Table 3.3-9: Summary Total Daily On-Site Construction Emissions (lbs./day)

Project Source	NOx	SO_2	CO	POC	PM_{10}	$PM_{2.5}$
Martinez Renewable Fuels	43.67	0.19	758.46	42.50	11.60	4.37
Avon Rail Extension	0.68	0.00	1.43	0.14	0.25	0.11
Avon Marine Oil Terminal Piping Upgrades	0.41	0.00	3.55	0.94	0.09	0.02
Amorco Marine Oil Terminal Fender Upgrades	0.73	0.00	3.17	3.57	0.10	0.04
On-Site Construction Total	45.49	0.20	766.62	47.16	12.05	4.54
BAAQMD CEQA Threshold	54	NA	NA	54	82	82

Source: Marathon Petroleum Corporation, 2021

Off-site construction emissions would occur within the BAAQMD and SJVAPCD jurisdictions. See Table 3.3-10 and Table 3.3-11 below, which compare the average daily unmitigated off-site emissions to the BAAQMD and SJVAPCD significance thresholds, respectively. Off-site construction emissions are below the CEQA significance thresholds.

Table 3.3.10: Summary of Off-Site Total Annual Construction Emissions in BAAQMD (tons/year)

Source	NO_x	SO_2	CO	POC	PM_{10}	$PM_{2.5}$
Off-Site BAAQMD Terminal	7.35	0.03	11.91	0.70	2.02	0.43
Off-Site Construction Total	7.35	0.03	11.91	0.70	2.02	0.43
BAAQMD CEQA Threshold	54	NA	NA	54	82	82

Source: Marathon Petroleum Corporation, 2021

Table 3.3-11: Summary of Off-Site Total Annual Construction Emissions in SJVAPCD (tons/year)

Source	NOx	SO_2	CO	POC	PM_{10}	$PM_{2.5}$
Off-Site SJVAPCD Terminal	5.31	0.02	3.21	0.62	1.54	0.50
SJVAPCD Construction Total	5.31	0.02	3.21	0.62	1.54	0.50
SJVAPCD CEQA Threshold	10	27	100	10	15	15

Source: Marathon Petroleum Corporation, 2021

Tables 3.3.10 and 3.3-11 show total on-site and off-site emissions from construction sites located within the BAAQMD jurisdiction. Total emissions are also below the BAAQMD CEQA thresholds.

Table 3.3-12: Summary of Total Daily Construction Emissions in BAAQMD (lbs./day)

Source	NO_x	SO_2	CO	POC	PM_{10}	$PM_{2.5}$
On-Site Construction	45.49	0.20	766.62	47.16	12.05	4.54
Off-Site Construction	7.35	0.03	11.91	0.70	2.02	0.43
Construction Total	52.84	0.23	778.53	47.86	14.06	4.97
BAAQMD CEQA Threshold	54	NA	NA	54	82	82

Unmitigated construction-related health risk from the proposed Project (see Table 3.3-12) would result in risk levels below the BAAQMD's thresholds of significance.

Table 3.3-13: Summary of Results at Maximally Exposed Offsite Receptors, Construction Sources

Location	Risk/HI Value	BAAQMD CEQA Threshold
Cancer Risk (Per Million)		
Residential receptor	2.65	10
Offsite workplace receptor	0.04	10
Sensitive Receptor	0.70	10
Chronic Hazard Index		
Residential receptor	0.0015	1.0
Offsite workplace receptor	0.0015	1.0
Sensitive Receptor	0.0004	1.0

The impact of construction emissions is less than significant before mitigation. The impact will be further reduced with implementation of Basic Construction Measures described in BAAQMD's *CEQA Air Quality Guidelines* (BAAQMD 2017) and Best Management Practices (BMP) described below.

Mitigation Measure AQ-1a: Implement BAAQMD Basic Construction Measures.

The permittee shall implement the following measures during construction of the Project:

- 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 off-site 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 once per day. 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 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations). 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-1b: Implement best management practices for construction activities.

The following air emissions reduction BMPs shall be implemented to the maximum extent practicable by the applicant and construction contractors. The measures shall be included as recommended practices incorporated into all construction contracts related to the Project.

- Provide the necessary infrastructure to support the zero and near-zero emission technology vehicles and equipment that will be operating on-site. Necessary infrastructure may include the physical (e.g., needed footprint), energy, and fueling infrastructure for construction equipment, on-site vehicles, and medium-heavy and heavy-heavy duty trucks.
- Portable equipment used during construction should be powered by electricity from the grid or onsite renewable sources, instead of diesel-powered generators.
- All off-road diesel-powered equipment used during construction shall be equipped with Tier 4 or cleaner engines, except for specialized construction equipment in which Tier 4 engines are not available. In place of Tier 4 engines, off-road equipment can incorporate retrofits such that emission reductions achieved equal or exceed that of a Tier 4 engine.
- All off-road equipment with a power rating below 19 kilowatts (e.g., plate compactors, pressure washers), used during project construction shall be battery powered.
- All heavy-duty trucks entering the construction site, during the grading and building construction phases shall be model year 2014 or later, to the maximum extent practicable. All heavy-duty haul trucks shall also meet CARB's lowest

optional low-NOx standard starting in the year 2022, to the maximum extent practicable.

Significance after Mitigation: Less than Significant.

Impact AQ-2: Operations emissions in excess of the thresholds of significance. (Significant and Unavoidable)

Tables 3.3-13 and 3.3-14 below provide a summary of the change in average daily and maximum annual emissions, respectively, from operation of the proposed Project. Appendix A and Appendix B of the *Air Quality and Greenhouse Technical Analysis* (ALG and Barr July 2021a) provide post-project emissions from stationary and mobile sources, respectively. Table 3.3-15 below shows the total change in emissions from on-site and off-site stationary sources and mobile sources are below the BAAQMD CEQA significance threshold without mitigation measures.

Emissions from tugs and barges in the SJVAPCD region will be further reduced with implementation of CARB's Commercial Harbor Craft regulation (CARB 2021). This regulation would take effect beginning in 2023 and will require harbor craft engines to meet Tier 3 or Tier 4 standards.

Table 3.3-14: Summary Total Project Daily Emission Changes (lbs./day)

	Source	NO_x	SO_2	CO	POC	PM_{10}	$PM_{2.5}$
BAAQMD	Stationary Source	-1,783.93	-1,375.75	-3,354.26	-6,849.98	-1,212.47	-1,173.07
	Mobile Source	-1,336.59	-2,197.32	-41.89	-84.03	-160.82	-57.40
	Off-Site Stationary Sources	52.94	16.90	10.57	6.14	1.81	1.81
	Project Total	-3,067.58	-3,556.16	-3,385.58	-6,927.86	-1,371.47	-1,228.67
	BAAQMD CEQA Threshold	54	NA	NA	54	82	54

Source: Marathon Petroleum Corporation, 2021

Table 3.3-15: Summary Total Project Annual Emission Changes (tons/year)

	Source	NOx	SO_2	CO	POC	PM_{10}	$PM_{2.5}$
BAAQMD	Stationary Source	-304.89	-254.47	-592.75	-80.44	-220.27	-213.08
	Mobile Source	-243.85	-401.00	-6.91	-15.31	-28.79	-10.39
	Off-Site Stationary Sources	9.66	3.08	1.93	1.12	0.33	0.33
	Project Total	-539.08	-652.39	-597.73	-94.63	-248.73	-223.14
	BAAQMD CEQA Threshold	10	NA	NA	10	NA	NA
SJVAPCD	Stationary Source						
	Mobile Source	26.273	0.0375	17.363	2.758	0.948	0.948
	Off-Site Stationary Sources	**0.53**	**1.23**	**9.91**	**7.07**	**0.33**	**0.33**
	Project Total						
	SJVAPCD CEQA Threshold	10	27	100	10	15	15

Source: Marathon Petroleum Corporation, 2021

The potential impact of mobile source emissions on localized CO concentrations was evaluated in accordance with Section 3.3 of the *BAAQMD CEQA Air Quality Guidelines* (BAAQMD 2017). A proposed Project would result in a less-than-significant impact if the following criteria are met:

- The Project is consistent with an applicable congestion management program established by the county congestion management agency for designated roads or highways, regional transportation plan and local congestion management agency plans.
- The Project traffic would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour.
- The Project traffic would not increase traffic volumes at affected intersections to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, bridge underpass, natural or urban street canyon, below-grade roadway).

Truck transportation is anticipated to decrease as a result of this Project, and employee transportation is expected to decrease due to a reduction in the number of employees. As such, the Project would not result in additional localized CO emissions from vehicular traffic.

Emissions from rail traffic would occur in eleven Air District jurisdictions, including the BAAQMD. Table 3.3-16 shows the change in emissions for each air affected air district along with their respective CEQA significance thresholds. Emissions in the BAAQMD and other Air

Districts would decrease or be below the respective significance threshold except for the hourly NOx emissions in Placer County.

Table 3.3-16: Rail Transport Emissions by Air District

	Daily Emissions			Annual Emissions		
Pollutant	Significance Threshold (lb/day)	Project Incremental Emissions (lb/day)	Over Threshold?	Significance Threshold (TPY)	Project Incremental Emissions (TPY)	Over Threshold?
Bay Area Air Quality Management District						
NOx	54	-2.03	No	10	-0.38	No
SO2	n/a	0	No	n/a	0	No
CO	n/a	-0.64	No	n/a	-0.12	No
POC	54	-0.06	No	10	-0.01	No
PM10	82	-0.04	No	15	-0.01	No
PM2.5	54	-0.05	No	10	-0.01	No
Mojave Desert Air Quality Management District						
NOx	137	-2.67	No	25	-0.49	No
SO_2	137	0.00	No	25	0.00	No
CO	548	-0.85	No	100	-0.85	No
POC	137	-0.08	No	25	-0.08	No
PM_{10}	82	-0.06	No	15	-0.06	No
$PM_{2.5}$	65	-0.05	No	12	-0.05	No
Northern Sierra Air Quality Management District						
NOx	136	55.14	No		10.06	No
SO_2		0.06	No		0.06	No
CO		17.48	No		17.48	No
POC	136	1.73	No		1.73	No
PM_{10}	136	1.23	No		1.23	No
$PM_{2.5}$		1.13	No		1.13	No
Placer County Air Pollution Control District						
NOx	55	87.26	Yes		15.92	No
SO_2		0.10	No		0.10	No

Table 3.3-16: Rail Transport Emissions by Air District

Daily Emissions				Annual Emissions		
Pollutant	Significance Threshold (lb/day)	Project Incremental Emissions (lb/day)	Over Threshold?	Significance Threshold (TPY)	Project Incremental Emissions (TPY)	Over Threshold?
CO		27.66	No		27.66	No
POC	55	2.74	No		2.74	No
PM_{10}	82	1.94	No		1.94	No
$PM_{2.5}$		1.78	No		1.78	No
Sacramento Metropolitan Air Quality Management District						
NOx	65	30.90	No		5.64	No
SO_2		0.04	No		0.04	No
CO		9.79	No		9.79	No
POC	65	0.97	No		0.97	No
PM_{10}	80	0.69	No	14.6	0.69	No
$PM_{2.5}$	82	0.63	No	15	0.63	No
San Joaquin Valley Air Pollution Control District						
NOx		4.14	No	10	0.76	No*
SO_2		0.00	No	27	0.00	No
CO		1.31	No	100	1.31	No
POC		0.13	No	10	0.13	No
PM_{10}		0.09	No	15	0.09	No
$PM_{2.5}$		0.08	No	15	0.08	No
South Coast Air Quality Management District						
NOx	55	-3.50	No		-0.64	No
SO_2	150	0.00	No		0.00	No
CO	550	-1.11	No		-1.11	No
POC	55	-0.11	No		-0.11	No
PM_{10}	150	-0.08	No		-0.08	No

Table 3.3-16: Rail Transport Emissions by Air District

	Daily Emissions			Annual Emissions		
Pollutant	Significance Threshold (lb/day)	Project Incremental Emissions (lb/day)	Over Threshold?	Significance Threshold (TPY)	Project Incremental Emissions (TPY)	Over Threshold?
$PM_{2.5}$	55	-0.07	No		-0.07	No
Yolo-Solano Air Quality Management District						
NOx		-0.15	No	10	-0.03	No
SO_2		0.00	No		0.00	No
CO		-0.05	No		-0.05	No
POC		0.00	No	10	0.00	No
PM_{10}	80	0.00	No		0.00	No
$PM_{2.5}$		0.00	No		0.00	No

** Annual NOx emissions in the SJVAPCD region would exceed the 10 tpy threshold when considering rail and marine vessel emissions, as discussed below.*

Sources: Marathon Petroleum Corporation, 2021; TRC Solutions, 2021

The NOx emissions from marine vessels (tugs and barges) and rail traffic in the SJVAPCD region are estimated to be 27.06 tpy which would exceed the SJVAPCD CEQA threshold of 10 tpy, with a majority (26.3 tpy) from marine vessels Emissions of other pollutants would be below their respective significance thresholds (refer to Table B-9b, Appendix B of the *Air Quality and GHG Technical Analysis* [ALG and Barr 2021a]). The NOx emissions would be further reduced with implementation of CARB's Commercial Harbor Craft regulation (CARB 2021). This regulation would take effect beginning in 2023 and will require harbor craft engines to meet Tier 3 or Tier 4 standards. As shown in Table 3.3-16, the overall project will decrease NOx emissions by over 500 tpy. The majority of the emission reductions would take place in the BAAQMD. However, it is well known that Bay Area emissions are transported to the San Joaquin Valley and contribute to air quality standard violations in that region (CARB 2001). Therefore, a substantial reduction in NOx emissions in the Bay Area would have a positive effect on air quality in the San Joaquin Valley.

The Project would result in emission reductions of all criteria air pollutants from both stationary and mobile sources. Emissions from operation of the Project would be below the BAAQMD CEQA significance thresholds and there would be no impact on localized CO concentrations. As noted above, NOx emissions from rail traffic in Placer County and marine vessels in the SJVAPCD would exceed significance thresholds. Therefore, the impact would be **significant and unavoidable**.

Impact AQ-3: Health risk from Project operations in excess of the thresholds of significance identified in the BAAQMD CEQA Guidelines. (Less than significant)

Table 3.3-17 below shows the maximum Project-related increase in health risk for residential, off-site workplace and sensitive receptors. The analysis included both stationary and mobile sources. The cancer and chronic risks are negative indicating a reduction in risk at all modeled receptors. The Project-related increase in acute risk is less than the BAAQMD CEQA threshold for all health risk categories.

Table 3.3-17: Summary of Results at Maximally Exposed Offsite Receptors, Operational Sources

Location	Risk/HI Value	BAAQMD CEQA Threshold
Cancer Risk (Per Million)		
Point of maximum impact	-0.55	10
Chronic Hazard Index		
Point of maximum impact	-0.00220	1.0
Acute Hazard Index		
Point of maximum impact	0.336	1.0
Residential receptor	0.097	1.0
Offsite workplace receptor	0.107	1.0
Sensitive Receptor	0.074	1.0

Sources: Marathon Refinery, 2021; Contra Costa County, 2021.

The impact of the Project on ambient $PM_{2.5}$ concentration was also evaluated by subtracting post-Project annual average $PM_{2.5}$ concentrations from pre-Project annual average $PM_{2.5}$ concentrations. The $PM_{2.5}$ concentrations for all receptors were greater for the pre-Project case. Therefore, there was a reduction in health risk associated with exposure to $PM_{2.5}$ emissions. It should also be noted that the highest average $PM_{2.5}$ concentration when only considering post-Project emissions was 0.12 micrograms per cubic meter (ug/m^3), which is below the BAAQMD CEQA significance threshold of 0.3 ug/m^3.

The health risk from Project operations is less than significant and no mitigation is required.

Mitigation Measure: No mitigation would be required.

Impact AQ-4: Cumulative criteria pollutant health risk in excess of the thresholds of significance identified in the BAAQMD CEQA Guidelines. (Significant and Unavoidable)

See Table 3.3-18 for the results of the cumulative health risk assessment for cancer risk, chronic non-cancer risk and exposure to PM $_{2.5}$ emissions. The health risk assessment included both stationary and mobile sources from the Project and sources within 1,000 feet of the Project site.

Table 3.3-18: Cumulative Health Risk Assessment Results

Location	Risk/HI Value/Concentration	BAAQMD CEQA Threshold
	Cancer Risk (per million)	
Point of maximum impact - resident	89.7	100
Point of maximum impact - worker	93.1	100
	Chronic Hazard Index	
Point of maximum impact	0.46	10.0
	Annual Average P $_{2.5}$ Concentration (ug/m3)	
Point of maximum impact - resident	1.3	0.8
Point of maximum impact - worker	27.9	0.8

Source: Marathon Refinery, 2021

The maximum cancer risk for both resident and worker receptors is less than the significance threshold of 100 in one million. The cancer risk was highest in the immediate vicinity of highways, and most of the risk was due to mobile source emissions. The chronic risk hazard index is less than 10.0 at all receptor locations. Cumulative cancer and chronic risk of the proposed Project is less than significant and no mitigation is required.

The maximum annual average $PM_{2.5}$ concentration at both residential and worker receptors exceeded the significance threshold of 0.8 ug/m^3. $PM_{2.5}$ concentrations were highest in the immediate vicinity of highways and around the cement and aggregate materials handling operations located to the southwest of the facility. The highest residential receptor was located immediately adjacent to Interstate Highway 680, and nearly all $PM_{2.5}$ at that receptor was due to highway mobile source emissions. The highest worker receptor was at the Valley Relocation & Storage Moving Company located across Highway 4 from the cement and aggregate materials handling operations. Over 95 percent of the $PM_{2.5}$ at this receptor was from the two materials handling operations. The impact at other residential and worker receptors was below the threshold of 0.8 µg/m^3. It is important to note that Project $PM_{2.5}$ concentrations are negative (pre-Project $PM_{2.5}$ concentrations exceed post-Project $PM_{2.5}$ concentrations); therefore, implementation of this Project would reduce overall $PM_{2.5}$ concentrations.

Emissions from the non-Project sources surrounding the facility result in $PM_{2.5}$ concentrations that are above the significance threshold. Additional emissions reductions from non-Project sources would be required to reduce the $PM_{2.5}$ concentration to below the significance threshold. Reductions from other sources are outside the purview of this Project; therefore, the impact on cumulative $PM_{2.5}$ concentration is **significant and unavoidable.**

Impact AQ-5: Creation of objectionable odors (Potentially Significant)

The primary source of odors from pre-Project operations are the treatment of sour gas streams, the Sulfur Recovery Unit (SRU), the Sulfuric Acid Plant (SAP), storage of crude oil and the wastewater treatment plant. The SRU,SAP, and crude oil storage would be shut down as part of this Project resulting in a reduction of odors.

The wastewater treatment plant will be upgraded with a new Moving Bed Biological Reactor unit. Odors from wastewater are often created when treatment systems are under designed or there is poor control of operational variables. The new wastewater treatment plant will have an equalization tank to provide a consistent feed to the plant creating fewer process swings and better control of process operating limits. The controls for chemical addition and outfall would be automated with updated technology that is more reliable. The combination of these upgrades will result in reduced odor from the wastewater treatment plant.

Potential new sources of odor are the storage of renewable feedstock, including tallow. In order to determine the level of potential odor and whether controls would be needed, Marathon visited three facilities where fat, oils, and grease were stored. Noticeable odors were not observed at these facilities and odor control technologies used at these sites were incorporated into the design for this Project. Odor management controls including carbon canisters, nitrogen blanketing of storage tanks and a vapor recovery system would be used to reduce odors from the storage tanks and loading and unloading activities.

The renewable feedstocks would not be delivered via trucks; therefore, there would not be potential for odors from trucks traveling through nearby neighborhoods.

These control measures would be incorporated into applicable permits issued by the BAAQMD. A third-party contractor would be used to conduct odor monitoring throughout the facility and surrounding community to evaluate the type and strength of any odors. There has been an average of two confirmed odor complaints over the last 3 years (BAAQMD 2021), which is less than the BAAQMD significance threshold of five confirmed odor complaints per year averaged over 3 years. Implementation of the above control measures and odor monitoring would prevent the creation of objectionable odors. Nevertheless, the potential for odors cannot be accurately predicted and therefore, the impact is potentially significant. Implementation of Mitigation Measure AQ-2 would reduce this impact to **less than significant**.

> **Mitigation Measure AQ-2:** During the construction phase of the Project, an operational Odor Management Plan (OMP) shall be developed and implemented upon commissioning of the renewable fuels processes, intended to become an integrated part of daily operations at the Facility and other sites, so as to prevent any objectionable offsite odors and effect diligent identification and remediation of any potential objectionable odors generated by the facility and associated sites. The plan shall outline equipment that is in place and procedures that facility personnel shall use to address odor issues, facility wide. The OMP shall include continuous 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 shall be retained at the facility for County or other government agency inspection upon request.

- The following practices shall be included in the OMP to reduce the potential of objectionable odors from the storage of renewable feedstocks, operation of the wastewater treatment plant, and any other odor generating activity:
    - Develop operating procedures to inspect and evaluate the effectiveness of odor control equipment and operation of the wastewater treatment plant. Inspections conducted on a semi-annual basis.
    - If there are fewer than an average of five confirmed complaints per year during the first 3 years of operation, then the inspection frequency can be reduced to an annual basis.
    - If there are more than five complaints in any single year, then the application shall develop additional mitigation strategies in consultation with the BAAQMD.

The Odor Management Plan shall be submitted to the Department of Conservation and Development for review and approval prior to commissioning of the renewable fuels process.

Significance after Mitigation: Less than significant.

Impact AQ-6: The Project conflicts with or obstructs implementation of applicable air quality plan. (Less than Significant)

The BAAQMD CEQA significance thresholds for construction and operation are used to determine if the Project supports the goals of the BAAQMD 2017 CAP (BAAQMD 2017a). As shown in the previous sections, the Project's impact would be below BAAQMD thresholds of significance, with the exception of the cumulative $PM_{2.5}$ concentration impact which is unavoidable.

A key element in the CAP control strategy is to decrease emissions of criteria and toxic air contaminants from stationary sources such as refineries. Due to the decrease in throughput and the shutdown of several emission units, the Project results in an overall reduction in emissions and supports the goals of the CAP. Feasible control measures for the Project would be evaluated by the BAAQMD and included in the Authority to Construct (ATC) permit. Compliance with the ATC permit and BAAQMD regulations specific to refinery operations would ensure that the Project does not conflict with the CAP. The shutdown of some process equipment such as the FCCU, SRU, and SAP is consistent with proposed stationary source measures SS1 (reduce secondary PM emissions at FCCUs), SS5 (reduce SO_2 emissions from SRUs) and SS7 (reduce SO_2 emissions from SAPs) described in the CAP. These and other CAP control measures are described in **T**able 3.3-19.

Table 3.3-19: 2017 CAP Control Measure Applicability

2017 CAP Control Measure	Description of Control Measure	Project's Impact on Control Measure
SS1 Fluid Catalytic Cracking at Refineries	Establish emission limits to reduce secondary PM emissions from Fluid Catalytic Cracking Units (FCCUs).	The Project would result in the shutdown of the FCCU eliminating emissions from the FCCU at the Martinez Refinery.
SS2 Equipment Leaks	Reduce fugitive emissions or organic gases, including methane.	The Project would eliminate crude oil refining and the related ROG emissions. Renewable feedstocks which contain essentially little to no ROG compounds, would be used instead.
SS5 Sulfur Recovery Units	Consider amendments to achieve the lowest SO_2 emissions feasible at Sulfur Recovery Units (SRUs).	The Project would result in the shutdown of the SRU eliminating emissions from the SRU at the Martinez Refinery.
SS6 Refinery Fuel Gas	Consider amendments to reduce sulfur limits for RFG.	Renewable feedstocks have little to no sulfur, so the Project would result in a decrease in sulfur compounds in the feedstock and would result in a reduction in sulfur in RFG generated at the Refinery.
SS11 Petroleum Refining Facility-Wide Emission Limits	Consider limiting facility-wide emissions of GHG, PM, NOx and SO_2 from refineries.	The project would result in a reduction of GHG, PM, NOx, and SO_2 emissions from the Martinez Refinery.
SS12 Petroleum Refining Climate Impacts Limit	Limit facility-wide carbon intensity at petroleum refineries.	The project would result in a reduction of GHG emissions from the Martinez Refinery.
SS18 Basin-Wide Combustion Strategy	Stabilize and reduce emissions of GHGs, criteria air pollutants and toxic emissions from stationary combustion sources.	The project would result in a reduction of GHG, PM, NOx, SO_2, and TAC emissions from the Martinez Refinery.
SS20 New Source Review for Toxics	Reduce public exposure to TACs from existing facilities	The project would result in a reduction in TAC emissions from the refinery, reducing public exposure to TAC emissions.
WR2 Support Water Conservation	Develop a list of best practices to reduce water consumption and increase on-site water recycling	The project would substantially reduce water use by the refinery by over 50%.
FSM SS4 Methane Exemptions from wastewater regulation.	Identify significant methane sources in the refinery wastewater collection systems to determine how these sources may be minimized or controlled.	The Project would substantially reduce water use and wastewater generated by the refinery. Fossil fuels would be replaced with renewable feedstocks, decreasing potential GHG emissions.

The reduction in emissions and employee vehicle trips associated with the Project would support the air resources goals in the Contra Costa County General Plan (Contra Costa County 2010). The Project does not conflict with the air resources policies described in the General Plan nor conflict with or obstruct implementation of the applicable air quality plans, and the Project's impact would be less than significant.

Mitigation Measure: No mitigation would be required.

3.3.5 References

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3.4 BIOLOGICAL RESOURCES

This section describes the existing environment for biological resources and the regulatory setting for their management and protection. It also analyzes potential impacts on biological resources that would result with implementation of the Project and identifies mitigation measures necessary to reduce these impacts.

Additional information on special-status plant and animal species and their potential to occur in the Project area, inclusive of the Refinery, marine oil terminals, and adjacent staging, access and work areas, is provided in Appendix BIO. Cumulative and growth-inducing impacts to biological resources are addressed in Chapter 4, Cumulative Impacts, and Chapter 6, Other CEQA Considerations.

Guidelines and key sources of data used in the preparation of this section include the following:

- Biological Technical Report, Martinez Renewable Fuels Project (ERM 2021).
- Results of 2021 "California Ridgway's (Clapper) Rail Survey," Avon MOTEMS Compliance Project, Martinez, California (LSA 2021a).
- Results of October 2020 Soft Bird's-Beak Field Survey along the Avon Wharf Approachway (LSA 2021b).
- California Department of Fish and Wildlife comment letter in response to the Martinez Refinery Renewable Fuels Project, Notice of Preparation of a Draft Environmental Impact Report, SCH No. 2021020289, Contra Costa County (CDFW 2021).
- eBird (Cornell Lab of Ornithology 2021).
- Tesoro Avon Marine Oil Terminal Lease Consideration Environmental Impact Report (TRC 2015).
- Tesoro Amorco Marine Oil Terminal Lease Consideration Environmental Impact Report (TRC 2013).

ERM performed a Site reconnaissance on April 8, 2021; LSA performed special-status plant surveys in October 2020, and protocol surveys for Ridgway's rail were conducted between January 22 and March 31, 2021.

3.4.1 Environmental Setting

3.4.1.1 Regulatory and Policy Context

Federal

Federal Endangered Species Act

Federal Endangered Species Act (ESA) (16 United States Code [USC] Sections 1531-1544) provisions protect federally listed threatened or endangered species and their habitats from unlawful take. *Take* is defined under the ESA as to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any of the specifically enumerated conduct." The United States Fish and Wildlife Service (USFWS) regulations define *harm* as "an

act which actually kills or injures wildlife." Activities that may result in take of individuals are regulated by the USFWS or National Marine Fisheries Service (NMFS).

Pursuant to the ESA, the USFWS or NMFS may also designate areas that are essential to the conservation of threatened and endangered species as "critical habitat." Areas of critical habitat are specified "to the maximum extent prudent and determinable," and may, therefore, be quite large to encompass and protect the primary constituent elements (PCEs) required to aid recovery and delisting of the species. PCEs include habitat for movement, foraging, shelter and reproduction within the historical geographic or ecological range of the species. Projects require consultation if they affect areas containing PCEs. Developed areas such as roads and buildings that fall within designated critical habitat are normally excluded from critical habitat.

Estuary Protection Act

The Estuary Protection Act (16 USC Sections 1221-1226) provides a means for federal agencies to consider the need to protect, conserve, and restore estuaries during the permit-approval process.

Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) (16 USC Sections 1801-1882) established jurisdiction over marine fisheries in the United States exclusive economic zone (EEZ) through fishery management plans (FMPs). The Pacific Fishery Management Council drafted three FMPs (the Pacific Groundfish Fishery Management Plan, Coastal Pelagic Fishery Management Plan, and Pacific Salmon Fishery Management Plan) to describe the habitat essential to the fish being managed and to describe threats to that habitat from both fishing and non-fishing activities.

Sustainable Fisheries Act

The Sustainable Fisheries Act of 1996 (Public Law No. 104-267) reauthorized the Magnuson-Stevens Act and amended the habitat provisions of the Magnuson-Stevens Act to direct the NMFS, Fishery Management Councils, and federal agencies to protect, conserve and enhance essential fish habitat (EFH). EFH is defined as waters and substrate necessary for spawning, breeding, feeding and rearing of federally managed fish species. Under the Magnuson-Stevens Act, all federal agencies must consult with the NMFS prior to authorizing projects that may adversely affect EFH.

Habitat Areas of Particular Concern (HAPCs) are a subset of EFH that exhibit one or more of the following traits: rare, stressed by development, provide important ecological functions for federally managed species, or are especially vulnerable to anthropogenic (or human impact) degradation. HAPCs do not receive additional regulatory protection under the Magnuson-Stevens Act, but projects with potential adverse impacts to HAPCs receive additional scrutiny during the consultation process.

Marine Mammal Protection Act

The Marine Mammal Protection Act of 1972 (MMPA) (16 USC Sections 1361-1421) prohibits take and importation of marine mammals in U.S. waters and by U.S. citizens on the high seas.

The MMPA has been amended numerous times to authorize and regulate take related to prescribed activities, mainly related to weapons testing by the U.S. military.

Migratory Bird Treaty Act

This Migratory Bird Treaty Act (MBTA) (16 USC Sections 703-712) prohibits killing, possessing, or trading in migratory birds except in accordance with regulations prescribed by the Secretary of the Interior. This act encompasses whole birds, parts of birds, bird nests, and eggs. Nest destruction that results in the unpermitted take of migratory birds or their eggs is illegal under the MBTA. Disturbances that result in the incidental loss of fertile eggs or nestlings due to nest abandonment are considered a violation of the MBTA. The MBTA does not contain any prohibition that applies to the destruction of a bird nest alone (without birds or eggs), provided that no possession occurs during the destruction.

Rivers and Harbors Act

The Rivers and Harbors Act of 1899 (33 USC Sections 401, 403, 407) addresses projects and activities in navigable waters, and harbor and river improvements. Under Section 10 of this act, any construction or alteration of a navigable water is required to first obtain the approval of the chief of the U.S. Army Corps of Engineers (USACE). Construction at the marine terminal would require permits from the USACE. Permits normally contain conditions requiring the permittee to comply with best management practices or requirements with respect to such matters as turbidity, water quality, containment of material, nature and location of approved spoil disposal areas, extent and period of dredging and other factors relating to protection of environmental and ecological values.

Nonindigenous Aquatic Nuisance Prevention and Control Act

The Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 (NANPCA) established the first major federal program to prevent the introduction and control the spread of introduced aquatic nuisance species. NANPCA was amended in 1996 by the National Invasive Species Act to implement voluntary ballast water exchange guidelines for vessels entering U.S. waters from outside the U.S. EEZ. Since 2004, ballast water exchange has been mandatory; the program is overseen by the U.S. Coast Guard.

Clean Water Act

Areas meeting the regulatory definition of waters of the United States (jurisdictional waters) are subject to the jurisdiction of the USACE. The USACE, under provisions of Section 404 of the Clean Water Act of 1972 (CWA) (33 USC Sections 1251-1376) and Section 10 of the Rivers and Harbors Act of 1899, has jurisdiction over waters of the United States. The Navigable Waters Protection Rule of 2020 provides four categories of federally protected waters: 1) the territorial seas and traditional navigable waters; 2) perennial and intermittent tributaries to those waters; 3) certain lakes, ponds and impoundments; and 4) wetlands adjacent to jurisdictional waters.

The Oil Pollution Act

The Oil Pollution Act of 1990 (OPA) (33 USC Sections 2701-2761) provides new requirements for contingency planning by industry such that owners or operators of vessels and certain facilities that pose a serious threat to the environment must prepare facility response plans

(FRPs). OPA also authorizes trustee agencies to seek monetary compensation for injured natural resources.

State

California Endangered Species Act

Provisions of the California Endangered Species Act (CESA) protect state-listed threatened and endangered species. The California Department of Fish and Wildlife (CDFW) regulates activities that may result in take of individuals (i.e., "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill"). Habitat degradation or modification is not included in the definition of take under the California Fish and Game Code. Any project that has the potential to take listed species must apply for an incidental take permit pursuant to Sections 2081 (B) and (C) of the California Fish and Game Code.

Other Provisions of the California Fish and Game Code

The California Fish and Game Code Sections 3511, 4700, 5050 and 5515 prohibit take of fully protected bird, mammal, reptile and amphibian and fish species, respectively. Species that are classified as fully protected species, or parts thereof, may not be taken or possessed at any time, nor may licenses be issued for their take.

Sections 3503 and 3503.5 of the California Fish and Game Code outlaw take, possession or destruction of birds and raptors, respectively, and their nests. Disturbance during the breeding season that results in the incidental loss of fertile eggs or nestlings, or otherwise leads to nest abandonment, is also considered take by the CDFW.

The CDFW promulgates various lists of sensitive species for which analysis of project impacts is required under CEQA. These lists include species of special concern lists for invertebrates, fish, amphibians and reptiles, mammals and birds.

Porter-Cologne Water Quality Control Act

Areas meeting the regulatory definition of waters of the State are subject to the jurisdiction of the California State Water Resources Control Board. Waters of the State means any surface water or groundwater, including saline waters, within the boundaries of the State (California Water Code, Section 13050(e)).

Lempert-Keene-Seastrand Oil Spill Prevention and Response Act

The Lempert-Keene-Seastrand Oil Spill Prevention and Response Act of 1990 covers all aspects of marine oil spill prevention and response in California. Administration of the act is under the authority of a chief deputy director of the CDFW, who is also then responsible for carrying out the CDFW's water pollution enforcement duties. Through the act, California State Lands Commission (CSLC) responsibilities were expanded through the creation of the Marine Environmental Protection Division (formerly the Marine Facilities Division) to oversee the safety of marine terminals and the transfer of crude oil from ships to shore-based facilities. The act also authorizes trustee agencies to seek monetary compensation for injured natural resources.

Marine Invasive Species Act

The Marine Invasive Species Act (MISA) of 2003, made permanent by the Coastal Ecosystems Protection Act of 2006, requires ballast water and biofouling management for all vessels that intend to discharge ballast water in California waters. Regulations depend on the vessel's size and origin of voyage. Under MISA, CSLC administers the Marine Invasive Species Program (MISP), a multiagency program tasked with preventing the introduction of non-indigenous aquatic species from ballast water and biofouling. All vessels covered under the law are required to complete and submit a ballast water report form to the CSLC upon departure from each port of call in California and must comply with good housekeeping practices.

Regional and Local

San Francisco Bay Plan 2020

Created in 1968 and updated in 2020, the San Francisco Bay Plan (Bay Plan) is a strategic plan that identifies priority uses for the San Francisco Bay and its shoreline, and includes findings and policies related to the conservation of habitats and features of particular importance. The San Francisco Bay Conservation and Development Commission (BCDC) is responsible for permitting proposed fill, including piles or structures placed on pilings, for projects located in the Bay between the Golden Gate Bridge to the confluence of San Joaquin and Sacramento Rivers. The Project is located in an area identified in the San Francisco Bay Plan (BCDC 2020) as designated for Water-Related Industry Priority Use. Bay Plan policies require tidal marshes and tidal flats to be conserved to the fullest possible extent.

Contra Costa County General Plan

Specific policies with application to the Project in the *Contra Costa County General Plan* (Contra Costa County, 2005) include:

8-6 Significant trees, natural vegetation and wildlife populations generally shall be preserved.

8-9 Areas determined to contain significant ecological resources, particularly those containing endangered species, shall be maintained in their natural state and carefully regulated to the maximum legal extent. Acquisition of the most ecologically sensitive properties within the County by appropriate public agencies shall be encouraged.

8-10 Any development located or proposed within significant ecological resource areas shall ensure that the resource is protected.

8-11 The County shall utilize performance criteria and standards which seek to regulate uses in and adjacent to significant ecological resource areas.

8-17 The ecological value of wetland areas, especially the salt marshes and tidelands of the bay and delta, shall be recognized. Existing wetlands in the County shall be identified and regulated. Restoration of degraded wetland areas shall be encouraged and supported wherever possible.

8-18 The filling and dredging of lagoons, estuaries, and bays which eliminate marshes and mud flats shall be allowed only for water-oriented projects which will provide substantial

public benefits and for which there are not reasonable alternatives, consistent with state and federal laws.

8-24 The County shall strive to identify and conserve remaining upland habitat areas which are adjacent to wetlands and are critical to the survival and nesting of wetland species.

8-25 The County shall protect marshes, wetlands and riparian corridors from the effects of potential industrial spills.

Management Plans

In addition to the federal, state and local regulations described above, the Project lies within the boundaries of many management plans and conservation strategy plans. Some of these plans are regulatory, while others are meant to provide general technical assistance and discretionary guidance for managing habitats in the San Francisco Bay Estuary. These plans include:

- 2016 Comprehensive Conservation and Management Plan for the San Francisco Estuary (Estuary Blueprint) (SFEP 2016).
- Bay Area Integrated Regional Water Management Plan (San Francisco Public Utilities Commission 2019).
- North American Waterfowl Management Plan 2012.
- San Francisco Bay Joint Venture Implementation Plan 2001.
- San Francisco Bay Joint Venture Monitoring and Evaluation Plan Phase 1 2011/2012.
- State Wildlife Action Plan (CDFW 2015).
- Coastal California (BCR 32) Waterbird Conservation Plan (Point Blue Conservation Science and USFWS 2014).
- Tidal Marsh Recovery Plan (USFWS 2013).
- San Francisco Bay Subtidal Habitat Goals Report.

3.4.2 Existing Conditions

Land adjacent to the Project Site is primarily open water, marshland and industrial. The biological environment adjacent to the Project Site can be characterized in two segments: the Marathon Martinez Refinery (Refinery) and the Avon and Amorco Marine Oil Terminals (MOTs).

The Refinery is situated on an approximately 2,000-acre site consisting of approximately 1,130 acres of developed oil and gas refining operations, and 870 acres of undeveloped marshlands and grasslands. The facility includes buildings, large storage tanks, roadways, parking, refinery units and wastewater treatment areas. Native vegetation has largely been removed from the Refinery premises to minimize fire hazards. The Refinery abuts large areas of undeveloped natural areas , including Pacheco Creek on its western boundary, Suisun Bay to the north, and open space to the east. Although the developed areas within the Refinery offer little value to biological resources, the adjacent habitat areas attract raptors and migratory birds that may nest in the facility.

The Avon and Amorco MOTs are located on the south shore of Suisun Bay and the Carquinez Strait, on lands leased from the public under lease agreements managed by the CSLC. The Avon

MOT is located approximately 1.75 miles east of the Benicia-Martinez Bridge and consists of a 13.3-acre lease area extending 1,200 feet into the bay. The Amorco MOT is located approximately 300 feet west of the Benicia-Martinez Bridge and consists of a 14.3-acre lease area extending 1,300 feet into the strait. Each lease area consists of a mostly developed onshore area and open water wharf that is connected by an elevated pipe rack and vehicle/pedestrian approachway over tidal marshes. Both the Avon and Amorco lease areas provide substantial value for biological resources including special-status plant and wildlife species.

3.4.2.1 Regional Setting

The San Francisco Bay Estuary is a critically important biological resource, providing winter feeding habitat for over a million migratory birds, a nursery for juvenile fish and shellfish, migratory corridors for anadromous fish and year-round habitat for diverse plants and animal species.

The estuary is typically divided into five segments: Sacramento-San Joaquin River Delta (Delta), Suisun Bay, San Pablo Bay, Central Bay and South Bay. The Delta is the easternmost, or most upstream, segment. The Delta is a 1,150-square mile triangle-shaped region roughly bounded on the north by the City of Sacramento, on the south by the City of Tracy and on the west by Chipps Island. The Sacramento and San Joaquin Rivers and their tributaries flowing into the Delta drain about half the surface area of California, and establish the extent of brackish water habitat in Suisun Bay.

Suisun Bay is a shallow estuarine bay bounded by Chipps Island on the east and the Benicia-Martinez Bridge on the west. Suisun Marsh, the largest brackish water marsh in the United States and the largest wetland in California, forms its northern boundary. Suisun Bay is connected to San Pablo Bay via the Carquinez Strait, a narrow, 12-mile-long band of water that extends from the Benicia-Martinez Bridge to Mare Island.

The Carquinez Strait is a narrow gap in the Coast Range that connects the San Pablo Bay to Suisun Bay. Typical river deltas widen from their source into a fan-shaped, sediment-heavy region. The narrow channel in the Carquinez Strait, however, restricts the outflow of flood waters and sediment from the Central Valley to the ocean, causing waters to pool and sediment to slow and settle in Suisun Bay, and resulting in a rare geological feature known as an inverted river delta. Upstream of the strait, the channel depth transitions rapidly from the deep channel of Carquinez Strait into the shallows of Suisun Bay.

3.4.2.2 Biological Communities

Vegetation cover at the Avon MOT is shown in Figure 3 of the Biological Resources Technical Report (BRTR). Vegetation cover at the Amorco MOT is shown in BRTR Figure 4 (Appendix BIO, ERM 2021). A complete list of plant and wildlife species observed in the Project Site during the April 2021 reconnaissance survey is presented in BRTR Table 1. BRTR Figures 5 and 6 depict the California Natural Diversity Database (CNDDB) occurrences and critical habitat in the vicinity of Avon and Amorco.

The Project encompasses four habitat types: open water, marsh, ruderal upland and developed areas. The following sections briefly describe these communities.

Open Water

Open water habitat within the Project Site includes the open estuarine waters of Suisun Bay and associated tidal channels extending into the marsh, the Carquinez Strait, and on-site freshwater treatment ponds. The open water habitat at the Avon MOT lease area consists of Deep Bay habitat, non-wetland waters and mudflats. At the Amorco MOT lease area, the open water habitat consists of Shallow Bay and Bay Flat habitat.

Open water habitat supports numerous native fish species, including those important to the sport fishery industry, and provides foraging, nesting and loafing habitat for ducks, gulls, terns, cormorants and other waterbirds. Diving ducks, such as greater scaup and ruddy duck, are more likely to forage in adjacent open waters. Dabbling ducks, such as mallard, American wigeon and green-winged teal, are more likely to forage and nest within the marsh and water treatment features.

At least 12 special-status resident and migratory fish species are known to use waters of Carquinez Strait and lower Suisun Bay. These include green sturgeon, white sturgeon, Pacific lamprey, delta smelt, western river lamprey, steelhead, Chinook salmon, Sacramento splittail and longfin smelt. These species migrate through the channels, and forage and rear young in these waters. Open water in the lease areas is within a larger area designated by the USFWS as critical habitat for green sturgeon, delta smelt and salmon.

Open waters also provide habitat for marine mammals including harbor seal and California sea lion, both of which are known to use the wharfs for basking. Though much less common, gray whale, humpback whale and harbor porpoises occasionally make their way up Carquinez Strait and into Suisun Bay.

Marsh

Marsh habitat is found at the Avon MOT lease area between open water and onshore facilities. Vegetation in the relatively undisturbed brackish marsh habitat community adjacent to Suisun Bay is dominated by common reed (*Phragmites australis*), but also includes alkali bulrush (*Bolboschoenus maritimus*), fat-hen (*Atriplex prostrata*), pickleweed (*Salicornia pacifica*) and jaumea (*Jaumea carnosa*). Further inland, vegetation species vary by elevation. Freshwater-influenced emergent marsh plants, including bulrush (*Schoenoplectus americanus* and *S. californica*) and cattail (*Typha* sp.) are present at lower elevation sites, while higher and consequently drier sites support high marsh species such as salt grass (*Distichlis spicata*), fat-hen and pickleweed, as well as stinkwort (*Dittrichia graveolens*), an invasive non-native herb. Portions of this marsh habitat are mapped by CDFW as *Bolboschoenus maritimus* – salt marsh bulrush marshes, a state-ranked sensitive natural community. Marsh plants may be visited by pollen-gathering insects, including native bumble bees, while in flower.

Marsh habitat and open wetlands provide forage and nesting habitat for a variety of native bird species, including special-status birds, such as tricolored blackbird, short-eared owl, white-tailed kite, salt marsh common yellowthroat (*Geothlypis trichas sinuosa*), California black rail, northern harrier (*Circus cyaneus*), Ridgway's rail, American white pelican (*Pelecanus erythrorhynchos*), San Pablo song sparrow and Suisun song sparrow (*Melospiza melodia maxillaris*).

Special-status mammals that may be found in marsh habitat on the Site include salt marsh harvest mouse and Suisun shrew. The regular inundation of brackish marsh by saline rich tidal waters precludes regular use by amphibians, reptiles and many mammals, but species from these taxa that use adjacent uplands and developed areas (see below) likely forage in the marsh. Common bat species, such as big brown bat (*Eptesicus fuscus*) and Brazilian free-tailed bat (*Tadarida brasiliensis*), likely forage over the marsh at night.

Ruderal/Upland

Ruderal/upland habitat is found onshore between the marsh habitat and developed land at the Avon MOT lease area and on an elevated berm that runs beneath the terminal approachway. *Ruderal* refers to areas dominated by weedy species that readily colonize disturbed areas such as roadsides or vacant lots. Vegetation in these areas consists of coyote bush (*Baccharis pilularis*) intermixed with both planted and naturalized olive (*Olea europea*) and Canary Island date palm trees, California rose (*Rosa californica*), non-native Himalayan blackberry (*Rubus armeniacus*), invasive non-native perennial pepperweed, marsh gumplant (*Grindelia stricta* var. *angustifolia*), rush (*Juncus balticus*) and bristly ox-tongue. Many of these species are visited by pollen-gathering insects, including native bumble bees, while in flower.

The dense shrub cover and scattered trees growing on the levees and along berms in the Project Site and its immediate vicinity provide nesting and foraging habitat for bird species, such as white-tailed kite (*Elanus leucurus*), red-tailed hawk (*Buteo jamaicensis*), great horned owl (*Bubo virginianus*), mourning dove (*Zenaida macroura*), Anna's hummingbird (*Calypte anna*), western scrub-jay (*Aphelocoma californica*) and northern mockingbird (*Mimus polyglottos*).

Exposed surfaces provide basking habitat for western fence lizards (*Sceloporus occidentalis*), and areas of dense shrub provide cover and foraging habitat for common native amphibians and reptiles such as Sierran treefrog (*Pseudacris sierra*), common garter snake (*Thamnophis sirtalis*), and gopher snake (*Thamnophis sirtalis*) and mammals such as black-tailed jackrabbit (*Lepus californicus*), coyote (*Canis latrans*), northern raccoon (*Procyon lotor*) and striped skunk (*Mephitis mephitis*).

Developed

Developed areas in the Project Site include the Refinery, wharf facilities and approachways, onshore facilities, parking lots, roads, wastewater treatment areas and other areas of industrial use. Ground cover consists of pavement, dirt and gravel, and sparse non-native invasive plant species including eucalyptus (*Eucaltyprus globulus*), black mustard (*Brassica nigra*) and sweet fennel (*Foeniculum vulagare*). With the exception of small areas of landscaping, vegetation in these areas is typically removed to reduce fire hazards.

The various structures and infrastructure (e.g., tanks, buildings, light poles, wires, pipelines) provide perch and nest sites for raptors and common birds such as black phoebe (*Sayornis nigricans*) and house finch (*Haemorhous mexicanus*). Western fence lizards likely use exposed road beds, metal ladders and other human-constructed hard surfaces for basking. Most of the mammal species that use ruderal/upland and marsh habitats also forage and move through developed portions of the study area.

The Avon and Amorco wharfs provide shade and refuge areas for fish, and resting spots and foraging opportunities for fish, birds and marine mammals. Wharf structures also provide nesting habitat for birds, including raptors such as osprey. The wharves' support pilings provide attachment areas for sessile invertebrates and a place for fish to spawn. The barren roads, road margins and dirt parking lots in the Project Site provide nesting habitat for killdeer (*Charadrius vociferous*).

3.4.2.3 Special-status Species

Special-status species include the following categories of plant and animals:

- Plants or animals that are listed, candidates or proposed for listing as threatened or endangered under ESA or CESA.
- Plants listed as rare under the California Native Plant Protection Act.
- Plants that meet the CEQA definition of rare or endangered, including those considered by the CNPS to be "rare, threatened, or endangered in California" (CNPS Lists 1B and 2).
- Riparian vegetation protected under the California Fish and Game Code.
- Animals fully protected under the California Fish and Game Code.
- Animal species of special concern to CDFW.
- Bat species considered "red or high" and "yellow or medium" priority species by the Western Bat Working Group.

A list of special-status species with potential to occur in the Project Site was compiled from the applicant-provided BRTR (ERM 2021) and information provided to the County by CDFW (CDFW 2021). The potential for each species to occur was assessed based on the species' known distribution and habitat requirements. Species that were determined not to have potential to occur in the Project area are not discussed further.

Special-status Plants

The following nine species were identified as having potential to be present at the Project Site:

- Soft bird's-beak (*Cordylanthus mollis* ssp. *mollis*).
- Bolander's water-hemlock (*Cicuta maculate* var. *bolanderi*).
- Coulter's goldfields (*Lasthenia glabrata* ssp. *coulteri*).
- Mason's lilaeopsis (*Lilaeopsis masonii*).
- Suisun Marsh aster (*Symphytrichum lentum*).
- Saline clover (*Trifolium depauperatum* var. *hydrophilum*).
- Delta tule pea (*Lathyrus jepsonii* var. *jepsonii*).
- San Joaquin spearscale (*Atriplex joaquinana*).
- Delta mudwort (*Limosella australis*).

Table 3.4-1, Special-status Species with Potential to Occur in the Project Area, provides an overview of these species.

Special-status Wildlife

The following 33 special-status wildlife species have potential to use portions of the Project Site or are common marine mammals of the San Francisco Bay area:

- Central Valley spring-run Chinook salmon (*Oncorhynchus tshawytscha*).
- Sacramento River winter-run Chinook salmon (*Oncorhynchus tshawytscha*).
- Delta smelt (*Hypomesus transpacificus*).
- Longfin smelt (*Spirinchus thaleichthys*).
- Central California Coast steelhead (*Oncorhynchus mykiss*).
- Green sturgeon, Southern DPS (*Acipenser medirostris*).
- Western pond turtle (*Emys marmorata*).
- American white pelican (*Pelecanus erythrorhynchos*).
- Black-crowned night heron (*Nycticorax nycticorax*).
- California black rail (*Laterallus jamaicensis coturniculus*).
- California Ridgway's rail (*Rallus obsoletus obsoletus*).
- Cooper's hawk (*Accipiter cooperii*).
- Double-crested cormorant (*Phalacrocorax auritis*).
- Loggerhead shrike (*Lanius ludovicianus*).
- Merlin (*Falco columbarius*).
- Northern harrier (*Circus cyaneus*).
- Osprey (*Pandion haliaetus*).
- Salt marsh common yellowthroat (*Geothlypis trichas sinuosa*).
- Suisun song sparrow (*Melospiza melodia maxillaris*).
- Tricolored blackbird (*Agelaius tricolor*).
- White-tailed kite (*Elanus leucurus*).
- Salt marsh harvest mouse (*Reithrodontomys raviventris*).
- Suisun shrew (*Sorex ornatus sinuosus*).
- Big free-tailed bat (*Nyctinomops macrotis*).
- California sea lion (*Zalophus californianus*).
- Harbor seal (*Phoca vitulina richardii*).
- Northern elephant seal (*Mirounga angustirostris*).
- Gray whale (*Eschrichtius robustus*).
- Humpback whale (*Megaptera novaeangliae*).
- Blue whale (*Balaenoptera musculus*).
- Pacific white-sided dolphin (*Lagenorhynchus obliquidens*).
- Dall's porpoise (*Phocoenoides dalli*).
- Harbor porpoise (*Phocoena phocoena*).

Table 3.4-1 provides an overview of these species' known distribution and habitat requirements. In addition, numerous migratory and native bird species and bat species have potential to use portions of the Project Site, and many marine mammals and aquatic species pass through shipping lanes in Central Bay, at the mouth of San Francisco Bay, and in coastal waters.

Nonindigenous Aquatic Species

San Francisco Bay Estuary has been described as one of the most invaded ecosystems in North America. Nonindigenous aquatic species dominate many parts of the San Francisco Bay, to the extent that in some locations only introduced species can be found. The shipping industry has been identified as one of the major vectors of nonindigenous aquatic species, and vessel biofouling and ballast water are considered the largest contributors of nonindigenous species to the San Francisco Bay (CSLC 2021). A total of 18 percent of established nonindigenous aquatic species are tied to vessel biofouling as the primary likely vector and 9 percent for ballast water; however, when considering established species with multiple possible vectors, 60 percent may have been introduced via vessel biofouling as one of several possible vectors, and 53 percent may have been introduced via ballast water as one of several possible vectors (OSPR 2011).

Invasive species may compete directly with native species for food or space, or prey upon native species. They can also change the food chain or physical environment to the detriment of native species. Approximately 42 percent of the species on the federal threatened or endangered species list are at risk primarily because of predation, parasitism and competition from nonindigenous invasive species (OSPR 2011). One such currently pernicious invasive species is the overbite clam (*Corbula amurensis*), first found in the San Francisco Bay Estuary in 1986. Thought to have been introduced into the San Francisco Bay Estuary by ballast water discharge, this planktivore is now so abundant that the current population is capable of filtering the estuary's water column several times a day.

Table 3.4-1 Special-status Species with Potential to Occur in the Project Area

Species	Status* Federal/State/CRPR	Habitat Requirements	Potential to Occur
Plants			
Big tarplant *Blepharizonia plumosa*	-- / -- / 1B.1	Valley and foothill grassland. Dry hills and plains in annual grassland. Clay to clay-loam soils; usually on slopes and often in burned areas. 60-505 m.	Unlikely to occur. Habitat is not present in the Project area.
Bolander's water-hemlock *Cicuta maculata* var. *bolanderi*	-- / -- / 2B.1	Marshes and swamps. In fresh or brackish water. 0-20 m.	Likely to Occur. Habitat is present in the Project area.
Carquinez goldenbush *Isocoma arguta*	-- / -- / 1B.1	Valley and foothill grassland. Alkaline soils, flats, lower hills. On low benches near drainages and on tops and sides of mounds in swale habitat. 1-50 m.	Unlikely to occur. Habitat is not present in the Project area.

Table 3.4-1 Special-status Species with Potential to Occur in the Project Area

Species	Status* Federal/State/CRPR	Habitat Requirements	Potential to Occur
Coulter's goldfields *Lasathenia glabrata* ssp. *coulterii*	-- / -- / 1B	Coastal marsh and swamps.	Likely to occur. Habitat is present in the Project area.
Congdon's tarplant *Centromadia parryi* ssp. *congdonii*	-- / -- / 1B.1	Valley and foothill grassland. Alkaline soils, sometimes described as heavy white clay. 0- 245 m.	Unlikely to occur. Habitat is not present in the Project area.
Delta tule pea *Lathyrus jepsonii* var. *jepsonii*	-- / -- / 1B.2	Marshes and swamps. In freshwater and brackish marshes. Often found with *typha*, *aster lentus, rosa californica, juncus spp., scirpus*, etc. Usually on marsh and slough edges. 0-5 m.	Potential to occur. Populations are found along bay shores in the vicinity of the Terminal, including Pacheco Slough and Martinez Marsh Regional Shoreline. If populations occur in the Project area, they may be impacted by construction.
Jepson's coyote-thistle *Eryngium jepsonii*	-- / -- / 1B.2	Vernal pools, valley and foothill grassland. Clay. 3-305 m.	Unlikely to occur. Habitat is not present in the Project area.
Long-styled sand-spurrey *Spergularia macrotheca* var. *longistyla*	-- / -- / 1B.2	Marshes and swamps, meadows and seeps. Alkaline. 0-220 m.	Unlikely to occur. Habitat is not present in the Project area.
Mason's lilaeopsis *Lilaeopsis masonii*	-- / R / 1B.1	Marshes and swamps, riparian scrub. Tidal zones, in muddy or silty soil formed through river deposition or river bank erosion. In brackish or freshwater. 0-10 m.	Potential to occur. Occurs along the bay shore in San Pablo Bay, Suisun Bay and the Contra Costa shoreline, including Pacheco Slough. If populations occur in the Project area, they may be impacted by construction.
Mt. Diablo fairy-lantern *Calochortus pulchellus*	-- / -- / 1B.2	Chaparral, cismontane woodland, riparian woodland, valley and foothill grassland. On wooded and brushy slopes. 45-915 m.	Unlikely to occur. Habitat is not present in the Project area.

Table 3.4-1 Special-status Species with Potential to Occur in the Project Area

Species	Status* Federal/State/CRPR	Habitat Requirements	Potential to Occur
Saline clover *Trifolium hydrophilum*	-- / -- / 1B.2	Marshes and swamps, valley and foothill grassland, vernal pools. Mesic, alkaline sites. 1-335 m.	Potential to occur. May occur in diked or brackish tidal marsh in northern San Pablo Bay and in Suisun Marsh. If populations occur in the Project area, they may be impacted by construction.
San Joaquin spearscale *Extriplex joaquinana*	-- / -- / 1B.2	Chenopod scrub, alkali meadow, playas, valley and foothill grassland. In seasonal alkali wetlands or alkali sink scrub with *distichlis spicata, frankenia*, etc. 0-800 m.	Low potential to occur. Rarely found in tidal marsh edges. Nearest record is 5 miles east, in grasslands near Golden Eagle Refinery. Has been reported from Suisun Bay area. If populations occur in the Project area, they may be impacted by construction.
Soft bird's-beak *Chloropyron molle* ssp. *molle*	E / R / 1B.2	Coastal salt marsh. In coastal salt marsh with *distichlis, salicornia, frankenia*, etc. 0-5 m.	Potential to occur. Found in brackish marsh edges of northeast San Pablo Bay, Suisun Marsh and the Contra Costa County shoreline, including the Martinez Marsh Regional Shoreline. If populations occur in the Project area, they may be impacted by construction. Not observed during focused surveys conducted 2020 (LSA 2021b).
Suisun Marsh aster *Symphyotrichum lentum*	-- / -- / 1B.2	Marshes and swamps (brackish and freshwater). Most often seen along sloughs with phragmites, *scirpus*, blackberry, *typha*, etc. 0-15 m.	Potential to occur. Found in Suisun Marsh and along the Contra Costa shoreline, including nearby Pacheco Slough. If populations occur in the Project area, they may be impacted by construction.

Table 3.4-1 Special-status Species with Potential to Occur in the Project Area

Species	Status* Federal/State/CRPR	Habitat Requirements	Potential to Occur
Suisun thistle *Cirsium hydrophilum* var. *hydrophilum*	E / -- / 1B.1	Marshes and swamps. Grows with *scirpus, distichlis* near small watercourses within saltmarsh. 0-1 m.	Potential to occur. Perennial herb of salt marshes. Blooms June through September. Rediscovered in 1989 on Grizzly Island in the Suisun Marsh; now known from two occurrences. Threatened by altered hydrology and competition from native and non-native plants. Potentially threatened by foot traffic and trampling by cattle. Protected in part at Grizzly Island and Peytonia Slough.
Invertebrates			
Obscure bumble bee *Bombus caliginosus*	-- / --	Coastal areas from Santa Barbara County to north to Washington State. Food plant genera include *baccharis, cirsium, lupinus, lotus, grindelia* and *phacelia*.	Potential to forage in tidal marshes and scrub habitat.
Western bumble bee *Bombus occidentalis*	-- / C	Once common and widespread, species has declined precipitously from Central California to Southern British Columbia, possibly from disease.	Potential to forage in tidal marshes and scrub habitat.
Fish			
Chinook salmon - Central Valley spring-run evolutionarily significant unit (ESU) *Oncorhynchus tshawytscha* pop. 6	T / T	Adult numbers depend on pool depth and volume, amount of cover and proximity to gravel. Water temperatures greater than 27 degrees Celsius are lethal to adults. Federal listing refers to populations spawning in Sacramento River and tributaries.	Present in estuary waters.

Table 3.4-1 Special-status Species with Potential to Occur in the Project Area

Species	Status* Federal/State/CRPR	Habitat Requirements	Potential to Occur
Chinook salmon - Sacramento River winter-run ESU *Oncorhynchus tshawytscha* pop. 7	E / E	Sacramento River below Keswick dam. Spawns in the Sacramento River, but not in tributary streams. Requires clean, cold water overgravel beds with water temperatures between 6 and 14 degrees Celsius for spawning.	Present in estuary waters.
Delta smelt *Hypomesus transpacificus*	T / E	Sacramento-San Joaquin Delta. Seasonally in Suisun Bay, Carquinez Strait and San Pablo Bay. Seldom found at salinities greater than 10 parts per trillion (ppt). Most often at salinities less than 2 ppt.	Present seasonally in estuary waters.
Longfin smelt *Spirinchus thaleichthys*	C / T	Euryhaline, nektonic and anadromous. Found in open waters of estuaries, mostly in middle or bottom of water column. Prefer salinities of 15-30 ppt, but can be found in completely freshwater to almost pure seawater.	Present seasonally in estuary waters.
Steelhead - central California coast Distinct Population Segment (DPS) *Oncorhynchus mykiss irideus pop. 8*	T / --	DPS includes all naturally spawned populations of steelhead (and their progeny) in streams from the Russian River to Aptos Creek, Santa Cruz County, California (inclusive). Also includes the drainages of San Francisco and San Pablo Bays.	Present in estuary waters.

Table 3.4-1 Special-status Species with Potential to Occur in the Project Area

Species	Status* Federal/State/CRPR	Habitat Requirements	Potential to Occur
Tidewater goby *Eucyclogobius newberryi*	E / SSC	Found in shallow lagoons and lower stream reaches, they need fairly still but not stagnant water and high oxygen levels. Believed to be extirpated from the region.	Unlikely to occur. Believed extirpated.
Green sturgeon, Southern DPS *Acipenser medirostris*	T / SSC	Found in estuarine and marine waters, spawn in Sacramento River and tributaries. In the estuary, green sturgeon are associated with turbid water, where they prey on benthic organisms such as clams and crabs.	Present in estuary waters.
Amphibians			
California red-legged frog *Rana draytonii*	T / SSC	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation. Requires 11-20 weeks of permanent water for larval development. Must have access to estivation habitat.	Potential for Impact from Operations, though not construction. Site is within the species range, and this species are known to tolerate brackish water. However, no habitat occurs in the construction impact area.
Reptiles			
Western pond turtle *Emys marmorata*	-- / SSC	A thoroughly aquatic turtle of ponds, marshes, rivers, streams and irrigation ditches, usually with aquatic vegetation, below 6000-foot elevation. Needs basking sites and suitable (sandy banks or grassy open fields) upland habitat up to 0.5 kilometers from water for egg laying.	Potential to occur. Known from Pacheco Slough.

Table 3.4-1 Special-status Species with Potential to Occur in the Project Area

Species	Status* Federal/State/CRPR	Habitat Requirements	Potential to Occur
Birds			
American white pelican *Pelecanus erythrorhynchos*	-- / SSC	Frequent on salt ponds, coastal bays, inlets, estuaries and sloughs from August to December.	Present. Foraging habitat present in at terminals. Observed in Project Site in 2021 (LSA 2021a).
Black-crowned night heron *Nycticorax nycticorax*	-- / --	Colonial nester, usually in trees, occasionally in tule patches. Rookery sites located adjacent to foraging areas: lake margins, mud-bordered bays, marshy spots.	Potential to occur. Foraging habitat present in tidal marshes.
California black rail *Laterallus jamaicensis coturniculus*	-- / T, FP	Inhabits freshwater marshes, wet meadows and shallow margins of saltwater marshes bordering larger bays. Needs water depths of about 1 inch that do not fluctuate during the year and dense vegetation for nesting habitat.	Present. Suitable, albeit marginal, habitat exists on the Project Site. Known from Concord and Point Edith marshes. Observed during breeding surveys at Avon wharf (LSA 2021a).
California Ridgway's rail *Rallus obsoletus obsoletus*	E / E, FP	Salt water and brackish marshes traversed by tidal sloughs in the vicinity of San Francisco Bay. Associated with abundant growths of pickleweed, but feeds away from cover on invertebrates from mud-bottomed sloughs.	Potential to occur. Occurs on the Project Site, where suitable habitat is present. Was observed during protocol level surveys in 2008, though not during breeding season surveys conducted in 2021 (LSA 2021a).
Cliff swallow *Petrochelidon pyrrhonota*	-- / --	Long-distance migratory species that generally migrates along the coastline between North and South America. Breeding habitat includes both cliff faces and man-made buildings and structures.	Present. A colony was observed at a steel holding tank in Marathon Martinez Refinery in 2021 (LSA 2021a).

Table 3.4-1 Special-status Species with Potential to Occur in the Project Area

Species	Status* Federal/State/CRPR	Habitat Requirements	Potential to Occur
Cooper's hawk *Accipiter cooperii*	-- / --	Woodland, chiefly of open, interrupted or marginal type. Nest sites mainly in riparian growths of deciduous trees, as in canyon bottoms on river flood-plains; also, live oaks.	Potential to occur. Potential to forage at site, unlikely to nest.
Double-crested cormorant *Phalacrocorax auritus*	-- / --	Colonial nester on coastal cliffs, offshore islands and along lake margins in the interior of the state. Nests along coast on sequestered islets, usually on ground with sloping surface, or in tall trees along lake margins.	Potential to occur. May forage at the terminal or rest on the wharf, though no likely nesting habitat is present.
Loggerhead shrike *Lanius ludovicianus*	-- / SSC	Broken woodlands, savannah, pinyon-juniper, Joshua tree, and riparian woodlands, desert oases, scrub and washes. Prefers open country for hunting, with perches for scanning, and fairly dense shrubs and brush for nesting.	Potential to occur. Has been observed foraging in marshlands adjacent to the Refinery (eBird 2021).
Merlin *Falco columbarius*	-- / --	Seacoast, tidal estuaries, open woodlands, savannahs, edges of grasslands and deserts, farms and ranches. Clumps of trees or windbreaks are required for roosting in open country.	Potential to occur. Has been observed foraging in marshes adjacent to the Refinery (eBird 2021).

Table 3.4-1 Special-status Species with Potential to Occur in the Project Area

Species	Status* Federal/State/CRPR	Habitat Requirements	Potential to Occur
Northern harrier *Circus hudsonius*	-- / SSC	Coastal salt and freshwater marsh. Nest and forage in grasslands, from salt grass in desert sink to mountain ciènagas. Nests on ground in shrubby vegetation, usually at marsh edge; nest built of a large mound of sticks in wet areas.	Present. Forage and nesting habitat present at marsh edge.
Osprey *Pandion haliaetus*	-- / --	Ocean shore, bays, freshwater lakes and larger streams. Large nests built in tree-tops within 15 miles of a good fish-producing body of water.	Present. Osprey were observed nesting atop wharf facilities at Amorco in 2021 (LSA 2021a). In 2014, Tesoro installed an osprey nest platform in the marshland west of the Avon approachway to replace an existing osprey nest that was located on a berth slated for demolition.
Red-tailed hawk *Buteo jamaicensis*	-- / --	Occupies a wide range of habitats across North America, including grasslands, forests, agricultural fields and urban areas.	Present. Project area provides foraging, roosting and nesting habitat. Pair observed nesting in a eucalyptus tree at Martinez Refinery in 2021 (LSA 2021a).
Saltmarsh common yellowthroat *Geothlypis trichas sinuosa*	-- / SSC	Resident of the San Francisco Bay region, in fresh and salt water marshes. Requires thick, continuous cover down to water surface for foraging; tall grasses, tule patches and willows for nesting.	Present. Suitable breeding and foraging habitat exists on the Project Site.
Suisun song sparrow *Melospiza melodia maxillaris*	-- / SSC	Resident of brackish-water marshes surrounding Suisun Bay. Inhabits cattails, tules and other sedges, and *salicornia*; also known to frequent tangles bordering sloughs.	Present. Suitable nesting, roosting and foraging habitat exists in the lease area.

Table 3.4-1 Special-status Species with Potential to Occur in the Project Area

Species	Status* Federal/State/CRPR	Habitat Requirements	Potential to Occur
Short-eared owl *Asio flammeus*	-- / SSC	Commonly found in treeless areas using fence posts and small mounds as perches. Requires dense vegetation for resting and roosting cover. Distributed throughout the Estuary, from Suisun Marsh to South Bay.	Present. Often found in coastal scrub/marshland habitat. May forage through marshlands, and nest in denser patches of scrub vegetation.
Sora *Porzana carolina*	-- / --	Breeding habitat consists of marshes throughout much of North America. Requires dense vegetation to hide nests.	Present at a high concentration in a single small freshwater pond surrounded by dense cattails west of Avon wharf.
Tricolored blackbird *Agelaius tricolor*	-- / T, SSC	Highly colonial species, most numerous in Central Valley and vicinity. Largely endemic to California. Requires open water, protected nesting substrate and foraging area with insect prey within a few kilometers of the colony.	Present. In 1980, a colony was observed at the Mountain View Sanitation District Sewage Ponds in East Martinez. Although this colony is considered extirpated, suitable roosting and nesting habitat for this species is found on site. Flocks of tricolored blackbird were observed near Avon wharf in 2021.
Virginia rail *Rallus limicola*	-- / --	Shallow wetlands with tall stands of cattails and rushes, ground-nesting species.	Present at Avon wharf.
White-tailed kite *Elanus leucurus*	-- / FP	Rolling foothills and valley margins with scattered oaks and river bottomlands or marshes next to deciduous woodland. Open grasslands, meadows or marshes for foraging close to isolated, dense-topped trees for nesting and perching.	Present. Forages over marshes, may nest and forage in scrub.

Table 3.4-1 Special-status Species with Potential to Occur in the Project Area

Species	Status* Federal/State/CRPR	Habitat Requirements	Potential to Occur
Yellow rail *Coturnicops noveboracensis*	-- / SSC	Summer resident in eastern Sierra Nevada in Mono County. Freshwater marshlands.	Unlikely to occur based on lack of dense grass vegetation and project location outside Suisun Marsh.
Mammals			
Salt-marsh harvest mouse *Reithrodontomys raviventris*	E / E, FP	Only in the saline emergent wetlands of San Francisco Bay and its tributaries. Pickleweed is primary habitat, but may occur in other marsh vegetation types and in adjacent upland areas. Does not burrow; builds loosely organized nests. Requires higher areas for flood escape.	Potential to occur. Suitable habitat available on the Project Site. Known to occur in Concord and Point Edith marshes.
Suisun shrew *Sorex ornatus sinuosus*	-- / SSC	Tidal marshes. Nests and forages in dense low-lying cover above the mean high tide line.	Potential to occur. Suitable habitat is available in the muted tidal marshes.
Big free-tailed bat *Nyctinomops macrotis*	-- / SSC	Rugged, rocky terrain. Migratory species that prefers rocky cliffs, but have been found in buildings and larges conifers and, in the desert, shrubs.	Potential to occur. CNDDB occurrence indicates the species has been found in Martinez.
California sea lion *Zalophus californianus*	MMPA / --	Within the San Francisco Bay, a large haul-out is found at San Francisco's Pier 39. This species breeds on islands off the coasts of southern and Baja California.	Potential to occur. California sea lion are known to use wharfs in San Pablo and Suisun Bays for haul out and cover sites.

Table 3.4-1 Special-status Species with Potential to Occur in the Project Area

Species	Status* Federal/State/CRPR	Habitat Requirements	Potential to Occur
Harbor seal *Phoca vitulina richardii*	MMPA / --	Harbor seals are permanent residents in San Francisco Bay. Harbor seals show site fidelity in choice of resting sites. They feed on fish in the deeper waters of the bay. The primary colonies in the bay are at Castro Rocks in San Pablo Bay, Yerba Buena Island in Central Bay, and Mowry Slough in the South Bay.	Potential to occur. Although the most important haul outs for harbor seal are located in the Central and South Bays, there are haul outs in Suisun and San Pablo Bays.
Northern elephant seal *Mirounga angustirostris*	MMPA / --	Breeds on California coast and islands; breeding areas are located at the Farallon Islands, Año Nuevo, and Point Reyes.	Present in coastal shipping lanes.
Gray whale *Eschrichtius robustus*	MMPA / --	Gray whale feed for the majority of the year in waters off of Alaska and migrate seasonally to Baja California to give birth in winter. Peak southern migration occurs in January; peak northern migration occurs in March.	Seasonally present in coastal shipping lanes during annual migrations between Alaska and Baja California.
Humpback whale – Central American DPS *Megaptera novaeangliae*	FE, MMPA / --	Coastal waters and Pacific Ocean, preference for shallow continental shelfs, offshore banks, and seamounts with high productivity and prey concentration. Mostly present from April to October, though some individuals may occur year-round depending on food availability.	Present in coastal shipping lanes.

Table 3.4-1 Special-status Species with Potential to Occur in the Project Area

Species	Status* Federal/State/CRPR	Habitat Requirements	Potential to Occur
Humpback whale – Mexico DPS Megaptera novaeangliae	FT, MMPA / --	Coastal waters and Pacific Ocean, preference for shallow continental shelfs, offshore banks, and seamounts with high productivity and prey concentration. Mostly present from April to October, though some individuals may occur year-round depending on food availability.	Present in coastal shipping lanes.
Blue whale *Balaenoptera musculus*	FE, MMPA / --	Pacific Ocean. Blue whale migrate between arctic and tropical waters. Northern migrations are typically far offshore, but they hug the coast during their southern migration and are sighted in San Francisco coastal waters approximately May through November	Seasonally present in coastal shipping lanes typically May through November.
Pacific white-sided dolphin *Lagenorhynchus obliquidens*	MMPA / --	Open coastal waters.	Present in coastal shipping lanes.
Dall's porpoise *Phocoenoides dalli*	MMPA / --	Coastal and pelagic waters of the North Pacific Ocean	Present in coastal and Central Bay shipping lanes. Unlikely in shallow waters of San Pablo or Suisun bays.
Harbor Porpoises *Phocoena* phocoena	MMPA / --	Common in open coastal waters and deep waters in Central Bay.	Present in coastal and Central Bay shipping lanes. Unlikely in shallow waters of San Pablo or Suisun bays.
Sensitive Natural Communities			
Coastal Brackish Marsh			Present at Avon Marine Terminal.
Northern Coastal Salt Marsh			Salt marsh bulrush marshes are present in the Project area at Avon MOT.

Table 3.4-1 Special-status Species with Potential to Occur in the Project Area

Species	Status* Federal/State/CRPR	Habitat Requirements	Potential to Occur
STATUS DESIGNATIONS			
Federal FE Listed as Endangered under the Federal Endangered Species Act FT Listed as Threatened under the Federal Endangered Species Act MMPA Listed under the Migratory Mammal Protection Act State of California SE California Fish and Game Code Endangered Species ST California Fish and Game Code Threatened Species FP California Fish and Game Code Fully Protected Species SR California Fish and Game Code Rare Species SSC California Department of Fish and Wildlife Species of Special Concern		California Rare Plant Rank (CRPR) 1A Plant assumed extinct in California 1B Plants rare, threatened or endangered in California and elsewhere 2 Plants rare, threatened or endangered in California, but more common elsewhere Threat Ranks: 0.1-Seriously threatened in California (over 80% of occurrences threatened/high degree and immediacy of threat) 0.2-Fairly 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)	

3.4.3 Impact Analysis

3.4.3.1 Methodology for Impact Analysis

Impacts on vegetation and wildlife were based on the information provided in the BRTR (ERM 2021) submitted as part of the Project application. In addition, the applicant provided a report documenting the results of focused surveys for soft bird's beak (LSA 2021) and protocol level surveys for California Ridgway's rail (ERM 2021). Additional information on species with potential to occur in the Project Site and types of Project impacts was provided by CDFW in a letter response to the Project's Notice of Preparation (CDFW 2021).

Documents incorporated by reference for this analysis include the *Tesoro Avon Marine Oil Terminal Lease Consideration Environmental Impact Report* (TRC 2015) and *Tesoro Amorco Marine Oil Terminal Lease Consideration Environmental Impact Report* (TRC 2013). Discussion of impacts from operations focuses on the particular characteristics of the proposed Project.

3.4.3.2 Significance Criteria

For the purposes of this analysis, an impact was considered to be significant and to require mitigation as follows:

- Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS?

- Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies and regulations or by the CDFW or USFWS?

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

- 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 wildlife nursery sites?

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

- 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?

3.4.4 Impacts and Mitigation Measures

Construction-related Impacts

Impact BIO-1: Cause substantial temporary impacts to special-status species due to renovation activity (Potentially Significant)

As discussed below, numerous special-status plant and wildlife species have potential to occur in the Project Site. Based on this information, in-water work to repair wharf facilities, pipeline modifications, vibration, noise and disruption associated with construction of the Project would have the potential to impact these species. Therefore, mitigation measures have been identified to reduce potential impacts to special-status wildlife to a less-than-significant level.

Fish

Suitable habitat for special-status fish species occurs in open waters at the Avon and Amorco wharfs. Special-status fish species with potential to occur include longfin smelt, delta smelt, steelhead, Chinook salmon and green sturgeon. These species migrate upstream and may pass through wharf waters, and their young forage and rear in the open waters and tidal marshes in the lease areas.

Open water habitat can be degraded by poor housekeeping, accidental spill of fuel or hazardous materials and polluted stormwater runoff. Substantial loss of individuals of special-status fish species caused by degradation of suitable open water habitat and marsh could result in a significant impact on special status fish species. Implementation of **Mitigation Measure BIO-1a: General Work Site Best Management Practices**, would ensure that best management practices are employed throughout the duration of the Project. Implementation of **Mitigation Measure BIO-1b: Spill and Accidental Discharge Prevention**, and **Mitigation Measure BIO-1c: Emergency Spill and Containment Plan**, would ensure that the Project minimizes the risk

of spills or accidental discharge of fuels or hazardous materials. Although Project construction would not trigger the requirement for a construction stormwater permit, implementation of **Mitigation Measure BIO-1d: Stormwater Pollution Prevention Plan** (SWPPP) would require the Project to implement requirements from the facility's existing SWPPPs (Martinez Refinery, Avon Marine Terminal, and Amorco Marine Terminal) for construction of the Project and ensure that impacts from stormwater runoff are reduced to less than significant.

Construction activities over open water at the Avon wharf would be confined to out-of-water facilities including the existing wharf, access area, piperack and protective scaffolding and therefore, are not expected to impact special-status fish. Construction at the Amorco wharf would require in-water work. In-water work can degrade water quality, create noise and cause the take of protected fish species and thus has the potential to cause a substantial adverse impact to special-status fish species through the direct loss of individuals and through habitat degradation. Implementation of **Mitigation Measure BIO-1e: In-water Work Restrictions**, would constrain in-water work activities to the extent feasible to hours and work windows that would reduce the potential for construction to impact fish to a less than significant level, as listed fish species are less likely to use the Project Site as a migratory corridor during these times. Implementation of **Mitigation Measure BIO-1f: Nearshore Habitat Disturbance Minimization**, would require the Project to minimize nearshore habitat disturbance, thereby reducing habitat degradation of open water from barge use.to a less-than-significant level.

The Project is located within critical habitat for green sturgeon, delta smelt and salmon. Degradation of water quality and noise from construction would degrade habitat quality and result in a significant adverse impact on critical habitat for special status fish species. Implementation of the aforementioned mitigation measures would also reduce impacts to Primary Constituent Elements (PCEs) of designated critical habitat to less than significant.

Plants

Suitable habitat for special-status plant species occurs in marsh and ruderal/upland habitat at the Avon wharf. Other areas in the Project do not provide habitat for special-status plants. Special-status species with potential to occur or that are likely to occur in the marsh and ruderal/upland habitat are:

- Soft bird's-beak (*Cordylanthus mollis* ssp. *mollis*).
- Bolander's water-hemlock (*Cicuta maculate* var. *bolanderi*).
- Coulter's goldfields (*Lasthenia glabrata* ssp. *coulteri*).
- Mason's lilaeopsis (*Lilaeopsis masonii*).
- Suisun Marsh aster (*Symphytrichum lentum*).
- Saline clover (*Trifolium depauperatum* var. *hydrophilum*).
- Delta tule pea (*Lathyrus jepsonii* var. *jepsonii*).
- San Joaquin spearscale (*Atriplex joaquinana*).
- Delta mudwort (*Limosella australis*).

No soft bird's beak were detected during focused surveys conducted for the Project (LSA 2021). However, brackish marsh habitat at Avon provides suitable habitat for both this and the remaining eight species. If the federally protected soft bird's beak were to be located in the

project work area, individuals could be inadvertently trampled during construction. Loss of individuals would be a significant adverse impact. Implementation of **Mitigation Measure BIO-1i: Preconstruction Focused Soft-Bird's Beak Surveys**, would ensure that soft bird's beak is absent from the Project Site prior to construction.

No construction activity would occur within vegetated areas. Access to Project components in marshlands would be from the existing approachway, access road and scaffolding attached to the existing piperack. A tarp to catch inadvertently dropped tools or material would be secured below the scaffolding for work in any area where pipe repairs are required. However, in areas where only heat tracing and insulation are required, construction workers would descend from the scaffolding to retrieve dropped tools or materials. When workers descend from the scaffolding into vegetated areas to retrieve accidentally dropped tools or materials, they could crush or injure individual special-status plants if present. Loss of special-status plants would potentially be a significant adverse impact. **Mitigation Measure BIO-1g: Demarcation of Limits of Work** would require that the limits of work areas are clearly marked, further reducing the potential for accidental crushing or injuring of individual special-status plants.

Work over vegetated areas has potential to introduce nonnative invasive plant seeds from vehicles and equipment or being tracked in on workers' boots, leading to habitat degradation. Impacts on any or all of the special-status plants with potential to occur in the Project Site could be significant. Habitat degradation for special status plants through the introduction of weed species into sensitive habitat would be a significantly adverse impact. However, implementation of **Mitigation Measure BIO-1h: Weed Spread Prevention**, would ensure that construction does not introduce weeds to the Project Site, thereby reducing the Project's impact on special-status plants to a less-than-significant level.

Degradation of marsh habitat could also occur from an accidental spill of fuel or other hazardous material. Habitat degradation caused by accidental spill into sensitive habitat for special status plants would be a significant adverse impact. Implementation of **Mitigation Measure BIO-1c: Emergency Spill and Containment Plan** and **Mitigation Measure BIO-1b: Spill and Accidental Discharge Prevention**, would reduce this impact to a less-than-significant level.

Mammals

The marsh areas at Avon provide suitable habitat for salt marsh harvest mouse and Suisun shrew. The wharf structures and open waters of the lease areas provide suitable habitat for California sea lion and harbor seal. Construction noise and activity would disturb individual animals, if present. However, individuals that are temporarily displaced by construction noise and activity would be able to retreat to adjacent marsh or open water habitat. The exact extent of suitable habitat for salt marsh harvest mouse and Suisun shrew has not been confirmed because no reconnaissance-level biological surveys were conducted in support of the Project. However, no construction would occur in vegetated areas. Habitat degradation for special status mammals caused by introduction of weed species or spills from the Project Site would be a significant adverse impact. Implementation of mitigation measures described above for plants would ensure protection of habitat for special-status mammals.

Birds

Suitable habitat for special-status birds is located in all areas of the Project Site. The Project could have temporary adverse impacts on 11 special-status birds, including tricolored blackbird, short-eared owl, northern harrier, white-tailed kit, saltmarsh common yellow-throat, Suisun song sparrow, San Pablo song sparrow, osprey, California black rail, California Ridgway's rail, American white pelican, as well as other nesting migratory birds and raptors through increased levels of disturbance from increased human presence, noise and/or equipment vibrations, facility construction and demolition. Such disturbances may disrupt normal behavioral patterns of breeding, foraging, sheltering and dispersal.

Field surveys for California Ridgway's rail were conducted in 2021 within tidal and brackish marsh habitat within 700 feet of the Avon Wharf to determine whether breeding Ridgway's rails were present in the Project area. No breeding California Ridgway's rails were present in the Project area. However, this species is mobile and has potential to begin nesting within the Project Site vicinity prior to construction.

California black rail, Virginia rail, sora, tricolored blackbird, white-tailed kite, northern harrier, San Francisco common yellowthroat, short-eared owl and Suisun song sparrow were observed in the Project area during biological surveys. Surveys also identified the presence of nesting raptors, including a red-tailed hawk nesting in a eucalyptus tree at the Martinez Refinery and osprey nesting at the Amorco Marine Terminal.

Noise and disturbance from project construction can cause stress to nesting birds, causing them to abandon their eggs or young and resulting in nest failure, resulting in a significant adverse impact. Implementation of **Mitigation Measure BIO-1j: Preconstruction Nesting Bird Surveys**, and **Mitigation Measure BIO-1k: California Ridgway's Rail and California Black Rail Surveys**, would require the applicant to conduct preconstruction nesting bird surveys and establish protective buffers to avoid impacts to nests if present, thus ensuring that Project impacts are less than significant.

> **Mitigation Measure BIO-1a: General Work Site Best Management Practices.** The following measures shall be included on all plans and employed by Marathon and its contractors to avoid and minimize impacts to water quality and other beneficial characteristics of wetlands at the Project Site:
>
> - No debris, soil, silt, sand, cement, concrete or washings thereof, or other construction-related materials or wastes, oil or petroleum products, or other organic or earthen material shall be allowed to enter into or be placed where it may be washed by rainfall or runoff into marshes or open water/ditches adjacent to the work areas.
> - All personnel and their equipment shall be required to stay within the designated construction area to perform job-related tasks and shall not be allowed to enter wetlands, drainages and habitat of listed species.
> - Pets shall not be allowed in or near the construction area.
> - Firearms shall not be allowed in or near the construction area, except for armed Marathon security officers who may periodically patrol work sites. No intentional killing or injury of wildlife shall be permitted.

- The construction site shall be maintained in a clean condition. All trash (e.g., food scraps, cans, bottles, containers, wrappers, cigarette butts and other discarded items) shall be placed in closed containers and properly disposed off-Site.
- After construction is completed, final cleanup shall include removal of all stakes, temporary fencing, flagging and other refuse generated by construction. Vegetation shall not be removed or disturbed in the cleanup process.

Mitigation Measure BIO-1b: **Spill and Accidental Discharge Prevention**. The following measures shall be included on all plans and employed by Marathon and its contractors. Marathon and its contractors shall be responsible for structure operations in a manner that minimizes the risk of spills or the accidental discharge of fuels or hazardous materials. Marathon and its contractors shall, at a minimum, ensure that:

- All employees handling fuels and other hazardous materials are properly trained.
- All equipment is in good operating order and inspected regularly.
- Hazardous materials, including chemicals, fuels and lubricating oils, shall not be stored within 200 feet of a wetland or water body. This applies to storage of these materials and does not apply to normal operation or use of equipment in these areas.
- If refueling is needed on-Site, it will occur at least 100 feet from a surface water feature, and in a designated refueling area with secondary containment/plastic sheeting and a spill containment kit.

Mitigation Measure BIO-1c: Emergency Spill and Containment Plan. The following measures shall be included on all plans and employed by Marathon and its contractors. In the event of an accidental spill, the Facility Oil Spill Contingency Plan shall be implemented. Site-specific provisions shall be listed on the Safe Work Permit and included within the job plan maintained on-Site.

At a minimum, Marathon and its contractors shall:

- Ensure that each construction crew (including clean-up crews) has sufficient supplies of absorbent and barrier materials on-Site to allow the rapid containment and recovery of spilled materials, and that each construction crew knows the procedure for reporting spills.
- Ensure that each construction crew has sufficient tools and material on Site to stop leaks.
- Know the contact names and telephone numbers for all Marathon Martinez Refinery contacts and local, state and federal agencies (including, if necessary, the U.S. Coast Guard and the National Response Center) that might need to be notified in the event of a spill.
- Follow the requirements of those agencies in cleaning up the spill, excavating and disposing soils or other materials contaminated by a spill, and collecting and disposing waste generated during spill cleanup.

Mitigation Measure BIO-1d: Stormwater Pollution Prevention Plan (SWPPP). The Project shall adhere to and implement the requirements of the respective existing SWPPP

for the Marathon Martinez Refinery, Avon Marine Terminal and Amorco Marine Terminal during Project construction.

Applicable measures in each SWPPP shall be incorporated into the construction plans by a qualified specialist and implemented prior to construction.

Mitigation Measure BIO-1e: In-water Work Restrictions. The following work restrictions shall be included on all plans that include in-water work, and employed by Marathon and its contractors:

- To the extent feasible, in-water work shall be performed between 30 minutes after sunrise and 30 minutes before sunset.
- In-water work activity shall only occur during the work window specified by the NMFS and CDFW for avoidance of potential impacts to fish species in this region of the San Francisco Bay Estuary, August 1 to November 30. If in-water work outside this time period is required, the work window may be adjusted through coordination with the CDFW, NMFS and USFWS.

Mitigation Measure BIO-1f: Nearshore Habitat Disturbance Minimization. The following measures shall be employed by Marathon and its contractors. The measures shall be included as recommended practices incorporated into all construction contracts related to the Project. The number of round trips made by barges during construction shall be limited to the extent feasible. Barge and support vessels shall transit through the shallows at a no-wake-producing speed to minimize disturbance to bottom sediments. Anchoring shall be minimized to the extent possible.

Mitigation Measure BIO-1g: Demarcation of Limits of Work. Marathon and its contractors shall clearly demarcate the limits of work in the field. All Project-related activity shall be confined to the designated work areas; no entry into adjacent areas shall be allowed by Project personnel. Upon Project completion, material used to mark the work boundary shall be removed.

Mitigation Measure BIO-1h: Weed Spread Prevention. Marathon and its contractors shall implement measures to ensure that boots, clothing, vehicles and equipment are free of soils and plant parts prior to entering work areas.

Mitigation Measure BIO-1i: Preconstruction Focused Soft-Bird's Beak Surveys. Focused surveys for soft-bird's beak shall be conducted by a qualified biologist each year during the appropriate blooming period (June 1 through September 30) prior to construction to confirm its absence. Locations of rare plants in proposed construction areas will be recorded using a GPS unit and flagged for avoidance. A qualified biologist shall monitor construction activities occurring in the vicinity of the flagged plants to ensure that no direct or indirect impacts occur.

Mitigation Measure BIO-1j: Preconstruction Nesting Bird Surveys. No more than 5 days prior to construction during the nesting bird season (February 1 through September 15), a qualified biologist shall conduct a survey for nesting birds. If work within an area lapses for more than 14 days during the nesting season, the survey shall be repeated. The

survey shall encompass all work areas and those areas within a buffer of 250 feet for passerines, 500 feet for small raptors, and 1,000 feet for large raptors. Where accessible, the location of active nests will be recorded using a handheld global-positioning system unit. Should an active nest be discovered, a biological monitor will be required on-Site during construction activities that could cause disturbance of the nest. The biologist may allow work to continue if they determine that the work activity is not likely to cause nest disturbance. The biological monitor shall have the authority to stop work should a nesting bird display signs of agitation. The qualified biologist conducting the nesting surveys should prepare a report that provides details about the nesting outcome and the removal of buffers. This report should be submitted to the County's Department of Conservation and Development for review and approval prior to the time that buffers are removed.

Mitigation Measure BIO-1k: California Ridgway's Rail and California Black Rail Surveys. Prior to construction occurring during the rail nesting season (February 1 through August 31) within 700 feet of suitable rail habitat, surveys shall be conducted for California Ridgway's rail and California black rail in accordance with the USFWS Survey protocol for California Ridgway's rail. Surveys should be initiated between January 15 and February 1. For each survey station, four surveys are to be conducted. Surveys should be spaced at least two weeks apart and should cover the time period from the date of the first survey through the end of March or mid-April. If California Ridgway's or California black rails are detected during the survey, no work within 700 feet of the rail calling centers (identified via compass bearing and distance estimate during surveys) shall occur between February 1 and August 31, unless otherwise approved by USFWS and CDFW.

Significance after Mitigation: Less than Significant

Impact BIO-2: Disturbance or Loss of Sensitive Natural Communities or State and Federally Protected Wetlands (Potentially Significant)

Modification of Line 26 from the Avon wharf would occur over marsh mapped by CDFW as a sensitive natural community, *Bolboschoenus maritimus*–Salt marsh bulrush marshes and over state and federally protected wetlands. However, no construction would occur in wetlands. All construction within this area would be conducted aboveground from the existing piperack. No ground disturbance beyond accidental foot traffic would occur. Habitat degradation through accidental spill or the introduction of weed species into this habitat would cause a loss of sensitive natural communities and federally protected wetlands. Implementation of **Mitigation Measure BIO-1a: General Work Site Best Management Practices**, **Mitigation Measure BIO-1b: Spill and Accidental Discharge Prevention**, **Mitigation Measure BIO-1c: Emergency Spill and Containment Plan**, **Mitigation Measure BIO-1g: Demarcation of Limits of Work** and **Mitigation Measure BIO-1h: Weed Spread Prevention**, will reduce indirect impacts to this community to less than significant.

Mitigation Measure BIO-2: Implement Mitigation Measure BIO-1a, Mitigation Measure BIO-1b, Mitigation Measure BIO-1c, Mitigation Measure BIO-1g and Mitigation Measure BIO-1h.

Significance after Mitigation: Less than Significant

Impact BIO-3: Interfere with Wildlife Migratory Corridors or Nursery Sites (Potentially Significant)

Special-status fish that could be present or migrating through the Project Site during construction include delta smelt, green sturgeon, Central California Coast steelhead, California Central Valley steelhead, Central Valley spring-run Chinook salmon, Sacramento River winter-run Chinook salmon and longfin smelt. Noise and disturbance caused by in-water work to repair dolphins at the Amorco MOT could interfere with migration of special-status fish species. Habitat degradation caused by noise and disturbance by in-water work would result in a significant adverse impact on wildlife migratory corridors. Implementation of **Mitigation Measure BIO-1e: In-water Work Restrictions**, would limit in-water work to times outside the migration period unless otherwise determined in consultation with USFWS, NMFS and CDFW, ensuring the impacts to migratory fish corridors are less than significant.

The open waters and tidal/brackish marshes in the Project Site are used as nursery sites by native wildlife species, including fish and birds. A notably high concentration of soras were detected in a small, freshwater pond surrounded by dense cattails located between the access road and Avon wharf near the station (LSA 2021). Construction noise and activity that results in disturbance to known nursery sites would be a significant adverse impact. Implementation of **Mitigation Measure BIO-1j: Preconstruction Nesting Bird Surveys**, and **Mitigation Measure BIO-1k: California Ridgway's Rail and California Black Rail Surveys**, require preconstruction surveys for nesting birds and protective buffers; and **Mitigation Measure BIO-1a: General Work Site Best Management Practices**, **Mitigation Measure BIO-1b: Spill and Accidental Discharge Prevention**, **Mitigation Measure BIO-1c: Emergency Spill and Containment Plan**, **Mitigation Measure BIO-1g: Demarcation of Limits of Work**, and **Mitigation Measure BIO-1h: Weed Spread Prevention**, would ensure that marsh areas are protected from accidental habitat degradation. Implementation of these measures would reduce impacts to native nursery sites such that impacts would be less than significant.

> **Mitigation Measure BIO-3:** Implement Mitigation Measure BIO-1a, Mitigation Measure BIO-1b, Mitigation Measure BIO-1c, Mitigation Measure BIO-1e, Mitigation Measure BIO-1g, Mitigation Measure BIO-1h, Mitigation Measure BIO-1j and Mitigation Measure BIO-1k.
>
> **Significance after Mitigation:** Less than Significant

Impact BIO-4: Conflict with any local policies or ordinances protecting biological resources or provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or State habitat conservation plan (Less than Significant)

The Conservation Element of the Contra Costa County General Plan (2005) provides policies to protect the County's natural resources and their uses. Degradation of salt marshes and tidelands caused by construction activity—such as accidental minor spills, noise, or introduction of weed species—would be a significant adverse impact. Mitigation measures in this section are adopted

to ensure that the salt marshes and tidelands in the Project Site, and the native species that they support, are recognized and protected during construction.

The Project is located in an area identified in the San Francisco Bay Plan (BCDC 2020) as designated for Water-Related Industry Priority Use. Bay Plan policies require tidal marshes and tidal flats to be conserved to the fullest possible extent. Degradation of these habitats caused by construction activities would be a significant adverse impact. Mitigation measures in this section are adopted to ensure that the tidal marshes and tidal flats are protected from accidental harm or habitat degradation during construction.

The Project would be consistent with both plans; therefore, this impact would be less than significant.

Mitigation Measure: No mitigation would be required.

Operational Impacts

Impact BIO-5: Cause substantial impact to special-status species or sensitive habitat due to increased fill area and bay cover. (Less than Significant)

One cone fender less than 20 square feet in size would be installed at a dolphin at the Amorco MOT. The *de minimis* increase to bay cover would not adversely affect the use of open water habitat by special-status species nor substantially impact sensitive open water habitat; therefore, it would result in a less-than-significant impact to special-status species or sensitive habitat.

Mitigation Measure: No mitigation is required.

Impact BIO-6: Increase deposition or erosion of sensitive habitats along the vessel path, including marshlands within and adjacent to the lease area, resulting from the resuspension of sediments by calling vessels. (Less than Significant)

Discussions of effects from vessel traffic can be found in Section 4.2.4.1, Impact BIO-3, of the Avon EIR, and in Section 4.2.3.3, Impact BIO-3, of the Amorco EIR.

Sediment plumes would be generated by vessels calling at the Avon or Amorco MOTs. Sediment lifting from the navigation channel substrate would contribute to the paucity of infaunal abundance typically found in these channels. Vessel calls at Avon MOT would increase from 120 per year to 364 per year. Vessel calls at Amorco MOT would decrease from 90 per year to 40 per year. While sediment levels could potentially be increased at the terminals, the tidal currents at both wharfs are considerable, and sediment plumes are expected to be quickly dispersed. In addition, due to the underlying topography at the Project Site, the terminals are located within highly turbid waters, and thus the temporary and intermittent increases in turbidity are unlikely to affect the local biotic communities. Therefore, impacts to protected sensitive habitats would be less than significant.

Mitigation Measure: No mitigation would be required.

Impact BIO-7: Cause injury or behavioral interruptions to aquatic species as a result of noise from increased number of vessels. (Potentially Significant)

Discussions of noise from vessels can be found in Section 4.2.4.1, Impact BIO-6, of the Avon EIR and in Section 4.2.3.3, Impact BIO-4, of the Amorco EIR.

Ships are the dominant source of low frequency noise in many highly trafficked coastal zones. Much of the noise associated with a vessel is caused by propeller wash: as the propellers spin underwater, small air bubbles form in nicks and gauges along the propeller edge and burst in a process known as cavitation. Other sources of noise include mechanical motors and other onboard machinery. Direct impacts to wildlife can be caused through masking or behavioral disturbance. *Masking* is noise that interferes with communication between animals or their ability to sense their surroundings; *behavioral disturbances* occur when wildlife are disturbed as a result of increased sound. Noise produced by vessels transiting the San Francisco Bay is mitigated by the soft-bottom substrate and sediment-rich waters, which attenuate sound.

The increase in numbers of vessels visiting the two terminals would incrementally increase the impacts from noise to fish and marine mammals. However, weekly vessel calls and the limited transit time would remain low. Behavioral disturbance and physical injury to fish and marine mammals from increasing intermittent vessel noise is not expected to be significant; thus impacts to special status species as a result of noise from increased vessel numbers would be less than significant.

In the same way that terrestrial animals can be injured or killed by vehicles, fish and marine mammals can be directly injured or killed by shipping vessels. Marine mammals in particular are vulnerable to blunt force trauma from collision with vessels (most commonly bow or propeller). The probability for marine mammals to be struck by a vessel is highest where a shipping channel intersects a migratory route or passes through a feeding area, such as is found at the mouth of San Francisco Bay. 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). Potential effects from vessel collisions on special-status fish, marine mammals and sea turtles are assessed below. Encouraging responsible vessel practices and understanding the distribution of special status species are two key components to reducing the risk of vessel strikes

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 (Kilgore 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.

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.

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 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; eggs are demersal. Early life stages are in freshwater. Chinook may rear in freshwater from months up to 2 years. Steelhead rear in freshwater streams 1-3 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.

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.

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 for both Chinook salmon and steelhead. Therefore, impacts to salmonids from vessel collisions or acoustics would be less than significant and no mitigation would be required.

Sturgeon

Green sturgeon spawn in the Sacramento River, and white sturgeon mostly do. Green sturgeon eggs, larvae, and young 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. 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.

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).

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 (Brown and Murphy 2010; Balazik et al. 2012). 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 2018). 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).

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. More than 400 deep-draft vessel trips per year occur in the navigational channel. With the Project, it is estimated there will be an 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. With the incorporation of **Mitigation Measure BIO-7b: Sturgeon Action Funding**, to support further research and education about research being conducted and how the public's observations

can inform strategies being developed to improve fisheries habitat within the estuary, the impacts are expected to be less than significant throughout the operational period of the Refinery.

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 (Schoeman et al. 2020, NOAA Fisheries 2021a, b). 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. However, with incorporating **Mitigation Measure BIO-7a: Vessel Strike Minimization**, which would reduce the speed of the approaching vessels, the impact is expected to be less than significant. Slowing vessel speed is considered by NMFS as applicable for reducing ship strike injury to sea turtles.

Marine Mammals

Marine mammal observations in the region during 2017-2020 included several whale species (blue, fin, gray, humpback; Killer, and minke), dolphins (northern right whale dolphin, Pacific white-sided dolphin, Risso's dolphin, short- and long-beaked dolphin), porpoises (Dall's porpoise, harbor porpoise), and a sea otter off San Francisco County. 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.

Harbor Seals and California Sea Lions

As discussed previously, harbor seals and California sea lions utilize the wharf structures and open waters of the lease areas surrounding the Project Site. 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

Sea otters would not be expected to occur in the traffic separation scheme shipping lanes.

Dolphins and Porpoises

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). 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.

Guadalupe Fur Seal

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 2020). Therefore, a substantial adverse impact on this species is considered unlikely.

Whales

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; Rockwood et al., 2017; Redfern et al., 2019). 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 (NMFS 2021a).

NOAA Fisheries has collaborated with NOAA Sanctuaries and the U.S. Coast Guard to effect changes in shipping lanes that should help reduce the risk of ships striking large whales. The Coast Guard is responsible for establishing and modifying shipping lanes under the Ports and Waterways Safety Act. NOAA Fisheries provided the Coast Guard with information on the abundance and distribution of whales to help reduce the overlap of ships and large whales. Shipping lanes were adjusted June 1, 2013 to promote safety of navigation and protect endangered whales along California coast. Busy shipping lanes off the California coast, including routes that cross four national marine sanctuaries, have been adjusted to balance the safe and efficient flow of commerce within and between our nation's ports, with NOAA's goal of reducing whale strikes from vessels.

A seasonal voluntary Vessel Speed Reduction is in place in designated shipping routes into San Francisco Bay during seasonal migration periods (May through November) to decrease whale mortality from ship strikes; however, because operations will double the number of vessel trips to the terminals it will correspondingly double the potential for a project vessel to strike aquatic species. Any unauthorized take of whales, even if unintentional, by vessels transiting in U.S. waters violates federal statutes. These species are protected under the Federal Endangered Species Act (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*.). The potential for ship strikes associated with increased vessel traffic from the Project to impact special status species is therefore significant.

By following the shipping lanes established by NOAA and U.S. Coast Guard that have been designed to reduce whale-vessel overlap, and by implementing **Mitigation Measure BIO-7a: Vessel Strike Minimization**, below, to reduce vessel speed, the project would be expected to reduce the risk of vessel strike impacts on whales to a less than significant level. By furthering the characterization of vessel strike risk to sturgeon, implementation of **Mitigation Measure**

BIO-7b: Sturgeon Action Funding, will reduce the risk of vessel strike to federally threatened green sturgeon to a less than significant level.

> **Mitigation Measure BIO-7a: Vessel Strike Minimization.** The following mitigation measure shall be implemented during all on-going business operations and shall be included as part of contractual agreement language to ensure that contract vessels are informed of all on-going operational responsibilities**.**
> Marathon 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 NOAA.
> - 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.
> - Inform all vessel traffic of vessels 300 gross registered tons or larger to reduce speeds to 10-knots when transiting within the designated Vessel Speed Reduction zones.
> - Request compliance to the maximum extent feasible (based on vessel safety) with the 10-knot speed reduction zone. Understand and agree that decisions concerning safe navigation and maneuvering of participating vessels remain entirely with ship masters and crew.
> - Encourage participation in the Blue Whales and Blue Skies incentive program.
>
> **Mitigation Measure BIO-7b: Sturgeon Action Funding.** Marathon Refining and Marketing Company, LLC (Marathon) shall conduct and support the following activities to further the understanding of vessel strike vulnerability of sturgeon in San Francisco, San Pablo, and Suisun Bays and the Carquinez Strait. The support shall be based on criteria that establish Marathon's commensurate share taking into account the increase in vessel calls to the Avon and Amorco Marine Oil Terminals. Support shall include coordination 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.
>
> **Significance after Mitigation:** Less than Significant

Impact BIO-8: Cause significant adverse impacts to the San Francisco Bay Estuary and associated biota as a result of spills. (Potentially Significant)

Discussions of impacts from major fuel, lubricant and/or boat related spills can be found in Section 4.2.4.1, Impact BIO-8, of the Final Environmental Impact Report for the Tesoro Avon Marine Oil Terminal Lease Consideration (CSLC 2015; Avon FEIR) and in Section 4.2.3.3,

Impact BIO-6, of the Final Environmental Impact Report for the Tesoro Amorco Marine Oil Terminal Lease Consideration (CSLC 2014; Amorco FEIR). Impacts from vegetable oil, animal fats or biofuel spills into the San Francisco Bay Estuary and surrounding natural lands would be significant and unavoidable.

Impacts from spills would depend on the material and quantity spilled. The above-referenced EIRs address spills from light oils such as fuel oil, medium oils such as crude oil and heavy oils such as heavy crude and some fuel oils. Biofuels such as ethanol or biodiesel, which are derived from vegetable oils or animal fats, behave differently from conventional petroleum-based fuels in the environment. A discussion of hazards associated with the change of feedstocks is provided in Section 3.9 Hazards and Hazardous Materials.

Biofuel spills may occur from leaks in equipment, pipes, storage tanks and during transfer of biofuel. Biofuels, unlike conventional petroleum-based oils, readily biodegrade under both aerobic and anaerobic conditions (IRTC 2011). The release of a readily degradable biofuel to soil or water results in the rapid consumption of oxygen. This can be detrimental in surface waters where low oxygen levels can adversely affect biological communities.

Biofuel feedstocks – vegetable oils and animal fats – would be transported via barge to the Refinery terminals. Vegetable oils and animal fats share common physical properties with petroleum oils and produce similar environmental effects when spilled (EPA 2020). Like crude oil, vegetable oils and animal fats may sink and form tar balls or coat the benthic floor. These oils tend not to evaporate, but instead leave a thick, viscous residue on the surface of receiving waters. Vegetable oils and animal fats can:

- Coat animals and plants with oil and suffocate them;
- Be toxic and form toxic products;
- Destroy and degrade habitat by fouling shorelines, the water column and the benthic substrate;
- Produce rancid odors; and
- Linger in the environment for many years.

Research and previous spills have shown that release of animal fats and vegetable oils into water or overland kill or injure wildlife. Wildlife, including waterbirds and fish, that become coated with animal fats or vegetable oils are unable to keep themselves warm, may suffer from dehydration, diarrhea, or starvation. Aquatic life can suffocate because of depletion of oxygen caused by spilled animal fats and vegetable oils in water.

Marathon would be required to update the Refinery's FRP and Spill Prevention, Control, and Countermeasure Plan (SPCC) to demonstrate preparedness to respond to vegetable oil and animal fat spills. However, there are limitations to thorough containment and cleanup of a major oil spill. As was determined in the Avon and Amorco EIRs, even with specific procedures to protect sensitive biological resources in the Project vicinity, adverse impacts to special status species, protected habitats, and migratory corridors and nursery sites for native species as a result of a major spill would remain **significant and unavoidable.**

Impact BIO-9: Introduce invasive nonindigenous aquatic species to the San Francisco Bay Estuary. (Potentially Significant)

Discussions of introduction of nonindigenous aquatic species to the estuary can be found in the Avon FEIR in Section 4.2.4.1, Impact BIO-9, and in the Amorco FEIR in Section 4.2.3.3, Impact BIO-7. Increase of vessel calls at the Avon and Amorco MOTs would increase the potential for introduction of nonindigenous aquatic species to the San Francisco Bay Estuary. This impact would be significant and unavoidable.

Nonindigenous aquatic species can be introduced into the San Francisco Bay Estuary through ballast water exchange or vessel biofouling. Ballast water is taken on or released by ships to improve vessel stability, maneuverability and propulsion. Because ballast water is taken from surrounding waters, it includes marine organisms that may then be released when ballast water is discharged. Marine organisms, such as barnacles, that have a sessile or sedentary life stage in which the attach to hard surfaces readily colonize ships' underwater surfaces. They may then be transported by vessels into new environments.

As discussed above under "State Regulations," preventing the introduction of non-indigenous aquatic species from vessels of 300 or more gross tons capable of carrying ballast water that arrive at California ports is managed through the Marine Invasive Species Program (MISP). The MISP collects information on ballast water management and biofouling management from forms submitted by vessel operators and through spot inspections of docked vessels. The 2021 Biennial Report on the MISP program reports that 99% of ballast water discharge in California waters between 2018 and 2019 was compliant with the MISP ballast water management requirements (CSLC 2021). Two-thirds of the vessel arrivals arriving at California ports were compliant with the California Biofouling Management Regulations; the 96% of the remaining third were compliant within 60 days of failing a first inspection. Most violations were issued for failure to include required information in the vessel's Biofouling Management Plan. Despite the high levels of regulatory compliance, non-indigenous aquatic species continue to arrive in the San Francisco Estuary: eight new species were identified in the estuary between 2014 and 2016 (CSLC 2019).

Marathon has no control over, ownership of or authority to direct vessels that dock at its terminals; therefore, specific details of how vessels manage biofouling or ballast water are not part of the Project. Under the terms of the terminal leases with CSLC, Marathon is required to ensure that vessels calling at Avon or Amorco MOTs are advised of California's Marine Invasive Species Act and submit forms as required by CSLC through the MISP. Mitigation Measure BIO-9b of the Avon FEIR and BIO-7b of the Amorco FEIR required the refinery's previous owner, Tesoro Refining and Marketing Company, to participate and assist in funding ongoing and future actions related to nonindigenous aquatic species at a level determined through cooperative effort with the MISP agencies. **Mitigation Measure BIO-9a: Invasive Species Action Funding**, below, would require funding levels to be revisited to address the increase in vessels calls to the two terminals. However, even with compliance with the MISA and research into invasive species, the potential adverse impact to special status species, protected habitats, and migratory corridors and nursery sites for native species from introducing new nonindigenous aquatic species via ballast water and vessel biofouling to the San Francisco Bay Estuary waters remains **significant and unavoidable**.

Mitigation Measure BIO-9a: Invasive Species Action Funding. Marathon Refining and Marketing Company, LLC (Marathon) shall continue to participate and assist in funding ongoing and future actions related to nonindigenous aquatic species (NAS) as described in Mitigation Measure BIO-9b of the Tesoro Avon Marine Oil Terminal Lease Consideration Project Final Environmental Impact Report (FEIR) and Mitigation Measure BIO-7b of the Amorco Marine Terminal FEIR. The level of funding shall be revisited through a cooperative effort between California State Lands Commission staff, the Department of Water Resources, California Department of Fish and Wildlife, and Marathon, and shall be based on criteria that establish Marathon's commensurate share NAS actions costs taking into account the increase in vessel calls to the Avon and Amorco Marine Oil Terminals.

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3.5 CULTURAL AND TRIBAL CULTURAL RESOURCES

Section 3.5 provides a detailed description of existing cultural, paleontological and tribal cultural resources in the vicinity of the Project Site and addresses the potential cultural resources impacts that could result from the Project.

Concepts and Terminology

Cultural Resources

The following definitions are common terms used to discuss the regulatory requirements and treatment of cultural resources:

- **Cultural resource:** A term used to describe several different types of resources, including prehistoric and historic-period archaeological resources; historic-period architectural structures such as buildings, bridges and infrastructure; and resources of importance to Native Americans.

- **Historic properties:** A term defined by the National Historic Preservation Act as any prehistoric or historic district, site, building, structure or object included or eligible for inclusion in the National Register of Historic Places (NRHP or National Register), including artifacts, records and material remains related to such a property.

- **Historical resource:** A term defined under the CEQA (Pub. Resources Code, § 21084.1 and State CEQA Guidelines §15064.5, subds. (a) and (b)), as any resource (including buildings, sites, structures, objects, records, manuscripts, etc.) listed or determined eligible for listing in the California Register of Historic Resources (CRHR or California Register). The California Register includes resources listed, or formally determined eligible for listing, in the National Register, as well as some California State Landmarks and Points of Historical Interest.

- **Unique archaeological resource:** A CEQA term defined under Public Resources Code Section 21083.2, subdivision (g) as an archaeological artifact, object or site about which it can be clearly demonstrated that there is a high probability that it meets any of the following criteria: (1) contains information needed to answer important scientific research questions, and there is a demonstrable public interest in that information; (2) has a particular quality such as being the oldest of its type or the best available example or (3) is directly associated with a scientifically recognized important prehistoric or historic event or person.

Tribal Cultural Resources

The following definitions are common terms used to discuss the regulatory requirements and treatment of tribal cultural resources.

CEQA requires lead agencies to consider whether projects would affect tribal cultural resources. Public Resources Code (PRC) Section 21074 states the following:

a) "Tribal cultural resources" are any 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 CRHR.
      B. Included in a local register of historical resources as defined in subdivision (k) of 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 Section 5024.1. In applying the criteria set forth in subdivision (c) of Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe.

b) A cultural landscape that meets the criteria of subdivision (a) is a tribal cultural resource to the extent that the landscape is geographically defined in terms of the size and scope of the landscape.

c) A historical resource described in Section 21084.1, a unique archaeological resource as defined in subdivision (g) of Section 21083.2, or a "nonunique archaeological resource" as defined in subdivision (h) of Section 21083.2 may also be a tribal cultural resource if it conforms with the criteria of subdivision (a).

3.5.1 Environmental Setting

3.5.1.1 Natural Conditions and Prehistoric and Ethnographic Setting

Natural Conditions

The Project area is in the southeastern Carquinez Strait near the southern border of the Suisun Bay/Sacramento River Delta in Contra Costa County, California, within the larger San Francisco Bay Area. The region in which the Project is located has a Mediterranean climate and supports a variety of wetland communities and grasslands.

Prehistoric Setting

This section describes the cultural changes in the San Francisco Bay Area. No discussion of the Clovis time (11500 to 8000 calibrated Before Present [cal. B.P.]) is provided, as there has been no evidence related to this time found in the area, presumably because it has been submerged or buried (Milliken et al. 2007). The sequence used here is very broad and includes the Lower, Middle and Late Archaic periods, and the Emergent Occupation.

Lower Archaic (8000 to 3500 cal. B.P.)

A generalized mobile forager pattern among prehistoric groups is characterized by portable milling stones, millingslabs (metates) and handstones (manos), as well as wide-stemmed projectile points. Archaeobotanical remains suggest an economy focused on acorns.

Middle Archaic (3500 to 500 cal. B.P.)

During the Middle Archaic, there appears to be an increase in regional trade and possibly signs of sedentism. The first cut shell beads appear in mortuaries. Mortars and pestles are documented shortly after 4000 cal. B.P. Net sinkers are a typical marker for this time. The burial complexes with ornamental grave associations seem to represent a movement from forager to semi-sedentary land use (Milliken et al. 2007).

Upper Archaic (500 cal. B.P. to cal. Anno Domini [A.D.] 1050)

The Upper Archaic period shows continued specialization and an increase in the complexity of technology. Acorns and fish are the predominant food sources. New bone tools and ornaments appear, including whistles and barbless fish spears. Beads become prominent with several types. Mortars and pestles continue to be the sole grinding tools. Net sinkers disappear at most sites. Mortuary practices change from a flexed position to an extended position.

Emergent (cal. A.D. 1050 to Historic)

Many archaeologists believe that craft specialization, political complexity and social ranking were highly developed. New bead types and multi-perforated and bar-scored ornaments appear. The bow and arrow replace the dart and atlatl as the favored hunting tools (Moratto 1984). Cultural traditions seem to be very similar to those witnessed at the time of European contact.

Ethnographic Setting

The Project lies within the territory occupied by the Native American group known to the Spanish as the Costanoan (Levy 1978). The contemporary descendants of this group are members of the Ohlone Indian Tribe. The Costanoan group occupied the coast of California from San Francisco to Monterey and inland to include the mountains from the southern side of the Carquinez Strait to the eastern side of the Salinas River south of the Chalone Creek.

Costanoan is a linguistic term for a family of eight related languages. Each language was spoken by a distinct group of people within a recognized geographic area. In the Martinez area, the spoken language was Karkin. This language was spoken only in a very small area, and all the speakers were probably related. Political units within each ethnic group were called tribelets and each tribelet contained between 50 and 500 people. Each tribelet had one or more permanent villages and probably several temporary camps within its territory.

The Costanoans were hunter gatherers, with acorns being the most important plant food. Various roots, nuts, berries and seeds were important. The Costanoan group's practices included managed burning of chaparral to encourage sprouting of seed plants and improve browsing for deer and elk. The favored animals for hunting were deer and rabbit. Whales and sea lions were eaten when found stranded on the beach. Waterfowl were captured in nets using decoys. Important fish were steelhead, salmon, and sturgeon, and mussels and abalone were the preferred shellfish.

Dome-thatched houses with rectangular doorways and a central hearth were the standard dwellings. Technology included tule balsa canoes, bows and arrows and baskets.

3.5.1.2 Historic Overview

A number of Spanish expeditions passed through the area between 1769 and 1776, including those led by Portola, Fages, Anza, and Rivera. Although the exact routes of the early explorers cannot be determined, none is thought to have traveled near the Project area (Milliken 1995, Beck and Haase 1974).

The Spanish government founded missions and secular towns with the land itself being held by the government. The Mexican government closed the missions in the early 1830s, and former mission lands were given to individuals as land grants.

The Martinez area was originally part of two Mexican land grants. The Rancho El Pinole was granted to Ygnacio Martinez in 1824, and Rancho Las Juntas was granted to William Welch in 1844. The Town of Martinez can be traced to the 1847 establishment of a ferry service that crossed the Carquinez Strait. The ferry was part of the main route from San Francisco to the gold mining areas in the Sierras. The Town grew rapidly by providing supplies and other services to the miners using the ferry route. Martinez was designated as the county seat for Contra Costa County in 1851. After the gold rush, the area continued to flourish due to agriculture, predominantly wheat and fruit. John Muir lived in Martinez from 1890 to 1914, and his home is preserved as the John Muir National Historic Site. Commercial salmon fishing began in the 1870s, and soon thereafter, two fish canneries opened in Martinez.

Martinez became an industrial center in the early 20th century when chemical and petroleum facilities were built. The Mountain Copper smelter was built at Bull's Head Point, and several refineries were opened in 1915. The Martinez location provided a deep-water harbor and rail connections for these industrial facilities.

Refer to Section 2.0, Project Description, for a discussion of the history of the existing Refinery facility.

3.5.1.3 Cultural Resources in the Vicinity of the Project Site

Summary of Known Cultural Resources and Significance Findings

Archaeological Record Search

The California Historical Resources Information System (CHRIS) maintains regional information centers that manage site records for known cultural resource locations and related technical studies. The regional information center for Contra Costa County is the Northwest Information Center (NWIC) at Sonoma State University in Rohnert Park, California. Information regarding cultural resource studies and archaeological sites was compiled using a 1-mile radius around the Project Site. Sources reviewed include all known and recorded archaeological and historic sites and cultural resource reports. Additional resources that were consulted for relevant information included the National Register, California Register, California Inventory of Historic Resources, California Points of Historical Interest, California Historical Landmarks, and historic maps.

The archaeological record search for the Project was requested on March 9, 2021, and was received on April 29, 2021. The record search identified six cultural resources (07-000130, 07-

000501, 07-000502, 07-000806, 07-002402 and 07-002921) within the footprint of the Project Site, and 26 previously recorded resources within the 1-mile radius.

One site, prehistoric shellmound CA-CCO-249 (P-07-000130), has been recorded within the Tesoro Golden Eagle Refinery. CA-CCO-249 or "Nelson 249a" is one of 425 "earth mounds and shell heaps" recorded by Nels C. Nelson of the University of California at Berkeley between 1906 and 1908. This site, described as "a habitation site," is recorded as "Near Avon Station" about 1,000 yards southeast of the Union Pacific/BNSF/Amtrak railroad line ("Main SPRR"). The CHRIS/NWIC maps this shellmound site as straddling both the Union Pacific railroad tracks (former SPRR San Ramon Branch) and Solano Way just east of the bend in channelized Pacheco Creek. In contrast, Nelson (1909, ca. 1912) maps the location on the east bank of Pacheco Creek on the west side of the railroad tracks on a former finger of land surrounded by salt marsh. At the time the site was recorded, it was noted that "R.R. lines cuts site" and that it was "Probably partially destroyed" (Nelson 1909; Nelson ca. 1909/form; Nelson ca. 1912 [annotated map]; Moratto 1984:227). Subsequent reports state that it is likely that the site has been destroyed and paved over during the course of upgrading the facilities at the Refinery, or was plowed in the years just prior.

Four cultural resources P-07-000501, P-07-000502, P-07-000806 (CA-CCO-000732H – Atchison, Topeka & Santa Fe Railroad), and P-07-002402 (CA-CCO-000861H – Navy Rail System, Concord Naval Weapons Station [NWS], USN Wpn. Sta. Seal Beach Detachment; Bay Point & Clayton Railroad) consist of various railroads that traverse the Project Site. None of the segments of these railroads are eligible for listing on the National Register (see Table 3.5-1).

P-07-002921 (WMU4 scatter) consists of a historic refuse scatter measuring 1.5 acres in size and contains a highly disturbed scatter of historic-era refuse that may be the remains of a demolished incinerator (Rehor 2008). Artifacts consisted of diagnostic brick fragments (produced from 1935 – 1955), hobble-skirt coke bottle fragments (ca. 1938 – 1965), and various glass and metal fragments. The site is situated in Waste Management Unit 4 of the Marathon Martinez Refinery (formerly the Tesoro Golden Eagle Refinery), in an area heavily disturbed due to mechanical earth-moving activities. The site has been recommended not eligible for listing on the National Register. Subsequent studies have not been able to relocate this site.

There are no sites currently listed on the National Register, California Register, Contra Costa County Historic Resources Inventory or the list of California Historical Landmarks within 1 mile of the Project Site.

The record search indicated that a total of 107 cultural resource studies have been completed within a 1-mile radius of the Project Site; of these studies, 20 include portions of the Project Site.

On October 28, 2020, the Contra Costa County Department of Conservation and Development contacted the Wilton Rancheria notifying the tribe of the proposed Project. Ms. Mariah Mayberry of the Wilton Rancheria responded on November 20, 2020, stating that the tribe had identified cultural resources near the Project's footprint and that the tribe would like to have a monitor present during all ground disturbance activities.

The California State Lands Commission (CSLC) online database for shipwrecks (CSLC 2021) was checked on May 17, 2021. The database lists shipwrecks by county and is based primarily on historical accounts of these incidents. This database search is by latitude and longitude. No known shipwrecks appeared within the Project footprint. One shipwreck appears on the United States Geological Survey (USGS) topographic map over one mile to the south of the Project Site. Two of the cultural resource studies that include portions of the Project Site were marine archaeological studies, and both studies were negative for shipwrecks in the vicinity of the Project Site.

Native American Heritage Commission

TRC contacted the Native American Heritage Commission (NAHC) on March 9, 2021, regarding the potential presence of burials and sacred lands on the Project Site and vicinity (see Appendix TCR for the NAHC correspondence). In its March 19, 2021 response, the NAHC stated that the sacred lands file records search did not indicate the presence of any known Native American cultural resources within the immediate Project area. The NAHC enclosed a list of Native American individuals and/or organizations that might have knowledge of cultural resources in or near the Project Site.

On April 1, 2021, TRC sent letters with a Project location map to all individuals and groups on the list requesting information and comments. There have been two responses at the time of this report.

On April 2, 2021, Kanyon Sayer-Roods from the Canyon Band of Costanoan Ohlone People responded via email and requested that a Native American monitor and an Archaeologist be present on-Site at all times due to a nearby potentially eligible cultural site.

Corrina Gould, Tribal Chair, replied on May 19, 2021 via email and requested additional information regarding the Site and if there had been a Sacred Lands File search conducted at the NAHC. Project description and the results of the search from the NAHC were submitted to Ms. Gould on May 20, 2021.

Paleontological Record Search

On March 31, 2021, a locality record search was conducted using the University of California, Museum of Paleontology website (University of California 2021). No localities were found within the Project Site for invertebrates, microfossils or vertebrates. An online search was performed at the USGS (USGS 2021) for the geologic rock units for the Project Site. The maps show that the Project Site is predominantly Alluvium dating from the Holocene and a few portions are from the Pleistocene, with some pockets of mud deposits from the late Holocene. There is minimal potential for fossils, due to previous dredging and because the depositional environment for fossil preservation is low.

Table 3.5-1: Cultural Resources Identified Within 1-mile Radius of Project Site

Primary Number	Trinomial	Resource Type	Description	Recorder(s) and Year(s)	Relationship to Project Site	NRHP/CRHR Status
P-07-000123	CA-CCO-000241/H	Prehistoric/ Historic	Nelson's 250	(L.L. Loud); 1951 (Meighan, University of California); 1952 (Pilling, University of California); 1990 (Suzanne Baker, Archaeological/Historical Consultants)	Outside (within 1 mile)	Unknown
P-07-000130	CA-CCO-000249	Prehistoric	Nelson's 249a	1909 (Nelson Survey, [none])	Within	Unknown
P-07-000489	CA-CCO-000843H	Historic	Sacramento Northern Railway; Oakland, Antioch & Eastern Railway	1994 (Hatoff, Voss, Waechter, Wee, Bente, Woodward-Clyde Consultants); 1994 (Hatoff, Voss, Waechter, Wee, Bente, Woodward-Clyde Consultants); 1994 (Hatoff, Voss, Waechter, Wee, Bente, Woodward-Clyde Consultants); 2010 (Kim Tremaine, John Lopez, Tremaine & Associates, Inc.); 2019 (Ashleigh Sims, ESA)	Outside (within 1 mile)	Unknown
P-07-000501	N/A	Historic	SPN-5	1995 (Brian Hatoff; Barb Voss; Sharon Waechter; Stephen Wee; Vance Bente, Woodward-Clyde Consultants)	Within	Not eligible
P-07-000502	N/A	Historic	SPN-4	1995 (Brian Hatoff; Barb Voss; Sharon Waechter; Stephen Wee; Vance Bente, Woodward-Clyde Consultants)	Within	Not eligible

Table 3.5-1: Cultural Resources Identified Within 1-mile Radius of Project Site

Primary Number	Trinomial	Resource Type	Description	Recorder(s) and Year(s)	Relationship to Project Site	NRHP/CRHR Status
P-07-000806	CA-CCO-000732H	Historic	Atchison, Topeka & Santa Fe Railroad	1995 (Brian Hatoff, Woodward-Clyde Consultants); 1995 (Brian Hatoff, Woodward-Clyde Consultants); 1995 (Brian Hatoff, Woodward-Clyde Consultants); 1995 (Brian Hatoff, Woodward-Clyde Consultants); 1996 (Ward Hill, [none]); 1998 (S. Ashkar, Jones & Stokes Associates, Inc.); 1998 (Meta Bunse, JRP Historical Consulting); 1999 (S. Atchley, G. Roark, Jones & Stokes Associates, Inc.); 2004 (Josh Smallwood, CRM Tech); 2009 (J. Lang, GANDA); 2016 (Polly S. Allen, JRP Historical Consulting)	Within	Not eligible
P-07-002079	N/A	Historic	Building 209, Concord NWS, Concord NWS, USN Weapons Station Detachment	1998 (Meta Bunse, JRP Historical Consulting Services)	Outside (within 1 mile)	Unknown
P-07-002080	N/A	Historic	Building 211, Concord NWS, Concord NWS, USN Weapons Station Detachment	1998 (Meta Bunse, JRP Historical Consulting Services)	Outside (within 1 mile)	Unknown

Table 3.5-1: Cultural Resources Identified Within 1-mile Radius of Project Site

Primary Number	Trinomial	Resource Type	Description	Recorder(s) and Year(s)	Relationship to Project Site	NRHP/CRHR Status
P-07-002081	N/A	Historic	Building 212, Concord NWS, Concord NWS, USN Weapons Station Detachment	1998 (Meta Bunse, JRP Historical Consulting Services)	Outside (within 1 mile)	Unknown
P-07-002082	N/A	Historic	Building 213, Concord NWS, Concord NWS, USN Weapons Station Detachment	1998 (Meta Bunse, JRP Historical Consulting Services)	Outside (within 1 mile)	Unknown
P-07-002083	N/A	Historic	Building 214, Concord NWS, Concord NWS, USN Weapons Station Detachment	1998 (Meta Bunse, JRP Historical Consulting Services)	Outside (within 1 mile)	Unknown
P-07-002084	N/A	Historic	Building 215, Concord NWS, Concord NWS, USN Weapons Station Detachment	1998 (Meta Bunse, JRP Historical Consulting Services)	Outside (within 1 mile)	Unknown
P-07-002085	N/A	Historic	Building 216, Concord NWS, Concord NWS, Usn Weapons Station Detachment	1998 (Meta Bunse, JRP Historical Consulting Services)	Outside (within 1 mile)	Unknown
P-07-002228	N/A	Historic	Building 154 Monuments	1998 ([none], JRP Historical Consulting Services)	Outside (within 1 mile)	Unknown
P-07-002231	N/A	Historic	Building 255 Monuments	1998 ([none], JRP Historical Consulting Services)	Outside (within 1 mile)	Unknown

Table 3.5-1: Cultural Resources Identified Within 1-mile Radius of Project Site

Primary Number	Trinomial	Resource Type	Description	Recorder(s) and Year(s)	Relationship to Project Site	NRHP/CRHR Status
P-07-002324	N/A	Historic	Building 139, Detached Garage, Concord NWS, USN WPN STA Seal Beach Detachment	1998 ([none], JRP Historical Consulting Services)	Outside (within 1 mile)	Unknown
P-07-002325	N/A	Historic	Building 140, Detached Garage, Concord NWS, USN WPN STA Seal Beach Detached	1998 ([none], JRP Historical Consulting Services)	Outside (within 1 mile)	Unknown
P-07-002326	N/A	Historic	Building 141, Detached Garage, Concord NWS, USN WPN STA Seal Beach Detached	1998 ([none], JRP Historical Consulting Services)	Outside (within 1 mile)	Unknown
P-07-002327	N/A	Historic	Building 142, Detached Garage, Concord NWS, USN WPN STA Seal Beach Detached	1998 ([none], JRP Historical Consulting Services)	Outside (within 1 mile)	Unknown
P-07-002328	N/A	Historic	Building 143, Detached Garage, Concord NWS, USN WPN STA Seal Beach Detached	1998 ([none], JRP Historical Consulting Services)	Outside (within 1 mile)	Unknown
P-07-002329	N/A	Historic	Building 144, Detached Garage, Concord NWS, USN WPN STA Seal Beach Detached	1998 ([none], JRP Historical Consulting Services)	Outside (within 1 mile)	Unknown

Table 3.5-1: Cultural Resources Identified Within 1-mile Radius of Project Site

Primary Number	Trinomial	Resource Type	Description	Recorder(s) and Year(s)	Relationship to Project Site	NRHP/CRHR Status
P-07-002333	N/A	Historic	Building 201, Officers Residence, Concord NWS, USN WPN STA Seal Beach Detached	1998 ([none], JRP Historical Consulting Services)	Outside (within 1 mile)	Unknown
P-07-002334	N/A	Historic	Building 202, Officers Residence, Concord NWS, USN WPN STA Seal Beach Detached	1998 ([none], JRP Historical Consulting Services)	Outside (within 1 mile)	Unknown
P-07-002339	N/A	Historic	Building 262 Inland Army Security	1998 (Meta Bunse, JRP Historical Consulting Services); 2012 (Melissa Montag, U.S. Army Corps of Engineers)	Outside (within 1 mile)	Unknown
P-07-002402	CA-CCO-000861H	Historic	Navy Rail System, Concord NWS, USN Wpn. Sta. Seal Beach Detachment; Bay Point & Clayton Railroad	1994 (Brian Hatoff, Woodward-Clyde Consultants); 1994 (Brian Hatoff, Woodward-Clyde Consultants); 1998 (Meta Bunse, JRP Historical Consulting Services); 2008 (Polly Allen, JRP); 2010 (Kim Tremaine, John Lopez, Tremaine & Associates, Inc.); 2018 (S. Psota; M. Holman, Holman Associates)	Within	Not eligible
P-07-002440	N/A	Historic	Contra Costa Canal	1998 (Meta Bunse, JRP Historical Consulting Services); 2012 (Melissa Montag, U.S. Army Corps of Engineers)	Outside (within 1 mile)	Unknown

Table 3.5-1: Cultural Resources Identified Within 1-mile Radius of Project Site

Primary Number	Trinomial	Resource Type	Description	Recorder(s) and Year(s)	Relationship to Project Site	NRHP/CRHR Status
P-07-002575	N/A	Historic	Bridge 28C-442	1978 (Carroll Pursell, University of California, Santa Barbara/Calif. Inventory); 2001 (Christopher McMorris, JRP Historical Consulting Services)	Outside (within 1 mile)	Unknown
P-07-002676	N/A	Historic	Grayson & Walnut Creeks Historic Scatter	2004 (Adam Marlow, William Self Associates, Inc.)	Outside (within 1 mile)	Unknown
P-07-002695	N/A	Historic	Contra Costa Canal	1993 ([none], JRP Historical Consulting Services); 1995 (Hatoff, Voss, Waechter, Wee, Bente, Woodward-Clyde Consultants); 2003 (Rand Herbert, JRP Historical Consulting Services); 2005 (Rand Herbert, Kate McLoughlin, JRP Historical Consulting Services); 2008 (Karen McNeill, Matthew Davis, Carey & Co.); 2008 (Cassidy DeBaker, Kruger Frank, Garcia & Associates); 2009 (Rand Herbert, JRP Historical Consultants); 2010 (R. Windmiller, Consulting Archaeologist)	Outside (within 1 mile)	Unknown
P-07-002731	N/A	Historic	Walnut Creek & Grayson Creek Levees	2002 (Rand Herbert, JRP Historical Consulting Services)	Outside (within 1 mile)	Unknown
P-07-002921	N/A	Historic	WMU4 scatter	2008 (Jay Rehor, URS Corporation); 2010 (Amy Dunay, Bureau of Reclamation)	Within	Not eligible

Table 3.5-1: Cultural Resources Identified Within 1-mile Radius of Project Site

Primary Number	Trinomial	Resource Type	Description	Recorder(s) and Year(s)	Relationship to Project Site	NRHP/CRHR Status
P-07-004707	N/A	Historic	Main Gate Guard Shack	1992 (C. Wills, G. Mattson, William Self Associates)	Outside (within 1 mile)	Unknown

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3.5.1.4 Regulatory and Policy Context

Federal and state laws that may be relevant to the Project are identified below. Local laws, regulations, and policies are discussed below.

State

The California Office of Historic Preservation, a division of the California Department of Parks and Recreation, is responsible for carrying out the duties described in the California PRC and maintaining the California Historic Resources Information System (CHRIS) and CRHR. The state-level regulatory framework also includes CEQA, which requires the identification and mitigation of substantial adverse impacts that may affect the significance of eligible historical and archaeological resources.

CEQA requires a lead agency to analyze whether historic and/or archaeological resources may be adversely impacted by a proposed project. Under CEQA, a "project that may cause a substantial adverse change in the significance of a historic resource is a project that may have a significant effect on the environment" (PRC Section 21084.1). Answering this question is a two-part process. First, the determination must be made as to whether the proposed project involves cultural resources. Second, if cultural resources are present, the proposed project must be analyzed for a potential "substantial adverse change in the significance" of the resource.

Assembly Bill 52, which adds several sections to the PRC, was signed by the California governor in September 2014 and establishes a new class of resources under CEQA: "tribal cultural resources." It requires that lead agencies undertaking CEQA review must, upon the written request of a California Native American tribe, begin consultation once the lead agency determines that the project application is complete, before the issuance of a notice of preparation of an Environmental Impact Report or notice of intent to adopt a negative declaration or mitigated negative declaration. Assembly Bill 52 also resulted in a revision to Appendix G, the environmental checklist, of the State CEQA Guidelines. This revision created a new standalone environmental topic and series of checklist questions for tribal cultural resources.

Local

Contra Costa County

The following goal and policy from the Open Space Element of the *Contra Costa County General Plan* (2005) may be applicable to the Project.

- 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.

3.5.2 Existing Conditions

The Project area is built, and no new construction outside of previously-disturbed areas of the Refinery would occur as a result of this Project.

3.5.3 Impact Analysis

3.5.3.1 Methodology for Impact Analysis

For the purposes of this Environmental Impact Report, potential impacts to cultural and tribal cultural resources were evaluated based on a review of known and recorded archaeological and historic sites within one mile of the Project Site. Additional resources that were consulted include cultural resource reports, the California Register, National Register, California Inventory of Historic Resources, California Historical Landmarks, historic maps and the CSLC online database for shipwrecks.

A paleontological record search was conducted online using the University of California, Museum of Paleontology website.

For tribal cultural resources, TRC prepared and mailed formal notification letters for the proposed Project to tribes that were included in the Native American Heritage Sacred Lands file search on April 1, 2021. As of the time of this writing, no responses have been received and no tribal cultural resources have been identified on the Project Site.

3.5.3.2 Significance Criteria

For the purposes of this analysis, the Project is considered to have a significant impact on cultural resources if it would:

- Cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines Section 15064.5;
- Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5;
- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature or
- Disturb any human remains, including those interred outside formal cemeteries.

For the purposes of this analysis, the Project is considered to have a significant impact on tribal cultural resources if it would 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:

- Listed or eligible for listing in the CRHR, or in a local register of historical resources as defined in PRC Section 5020.1(k) or

- 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.

3.5.4 Impacts Analysis and Mitigation Measures

The following subsections describe the Project's potential impacts on cultural and tribal cultural resources, and paleontological resources. Where impacts are determined to be significant, feasible mitigation measures are described that would reduce or avoid impacts. Because potential

impacts on cultural and tribal cultural resources would occur during ground disturbance, which would occur during Project construction as well as during ongoing operational maintenance activities that might require ground disturbance post-construction, construction and operational impacts are discussed together below.

Cultural Resources

Impact CR-1: Potential to cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5. (Potentially Significant)

The CHRIS NWIC completed the archaeological record search for the Project on April 29, 2021. The record search identified six cultural resources (07-000130, 07-000501, 07-000502, 07-000806, 07-002402 and 07-002921) within the footprint of the Project Site, and 26 previously recorded resources within the 1-mile radius. Of those resources identified, four cultural resources, P-07-000501, P-07-000502, P-07-000806 (CA-CCO-000732H - Atchison, Topeka & Santa Fe Railroad), and P-07-002402 (CA-CCO-000861H - Navy Rail System, Concord NWS, USN Wpn. Sta. Seal Beach Detachment; Bay Point & Clayton Railroad), consist of various railroads that traverse the Project Site. None of the segments of these railroads is eligible for listing in the NRHP, and none would be impacted by the proposed Project because they are located outside the area of new equipment installation/construction and demolition. P-07-002921 (WMU4 scatter) consists of a historic refuse scatter situated in a heavily disturbed area, and subsequent studies have not been able to relocate this site. Considering the results of the records search, previous surveys of portions of the Project Area, and NAHC response, there are no known historical resources in the Project work area. The Project Site is completely developed, and there is a high degree of disturbance on the property. One prehistoric shellmound CA-CCO-249 (P-07-000130) site has been recorded within the Marathon Martinez Refinery (formerly the Tesoro Golden Eagle Refinery). At the time the site was recorded, it was noted that "R.R. lines cut site" and "Probably partially destroyed." Subsequent reports state that it is likely that the site has been destroyed and paved over during the course of upgrading the facilities at the Refinery, or it was plowed in the years just prior.

There are no sites currently listed on the National Register, California Register, Contra Costa County Historic Resources Inventory, or the list of California Historical Landmarks within one mile of the Project Site.

Based on the resources discussed above within the boundaries of the Refinery, there is a potential to encounter previously unidentified buried archaeological resources during construction. This is particularly true for the paved pipeline segments, where the natural ground surface was not visible during survey. While the depth of excavation for the pipelines likely will not be great, there is the potential to encounter previously undocumented archaeological resources.

Mitigation Measure CR-1: Discovery of Unknown Cultural or Archaeological Resources. The following Mitigation Measures shall be implemented during project related ground disturbance, and shall be included on all construction plans:

All construction personnel, including operators of equipment involved in grading, or trenching activities will be advised of the need to immediately stop work if they observe

any indications of the presence of an unanticipated cultural resource discovery (e.g. wood, stone, foundations, and other structural remains; debris-filled wells or privies; deposits of wood, glass, ceramics). If deposits of prehistoric or historical archaeological materials are encountered during ground disturbance activities, all work within 50 feet of the discovery shall be redirected and a qualified archaeologist, certified by the Society for California Archaeology (SCA) and/or the Society of Professional Archaeology (SOPA), shall be contacted to evaluate the finds and, if necessary, develop appropriate treatment measures in consultation with the County and other appropriate agencies. If the cultural resource is also a tribal cultural resource (TCR) the representative (or consulting) tribe(s) will also require notification and opportunity to consult on the findings.

If the deposits are not eligible, avoidance is not necessary. If eligible, deposits will need to be avoided by impacts or such impacts must be mitigated. Upon completion of the archaeological assessment, a report should be prepared documenting the methods, results, and recommendations. The report should be submitted to the Northwest Information Center and appropriate Contra Costa County agencies.

Should human remains be uncovered during grading, trenching, or other on-site excavation(s), earthwork within 30 yards of these materials shall be stopped until the County coroner has had an opportunity to evaluate the significance of the human remains and determine the proper treatment and disposition of the remains. Pursuant to California Health and Safety Code Section 7050.5, if the coroner determines the remains may those of a Native American, the coroner is responsible for contacting the Native American Heritage Commission (NAHC) by telephone within 24 hours. Pursuant to California Public Resources Code Section 5097.98, the NAHC will then determine a Most Likely Descendant (MLD) tribe and contact them. The MLD tribe has 48 hours from the time they are given access to the site to make recommendations to the land owner for treatment and disposition of the ancestor's remains. The land owner shall follow the requirements of Public Resources Code Section 5097.98 for the remains.

In the event the Project design changes, and ground disturbance is anticipated beyond the Area of Potential Effect, as it is currently defined by the Cultural Resources Inventory Reports, further surveys shall be conducted in those new areas to assess the presence of cultural resources. Any newly discovered or previously recorded sites within the additional survey areas shall be recorded (or updated) on appropriate Department of Parks and Recreation (DPR) 523-series forms. If avoidance of these cultural resources is not feasible then an evaluation and/or data recovery program shall be drafted and implemented.

Significance after Mitigation: Less than Significant.

Impact CR-2: Potential to cause a substantial adverse change in the significance of an archaeological resource as defined in CEQA Guidelines Section 15064.5. (Potentially Significant)

The records search indicated that there are six archaeological resources (07-000130, 07-000501, 07-000502, 07-000806, 07-002402 and 07-002921) within or adjacent to the Project Site.

Furthermore, 26 resources were identified in the 1-mile radius. None of these resources are eligible for listing in the NRHP/CRHR. A search of the NAHC Sacred Lands File failed to indicate the presence of Native American cultural resources in the Project work area. P-07-002921 (WMU4 scatter) consists of a historic refuse scatter situated in a heavily disturbed area, and subsequent studies have not been able to relocate this site. Considering the results of the records search, previous surveys of portions of the Project Site, and NAHC response, there are no known archaeological resources on the Project Site. The Project Site is completely developed and there is a high degree of disturbance on the property. One prehistoric shellmound CA-CCO-249 (P-07-000130) site has been recorded within the Marathon Martinez Refinery (formerly the Tesoro Golden Eagle Refinery). At the time the site was recorded, it was noted that "R.R. lines cuts site" and "Probably partially destroyed." Subsequent reports state that it is likely that the site has been destroyed and paved over during the course of upgrading the facilities at the Refinery, or it was plowed in the years just prior.

The new construction areas and areas of demolition associated with the Project are not located within any of the above-mentioned cultural resources; therefore, there would be no new disturbance to previously recorded archaeological resources. Because there are no shipwrecks in the immediate area of the Refinery, any maintenance dredging would also have no impact on known cultural resources.

Based on the resources discussed above within the boundaries of the Refinery, there is a potential to encounter previously unidentified buried archaeological resources during construction. This is particularly true for the paved pipeline segments, where the natural ground surface was not visible during survey. While the depth of excavation for the pipelines likely will not be great, there is the potential to encounter previously undocumented archaeological resources.

Mitigation Measure CR-1: Implement Mitigation Measure CR-1.

Significance after Mitigation: Less than Significant.

Impact CR-3: Potential to directly or indirectly destroy a unique paleontological resource or site or unique geologic feature. (Less than Significant)

The Project Site is relatively flat terrain with no unique geologic features. The native geological materials beneath the Project Site are mapped as late Pleistocene alluvium (USGS 2021). These deposits are about 11,500 years old or older and contain late Pleistocene vertebrate and invertebrate fossil faunas. This geologic unit is widespread at low elevations in the San Francisco Bay region and, in places, can contain localized accumulations of freshwater gastropod (snail) and pelecypods (bivalve mollusks) fossils. While fossils of this age could potentially occur in the native geologic unit that underlies the Project Site and could potentially be important for their uniqueness and scientific value, it is unlikely that any such fossils would be disturbed by the Project within these geologic deposits.

Mitigation Measure: No mitigation is required.

Impact CR-4: Potential to disturb any human remains, including those interred outside of formal cemeteries. (Less than Significant)

No human remains or cemeteries have been previously recorded within or near the Project Site. There is a low likelihood of encountering buried human remains during ground-disturbing Project activities. None have been reported in the Project vicinity, and the filled and heavily developed former tidal marshland on which the Refinery has been built has a low sensitivity for preservation of such remains.

Mitigation Measure: No mitigation is required.

Tribal Cultural Resources

Impact TCR-1: **Potential to 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 1) listed or eligible for listing in the CRHR, or in a local register of historical resources as defined in Public Resources Code (PRC) Section 5020.1(k); or 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. (Potentially Significant)**

The archaeological record search for the project was completed by the CHRIS NWIC on April 29, 2021. The record search identified six cultural resources (07-000130, 07-000501, 07-000502, 07-000806, 07-002402 and 07-002921) within the footprint of the Project Site, and 26 previously recorded resources within the 1-mile radius. Of these resources identified, four cultural resources, P-07-000501, P-07-000502, P-07-000806 (CA-CCO-000732H – Atchison, Topeka & Santa Fe Railroad) and P-07-002402 (CA-CCO-000861H – Navy Rail System, Concord NWS, USN Wpn. Sta. Seal Beach Detachment; Bay Point & Clayton Railroad), consist of various railroads that traverse the Project Site. None of the segments of these railroads are eligible for listing on the NRHP, and none will be impacted by the proposed Project. P-07-002921 (WMU4 scatter) consists of a historic refuse scatter situated in a heavily disturbed area and subsequent studies have not been able to relocate this site. One prehistoric shellmound CA-CCO-249 (P-07-000130) site has been recorded within the Marathon Martinez Refinery (formerly the Tesoro Golden Eagle Refinery). At the time the site was recorded, it was noted that "R.R. lines cuts site" and "Probably partially destroyed." Subsequent reports state that it is likely that the site has been destroyed and paved over during the course of upgrading the facilities at the refinery, or it was plowed in the years just prior.

There are no sites currently listed on the National Register, California Register, Contra Costa County Historic Resources Inventory or the list of California Historical Landmarks within 1 mile of the Project Site.

On October 28, 2020, the Contra Costa County Department of Conservation and Development contacted the Wilton Rancheria notifying the tribe of the proposed Project. Ms. Mariah Mayberry of the Wilton Rancheria responded on November 20, 2020, stating that the tribe has identified cultural resource near the Project's footprint and that the tribe would like to have a monitor present during all ground disturbance. In the event that cultural resources are unearthed during ground-disturbing activities, the archaeological monitor would be empowered to halt or

redirect ground-disturbing activities away from the vicinity of the find so that the find can be evaluated. The monitor could be directed by the County to prepare and submit brief weekly monitoring reports as well as one final monitoring report summarizing the results of the monitoring activity and describing any cultural resources recovered in the duration of monitoring. Marathon has agreed to the request for a tribal monitor, and the tribal monitor would be required as a condition of project approval.

TRC contacted the NAHC on March 9, 2021, regarding the potential presence of burials and sacred lands on the Project Site and vicinity (see Appendix F for the NAHC correspondence). In its March 19, 2021 response, the NAHC stated that the sacred lands file records search did not indicate the presence of any known Native American cultural resources within the immediate area around the Project Site. The NAHC enclosed a list of Native American individuals and/or organizations that might have knowledge of cultural resources in or near the Project Site.

On April 1, 2021, TRC sent letters with a Project location map to all individuals and groups on the list requesting information and comments. There have been two responses at the time of this report: the first on April 2, 2021, Kanyon Sayer-Roods from the Canyon Band of Costanoan Ohlone People, and the second on May 19, 2021, from Corrina Gould.

A search of the NAHC Sacred Lands File failed to indicate the presence of Native American cultural resources on the Project Site. Considering the results of the records search, previous surveys of portions of the Project Site, and NAHC response, there are no known tribal cultural resources on the Project Site. The Project Site is completely developed and there is a high degree of disturbance on the property. As the proposed Project Site contains neither any archaeological, historic or tribal cultural resources, as defined in PRC Section 21074, there would be no effect on known Tribal Cultural Resources, and there are no resources 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. Consequently, there would be no effect upon such resources.

Based on the resources discussed above within the boundaries of the Refinery, there is a potential to encounter previously unidentified buried archaeological resources during construction. This is particularly true for the paved pipeline segments, where the natural ground surface was not visible during survey. While the depth of excavation necessary for the construction of the Project equipment foundations likely will not generally be more than 5 feet, there is the potential to encounter previously undocumented archaeological resources.

Mitigation Measure TCR-1: Implement Mitigation Measure CR-1

Significance after Mitigation: Less than Significant.

3.5.5 References

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3.6 ENERGY

Environmental effects related to energy include the Project's energy requirements and its energy use efficiencies by amount and fuel type during construction and operation; the effects of the Project on local and regional energy supplies; the effects of the Project on peak and base period demands for electricity and other forms of energy; the degree to which the Project complies with existing energy standards; the effects of the Project on energy resources; and the Project's projected transportation energy use requirements and its overall use of efficient transportation alternatives, if applicable.

3.6.1 Environmental Setting

3.6.1.1 Regulatory and Policy Context

Section 21100(b) of the California Environmental Quality Act (CEQA) Guidelines (State CEQA Guidelines) requires that an environmental impact report (EIR) include a detailed statement setting forth mitigation measures proposed to minimize a project's significant effects on the environment, including, but not limited to, measures to reduce the wasteful, inefficient, or unnecessary consumption of energy. Appendix F of the State CEQA Guidelines states that, in order to ensure that energy implications are considered in project decisions, the potential energy implications of a project shall be considered in an EIR, to the extent relevant and applicable to the project. Appendix F further states that a project's energy consumption and proposed conservation measures may be addressed, as relevant and applicable, in the Project Description, Environmental Setting and Impact Analysis portions of technical sections, as well as through mitigation measures and alternatives.

In accordance with the intent of Appendix F of the State CEQA Guidelines, which requires an EIR to include a discussion of the potential energy impacts of a proposed project with an emphasis on avoiding or reducing inefficient, wasteful, or unnecessary consumption of energy, this Draft EIR includes relevant information and analyses that address the energy implications of the Project. This section represents a summary of the Project's anticipated energy needs, impacts, and conservation measures.

Information in this section, as well as other aspects of the Project's energy implications, are discussed in greater detail elsewhere in this EIR, including in Chapter 2, Project Description, and Section 3.3 Air Quality, Section 3.8, Greenhouse Gas Emissions, and Section 3.14, Transportation.

Federal

The United States Environmental Protection Agency (U.S. EPA) is responsible for setting and enforcing the National Ambient Air Quality Standards (discussed in Section 3.3, Air Quality). The U.S. EPA has jurisdiction over emissions sources that are under the authority of the federal government including aircraft, locomotives, and emissions sources outside state waters (Other Waters of the U.S.). The U.S. EPA also establishes emission standards for vehicles sold in states other than California. Automobiles sold in California must meet the stricter emission requirements of the California Air Resources Board (CARB). California has enacted legislation related to transportation and vehicle efficiencies, energy-efficient building and appliances,

renewable energy portfolios, renewable energy access, water conservation, and solid waste reduction and recycling.

Title III of the 1990 Clean Air Act (CAA) amendments required the U.S. EPA to promulgate National Emission Standards for Hazardous Air Pollutants (NESHAP) on a specified schedule for certain categories of sources identified by the U.S. EPA as emitting one or more of the 189 listed Hazardous Air Pollutants (HAPs). Emission standards for affected sources must require the maximum achievable control technology (MACT). MACT is defined as the maximum degree of emission reduction achievable considering cost and non-air quality health and environmental impacts and energy requirements. All NESHAPs were promulgated by May 2015.

Fuel efficiency standards for medium- and heavy-duty trucks have been jointly developed by the U.S. EPA and the National Highway Traffic Safety Administration (NHTSA). The Phase 1 heavy-duty truck standards apply to combination tractors, heavy-duty pickup trucks and vans, and vocational vehicles for model years 2014 through 2018 and result in a reduction in fuel consumption from 6 to 23 percent over the 2010 baseline, depending on the vehicle type (U.S. EPA 2011). The U.S. EPA and NHTSA also adopted the Phase 2 heavy-duty truck standards, which cover model years 2021 through 2027 and require the phase-in of a 5 to 25 percent reduction in fuel consumption over the 2017 baseline depending on the compliance year and vehicle type (U.S. EPA 2016).

Additional federal regulations pertaining to energy resources are found in Section 3.3 Air Quality and Section 3.8 Greenhouse Gas Emissions of this EIR.

State Regulations

Senate Bill 1389

Senate Bill (SB) 1389, codified in Public Resources Code (PRC) Sections 25300 through 25323, requires the California Energy Commission (CEC) to prepare a biennial integrated energy policy report that assesses major energy trends and issues facing the state's electricity, natural gas, and transportation fuel sectors and provides policy recommendations to conserve resources; protect the environment; ensure reliable, secure, and diverse energy supplies; enhance the state's economy; and protect public health and safety (PRC Section 25301[a]). The 2015 Integrated Energy Policy Report provides the results of the CEC's assessments of a variety of energy issues facing California including energy efficiency, strategies related to data for improved decisions in the Existing Buildings Energy Efficiency Action Plan, building energy efficiency standards, the impact of drought on California's energy system, achieving 50 percent renewables by 2030, the California Energy Demand Forecast, the Natural Gas Outlook, the Transportation Energy Demand Forecast, Alternative and Renewable Fuel and Vehicle Technology Program benefits updates, update on electricity infrastructure in Southern California, an update on trends in California's sources of crude oil, an update on California's nuclear plants, and other energy issues.

Assembly Bill 1493 In response to the transportation sector accounting for more than half of California's carbon dioxide (CO_2) emissions, Assembly Bill (AB) 1493 (Chapter 200, Statutes of 2002), enacted on July 22, 2002, required CARB to set greenhouse gas (GHG) emission standards for passenger vehicles, light-duty trucks, and other vehicles whose primary use is non-commercial personal transportation manufactured in and after 2009.

2005 California Energy Action Plan II

The California Energy Action Plan II is the state's principal energy planning and policy document (CEC 2005). The plan continues the goals of the original Energy Action Plan, describes a coordinated implementation plan for state energy policies, and identifies specific action areas to ensure that California's energy is adequate, affordable, technologically advanced, and environmentally sound. In accordance with this plan, the first priority actions to address California's increasing energy demands are energy efficiency and demand response (i.e., reduction of customer energy usage during peak periods in order to address system reliability and support the best use of energy infrastructure). Additional priorities include the use of renewable sources of power and distributed generation (i.e., the use of relatively small power plants near or at centers of high demand). To the extent that these actions are unable to satisfy the increasing energy and capacity needs, clean and efficient fossil-fired generation is supported.

The Energy Action Plan II seeks to identify opportunities and support programs to reduce electricity demand related to the water supply system during peak hours and opportunities to reduce the energy needed to operate water conveyance and treatment systems.

In 2002, California established its Renewable Portfolio Standard (RPS) program, with the goal of increasing the percentage of renewable energy in the state's electricity mix to 20 percent by 2017. The California Energy Commission subsequently accelerated that goal to 2010, and further recommended increasing the target to 33 percent by 2020, and at least 50 percent must come from renewable energy sources by 2030. To complement these efforts on electricity generation, the state has also committed to increasing the energy efficiency of existing buildings by 50 percent by 2050 in order to reduce energy demand.

Senate Bill 350

The Clean Energy and Pollution Reduction Act (SB 350) establishes clean energy, clean air, and GHG reduction goals, including reducing GHG to 40 percent below 1990 levels by 2030 and to 80 percent below 1990 levels by 2050. SB 350 requirements include:

- Increase California's renewable electricity procurement goal from 33 percent by 2020 to 50 percent by 2030. This objective will increase the use of RPS eligible resources, including solar, wind, biomass, geothermal and others.

- Double statewide energy efficiency savings in electricity and natural gas end uses by 2030. To help meet these goals and reduce GHG emissions, large utilities will be required to develop and submit integrated resource plans (IRPs). These plans detail how utilities will meet their customers' resource needs, reduce GHG emissions, and ramp up the use of clean energy resources.

- Transform California Independent System Operator (ISO), a nonprofit public corporation, into a regional organization, contingent upon approval from the Legislature. The bill also authorizes utilities to undertake transportation electrification.

Senate Bill 100

On September 10, 2018, 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 Renewables Portfolio Standard (RPS) goals that were established by SB 350 in 2015. Specifically, the law increases the percentage of energy that both investor-owned utilities and publicly-owned utilities must obtain from renewable sources from 50 percent to 60 percent by 2030. Incrementally, these energy providers must also 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, because many California energy providers are already meeting or exceeding the RPS goals established by SB 350.

Known as the "100 percent clean energy bill," SB 100:

- Sets a 2045 goal of powering all retail electricity sold in California and state agency electricity needs with renewable and zero-carbon resources — those such as solar and wind energy that do not emit climate-altering greenhouse gases.

- Updates the state's Renewables Portfolio Standard to ensure that by 2030 at least 60 percent of California's electricity is renewable.

- Requires the CEC, California Public Utilities Commission (CPUC) and CARB to use programs under existing laws to achieve 100 percent clean electricity and issue a joint policy report on SB 100 by 2021 and every four years thereafter.

Cap and Trade Policies

Emissions from oil refineries and power plants are regulated at the regional and state levels. This regulatory environment makes it difficult for the County to control or influence the sector that produces the majority of GHG emissions except through participating in the cap-and-trade programs administered by the state or through conditions and mitigation measures placed in land-use permits. Cap-and-trade is a market-based approach to reducing GHG emissions. In California, the Cap-and-Trade Program sets an enforceable limit, or the cap, on the amount of emissions that can be produced by large industrial emitters. The program then authorizes a number of permits that allow additional emissions that can then be traded, bought, or sold.

Cap-and-trade programs enable industrial emitters to reduce overall emissions and to invest in cleaner fuels and energy efficiency. The AB 32 Scoping Plan update identifies California's Cap-and-Trade Program as a key component in reaching the state's near- and long-term GHG emissions targets. California's Cap-and-Trade Program has been designed by CARB in conjunction with stakeholders through a multiyear process and calls for a statewide limit on the sources that create 85 percent of California's GHG emissions including electricity generation, large industrial sources, transportation fuels, and residential and commercial use of natural gas. Starting in 2013, the CARB program began regulating utilities and large industrial facilities with a cap 2 percent below 2012 emissions levels. Starting in 2015, fuel distributors were also brought under the cap. CARB estimated that the Cap-and-Trade Program would generate about $1 billion in state revenue from the auction of emissions allowances for 2012-13, and possibly up to $10 billion annually by 2020 (Contra Costa County 2015).

Recent legislation, including AB 1532 and SB 535, seek to allocate cap-and-trade revenue for programs that reduce pollution in disproportionately impacted communities. AB 1532, the

California Global Warming Solutions Act of 2006: Greenhouse Gas Reduction Fund, addresses how funds related to market-based compliance mechanisms, such as cap-and-trade, can be used. The bill also stipulates that the California Environmental Protection Agency must develop a method for the identification of priority communities for investment opportunities based on a variety of geographic, socioeconomic, and environmental factors. SB 535 builds off AB 1532 and requires 25 percent of the available funds to go to projects that provide benefits to disadvantaged communities, and that 10 percent of the available funds go to projects located within disadvantaged communities. These funds may be allocated to disadvantaged communities through projects that reduce pollution and develop clean energy. In addition to identifying strategies to reduce local emissions, this CAP includes policies to support local programs that could be funded by potential cap-and-trade revenue.

AB 617 Expedited Best Available Retrofit Control Technology (BARCT)

The expedited best available retrofit control technology (BARCT) requirements of AB 617 are an important component of the bill, which is intended to provide benefits to residents statewide that are living near industrial sources. In addition to the statewide benefits of expedited BARCT, the schedules are expected to yield important emissions reduction benefits within communities selected for emission reduction and air monitoring programs.

Districts in nonattainment for one or more air pollutants (including the Bay Area Air Quality Management District) were required to adopt an expedited schedule by January 1, 2019 for the implementation of BARCT by December 31, 2023. The expedited BARCT schedules apply to each industrial source that as of January 1, 2017, would be subject to the Cap-and-Trade program. This requirement addresses sources that fall within 18 air districts across the state. The adopted schedules must give highest priority to permitted units that have not modified emissions-related permit conditions for the greatest period of time. In developing the expedited schedules for implementing BARCT, affected air districts must prioritize the retrofit of emissions sources that have not been addressed for the longest period of time to promptly reduce emissions in communities located near these sources. The schedule does not apply to emissions units that have implemented BARCT due to a permit revision or new permit issuance since 2007 (CARB 2021).

Local

Contra Costa County Climate Action Plan (2005)

In 2009, the County was awarded a $3.57 million Energy Efficiency and Conservation Block Grant (EECBG) from the US Department of Energy. In 2011, the County dedicated a portion of its EECBG funds to prepare a climate action plan (CAP). In support of this effort, the County updated its GHG inventory and forecasts and developed draft measures to achieve a Year 2020 GHG reduction target consistent with AB 32 (see Section 3.3 Greenhouse Gas Emissions).

In 2005 the County established a Climate Change Working Group to coordinate County efforts to respond to climate change, and to guide practices that result in more sustainable actions. Many County policies and initiatives support goals and policies described in the 2015 CAP, including:

- The 2007 Municipal Climate Action Plan.
- Energy conservation policies and programs designed to reduce energy demand through a

home weatherization programs and green building guidelines.

- Alternative energy policies that will reduce GHG emissions through supporting appropriate renewable energy projects and encouraging energy recovery projects.
- A comprehensive approach to water conservation.
- Transportation policies that support a balanced transportation system including bicycle, pedestrian, transit, and carpooling facilities, transportation and parking demand management, and support for rail and bus transit.
- Waste reduction strategies that reduce landfill disposal by supporting recycling and waste diversion.
- Land use policies that encourage transit-oriented, mixed-use, and infill development, and support local agricultural operations and production.
- Participation in regional energy efficiency efforts, such as the Bay Area Regional Energy Network (BayREN).

3.6.2 Existing Conditions

Electricity for the refinery is provided by multiple sources. Pacific Gas and Electric (PG&E) Company provides electricity and natural gas services for the refinery. PG&E's electric and gas services are regulated by the CPUC. A combined heat and power production (CHP or cogeneration) plant operated by Foster Wheeler Martinez is located at the refinery site and also provides electricity for the Refinery. Water supply is through the Contra Costa Water District. Wastewater is discharged into pipes managed by the Central Costa County Sanitary District. Marathon Refinery operates its own onsite wastewater treatment facilities.

3.6.3 Impact Analysis

3.6.3.1 Methodology for Impact Analysis

Analysis of the Project's potential energy impacts is based in part on information discussed in Section 3.3, Air Quality; Section 3.8, Greenhouse Gas Emissions; Section 3.14, Transportation; and Section 3.15 Utilities and Services. Supplemental information included in this EIR is from the Initial Study prepared for Marathon Refinery (Environmental Audit 2020). The evaluation of potential impacts related to energy usage that may result from the construction and long-term operations of the Project has been conducted as described below.

Construction

The Project would be constructed in a single phase with overlapping development activities. Construction could commence in 2021, pending Project approval and EIR certification, with full buildout and operation of the Project anticipated by 2023. Construction energy consumption would result primarily from transportation fuels (e.g., diesel and gasoline) used for haul trucks, heavy-duty construction equipment, and construction workers traveling to and from the Project site. Construction activities can vary substantially from day to day, depending on the specific type of construction activity and the number of workers and vendors traveling to the Project site. This analysis considers these factors and provides the estimated maximum construction energy consumption for the purposes of evaluating the associated impacts on energy resources.

The energy usage required for Project construction would be estimated based on the number and type of construction equipment that would be used during Project construction, the extent that various equipment are utilized in terms of equipment operating hours or miles driven, and the estimated duration of construction activities. Energy for construction worker commuting trips has been estimated based on the predicted number of workers for the various phases of construction and the estimated vehicle miles traveled (VMT). The level of significance regarding the Project's energy consumption would be based on the Project's compliance with relevant energy-related regulatory measures (**MM AQ-1: Implement BAAQMD Basic Construction Measures**) that would minimize the amount of energy usage during construction. These measures are also discussed elsewhere in EIR; Chapter 2, Project Description, Section 3.8, Greenhouse Gas Emissions, Section 3.11, Land Use and Planning, and Section 3.14, Transportation and Traffic.

Operation

Proposed Project operations would require energy in the form of electricity and natural gas for heating, cooling, lighting, water demand and wastewater treatment and other energy needs, and transportation-fuels, primarily gasoline, for vehicles traveling to and from the Project Site. Increases or decreases in energy usage required for Project operations and routine and incidental maintenance activities would be based on estimated net change in energy demand required for lifecycle production of diesel, jet fuel and other fuel sources on refinery facilities compared to previous petroleum fuel production.

Use of the cogeneration plant provides electricity to the facility that is significantly more efficient than standard power plants because it takes advantage of waste heat that would be classified as losses in conventional power plants. In addition, transportation losses are minimized since the cogeneration system is located near the refinery.

Emission factors for employee travel and truck travel were based on EMFAC2017 (CARB 2017). Vehicle trip lengths were determined using information on the residential locations of Marathon employees. The estimated fuel economy for vehicles is based on fuel consumption factors from the CARB EMFAC emissions model. Therefore, this energy assessment is consistent with the modeling approach used for other environmental analyses in this Draft EIR and consistent with general CEQA standards.

3.6.3.2 Significance Criteria

For the purposes of this analysis, the Project is considered to have a significant impact on energy resources if it would:

- result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation; or
- conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

3.6.4 Impacts and Mitigation Measures

Impact EN-1: The proposed Project could result in increased energy consumption, but not in large amounts or in a wasteful manner. (Less than Significant)

The proposed Project modifications would allow the facility to manufacture renewable fuels in compliance with CARB's Low Carbon Fuel Standard (Title 17, California Code of Regulations, Sections 95480-95490), which reduces greenhouse gas emissions by reducing the carbon intensity of transportation fuels used in California by at least 20 percent by 2030. The proposed Project would change the existing use of the Refinery from petroleum-based fuel processing to renewable feedstocks. This is expected to decrease the intensity of energy use at the Project Site, as discussed below.

The Marathon facility would continue to receive electricity from the Foster Wheeler Martinez cogeneration facility onsite. The Marathon facility would reduce the amount of feedstock processed from 161,000 barrels per day to 48,000 barrels per day, reducing the processing activities at the facility. Units that are expected to be shutdown include the Crude Units, No. 4 HDS Unit, Alkylation Unit, No. 4 Gas Plant, Catalytic Reformer, UOP Platforming Unit, Sulfur Recovery Unit, Benzene Saturation Unit, Fluid Catalytic Cracking Unit, Boilers #6 and #7, and Vacuum Units. Several units would be modified including the No. 2 and No. 3 HDS, Hydrocracker Stage 1 and 2, No. 1 and No. 5 Gas Plants, and some storage tanks. New units that would be installed include a Thermal Oxidizer, Pretreatment Unit, and Wastewater Treatment Unit. Overall, the proposed Project would result in the shutdown of a number of refinery units, heaters and boilers, resulting in a decrease in electricity and natural gas use.

The purchases of electricity from a public utility company would decrease under the proposed Project. Current electricity use at the Refinery is approximately 1,200,000 megawatt-hours (MWh) per year. Electricity demand after implementation of the proposed Project is an estimated to be 855,000 MWh per year. Current natural gas demand at the Refinery is approximately 60,000 Metric Million British Thermal Units per day (MMBtu/day). Natural gas demand after implementation of the proposed Project is estimated to be approximately 31,080 MMBtu/day. The reduction in electricity and natural gas use is further documented in Section 3.8, Greenhouse Gas Emissions, which shows an emission reduction of over 885,000 metric tons per year of GHG emissions, most of which are carbon dioxide emissions generated by combustion sources.

CARB has also adopted emission standards for off-road diesel construction equipment of greater than 25 horsepower (hp). The emissions standards are referred to as "tiers" with Tier 4 being the most stringent (i.e., less polluting). The requirements are phased in, with full implementation for large and medium fleets by 2023 and for small fleets by 2028. The Project would accelerate the use of cleaner construction equipment by using equipment that meet at a minimum the Tier 3 or Tier 4 interim off-road emissions standards as specified in the discussion of Impact AQ-1. Field testing from construction equipment manufacturers have shown that higher tier equipment results in lower fuel consumption.

No increase in operational energy consumption would occur, so the project would not interfere with energy consumption in the immediate project area, nor would long-term energy consumption exceed anticipated growth in the area (see Section 3.1 of the Project Description). The Refinery would comply with applicable climate action plans and sustainability plans (such as Contra Costa County's *Climate Action Plan*) discussed throughout this EIR that address energy efficiency. These standards provide "a whole systems" approach for designing and constructing facilities that would conserve energy, water, and material resources which identify measures the County would implement in order to to reach energy efficiency targets, in addition

to supporting other public health, water conservation, and air quality, and greenhouse gas emissions goals.

The Refinery would be subject to energy conservation regulations that would require the proposed Project to meet a number of conservation standards discussed above. See also sections 3.3 Air Quality, 3.8 Greenhouse Gas Emissions, and Section 3.15 Utilities and Service Systems for a detailed discussion of those conservation standards. As such, the proposed Project would not cause a wasteful use of energy, and effects related to use of fuel, water, or energy would be **less than significant**.

Mitigation Measure: No mitigation would be required.

Impact EN-2: Proposed Project construction or operations would not conflict with adopted energy conservation plans or standards (Less than Significant)

The Project would utilize construction contractors who must comply with applicable CARB regulations restricting the idling of heavy-duty diesel motor vehicles and governing the accelerated retrofitting, repowering, or replacement of heavy-duty diesel on- and off-road equipment.

The proposed Project would allow the Martinez Refinery to help meet the growing demand in California for renewable fuels, due to implementation of the Low Carbon Fuel Standard (LCFS). The LCFS was designed to reduce the State's reliance on petroleum-based fuels and encourage the use of less carbon-intensive fuels in the transportation sector.

The LCFS increases the desirability of the types of fuels that the proposed Project would supply. Because of their relatively low carbon-intensity scores, renewable fuels provide a means to meet the carbon intensity benchmarks and to create credits to offset any deficits incurred by more carbon-intensive fuels. Additionally, because a fuel's carbon intensity score takes into account the emissions associated with transportation of a finished fuel to the California market, and transportation of finished fuels from outside California is relatively carbon intensive, the LCFS creates an economic incentive for production of renewable fuels within the State of California. The proposed Project would assist the state with compliance of the LCFS and the state's overall strategy to mitigate greenhouse gas emissions and address climate change. See Section 3.8.2 of this EIR for more details on the LCFS standard.

The proposed Project would meet the requirements of the California Energy Code, as well as regulatory requirements discussed in the beginning of this chapter.

The proposed Project would result in a decrease in energy use, both natural gas and electricity. Reducing consumption of electricity and diversifying electricity generation resources are significant elements of plans to reduce natural gas demand. The RPS is a flexible, market-driven policy to ensure that the public benefits of wind, solar, biomass, and geothermal energy continue to be realized as electricity markets become more competitive. The policy ensures that a minimum amount of renewable energy is included in the portfolio of electricity resources serving a state or country. By increasing the required minimum amount over time, the Renewable Portfolio Standard puts the electricity industry on a path toward increasing sustainability.

The proposed Project and nearby residential and nonresidential development projects would be required to conform to current state and local energy conservation standards, including Title 24 of the California Code of Regulations. As a result, the proposed Project, in combination with other reasonably foreseeable projects, would not cause a wasteful use of energy or other non-renewable natural resources. The Project would result in a decrease in electricity, therefore, the project would not exceed overall demand within Contra Costa County, the greater Bay Area, and the state, and would not require any expansion of power facilities. The County's plans to reduce GHG emissions (discussed in the County's 2015 CAP above) would be achieved through a number of different strategies, including energy efficiency. Further, the proposed Project would be consistent with regional and state energy reduction strategies. Therefore, the energy demand associated with the proposed would not contribute to a cumulative impact on existing or proposed energy supplies or resources, as it would result in a decrease in energy use.

Based on the foregoing, the proposed Project, alone or in combination with past, present, and reasonably foreseeable projects, would not cause a significant cumulative impact on energy resources.

Mitigation Measure: No mitigation would be required.

3.6.5 References

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3.7 GEOLOGY AND SOILS

This section describes the environmental conditions and impacts analysis of geology, sediments and seismicity issues associated with converting the existing Marathon Martinez Refinery from its current production of fossil fuels (i.e., conventional diesel fuel, gasoline, distillates, propane, and various by-products) to the production of renewable fuels, including renewable diesel, renewable propane, renewable naphtha and potentially renewable jet.

The environmental setting provides a summary of laws and regulations that may affect geologic resources and seismicity analyses. Also included is information on the existing geologic and conditions regionally, as well as in the immediate vicinity of the Project Site. This is followed by an analysis of the potential Project impacts. Geologic issues associated with the Project primarily involve the effects of seismic events on structures and systems.

Guidelines and key sources of data used in the preparation of this section include the following:

- Geotechnical reports
- Site plans
- Geologic maps
- Hazard maps

3.7.1 Environmental Setting

3.7.1.1 Regulatory and Policy Context

Federal

There are no federal plans, policies or regulations that are applicable to this resource area.

State

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act is overseen by the California Department of Conservation, California Geological Survey. Alquist-Priolo earthquake fault zones are regulatory zones surrounding the surface traces of active faults in California, and the purpose of the Act is to reduce losses from surface fault rupture. If an active fault 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. The Alquist-Priolo Act defines an active fault as one that has ruptured in the last 11,000 years.

California Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act was established in 1990 and directs the Department of Conservation, California Geological Survey to identify and map areas prone to earthquake hazards, including liquefaction, landslides and ground shaking. The purpose of the Act is to reduce the threat to public safety and to minimize the loss of life and property by identifying and mitigating seismic hazards. The Act requires the State Geologist to establish regulatory zones and to issue Seismic Hazard Zone maps.

California Building Standards Code

The California Building Standards Code (California Code of Regulations, Title 24) includes provisions for earthquake safety based on factors including occupancy type, soil and rock profile, the strength of the ground and distance to seismic sources.

Local

Contra Costa County

Contra Costa Health Services Hazardous Materials Programs administers the California Accidental Release Prevention (CalARP) Program (California Code of Regulations, Title 19, Division 2, Chapter 4.5). Through CalARP, businesses that handle more than a threshold quantity of certain regulated substances must develop a Risk Management Plan (RMP). An RMP is a detailed engineering analysis of the potential accident factors, including seismic considerations, present at a business, as well as the mitigation measures that can be implemented to reduce this accident potential.

City of Martinez

The Safety Element of the City of Martinez General Plan (2010) identifies geologic and seismic hazards in the City, provides restraints in the selection of land for development, and provides policies with regard to structural design. Additionally, the Open Space and Conservation Element of the General Plan identifies the City's policies pertaining to natural resources, including soils.

3.7.1.2 Existing Conditions

The Marathon Martinez Refinery is located 3.25 miles east of downtown Martinez along Solano Way between Waterfront Road and Monsanto Way, adjacent to the Pacheco Creek, on approximately 2,000 acres of property owned by Marathon.

Regional Geology

Most of the Bay Area is located within the Coast Ranges geomorphic province. The Coast Range province spans approximately 400 miles from Oregon into Southern California and is characterized by a series of northwest trending ridges and valleys that roughly parallel the San Andreas fault zone. Much of the Coast Range province is composed of marine sedimentary and volcanic rocks located east of the San Andreas Fault, while the region west of the San Andreas Fault is underlain by a mass of basement rock that is composed of mainly marine sandstone and various metamorphic rocks. Unconsolidated alluvial deposits, artificial fill, and estuarine deposits (including Bay Mud) underlie the low-lying region along the margins of the Carquinez Straight and Suisun Bay (ABAG 2017).

Project Site Geology

The Site-specific geologic characteristics described in this section are based on the geotechnical investigation conducted by Hultgren-Tillis Engineers (Hultgren-Tillis 2021). For this investigation, Hultgren-Tillis reviewed existing geotechnical reports and logs of borings, drilled soil borings, performed laboratory testing on selected soil samples, and performed Cone Penetration Testing (CPT) soundings and field electrical resistivity testing. A total of 6 soil borings were completed to depths ranging from 10 feet to 100 feet.

Subsurface geology at the Project Site is generally classified as fill underlain by fine-grained alluvium and sand alluvium that ranges in age from late Pleistocene to Holocene. The fill soil consists of moderately expansive clay and clayey sand approximately 5 to 12 feet thick. The fill is moist to wet and medium stiff to stiff in the upper 5 feet; below 5 feet, the fill is wet to saturated and soft to medium stiff. The fills vary in consistency and compressibility both laterally and with depth. The lower portion of the fill is considerably softer and more compressible and appears to be poorly compacted.

The fine-grained alluvium consists of low to medium plasticity clays and silts with variable sand content and thin layers of medium-dense to dense silty and clayey sands. The upper 10 to 30 feet is described as medium stiff to stiff, while at depths of 20 to 45 feet, the alluvium becomes stiff to very stiff. At some boring and CPT locations, a dense to very dense alluvial sand layer was encountered below the fine-grained alluvium at depths of 48 to 68 feet below the ground surface. Although the dense sand alluvium was not observed at all locations, where encountered, it continued to the maximum boring depth of 100 feet. Zones of gravel and fine-grained soils were also encountered within the sand.

Some portions of the Project Site also include marsh deposits, consisting of high plasticity clay and silt with varying amounts of organic material. The marsh soils are generally soft to medium stiff, saturated, highly compressible and normally consolidated to slightly overconsolidated.

Groundwater was encountered in one boring location at 3 feet below the ground surface (approximately 7 feet in elevation). Groundwater in other borings was either not encountered or was obscured by the rotary wash-drilling methods. Field resistivity testing and laboratory corrosion tests indicate that the soils are highly variable, and results indicate that the soils may be severely corrosive.

As described by Hultgren-Tillis (2021), geotechnical test results indicate that the near surface soils have a moderate to high expansion potential and may change volume with changes in their moisture content. The Project Site is located in an area of clay and silty clay soils, including Altamont clay, Capay clay, Cropley clay, Diablo clay, Omni silty clay and Novato silty clay (Natural Resources Conservation Service [NRCS] 2019), which may be expansive.

The existing soil conditions (fine-grained soils to depths of about 48 to 68 feet and relatively dense sandy soils below) suggest that the risk of liquefaction, the transformation of saturated granular soils from a solid to liquefied state caused by increased pore pressure and decreased effective stress, is low. If liquefaction occurs, it is estimated that additional ground settlements of about 1 to 2 inches could occur.

Regional Seismicity

The San Francisco Bay Area lies along the San Andreas Fault system, which forms the boundary between the Pacific and North American tectonic plates. Movement between the plates has created several other active faults within the larger San Andreas Fault system, including the Hayward, Concord-Green Valley, Greenville, Rodgers Creek and San Gregorio Faults. The U.S. Geological Survey (USGS) Working Group on California Earthquake Probabilities has evaluated the probability of one or more earthquakes occurring in the Bay Area and concluded that there is

a 63 percent likelihood of a magnitude 6.7 or higher earthquake occurring in the Bay Area by 2037 (USGS 2008; ABAG 2017). A summary of active faults is included on the following table:

Table 3.7-1: Active Faults within 8 miles of the Project Site

Fault	Recent Movement	Historical Seismicity	Maximum Moment Magnitude (Mw)
Hayward	1868 (Holocene)	M6.8, 1868; many <M4.5	7.1
San Andreas	1989 (Holocene)	M7.1, 1989; M8.25, 1906; M7.0, 1838; many <M6	7.9
Rogers Creek-Healdsburg	1969 (Holocene)	M6.7, 1898; M5.6, 5.7, 1969	7.0
Concord-Green Valley	1955 (Holocene)	Historic active creep	6.9
Marsh Creek-Greenville	1980 (Holocene)	M5.6, 1980	6.9
San Gregorio-Hosgri	Holocene; Late Quaternary	Many M3-6.4	7.3
West Napa	2000 (Holocene)	M5.2, 2000	6.5
Maacama	Holocene	Historic active creep	7.1
Calaveras	1990 (Holocene)	M5.6-M6.4, 1861; M4 to M4.5 swarms 1970, 1990	6.8
Mount Diablo Thrust	Quaternary	N/A	6.7

Source: ABAG, 2017

M - Magnitude

Several major earthquakes have occurred within the Bay Area on these faults. A magnitude 6.8 earthquake occurred in 1868 along the Hayward Fault, which is located approximately 15 miles from the Project Site. Major earthquakes also occurred in 1861 on the Calaveras Fault, which is located approximately 16 miles from the Project Site, and in 1898 along the Rodgers Creek Fault, which is approximately 12 miles from the Project Site. The 1838, 1906 and 1989 earthquake events along the San Andreas fault comprise the most significant earthquakes that have occurred in the region within the past 200 years and caused major damage to structures in the Bay Area.

Project Site Seismicity

As discussed above, the Project Site is located in a region defined by a number of fault zones associated with the San Andreas Fault system, which marks the tectonic boundary between the North American and Pacific plates. The major earthquake faults in the region are the San Andreas, the Hayward and the Calaveras fault zones; other active Holocene faults close to the Project Site are the Concord-Green Valley fault, and the West Napa and Rogers Creek faults (Jennings and Bryant 2010; ABAG 2017).

The Project Site is not located in an Alquist-Priolo Earthquake Fault Zone (DOC 2019); however, the Concord-Green Valley fault is located approximately 1 mile to the west of the Project Site and is designated as an Alquist-Priolo Fault Zone. It is estimated that this fault could generate a magnitude 6.9 earthquake (ABAG 2017), but a major seismic event on any of the surrounding active faults could cause significant ground shaking at the Project Site.

Ground movement intensity during an earthquake depends on several factors, including earthquake magnitude, distance to the fault, focus of earthquake energy and type of geological material. Areas underlain by bedrock tend to experience less ground shaking than those underlain by unconsolidated sediments. Earthquake ground shaking may have secondary effects, including liquefaction, seismically induced settlement, and lateral spreading.

Liquefaction is the transformation of saturated granular soils from a solid to liquefied state, caused by increased pore pressure and decreased effective stress usually induced by earthquakes. Areas susceptible to liquefaction can be determined based on characteristics such as soil type, soil density and depth to groundwater. Liquefaction occurs in areas underlain by loose, saturated silt, sand and/or gravel. A study of the nine-county San Francisco Bay Area, conducted by the USGS and the California Geological Survey identify the Project Site as moderately susceptible to liquefaction (Knudsen et al. 2000; DOC 2019). These results are consistent with the findings of the Site-specific geotechnical investigation conducted by Hultgren-Tillis Engineers (Hultgren-Tillis 2021).

The Project Site is located in a generally flat area, and the Association of Bay Area Governments (ABAG) Hazard Viewer Map shows that the Project Site is not located in landslide hazard zone (ABAG 2020).

Tsunamis and Seiches

Tsunamis are sea waves typically created by undersea fault movement or landslides. Tsunamis may be generated at either great or close distances from shore. When the wave reaches the coastline, it pushes upward from the ocean bottom to create a high swell of water that breaks and washes inland with high velocities and significant force that can impact coastal structures. A seiche is a long, rolling wave with periodic oscillation of water in an enclosed basin (i.e., lake, bay, etc.) that can be caused by strong winds.

Tsunamis and seiches are both rare; however, tsunamis have historically affected the Pacific coastline. A tsunami possibly affecting the Bay Area would originate in the Pacific Ocean before entering San Francisco Bay and likely dissipating through this wider and shallower water body. The ABAG Hazard Viewer Map indicates that the Project Site is not located in a tsunami evacuation hazard zone (ABAG 2020).

3.7.2 Impact Analysis

3.7.2.1 Methodology for Impact Analysis

Geologic impacts were evaluated in two ways: (1) impacts of geologic hazards on project components that may result in substantial damage to structures or infrastructure, and/or expose people to substantial risk of injury; and (2) the impact of the project on the local geologic environment.

3.7.2.2 Significance Criteria

For the purposes of this analysis, the Project was considered to have a significant geology or soils use impact requiring mitigation if it would:

- Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury or death involving:
  - 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;
  - Strong seismic ground shaking;
  - Seismic-related ground failure, including liquefaction or
  - Landslides;
- Result in substantial soil erosion or the loss of topsoil;
- Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse;
- Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property;
- 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 or
- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

3.7.3 Impacts and Mitigation Measures

Construction-related Impacts

Impact GEO-1: Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury or death involving 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. (Less than Significant)

As discussed above, the proposed Project area is located in a region defined by a number of fault zones associated with the San Andreas Fault system, but the Project Site is not located in any Alquist-Priolo Earthquake Fault Zone (DOC 2019). The nearest active fault is the Concord-

Green Valley fault, which is located approximately 1 mile west of the Project Site. Therefore, direct rupture from an earthquake fault would be unlikely, and the impact is less than significant.

Mitigation Measure: No mitigation required.

Impact GEO-2: Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury or death involving strong seismic ground shaking. (Potentially Significant)

Because the Project Site is located in a region with several major fault zones, it may experience strong ground shaking associated with seismic activity along these faults. The extent and strength of ground shaking depends on the magnitude and intensity of the earthquake, distance from the epicenter and geologic conditions. The ABAG Hazard Viewer Map indicates that the Project Site is located in an area susceptible to severe shaking hazard (ABAG 2020). Therefore, any new Project facilities and equipment must be designed to comply with the California Building Code requirements. The California Building Code represents a standard safeguard against major structural failures and loss of life, and it requires that structures will: 1) resist minor earthquakes without damage; 2) resist moderate earthquakes without structural damage, but with some non-structural damage and 3) resist major earthquakes without collapse, but with some structural and non-structural damage.

New structures and equipment at the Project Site would require building permits from Contra Costa County Department of Conservation and Development, as applicable. Building permit applications and plans are reviewed by County plan checkers for compliance with the California Building Code; therefore, issuance of building permits from the local authority will assure compliance with the California Building Code requirements.

Ground shaking at the refinery has the potential to directly or indirectly cause potential substantial adverse effects. Upset conditions at the facility could result in fire, explosions, and significant air quality impacts if the structural design of the facility does not address strong seismic ground shaking. Therefore, the following mitigation measure would be implemented to ensure the proposed Project plans comply with applicable regulations and recommendations of the Site-specific geotechnical report (Hultgren-Tillis 2021). For use with the 2019 California Building Code, proposed Project locations have been classified as Site Class D, a stiff soil profile, and Site Class E, a soft soil profile (Hultgren-Tillis 2021). The geotechnical investigation included Site-specific ground motion hazard analyses for these soil profiles, and the response spectra presented in Appendix G of the report can be used for design of Project improvements.

Mitigation Measure GEO-2: Submittal of Final Geotechnical Evaluation Report. Prior to issuance of a grading or building permit for the equipment changes associated with the Project, the Applicant shall submit a final geotechnical evaluation report prepared by a licensed engineer, for approval by the Department of Conservation and Development, Peer Review Geologist, along with payment for the peer review fee. The report shall specify final recommendations for seismically and structurally sound installation of new structures, equipment and foundations in accordance with the California Building Code standards in effect at the time the permit application is submitted. Construction drawings submitted with the building permit application shall

include appropriate detail to demonstrate compliance of the Project with the standards of the applicable California Building Code.

Significance after Mitigation: Less than Significant.

Impact GEO-3: Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury or death involving seismic-related ground failure, including liquefaction. (Less than Significant)

Liquefaction is the transformation of saturated granular soils from a solid to liquefied state, caused by increased pore pressure and decreased effective stress, and usually induced by earthquakes. Areas susceptible to liquefaction can be determined based on characteristics such as soil type, soil density and depth to groundwater. Liquefaction occurs in areas underlain by loose, saturated silt, sand and/or gravel. A study of the nine-county San Francisco Bay Area, conducted by the U.S. Geological Survey (Knudsen et al. 2000) and the ABAG Hazard Viewer Map, identify the Project Site as moderately susceptible to liquefaction (ABAG 2020). Soil conditions at the Project Site consist predominately of fine-grained soils to depths of about 48 to 68 feet with relatively dense sandy soils below and localized pockets of loose to medium dense sand. The loose to medium dense sands appear to be discontinuous, and the risk of liquefaction is judged to be low (Hultgren-Tillis 2021).

If liquefaction does occur, it could result in estimated additional ground settlements of about 1 to 2 inches. However, substantial exposure of people or structures to the risk of loss, injury or death from liquefaction is not anticipated because Site-specific liquefaction risk is low.

Mitigation Measure: No mitigation would be required.

Impact GEO-4: Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury or death involving landslides. (Less than Significant)

The Project Site is located in a generally flat area with elevations ranging from 10 feet above mean sea level near the shoreline to 130 feet at points over 15,000 feet inland from the shore according to the County's geographic information system. The ABAG Hazard Viewer Map shows that the Project Site is not located in landslide hazard zone (ABAG 2020), and Figure 10-6 of the County's General Plan does not identify any landslide deposits on the Project Site. Within the areas of construction of the Project within the Refinery boundaries, equipment would be installed in large, flat areas where elevation differentials range from 5 feet in the location of the new feed pre-treatment unit, to as few as 6 inches in the location of the No. 2 HDS unit (Hultgren-Tillis 2021). Without steep slopes or large changes in grade across the property, impacts from landsliding would be less than significant.

Mitigation Measure: No mitigation would be required.

Impact GEO-5: Result in substantial soil erosion or the loss of topsoil. (Less than Significant)

Project activities may temporarily increase the exposure of soils to erosion from grading and excavation activities. However, grading for the proposed Project would be limited to trenching to

provide utilities to new units and grading, with typical work being 48 to 60 inches below ground surface to develop stable foundations for new units and facilities at the Project Site. Most of the foundations would be pile-supported using auger-cast construction where the piles are augered as far as 65 feet below ground surface. Stormwater in the operating portions of the existing Project Site is contained on site and would not result in erosion.

Projects that disturb 1 or more acre of soil are required to obtain coverage under the National Pollutant Discharge Elimination System (NPDES) Construction Storm Water General Permit. Project construction activities subject to this permit may include clearing, grading and/or other disturbances to the ground such as stockpiling or excavation. Because the Proposed Project would disturb more than 1 acre of soil, a Stormwater Pollution Prevention Plan must be prepared for Project construction activities and would provide controls so that stormwater runoff would be contained and only allowed to drain off-site when appropriately managed, with drainage velocities adjusted using engineering controls as needed to minimize erosion. Typical Best Management Practices (BMPs) to minimize erosion may include but are not limited to the following:

- Silt fence would be installed along the downslope boundary of each dig to prevent the mobilization of soil from the site into nearby aquatic habitats (where present). Silt fencing would be installed in accordance with the manufacturer's guidelines and would be regularly inspected.
- Any refueling needed onsite would occur at least 100 feet from a surface water feature, and in a designated refueling area with secondary containment/plastic sheeting and a spill containment kit.
- If contaminated soils or materials are excavated, they would be stockpiled and/or removed from the site and disposed of appropriately.
- Following the completion of the repair action, the site would be regraded to match the original site contours.
- Disturbed areas with a slope of 5 percent or greater would be covered with a layer of jute matting or certified weed-free straw.
- Straw wattles (certified weed-free straw), and other BMPs as needed, would be installed following guidelines in the California Stormwater Quality Association Construction BMP handbook.

Due to the limited grading and excavation on the generally flat site, the proposed Project is not expected to result in substantial soil erosion or loss of topsoil and impacts would be less than significant.

Mitigation Measure: No mitigation would be required.

Impact GEO-6: Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse. (Potentially Significant)

The marsh soil and lower portions of the fill are highly compressible, and significant settlement is expected from placement of loads at or near the ground surface. Settlement will occur slowly

over years with 50 percent of the settlement estimated to occur in the first year after loading and the remainder occurring slowly, with approximately 60 to 90 percent of settlement complete in 5 years after fill placement and/or foundation construction (Hultgren-Tillis 2021). Any new structures and/or equipment associated with the Project would be constructed in compliance with California Building Code requirements and incorporating applicable recommendations from the Site-specific geotechnical report (Hultgren-Tillis 2021).

The potential for liquefaction at the Project Site is discussed above. The Project Site is located in a generally flat area, and there are no substantial slopes in the vicinity that would pose a landslide hazard, nor are there unsupported conditions susceptible to significant lateral spreading. Before the issuance of any permits, the County would require through the building permit plan check process that the proposed Project plans would comply with applicable regulations and recommendations of the Site-specific geotechnical report (Hultgren-Tillis 2021), including construction of deep foundations such as driven piles or auger-cast piles to transfer the loads down to stiff and dense materials below the marsh soil and use of shallow footings to support smaller structures. Therefore, with compliance with the County's building permit plan check and code compliance confirmation process, Project impacts would be less than significant.

Mitigation Measure GEO-6: Implement Mitigation Measure GEO-2.

Impact GEO-7: Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property. (Potentially Significant)

Expansive soils are soils with the potential to undergo significant changes in volume due to their composition and moisture content. This periodic shrinking and/or swelling of expansive soils may cause damage to structures and roads. The Project Site is located in an area of clay and silty clay soils, including Altamont clay, Capay clay, Cropley clay, Diablo clay, Omni silty clay and Novato silty clay (NRCS 2019), which may be expansive. Atterberg limits and expansion index test results indicate that the near surface soils have a moderate to high expansion potential (Hultgren-Tillis 2021). Grading for the proposed Project is expected to be minimal and limited to trenching to provide utilities to new equipment and grading to develop stable foundations for new units.

No significant adverse impacts from unstable or expansive soils are expected provided that the proposed equipment and facility modifications associated with the Project are installed in compliance with the California Building Code and recommendations from the Site-specific geotechnical investigation (Hultgren-Tillis 2021). In accordance with Mitigation Measure GEO-2, before the issuance of any permits, the County would require through the building permit plan check process that the proposed Project plans comply with applicable building code regulations and recommendations of the Site-specific geotechnical report (Hultgren-Tillis 2021). The impact of expansive soil on concrete slabs-on-grade can be mitigated in several ways, including soaking the subgrade before casting the slab and/or placing select fill of low expansion potential below the slabs. Providing additional reinforcement in concrete slabs can also help hold the slabs together and control slab offsets and tripping hazards. Therefore, Project impacts would be less

than significant with compliance with the County's building permit plan check and code compliance confirmation process and implementation of Mitigation Measure GEO-2.

Mitigation Measure GEO-7: Implement Mitigation Measure GEO-2.

Impact GEO-8: Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater. (No Impact)

The existing Project Site discharges treated wastewater under an NPDES Discharge Permit, and the wastewater generated by the proposed Project would be treated in the existing wastewater treatment system, which does not use septic tanks or alternative wastewater disposal systems nor rely on subsurface leachlines and soils for treatment of effluent. Therefore, no significant impacts on soils from alternative wastewater disposal systems are expected, and the Project would have no impact.

Mitigation Measure: No mitigation would be required.

Impact GEO-9: Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature. (Less than Significant)

As discussed in Section 3.5.2.3: Cultural and Paleontological Resources in the Vicinity of the Project Site, of this DEIR, it is unlikely that paleontological resources would be disturbed by the Project. The Project Site is therefore not likely to contain significant paleontological resources, and impacts from the proposed Project would be less than significant.

Mitigation Measure: No mitigation would be required.

Operational Impacts

Because geological conditions at the Site would not change before, during or after construction activities associated with the Project, the operational impacts of the Project would not differ from the construction-related Project impacts discussed above. Post-construction, the Project would have no new or different impacts resulting from operations beyond those discussed relative to construction, and no additional mitigation measures would be necessary.

3.7.4 References

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3.8 GREENHOUSE GAS EMISSIONS

Section 3.8 describes the Marathon Refinery's greenhouse gas (GHG) emissions from existing fossil fuels production, and projected emissions resulting from conversion to renewable fuel sources. Section 3.8.1, Environmental Setting includes a discussion of local and regional climate conditions in Contra Costa County (the County), and Section 3.8.2, Regulatory Setting, describes GHG regulations and policy, plans and guidance. Section 3.8.3 describes a summary of impacts from the conversion to renewable fuels production.

3.8.1 Environmental Setting

3.8.1.1 Climate Change

Global climate change is a change in the average weather of the Earth, and can be measured by wind patterns, storms, precipitation and temperature (refer to Section 3.3, Air Quality, for a discussion of local climatology). Scientific consensus has identified that the human-related emission of GHGs above natural levels is a significant contributor to global climate change. GHGs lead to the trapping and buildup of heat in the atmosphere near the Earth's surface, known as the Greenhouse Effect.

GHGs are gases that allow visible and ultraviolet light from the sun to pass through the atmosphere, but they prevent heat from escaping back out into space. Among the potential implications of global warming are rising sea levels, and adverse impacts to water supply, water quality, agriculture, forestry and habitats. In addition, global warming may increase electricity demand for cooling, decrease the availability of hydroelectric power and affect regional air quality and public health. The seven major GHGs are summarized in Table 3.8-1 below.

Table 3.8-1: Common GHGs

Gas	Sources
Carbon dioxide (CO_2)	Fossil fuel combustion in stationary and point sources; emission sources includes burning of oil, coal and gas.
Methane (CH_4)	Incomplete combustion in forest fires, landfills and leaks in natural gas and petroleum systems, agricultural activities, coal mining, wastewater treatment and certain industrial processes.
Nitrous oxide (N_2O)	Fossil fuel combustion in stationary and point sources; other emission sources include agricultural soil management, animal manure management, sewage treatment, adipic acid production and nitric acid production.
Chlorofluorocarbon (CFC), and Hydro-chlorofluorocarbon (HCFC)	Agents used in production of foam insulation; other sources include air conditioners, refrigerators and solvents in cleaners.
Sulfur hexafluoride (SF_6)	Electric insulation in high voltage equipment that transmits and distributes electricity, including circuit breakers, gas-insulated substations, and other switchgear used in the transmission system to manage the high voltages carried between generating stations and customer load centers.
Perfluorocarbons (PFCs)	Primary aluminum production and semiconductor manufacturing.

Source: U.S. EPA 2009

CO_2 Equivalent

CO_2 is the reference gas for climate change, as it is the GHG emitted in the highest volume. The effect that each of the GHGs have on global warming is the product of the mass of their emissions and their global warming potential (GWP). GWP indicates how much a gas is predicted to contribute to global warming relative to how much warming would be predicted to be caused by the same mass of CO_2. For example, while CO_2 has a GWP of 1, methane and N_2O are substantially more potent GHGs than CO_2, with GWPs of 25 and 298 times that of CO_2, respectively (U.S. EPA 2019).

The main difference between CO_2 and carbon dioxide equivalents (CO_2e) is that CO_2 only accounts for carbon dioxide, while CO_2e accounts for carbon dioxide and other GHGs including hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), SF_6 and nitrogen trifluoride.

3.8.1.2 Nationwide GHG Emissions

In 2017, the United States emitted about 6,457 million metric tons (MMT) of CO_2e ($MMTCO_2e$), with 76.1 percent of emissions coming from fossil fuel combustion. Of the major sectors nationwide, transportation accounts for the highest amount of GHG emissions (approximately 29 percent), followed by electricity generation (28 percent), industry (22 percent), agriculture (9 percent), commercial buildings (6 percent) and residential buildings (5 percent). Between 1990 and 2017, total U.S. GHG emissions rose by 1.3 percent, but emissions have generally decreased since peaking in 2005. Since 1990, U.S. emissions have increased at an average annual rate of 0.4 percent (U.S. EPA 2019).

3.8.1.3 California GHG Emissions Inventory

The California Air Resources Board (CARB) GHG emissions inventory is a tool to measure California's progress toward achieving the statewide GHG goal to reduce emissions to 1990 levels by 2020. The inventory includes emissions reporting from fossil fuel combustion, GHG generated as by-product of chemical reactions in industrial processes, use of GHG-containing consumer products and human-made chemicals and emissions from agricultural and waste sector operations.

Emissions from the industrial sector contributed 21 percent of California's total GHG emissions in 2018. Emissions in this sector are primarily driven by fuel combustion from sources that include refineries, oil and gas extraction, cement plants and the portion of cogeneration emissions attributed to thermal energy output (CARB 2021).

In 2018, emissions of 425 $MMTCO_2e$ from statewide emitting activities were higher than 2017 levels but below the 2020 GHG goal of 431 $MMTCO_2e$. Since its peak level in 2004, California's GHG emissions have generally followed a decreasing trend. In 2016, statewide GHG emissions dropped below the 2020 GHG goal and have remained below the goal since that time (CARB 2020). As shown in Table 3.8-2 below, the transportation sector is the largest contributor to statewide GHG emissions at approximately 39 percent in 2016.

Table 3.8-2: California GHG Emissions (1990-2016)

Category	Total 1990 Emissions Using IPCC SAR ($MMTCO_2e$)	Percent of Total 1990 Emissions	Total 2016 Emissions Using IPCC AR4 ($MMTCO_2e$)	Percent of Total 2016 Emissions
Transportation	150.7	35%	169.4	39%
Electric Power	110.6	26%	68.6	16%
Commercial Fuel Use	14.4	3%	15.2	4%
Residential	29.7	7%	24.2	6%
Industrial	103.0	24%	89.6	21%
Recycling and Waste (a)	—	—	8.8	2%
High GWP/Non-Specified (b)	1.3	<1%	19.8	5%
Agriculture/Forestry	23.6	6%	33.8	8%
Forestry Sinks	-6.7	-2%	— (c)	—
Net Total (IPCC SAR)	**426.6**	**100%** (e)	**—**	**—**
Net Total (IPCC AR4) (d)	**431**	**100%** (e)	**429.4**	**100% (e)**

NOTES:

AR4 = Fourth Assessment Report; GWP = global warming potential; IPCC = Intergovernmental Panel on Climate Change; MMTCO2e = million metric tons of carbon dioxide equivalents; SAR = Second Assessment Report

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 methods under development (not reported for 2016).

d CARB revised the state's 1990-level GHG emissions using GWPs from the IPCC AR4.

e Total of individual percentages may not add up to 100% due to rounding.

Sources:

California Air Resources Board, 1990 to 2004 Inventory Data and Documentation. Available at https://www.arb.ca.gov/cc/inventory/1990level/1990data.htm. Accessed July 2, 2021.

California Air Resources Board, California Greenhouse Gas 2000–2016 Inventory by Scoping Plan Category—Summary, June 22, 2018. Available at https://www.arb.ca.gov/cc/inventory/data/tables/ghg_inventory_scopingplan_sum_2000-16.pdf. Accessed July 2, 2021.

Contra Costa County

Due to the diverse geographical conditions of California, potential impacts to ecosystems, the built environment, and human activities will vary. The County will likely experience more extreme heat events, deteriorated air quality, damaging sea level rise, less predictable water supply and increases in storm severity and frequency of flood events. Even with significant efforts to mitigate GHG emissions today, future climate projections anticipate significant effects on California and the County's precipitation, temperature and weather patterns, which in turn will have dramatic impacts on public health.

As shown in Table 3.8-3 below, the County is home to some of the largest GHG-emitting stationary source facilities in the state of California. Stationary sources are non-moving, fixed-site producers of pollution such as power plants, chemical plants, oil refineries, manufacturing facilities and other industrial facilities (U.S. EPA 2021). Between 2015 and 2019, the County had 28 stationary source facilities that were required to report emissions to CARB.

Table 3.8-3: Largest GHG Emitting Sources in Contra Costa County

Facility	Total 2015 Emissions (MT CO_2e)	Total 2019 Emissions (MT CO_2e)	Facility Type
Chevron Products Co. Richmond[(a)]	4,522,795	4,521,944	Refinery, Chemicals
Martinez Refining Company, LLC, Martinez	3,619,640	3,055,157	Refinery, Chemicals
Tesoro Refining and Marketing Co., Golden Eagle Refinery, Martinez[(a)]	2,076,234	2,302,965	Refinery, Chemicals
San Francisco Refinery at Rodeo	1,477,215	1,346,105	Refinery
PG&E Gateway Generating Station, Antioch	1,305,982	1,137,219	Power Plant
Air Liquide Large Industries US, LP, Rodeo	817,994	800,782	Hydrogen Production
Crockett Cogeneration Plant, Crockett	791,210	735,568	Power Plant
Air Products & Chemicals Inc., Martinez and Waterfront	742,219	717,297	Hydrogen Production
Martinez Cogen Limited Partner	401,601	391,426	Power Plant
Air Products & Chemicals, Inc, Tesoro Martinez	196,659	264,073	Hydrogen Production
GWF Power Systems, LP (site 3)	181,520	0	Power Plant

Sources: U.S. EPA 2021 GHG Emissions by Facility. Reported 9/20/20
MT=Metric Ton

NOTES
[a] Some CO_2 reported as emissions is collected and transferred to other users or sequestered or otherwise injected underground

CEQA Guidelines Section 15360 and Public Resources Code Section 21060.5 define "environment" as "the physical conditions that exist within the area which will be affected by a proposed project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historical or aesthetic significance." CEQA Guidelines Section 15125(a) requires that an Environmental Impact Report (EIR) include a description of the physical environmental conditions in the vicinity of the project, as they exist at the time the notice of preparation is published from both a local and regional perspective. This environmental setting will normally constitute the baseline physical conditions by which a lead agency determines whether an impact

is significant. As described in Chapter 3.0, this EIR describes baseline conditions for GHGs as of the time the environmental analysis commenced (2020) and including the 5 years prior, to the extent that information is available. Both existing and projected GHG emissions from activities within a defined geographic area are quantified over a specified time period.

A GHG Reduction Strategy must include an emissions inventory that quantifies an existing baseline level of emissions and projected GHG emissions from a business-as-usual, no-plan, forecast scenario of the horizon year. The baseline year is based on the existing growth pattern defined by an existing general plan. The projected GHG emissions are based on the emissions from the existing growth pattern or general plan through to 2020, and if different, the year used for the forecast. If the forecast year is beyond 2020, the Bay Area Air Quality Management District recommends doing a forecast for 2020 to establish a trend. The forecast does not include new growth estimates based on a new or draft general plan.

Tables 3.8-4 through Table 3.8-6 below summarize the facility's baseline stationary and mobile source emissions, which include the facility plus estimated mobile source emissions for the 5-year baseline period. In the tables below, the calculated CO_2, CH_4 and N_2O emissions from each emission source were multiplied by the corresponding global warming potentials, summed up and reported as the total CO_2e associated with the construction and operation of the proposed Project.

As discussed in the introduction to Chapter 3, the 5-year baseline period used in this EIR for greenhouse gas impacts analysis consists of the five consecutive 12-month periods between October 1, 2015, and September 30, 2020. This timeframe captures multiple years of production including a high throughput year (Year 3) as well as two comparably lower throughput years (Year 1, and Year 5 when refining activities were idled for 7 months). Thus, the 5-year baseline period better represents the variation in production at the Refinery. Likewise, the 5-year baseline captures the Refinery's turnaround cycle, including two years in 2016 and 2020 when no equipment turnarounds occurred and emissions would have been higher because all equipment was in operation. For informational purposes, Table 3.8-7 provides a summary comparison of the 1-year and 3-year average annual emissions against the average annual emissions for the 5-year period that is the baseline timeframe for this EIR.

Table 3.8-4: Marathon Refinery, Annual Stationary Source Emissions (tons per year, 2015-2020)

Emission	Year 1 (2015-2016)	Year 2 (2016-2017)	Year 3 (2017-2018)	Year 4 (2018-2019)	Year 5 (2019-2020)
CO_2	1,803,452.00	2,107,344.42	2,147,840.46	2,233,534.04	1,108,669.54
CH_4	82.56	99.70	99.30	106.13	60.39
N_2O	12.33	14.49	14.46	14.64	7.27
GHG CO2e	*1,809,007.18*	*2,113,929.58*	*2,154,408.50*	*2,240,300.86*	*1,112,190.59*

Source: Marathon Petroleum Corporation, 2021

Table 3.8-5: Marathon Refinery, Annual Mobile Source Emissions (tons per year, 2015-2020)

Emission	Year 1 (2015-2016)	Year 2 (2016-2017)	Year 3 (2017-2018)	Year 4 (2018-2019)	Year 5 (2019-2020)
CO_2	46,133.27	46,437.98	46,454.35	46,262.31	42,597.68
CH_4	0.60	0.60	0.60	0.59	0.55
N_2O	3.59	3.65	3.65	3.62	3.11
GHG CO2e	*47,108*	*47,513*	*47,482*	*47,339*	*44,017*

Source: Marathon Petroleum Corporation, 2021

Table 3.8-6: Marathon Refinery, Total Emissions (Stationary and Mobile, tons per year, 2015-2020)

Emission	Year 1 (2015-2016)	Year 2 (2016-2017)	Year 3 (2017-2018)	Year 4 (2018-2019)	Year 5 (2019-2020)
CO_2	1,849,585.27	2,153,782.40	2,194,294.80	2,279,796.34	1,151,267.22
CH_4	83.16	100.29	99.89	106.73	60.93
N_2O	15.92	18.14	18.11	18.26	10.38
GHG CO2e	*1,856,114.68*	*2,161,442.36*	*2,201,890.31*	*2,287,639.64*	*1,156,207.52*

NOTES:

- Baseline Window: October 2015 – September 2020 emission inventory data.
- 2020 stationary source inventory data estimated from preliminary Reg 12-15 report, which was not due for submission until April 15, 2021.
- Mobile source emissions estimated from on Ship and Rec data; will be validated with gate logs at a later date.
- Mobile Source GHG emissions are inclusive of statewide operations.

Source: Marathon Petroleum Corporation, personal communication, June 8, 2021

Table 3.8-7: Comparison of Average Annual Emissions, 1 year, 3 years and 5 years

Emission	Unit	1-year Average (2019-2020)	1-year Average (2018-2019	3-year Average (2017-2019)	5-year Average (2015-2020)
CO_2	Metric Ton	1,151,267.22	2,279,796.34	1,875,119.45	1,925,745.21
CH_4	Metric Ton	60.93	106.73	89.18	90.20
N_2O	Metric Ton	10.38	18.26	15.58	16.16
GHG CO_2e	Metric Ton	*1,156,207.52*	*2,287,639.64*	1,881,912.49	1,932,058.90

Source: Marathon Petroleum Corporation, 2021

3.8.2 Regulatory Setting

3.8.2.1 Federal

United States Environmental Protection Agency

As discussed in Section 3.3 Air Quality, the United States Environmental Protection Agency (U.S. EPA) is the federal agency responsible for implementing the Federal Clean Air Act (CAA).

CAA and U.S. EPA "Endangerment" and "Cause or Contribute" Findings

In 2007, the U.S. Supreme Court held that the U.S. EPA must consider regulation of motor vehicle GHG emissions. In Massachusetts v. Environmental Protection Agency et al., 12 states and cities, including California, together with several environmental organizations sued to require U.S. EPA to regulate GHGs as pollutants under the CAA (127 S. Ct. 1438 [2007]). The Supreme Court ruled that GHGs fit within the CAA's definition of a pollutant, and U.S. EPA had the authority to regulate GHGs.

On December 7, 2009, the U.S. EPA Administrator signed two distinct findings regarding GHGs under CAA Section 202(a):

- **Endangerment Finding**: The current and projected concentrations of the six key GHGs—CO_2, CH_4, N_2O, HFCs, PFCs and SF_6—in the atmosphere threaten the public health and welfare of current and future generations.
- **Cause or Contribute Finding**: The combined emissions of these GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution that threatens public health and welfare.

Mandatory Greenhouse Gas Reporting Rule (40 CFR Part 98)

As part of the Fiscal Year 2008 Consolidated Appropriations Act, signed into law in 2007, the U.S. EPA was ordered to publish a rule requiring public reporting of GHG emissions from large sources. In response to Congress's directive, U.S. EPA released a final rule, "Mandatory Reporting of Greenhouse Gases," which went into effect on December 29, 2009. The Greenhouse Gas Reporting Program database provides comprehensive nationwide GHG emissions data (electric power companies were already reporting their CO_2 emissions under the CAA Amendments of 1990). Over 40 source categories are now covered by the reporting program.

The U.S. EPA's Greenhouse Gas Reporting Program (GHGRP) requires large GHG emission sources, fuel and industrial gas suppliers and CO_2 injection sites to report emissions on annual basis (U.S. EPA 2021). In addition, the GHGRP requires suppliers of specific products, such as natural gas and petroleum, to report the GHG emissions that would ultimately result from the use of their products. Since 2011, the GHGRP has collected annual emissions data from nearly 8,000 large industrial facilities and other sources in the United States. According to U.S. EPA, 85 to 90 percent of annual man-made U.S. GHG emissions have been reported under the program (Congressional Research Service 2021).

3.8.2.2 State

CEQA

Current CEQA Guidelines, CCR Title 14, Section 15064.4 states that "a lead agency shall make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate, or estimate the amount of GHG emissions resulting from a project." Section 15064.4 further states:

> *A lead agency should consider the following factors, when determining the significance of impacts from greenhouse gas emissions on the environment:*
>
> > *(1) The extent to which the project may increase or reduce greenhouse gas emissions as compared to the existing environmental setting;*
> >
> > *(2) Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project.*
> >
> > *(3) The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions (see e.g., section 15183.5(b)).*

The CEQA Guidelines also state that a project's incremental contribution to a cumulative effect is not cumulatively considerable if the project will comply with the requirements in a previously approved plan or mitigation program (including plans or regulations for the reduction of GHG emissions) that provides specific requirements that will avoid or substantially lessen the cumulative problem within the geographic area in which the project is located (CEQA Guidelines Section 15064(h)(3)).

State of California Executive Orders

Executive Order S-3-05

Governor Arnold Schwarzenegger issued Executive Order S-3-05 in 2005, which set forth a series of target dates by which statewide emissions of GHGs would be progressively reduced, as follows:

- Reduce GHG emissions to 2000 levels by 2010
- Reduce GHG emissions to 1990 levels by 2020
- Reduce GHG emissions to 80 percent below 1990 levels by 2050

Executive Order S-1-07

Executive Order S-1-07, signed by Governor Schwarzenegger in 2007, finds that the transportation sector is the main source of GHG emissions in California, generating more than 40 percent of statewide emissions. It established a low carbon fuel standard (LCFS) with a goal to reduce the carbon intensity of transportation fuels sold in California by at least 10 percent by 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 carbon intensity reduction to 20 percent by 2030.

Executive Orders S-14-08 and S-21-09

Executive Order S-14-08 enacted in November 2008 expands the state's Renewable Portfolio Standard (RPS) to 33 percent renewable power by 2020. In September 2009, the Governor continued California's commitment to the RPS by signing Executive Order S-21-09, which directs CARB, pursuant to its authority under Assembly Bill (AB) 32 (California Global Warming Solutions Act of 2006), to enact regulations to help the state meet its RPS goal of 33 percent renewable energy by 2020.

Executive Order S-13-08

Executive Order S-13-08, signed on November 14, 2008, 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* 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 (California Natural Resources Agency 2012).

Executive Order B-16-12

In March 2012, Governor Jerry Brown issued an executive order establishing a goal of 1.5 million zero-emission vehicles (ZEVs) on California roads by 2025. In addition to the ZEV goal, Executive Order 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; that by 2050, virtually all personal transportation in the state will be based on ZEVs; and that GHG emissions from the transportation sector will be reduced by 80 percent below 1990 levels.

Executive Order B-30-15

Executive Order B-30-15 signed April 29, 2015, includes the following directives:

- 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; and
- Directed CARB to update the *Climate Change Scoping Plan* (discussed below) to express the 2030 target in terms of MMT of CO_2e.

Executive Order B-48-18

On January 26, 2018, Governor Brown issued an executive order establishing a goal of 5 million ZEVs on California roads by 2030.

Executive Order B-55-18

Executive Order B-55-18, signed September 10, 2018, established a state-wide commitment to total, economy-wide carbon neutrality by 2045. Executive Order B-55-18 directs CARB to work with relevant state agencies to develop a framework to implement and accounting to track progress toward this goal.

State of California Policy and Legislation

Assembly Bill (AB) 1493

Signed in 2002, AB 1493 required that CARB develop and adopt, by January 1, 2005, regulations to 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, CARB approved amendments to the California Code of Regulations adding GHG emissions standards to California's existing standards for motor vehicle emissions. All mobile sources were required to comply with these regulations as they were phased in from 2009 through 2016.

Senate Bill (SB) 97

SB 97 was adopted in 2007 and directed the Governor's Office of Planning and Research (OPR) to amend the CEQA Guidelines to address GHG emissions. The CEQA Guidelines prepared by OPR were adopted in December 2009 and went into effect on March 18, 2010. The updated guidelines include provisions for local governments to use adopted plans for the reduction of GHG emissions to address the cumulative impacts of individual future projects on GHG emissions (see State CEQA Guidelines Section 15183.5(b)(1)). In order to benefit from the streamlining provisions of the updated CEQA Guidelines, a Climate Action Plan (CAP) for the reduction of GHG emissions must accomplish the following:

- Quantify GHG emissions, both existing and projected over a specified time period, resulting from activities within a defined geographic area.
- Establish a level, based on substantial evidence, below which the contribution to GHG emissions from activities covered by the plan would not be cumulatively considerable.
- Identify and analyze the GHG emissions resulting from specific actions or categories of actions anticipated within the geographic area.
- Specify measures or a group of measures, including performance standards, that substantial evidence demonstrates, if implemented on a project-by-project basis, would collectively achieve the specified emissions level.
- Establish a mechanism to monitor the plan's progress toward achieving the specified level and to require an amendment if the plan is not achieving specified levels.

Assembly Bill 32

Known as the California Global Warming Solutions Act of 2006, AB 32 established regulatory, reporting and market mechanisms to achieve quantifiable reductions in GHG emissions and established a cap on statewide GHG emissions. AB 32 required that statewide GHG emissions be

reduced to 1990 levels by 2020. This reduction was to be accomplished by enforcing a statewide cap on GHG emissions that would be phased in starting in 2012. To effectively implement the cap, AB 32 directed CARB to develop and implement regulations to reduce statewide GHG emissions from stationary sources. AB 32 specified that regulations adopted in response to AB 1493 should be used to address GHG emissions from vehicles. However, AB 32 also included language stating that if the AB 1493 regulations could not be implemented, then CARB should develop new regulations to control vehicle GHG emissions under the authorization of AB 32.

Senate Bill 32

In 2016, SB 32 (California Global Warming Solutions Act of 2006: Emissions Limit) and its companion bill AB 197 amended Health and Safety Code Division 25.5, establishing a new climate pollution reduction target of 40 percent below 1990 levels by 2030, and included provisions to ensure that the benefits of state climate policies reach disadvantaged communities. SB 32 authorizes CARB to adopt an interim GHG emissions level target to be achieved by 2030. CARB also must adopt rules and regulations in an open public process to achieve the maximum, technologically feasible, cost-effective GHG reductions; and support of climate investment in 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. CARB developed and approved the initial scoping plan in 2008 (CARB 2008), 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 approved the *2017 Climate Change Scoping Plan Update* in December 2017. The 2017 Scoping Plan Update outlines the proposed framework of action for achieving the 2030 GHG target of a 40 percent reduction in GHG emissions relative to 1990 levels. Through a combination of data synthesis and modeling, CARB determined that the target statewide 2030 emissions limit is 260 $MMTCO_2e$, and that further commitments will need to be made to achieve an additional reduction of 50 $MMTCO_2e$ beyond current policies and programs.

The cornerstone of the *2017 Scoping Plan Update* (CARB 2017a) is an expansion of the cap-and-trade program (discussed below) to meet the aggressive 2030 GHG emissions goal and ensure achievement of the 2030 limit set forth by Executive Order B-30-15.

In the 2017 Scoping Plan Update, CARB recommends statewide targets of no more than 6 $MTCO_2e$ per capita by 2030 and no more than 2 $MTCO_2e$ per capita by 2050. 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, it is appropriate for local jurisdictions to derive evidence-based local per capita goals based on local emissions sectors and growth projections.

To demonstrate how a local jurisdiction can achieve its long-term GHG goals at the community plan level, CARB recommends developing a geographically specific GHG reduction plan (i.e., climate action plan) consistent with the requirements of CEQA Section 15183.5(b). A so-called

"CEQA-qualified" GHG reduction plan, once adopted, can provide local governments with a streamlining tool for project-level environmental review of GHG emissions, provided there are adequate performance metrics for determining project consistency with the plan.

Cap-and-Trade Program

The CARB-initiated Cap-and-Trade Program links with other Western Climate Initiative partner programs to create a regional market system. The California Cap-and-Trade Program caps GHG emissions and requires the purchase of emission allowances for covered activities. The Cap-and-Trade Program is designed to reduce GHG emissions from major sources (deemed "covered entities") by setting a firm cap on statewide GHG emissions and employing market mechanisms to achieve AB 32's emission-reduction mandate of returning to 1990 levels of emissions by 2020. The statewide cap for GHG emissions from the capped sectors (i.e., electricity generation, industrial sources, petroleum refining, and cement production) commenced in 2013 and will decline over time, achieving GHG emission reductions throughout the program's duration.

Under the Cap-and-Trade Program, covered entities that emit more than 25,000 $MTCO_2e$ per year must comply with program requirements. Triggering of the 25,000 $MTCO_2e$ per year "inclusion threshold" is measured against a subset of emissions reported and verified under the California Regulation for the Mandatory Reporting of GHG Emissions (Mandatory Reporting Rule). CARB issues allowances equal to the total amount of allowable emissions over a given compliance period and distributes these to regulated entities. Covered entities are allocated free allowances in whole or part (if eligible), and may buy allowances at auction, purchase allowances from others, or purchase offset credits.

Low Carbon Fuel Standard (California Code of Regulations, Title 17, Section 95480 *et seq.*)

The Low Carbon Fuel Standard (LCFS) was designed to reduce the State's reliance on petroleum-based fuels and encourage the use of less carbon intensive fuels in the transportation sector. California officials have identified the LCFS as a centerpiece to the state's efforts to combat climate change, including for example, in California Air Resources Board's (CARB) 2008 Climate Change Scoping Plan and its subsequent updates.

The LCFS assigns carbon intensity (CI) scores to petroleum fuels and their substitutes based on a lifecycle analysis of the direct and indirect greenhouse gas emissions attributable to the fuel at each step of its production, refining, transportation, and use. Additionally, the LCFS establishes annually decreasing CI benchmarks that each transportation fuel providers' pool of fuels must meet in a given year. Producers can meet these benchmarks by utilizing less carbon intensive fuels, or they can utilize "credits" to offset any "deficits" incurred by fuels which have a CI score exceeding that year's benchmark. Traditional petroleum fuels tend to have CI scores that exceed the CI benchmarks, and these fuel types therefore typically incur a deficit. By contrast, renewable fuels tend to have CI scores below the CI benchmarks, so they can be a source of credits for producers. Credits and deficits are denominated in metric tons of CO_2 equivalent, respectively reflecting either the reduction or the increase in total lifecycle greenhouse gas emissions attributable to production and use of a fuel, relative to the annual CI benchmark for the fuel type.

By making the annual CI benchmark scores increasingly stringent, the LCFS increases the desirability of low-carbon fuels. Because of their relatively low CI scores, biofuels are attractive

to producers as a way to meet the CI benchmarks and to create credits to offset any deficits incurred by more carbon-intensive fuels. Additionally, because a fuel's CI score takes into account the emissions associated with transportation of a finished fuel to the California market, and transportation of finished fuels from outside California is relatively carbon intensive, the LCFS creates an economic incentive for production of renewable fuels within the State of California.

The conversion of existing petroleum refining infrastructure within the State to the production of renewable fuels is also identified as a means to advance the State's goals of providing consumers with more fuel choices, while reducing emissions of toxic pollutants and greenhouse gases. According to the Bay Area Air Quality Management District's 2017 Clean Air Plan, in order "[t]o meet California's…climate goals, demand for traditional transportation fuels will need to be dramatically reduced. California's refineries will likely need to shift production to a renewable fuel portfolio and/or steadily decrease, and in some cases even cease, production" (BAAQMD 2017c).

Because the LCFS was designed to incentivize the production and use of biofuels, CARB has previously evaluated, considered and mitigated the environmental impacts associated with increased production and consumption of such fuels at a programmatic level, as part of its adoption, re-adoption and amendment of the LCFS. Throughout its rulemaking process, CARB has undertaken a searching review of the policy's direct and indirect environmental impacts, including the foreseeable environmental impacts occurring both within and beyond California's borders, attributable to the increased production and consumption of biofuels needed to achieve the LCFS's goals. CARB has done this, both to ensure that the greenhouse gas reductions achieved by its LCFS are real and not offset by emissions increases occurring elsewhere, and to satisfy the requirements of CEQA, which apply to its rulemaking decisions.

Upstream land use changes associated with certain crop-based biofuels have been a central focus of CARB's efforts to analyze and mitigate the LCFS's direct and indirect environmental impacts, ever since the initial adoption of the LCFS. In the Initial Statement of Reasons (ISOR) that supported CARB's proposal to adopt the LCFS, CARB concluded, after a detailed analysis, that "the land use impacts of crop-based biofuels are significant, and must be included in LCFS fuel carbon intensities." (CARB 2009a). CARB utilized a worldwide model for estimating land use change impacts (the Global Trade Analysis Project [GTAP] model) to quantify the anticipated transformation of nonagricultural and agricultural land that would occur both in the United States and internationally, as demand for crop-based fuels increases. CARB then adopted a mechanism within the LCFS to mitigate the impact of any such land use changes and assure that the greenhouse gas emissions attributable to such changes are fully accounted for within a fuel's assigned CI score. As a consequence, fuels produced from feedstock that results in greater land use change are assigned a higher CI score, which acts as an economic disincentive for producers to produce such fuels as a substitute for petroleum-based fuels.

Specifically with respect to soybean oil, CARB published additional analysis estimating the land use change CI associated with use of soybean oil as a substitute for petroleum-based diesel (CARB 2009b). In a detailed technical discussion, CARB explained that it had identified several limitations with the original models that were available when it was developing the proposed rule. CARB worked with scientists to remedy these shortcomings and produced a new model for

biodiesel and renewable diesel made from Midwest soybeans, which considered, among other variables, the transformation of forestland and pastureland (both within the United States and globally) into soy cropland. CARB supplemented this with additional analysis, reflecting its complete re-evaluation of the land use change CI associated with soy biodiesel and renewable diesel (CARB 2010).

This approach has defined CARB's strategy of developing and updating the CI land use change scores. Upon final adoption of the LCFS, CARB devoted over 120 pages to addressing comments either questioning or challenging CARB's decision to account for land use changes, as well as the scientific and economic models it used to generate its CI land use change scores (CARB 2009c). CARB defended its decision to account for upstream land use changes, even though the models it relied on were relatively new and relatively untested. In relevant part, CARB explained that ignoring the greenhouse gas emissions associated with land use changes would be inconsistent with the LCFS, which "is explicitly intended to reduce carbon emissions." FSOR. at 632. "To do otherwise," CARB continued, "would be to underestimate the carbon emissions from biofuels, and to thereby send the wrong signals to those in the fuel industry who will be developing the next generations of low-carbon fuels." Thus, despite the lack of a perfect model, CARB committed to using "the most mature and highly regarded global economic model available. . . to estimate land use change impacts."

Since then, CARB has continued to fine tune its approach. As the scientific community's understanding of land use changes and economists' ability to accurately model those changes has continued to improve, CARB has repeatedly updated its CI scores to reflect this new knowledge. When CARB re-adopted the LCFS in 2015, CARB updated its CI scores based on new, more sophisticated approaches to measuring upstream land use changes (CARB 2017). There, CARB explained that the new values were the culmination of an expert working group convened to improve upon the land use change models that generated the LCFS's initial CI scores. The analysis goes on to provide updated land use change values for six types of biofuel, and for each, it addresses topics like the anticipated conversion of forestland, pastureland, and existing cropland—both domestically and abroad—as increased demand for biofuels creates an increased demand for farmland to produce farm-based feedstocks (CARB 2017). CARB's Final Environmental Analysis supporting the 2015 re-adoption of the LCFS addressed "environmental impacts both within California and outside the State to the extent they are reasonably foreseeable and do not require speculation" (CARB 2015). This included extensive discussion of potential impacts attributable to land use change occurring both within and outside of California.

When CARB amended the LCFS in 2018 to extend and increase the CI reduction targets to a 20 percent reduction by 2030, CARB evaluated the environmental impacts attributable to the increase in production of biofuels that would be needed to achieve the more stringent targets (CARB 2019). There, CARB acknowledged that upstream land use changes were an unavoidable impact of the increased utilization of biofuels, but that it had strived to account for these effects when determining the CI scores for various fuels. CARB explained, in relevant part: "The Proposed Amendments would incent fuels that have lower CI values, including fuels made from sugarcane, sorghum, wheat, cellulosic sources, corn, and soy. With continued increased demands on biofuel crops the Proposed Amendments could contribute to increased direct and indirect land use change to accommodate new croplands, but the likelihood of this is at least partially mitigated by the [land use change] scores added to crop-derived pathways" *Id.* at 47.

The LCFS CI scoring system therefore reflects CARB's efforts to apply the best available science and economic analyses to mitigate the impacts associated with land use changes occurring both within the U.S. and internationally. In sum, biofuels produced from feedstock with a high land use change score will be disadvantaged; that is, they would produce greater deficits or fewer credits, relative to those produced from a feedstock that causes less land use change. This creates an economic incentive for producers to utilize the lowest CI feedstock available, as the product's value is inextricably linked to the number of credits it can produce.

Senate Bill 375

SB 375 (Sustainable Communities and Climate Protection Act of 2008) supplements GHG reductions from new vehicle technology and fuel standards with reductions from more efficient land use patterns and improved transportation under CARB-approved GHG reduction targets for California's 18 federally designated regional planning bodies, known as Metropolitan Planning Organizations. The target reductions for the Bay Area are represented as a regional reduction of per-capita GHG emissions from cars and light-duty trucks by 7 percent by 2020 and by 15 percent by 2035, compared to a 2005 baseline.

The Metropolitan Transportation Commission and Association of Bay Area Governments (ABAG) address these goals in *Plan Bay Area 2040*, which identifies Priority Development Areas (PDAs) near transit options to reduce the use of on-road vehicles. By focusing and incentivizing future growth in PDAs, *Plan Bay Area 2040* demonstrates how the nine-county Bay Area can reduce per-capita CO_2 emissions by 16 percent by 2035 (MTC/ABAG 2017). In March 2018, CARB approved revised targets: to reduce per-capita emissions 10 percent by 2020 and 19 percent by 2035 (CARB 2018).

Senate Bill 743

In 2013, Governor Brown signed SB 743, which added Public Resources Code Section 21099 to CEQA Guidelines. SB 743 changed the way that transportation impacts are analyzed in Transit Priority Areas under CEQA, better aligning local environmental review with statewide objectives to reduce GHG emissions, encourage infill mixed-use development in designated priority development areas, reduce regional sprawl development and reduce vehicle miles traveled (VMT) in California.

The State Office of Planning and Research (OPR) issued a *2018 Technical Advisory on Evaluating Transportation Impacts* for CEQA analysis. The technical advisory report recommends different thresholds of significance for projects depending on land use types. For example, residential and office space projects that demonstrate a VMT level that is 15 percent less than that of existing development can be determined to have mobile-source project GHG emissions that are consistent with statewide GHG reduction targets.

Senate Bill 350

SB 350 (Clean Energy and Pollution Reduction Act of 2015) implements the goals of EO B-30-15 (2015). The objectives of SB 350 are to increase the procurement of electricity from renewable sources from 33 percent to 50 percent (with interim targets of 40 percent by 2024 and 25 percent by 2027) and to double the energy efficiency savings in electricity and natural gas end uses of retail customers through energy efficiency and conservation. SB 350 also reorganizes the

Independent System Operator to develop more regional electricity transmission markets and improve accessibility in these markets, which would facilitate the growth of renewable energy markets in the western United States.

3.8.2.3 Regional

Bay Area Air Quality Management District

The Bay Area Air Quality Management District (BAAQMD) is the regional government agency that regulates stationary sources of air pollution in the nine San Francisco Bay Area counties. BAAQMD regulates GHG emissions through the following plans, programs and guidelines.

Clean Air Plan

BAAQMD and other air districts prepare clean air plans in accordance with the Federal and State CAAs. On April 19, 2017, the BAAQMD Board of Directors adopted the *2017 Clean Air Plan: Spare the Air, Cool the Climate*, an update to the 2010 Clean Air Plan (BAAQMD 2017a). The 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 CEQA Air Quality Guidelines

The BAAQMD CEQA Air Quality Guidelines were prepared to assist CEQA lead agencies in the evaluation of air quality impacts of projects and plans proposed in the Bay Area. The guidelines also include recommended assessment methodologies for air toxics, odors, and GHG emissions. In June 2010, BAAQMD's Board of Directors adopted CEQA thresholds of significance and an update of the BAAQMD CEQA Guidelines, which included significance thresholds for GHG emissions based on the emission reduction goals for 2020 articulated by the California Legislature in AB 32.

In May 2017, the BAAQMD released updated CEQA Guidelines, describing how the effects of climate change should be addressed in CEQA documents. The CEQA Guidelines: (1) specify a threshold of significance for operations-related GHG emissions of 10,000 $MTCO_2e$ per year, (2) discuss how the BAAQMD established the thresholds of significance, (3) recommend that CEQA documents include a discussion of a project's GHG emissions from construction and operation, and (4) discuss GHG impact assessment and mitigation measures available.

Under the current BAAQMD Air Quality Guidelines, a local government may prepare a qualified GHG reduction strategy that is consistent with AB 32 goals. If a project is consistent with an adopted qualified GHG reduction strategy and general plan that addresses the project's GHG emissions, it can be presumed that the project would not have significant GHG emissions under CEQA (BAAQMD 2017b)

3.8.2.4 Contra Costa County

Contra Costa County Climate Action Plan 2015

The County CAP demonstrates the County's commitment to addressing the challenges of climate change by reducing local GHG emissions while improving community health. Additionally, this CAP meets the CEQA requirements for developing a qualified GHG reduction strategy and is

consistent with the BAAQMD's guidance on preparing a qualified GHG reduction strategy (Contra Costa County 2015).

The CAP identifies how the County will achieve the AB 32 GHG emissions reduction target of 15 percent below baseline levels by the year 2020, in addition to supporting other public health, energy efficiency, water conservation and air quality goals identified in the County's General Plan and other policy documents. Beyond reducing GHG emissions, this CAP includes actions that improve public health and result in additional benefits to the community such as lower energy bills and enhanced quality of life. The CAP also lays the groundwork for achieving long-term state GHG reduction goals for 2035.

Specifically, the County's CAP:

- Provides the scientific, regulatory, and public health framework for addressing climate change and GHGs at the local level.
- Identifies sources of GHG emissions within the unincorporated areas of the County and estimates how these emissions may change over time.
- Provides energy use, transportation, land use, water use and solid waste strategies to reduce communitywide GHG emissions consistent with AB 32, BAAQMD guidance, and Public Resources Code Section 21083.3 (CEQA)
- Proposes an approach to addressing climate change-related public health issues, which increases the county's resiliency to climate change, establishes priorities for improving public health and identifies public health benefits that are expected to result from implementing the CAP.
- Presents an implementation program to assist with monitoring and prioritization of the reduction strategies and public health goals through 2020.

Contra Costa County General Plan

The County General Plan includes goals to improve air quality, including meeting federal air quality standards, supporting efforts to reduce air pollution, restoring air quality to a more healthful level, and reducing the percentage of traffic trips at peak hours.

3.8.3 Impact Analysis

3.8.3.1 Methodology for Impact Analysis

The construction of the proposed Project would generate GHG emissions primarily from combustion of fuels used in construction equipment. The operation of the proposed Project would generate GHG emissions from various sources, including stationary and mobile sources such as trucks, marine vessels and locomotives. GHG emissions associated with the proposed Project were quantified in the form of CO_2, CH_4 and N_2O and in the combined form as CO_2e, a unit of measure for GHG that uses CO_2 as the standard unit of reference. Emissions of CH_4 and N_2O would be relatively small in comparison to CO_2; however, as described above, these two components have high global warming potentials of 25 and 298, respectively, as compared to the global warming potential of 1 for CO_2. To compare the GHG emission impact from various emission sources, the calculated CO_2, CH_4 and N_2O emissions from each emission source were multiplied by the corresponding global warming potentials, summed up, and reported as the total

CO_2e associated with the construction and operation of the proposed project (see Tables 3.8-4, 3.8-5 and 3.8-6.)

Project-generated GHG emission estimates were developed based on methodologies and emission factors in Marathon's *California Electronic Greenhouse Gas Reporting Tool (Cal e-GRRT) Summary Report*, which is submitted to CARB on an annual basis for the Refinery. Project-specific information was used to determine the total GHG emissions associated with the proposed project construction and operations. Refer to Section 4 of the *Air Quality and GHG Technical Analysis* (ALG and Barr 2021) and Appendix B in the *Application for Authority to Construct and Title V Operating Permit Amendment* (ALG and Barr 2020) for additional details regarding the GHG emission calculations and the calculation assumptions.

Construction Emissions

GHG emissions from construction activities are associated with fuel combustion for off-road diesel construction equipment and on-road motor vehicles. The same methodologies and assumptions described in Chapter 3.3, Air Quality were used to calculate construction-related GHG emissions. Emission factors for off-road diesel equipment were obtained from OFFROAD 2017 (CARB 2017) and emission factors for on-road vehicles was obtained from EMFAC2017 (CARB 2017b). CO_2, CH_4 and N_2O emission factors were selected for calculations based on the equipment type, horsepower rating and corresponding engine tier emission standards.

Operation Emissions

Stationary Source Emissions

GHG emissions from operation of the source can be direct or indirect emissions. Emissions from the Refinery, Avon Marine Oil Terminal (MOT) and Amorco MOT are considered direct emissions. Emissions from sources such as the off-site terminals and Air Products hydrogen plant are also considered direct emissions because they are directly involved in the operation of this Project. Indirect emissions are emissions that occur as a consequence of operation of the Project but occur at sources owned or controlled by other entities. Indirect emissions would include GHG emissions associated with the generation of electricity for the Refinery's facilities, treatment of sanitary wastewater from the Refinery, decomposition of solid waste generated from operation of the Refinery and MOTs and employee motor vehicle commute trips.

The methodology described in Section 3.3 for estimating criteria and toxic air pollutant emissions was also used to estimate direct GHG emissions. Refer to Appendix A of the *Air Quality and Greenhouse Gas Technical Analysis* (ALG and Barr 2021) for details regarding GHG emission calculations for on-site and off-site stationary sources. The change in feedstock could result in lower emissions from the wastewater treatment plant. However, information on the impact is not readily available and potential emission reductions were not included in this analysis. With the exception of GHG emissions from the hydrogen plant, there would be a decrease in GHG emissions from existing emission units at the Refinery and MOTs. Post-project GHG emissions from on-site new and existing sources would be less than pre-project emissions. There would be an increase in emissions from off-site stationary sources within the BAAQMD jurisdiction.

The Project would result in an overall decrease in electricity, natural gas and water consumption as well as waste generation. Therefore, indirect GHG emissions will also be reduced. Because there would be a decrease in both direct emissions and mobile source emissions, additional reductions in indirect emissions from these sources were not quantified. Emissions from employee commute trips were estimated as described below.

Mobile Source Emissions

Mobile source GHG emissions were calculated using the same methodology and assumptions described in Chapter 3.3 and are based on travel within California, not just the area under BAAQMD jurisdiction. Emission factors for employee travel and truck travel were based on EMFAC2017 (CARB 2017b). The source of emission factors for rail travel was the *The Climate Registry's 2020 Default Emission Factors*, Tables 2.1 and 2.7 (The Climate Registry 2020). Refer to Appendix B of the *Air Quality and GHG Technical Analysis* (ALG and Barr 2021) for the multiple sources of emissions factors used to calculate emissions from marine vessels. The overall GHG emissions from mobile sources would be reduced from pre-Project levels.

3.8.3.2 Significance Criteria

For the purposes of this analysis, the Project is considered to have a significant GHG impact if it would:

- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment or
- Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHG.

The *BAAQMD CEQA Air Quality Guidelines* (BAAQMD 2017b) include significance thresholds for operational-related GHG emissions. These thresholds are used to determine if the GHG emissions may have a significant impact on the environment. The BAAQMD has not adopted a significance threshold for construction emissions.

3.8.4 Impacts and Mitigation Measures

Construction-related Impacts

Impact GHG-1: Generate construction-related GHG emissions that directly or indirectly have a significant impact on the environment by exceeding adopted BAAQMD thresholds. (Less than Significant)

Although the BAAQMD does not have significance thresholds for construction-related GHG emissions, the District does recommend that emissions be quantified and disclosed. See **Table** 3.8-8 below, which provides the annual GHG emissions associated with off-road diesel construction equipment and on-road motor vehicles that would be used during construction.

Table 3.8-8: Construction GHG Emissions (metric tons/year)

Construction Component	CO_2	CH_4	N_20	CO_2e
Off-road diesel construction equipment	2,655.30	0.17	0.36	2770.53
On-road motor vehicles	1,899.42	0.01	0.19	1,957.67

Table 3.8-8: Construction GHG Emissions (metric tons/year)

Construction Component	CO_2	CH_4	N_20	CO_2e
Total	**4,554.72**	**0.18**	**0.55**	**4,728.20**

GHG emissions during construction would be further reduced with implementation of the **BAAQMD's Basic Construction Measures described in Mitigation Measure AQ-1a** (Chapter 3.3). The BAAQMD also encourages the use of best management practices (BMPs) to reduce GHG emissions during construction. Implementation of the BMPs required in Mitigation Measure AQ-1b (Chapter 3.3) would also further reduce GHG emissions. The GHG emissions impact due to construction of the Project are less than significant, and no mitigation is required.

Mitigation Measure: No mitigation is required.

Impact GHG-2: Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions. (Less than Significant)

As discussed under Impact GHG-1 above, temporary GHG emissions from construction of the Project are less than significant, and no mitigation is required. Construction of the Project would therefore not conflict with any local plan, policy or regulation adopted to reduce GHG emissions.

Mitigation Measure: No mitigation is required.

Operational Impacts

Impact GHG-1: Generate operation-related GHG emissions that exceed the adopted BAAQMD thresholds. (Less than Significant)

Table 3.8-9 below provides the estimated direct GHG emissions from operation of the Project and shows that the Project would result in an overall decrease in emissions.

The Project would also result in reduced indirect GHG emissions due to the reductions in electricity, natural gas, waste generation, and water usage. The number of employees at the facility is expected to decrease and there would be a corresponding decrease in emissions associated with employee commutes. As described above, due to reductions in overall production, an overall decrease in electricity, natural gas and water consumption as well as waste generation is expected. These changes would result in reductions in indirect source emissions. Separate quantification of the indirect sources was not provided because these reductions from the Project results in a decrease in indirect GHG emissions in addition to the reduction in direct GHG emissions. GHG emissions associated with both stationary and mobile sources were compared to the BAAQMD threshold of 1,100 $MTCO_2e$/year for projects other than stationary sources.

Table 3.8-9: Summary Total Project Annual Emission Changes (Metric Tons/Year)

Source	CO_2	CH_4	N_2O	Total CO_2e
Stationary Source	-1,178,230	-56.78	-9.45	-1,182,352
Mobile Source	-11,813	0.03	-0.24	-10,674
Off-Site BAAQMD Stationary Sources	303,918	2.43	0.24	304,044
Project Total	**-886,125**	**-54.32**	**-9.45**	**-888,982**
BAAQMD CEQA Threshold	NA	NA	NA	1,100

Mitigation Measure: No mitigation is required. The GHG emissions impact due to operation of the project would be less than significant but would be further reduced with implementation of Best Management Practice GHG-1.

Best Management Practice GHG-1: Operational Measures to Reduce GHG Emissions. The following GHG reduction BMPs shall be implemented to the maximum extent practicable during all on-going business operations. The measures shall be included as recommended practices incorporated into all construction contracts related to the Project.

All heavy-duty trucks entering or operated on the project site shall be model year 2014 or later, and transition to zero-emission vehicles shall be expedited, with the fleet fully zero-emission beginning in 2030 or when such vehicles are commercially available, whichever date is later.

- All ocean-going vessels calling at the refinery shall use engines meeting the International Maritime Organization's Tier 3 engine standard.
- All ocean-going vessels calling at the refinery shall comply with CARB's At-Berth Regulation, including meeting the onboard auxiliary diesel engine operational time limits and onboard auxiliary-diesel-engine power generation reductions. All ocean-going vessels shall comply with the voluntary vessel speed reduction zones established by National Oceanic and Atmospheric Administration.
- All engines in articulated tug-barge combinations and tugboats assisting oceangoing vessels shall meet U.S. Environmental Protection Agency (EPA) Tier 3 and 4 engines standards, and be equipped with diesel particulate filters.
- All locomotives shall meet U.S. EPA Tier 4 engine standards.
- Utilize a "clean fleet" (e.g., zero-emission light-and medium-duty delivery trucks, vans, automobiles, railcar engines, and vessels) as part of business operations.
- Ensure all service equipment (e.g., yard hostlers, yard equipment, forklifts, and pallet jacks) used within the project site are zero-emission.
- Use the cleanest technologies available and provide the necessary infrastructure to support zero-emission vehicles and equipment that will be operating on-site.

- Idling is strictly prohibited on the subject property and adjacent streets in the Martinez area. All truck drivers associated with the business shall be informed of this prohibition.
- Periodically sweep the property to remove road dust, tire wear, brake dust and other contaminants in parking lots.
- Diesel back-up generators shall not be used on the property unless absolutely necessary. If absolutely necessary, generators shall have Best Available Control Technology (BACT) that meets CARB's Tier 4 emission standards or meets the most stringent in-use standard, whichever has the least emissions.

Monitor and be in compliance with all current air quality regulations for on-road trucks including CARB's Heavy-Duty (Tractor-trailer) Greenhouse Gas Regulation, Periodic Smoke Inspection Program, and the Statewide Truck and Bus Regulation.

Impact GHG-2: Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions. (Less than Significant)

The State of California is committed to reducing GHG emissions statewide. AB 32 and its associated Scoping Plan identify the state's approach, as overseen by CARB, to track and reduce GHG emissions. The AB 32 Scoping Plan includes a number of strategies that are designed to reduce GHG emissions, including the LCFS. The purpose of this Project is to use renewable feedstocks to produce low carbon fuels in alignment with the LCFS, and the Project would support CARB's goal of reducing GHG emissions from fuel combustion. Furthermore, the Project itself would result in a reduction of GHG emissions from stationary and mobile sources, and this also supports California's goals in SB 32 to meet reduction targets in 2030 and in Executive Order S-3-05 to meet reduction targets in 2050. The County has developed a *Climate Action Plan* (Contra Costa County 2015) with goals that are consistent with AB 32. Because the conversion to produce renewable fuels instead of fossil fuels and the reductions in GHG emissions from operation of the Project would not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing GHG emissions, this impact is less than significant, and no mitigation would be required.

Mitigation Measure: No mitigation is required.

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3.9 HAZARDS AND HAZARDOUS MATERIALS

This section describes the potential hazards to the environment that would result from implementation of the Project. Existing regulations governing use, cleanup and transport of hazardous materials are summarized, as well as existing safety programs, cleanup efforts, contamination monitoring activities and preventative measures implemented at the Refinery.

Guidelines and key sources of data used in the preparation of this section include the following:

- Aerial photography
- Site plans and Project renderings
- County Land Use and Emergency Response Plans
- Marathon Martinez Soil Management Plan
- Tesoro Avon Marine Oil Terminal Lease Consideration Final Environmental Impact Report (EIR), 2015
- Tesoro Amorco Marine Oil Terminal Lease Consideration Final EIR, 2014
- Marathon Martinez Renewable Fuels Project Hazards and Hazardous Materials Technical Analysis

3.9.1 Environmental Setting

3.9.1.1 Regulatory and Policy Context

Federal

The Federal Toxic Substances Control Act (1976) and the Resource Conservation and Recovery Act of 1976

These acts established a program administered by the United States Environmental Protection Agency (U.S. EPA) for the regulation of the generation, transportation, treatment, storage and disposal of hazardous waste. This federal regulation is codified in 40 Code of Federal Regulations (CFR). The Resource Conservation and Recovery Act (RCRA) was amended in 1984 by the Hazardous and Solid Waste Act, which affirmed and extended the "cradle-to-grave" system of regulating hazardous wastes. Among other things, the Hazardous and Solid Waste Act prohibited use of certain techniques for the disposal of some hazardous wastes. Individual states, including California, may implement their own hazardous waste programs under the RCRA with approval by the U.S. EPA. In 1992, the California Department of Toxic Substances Control (DTSC) received authorization from the U.S. EPA to implement RCRA, Subtitle C requirements and the associated regulations in California.

The Comprehensive Environmental Response, Compensation and Liability Act (Enacted 1980), Amended by the Superfund Amendments and Reauthorization Act (1986)

This law provides broad federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment. Among other things, the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) established requirements concerning closed and abandoned hazardous waste sites, provided for liability of persons responsible for releases of hazardous waste at these sites, and established a

trust fund to provide for cleanup when no responsible party could be identified. CERCLA also enabled revision of the National Contingency Plan, which provided the guidelines and procedures needed to respond to releases and threatened releases of hazardous substances, pollutants or contaminants. The National Contingency Plan also established the National Priorities List.

U.S. EPA Emergency Planning and Community Right-to-Know Act

The objectives of the Emergency Planning and Community Right-to-Know Act **(**EPCRA) are 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. EPCRA Section 302 requires facilities to notify the State Emergency Response Commission and local Emergency Response Committees of the presence of "extremely hazardous substances" (40 CFR Part 355 lists specific substances) 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 EPCRA has been delegated to the State of California. The California Emergency Management Agency requires businesses to develop a Hazardous Materials Business Plan 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 Certified Unified Permitting Agencies (CUPA), which is Contra Costa County Health Services in the Martinez area, for use by state and local emergency response agencies.

United States Department of Transportation Hazardous Materials Regulations (49 CFR Parts 100-185)

The United States Department of Transportation (USDOT) Hazardous Materials Regulations cover all aspects of hazardous materials packaging, handling and transportation. Parts 172 (Emergency Response), 173 (Packaging Requirements), 174 (Rail Transportation), 177 (Highway Transportation), 178 (Packaging Specifications) and 180 (Packaging Maintenance) would all apply to the proposed Project activities.

The Hazardous Materials Transportation Act, (49 CFR 171 Subchapter C)

The Hazardous Materials Transportation Act (HMTA) is federal legislation that regulates transportation of hazardous materials. The primary objective of the HMTA is to provide adequate protection against the risks to life and property inherent in the transportation of hazardous material in commerce by improving the regulatory and enforcement authority of the Secretary of Transportation. A hazardous material, as defined by the Secretary of Transportation, is any “particular quantity or form” of a material that “may pose an unreasonable risk to health and safety or property.” The primary regulatory authorities are the USDOT, the Federal Highway Administration and the Federal Railroad Administration. The HMTA requires that carriers report accidental releases of hazardous materials to the USDOT at the earliest practical moment (49 CFR Subchapter C). Incidents that must be reported include deaths, injuries requiring hospitalization and property damage exceeding $50,000. The California Department of Transportation (Caltrans) sets similar standards for trucks in California. The Caltrans and federal regulations are enforced by the California Highway Patrol (CHP).

Oil Pollution Act

The Oil Pollution Act (OPA) was signed into law in 1990 to give the federal government authority to better respond to oil spills. The OPA improved the federal government's ability to prevent and respond to oil spills, including provision of money and resources. The OPA provides a mechanism for establishing polluter liability, gives states enforcement rights in navigable waters of a state, mandates the development of spill control and response plans for all vessels and facilities, increases fines and enforcement mechanisms and establishes a federal trust fund for financing clean-up.

The OPA also established the National Oil Spill Liability Trust Fund to provide financing for cases in which the responsible party is either not readily identifiable or cannot pay the cleanup/damage costs. In addition, the OPA expands provisions of the National Oil and Hazardous Substances Pollution Contingency Plan, more commonly called the National Contingency Plan, requiring the federal government to direct all public and private oil spill response efforts. OPA also requires area committees, composed of federal, state and local government officials, to develop detailed, location-specific area contingency plans. In addition, the OPA directs owners and operators of vessels, and certain facilities that pose a serious threat to the environment, to prepare their own specific facility response plans. The OPA increases penalties for regulatory non-compliance by responsible parties, gives the federal government broad enforcement authority and provides individual states the authority to establish their own laws governing oil spills, prevention measures and response methods.

USDOT, Office of Pipeline Safety

The Pipeline and Hazardous Materials Safety Administration (PHMSA) is a department within the USDOT that has jurisdictional responsibility for ensuring the safe and secure movement of hazardous liquid and gas through pipelines under its jurisdiction in the United States. Title 49 of the U.S. Code relates to the role of transportation, including pipelines, in the United States. 49 CFR Parts 190-199 establish minimum pipeline safety standards. The Office of the State Fire Marshal works in partnership with the PHMSA to assure pipeline operators meet requirements for safe, reliable and environmentally sound operation of their facilities for intrastate pipelines within California. The following summarizes 49 CFR Parts 190-199:

- **49 CFR Part 190 – Pipeline Safety Procedures:** 49 CFR Part 190 outlines the pipeline safety programs and rulemaking procedures utilized by the PHMSA under Title 49 U.S. Code 60101 *et seq*. (pipeline safety laws) and Title 49 U.S. Code 5101 *et seq*. (hazardous material transportation laws).
- **49 CFR Part 194 – Response Plans for Onshore Oil Pipelines:** 49 CFR Part 194 outlines requirements for oil spill response plans to reduce/mitigate the environmental impact of oil discharges from onshore oil pipelines. 49 CFR Part 194 covers general response plan requirements as well as reporting and approval procedures for onshore oil pipelines.
- **49 CFR Part 195 – Transportation of Hazardous Liquids by Pipeline:** 49 CFR Part 195 contains regulations authorized by the Hazardous Liquid Pipeline Safety Act of 1979 for the design, construction, testing, operation and maintenance of pipelines, including pressure-testing requirements for pipeline components (valves, pumps and tie-ins) as well as aboveground breakout tanks. 49 CFR Part 195 also prescribes safety standards and

reporting requirements for pipeline facilities used in the transportation of hazardous liquids or carbon dioxide, and outlines procedures for pipeline facility operations and maintenance including but not limited to qualifications of pipeline personnel and pipeline corrosion control. Because the requirements found within 49 CFR Part 195 are applicable only to interstate pipelines, the pipelines included as part of the proposed Project would not be regulated under this provision but would be regulated by the California Pipeline Safety Act and the Pipeline Safety Division of the Office of the State Fire Marshal.

- **49 CFR Part 195(b) – Hazardous Liquid Accident Database:** 49 CFR Part 195(b) requires liquid pipeline operators to report any spills and/or accidents to the USDOT if they meet one or more of the following criteria: (1) explosion or fire not intentionally set by the operator; (2) loss of 50 or more barrels of hazardous liquid or carbon dioxide; (3) escape to the atmosphere of more than five barrels a day of highly volatile liquids; (4) death of any person; (5) bodily harm to any person resulting in loss of consciousness, a person is required to be carried from the scene, a person requires medical treatment or a person is disabled and prevented from normal duties or the pursuit of normal activities beyond the day of the accident or (6) estimated property damage, including cost of clean-up and recovery, value of lost product, and damage to the property of the operator, others or both, exceeding $50,000.

Accidental Release – Risk Management Plans (40 CFR Part 68)

The Risk Management Plan (RMP) rule requires facilities that use extremely hazardous substances to develop an RMP that identifies the potential effects of a chemical accident, identifies steps the facility is taking to prevent an accident and spells out emergency response procedures should an accident occur. These plans provide information to local fire, police and emergency response personnel to prepare for and respond to chemical emergencies in their community. The RMP rule was built upon existing industry codes and standards. It requires facilities that use listed regulated Toxic or Flammable Substances for Accidental Release Prevention to develop an RMP and submit that plan to U.S. EPA.

Chemical Facility Anti-Terrorism Standards

The Chemical Facility Anti-Terrorism Standards are a set of federal security regulations for high-risk chemical facilities such as chemical plants, electrical generating facilities, refineries and universities. The Federal Department of Homeland Security promulgated the final rule containing the Chemical Facility Anti-Terrorism Standards in 2007. This rule established risk-based performance standards for the security of chemical facilities. It requires covered chemical facilities to prepare Security Vulnerability Assessments, which identify facility security vulnerabilities, and to develop and implement Site Security Plans.

Spill Prevention, Control, and Countermeasure Rule (40 CFR Part 112)

The Spill Prevention, Control, and Countermeasure (SPCC) rule includes requirements for oil spill prevention, preparedness and response to prevent oil discharges to navigable waters and adjoining shorelines. The rule requires specific facilities to prepare, amend and implement SPCC Plans. SPCC Plans require applicable facilities to take steps to prevent oil spills including: (1) using suitable storage containers/tanks; (2) providing overfill prevention, e.g., high-level alarms; (3) providing secondary containment for bulk storage tanks; (4) providing secondary

containment to catch oil spills during transfer activities and (5) periodically inspecting and testing pipes and containers. The SPCC rule is part of the Oil Pollution Prevention regulations.

State

California State Lands Commission (CSLC)

The CSLC regulates onshore marine oil terminals (MOTs) and has jurisdiction and management authority over ungranted tidelands, submerged lands and the beds of navigable lakes and waterways. CSLC also has certain residual and review authority for tidelands and submerged lands legislatively granted in trust to local jurisdictions (Public Resources Code §§ 6301, 6306).

The CSLC also developed MOT 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 MOTs during extreme weather events, seismic activity and routine operations that could lead to releases of petroleum substances to the environment. Existing facilities are required to retrofit or rebuild as necessary to meet MOTEMS, which the Refinery operators have already done pursuant to recently-renewed leases with CSLC, and the terminal will continue to be subject to compliance with MOTEMS requirements.

All tidelands and submerged lands, granted or ungranted, as well as navigable lakes and waterways, are subject to the protections of the Common Law Public Trust. On tidal waterways, the State's sovereign fee ownership extends landward to the mean high tide line, except for areas of fill or artificial accretion. The CSLC's jurisdiction also includes a 3-nautical-mile-wide section of tidal and submerged land adjacent to the coast and offshore islands, including bays, estuaries, and lagoons. The CSLC is responsible for implementing State laws and regulations, including the California Environmental Quality Act (CEQA), for activities affecting State lands.

The subject facility includes two MOTs which operate under applicable leases with the CSLC: Amorco (Lease PRC 3453.1) and Avon (Lease No. PRC 3454.1). These leases include conditions of operation that were designated in the respective EIRs certified by the State Lands Commission in 2014 and 2015, respectively (CSLC 2014; CSLC 2015). The conditions of operation were identified as Mitigation Measures in the EIRs to prevent a release during vessel transport and/or during loading/unloading operations at the MOTs and are, therefore, existing regulatory requirements applicable to the proposed Project.

California Health and Safety Code

The California Health and Safety Code defines hazardous materials in section 25501(m) and contains requirements regarding the preparation of Hazardous Materials Business Plans in Section 25505. Health and Safety Code Division 20, Chapter 6.95 requires any business that handles more than a specified amount of hazardous or extremely hazardous materials, termed a "reportable quantity," to submit a Hazardous Materials Business Plan to its Certified Unified Permitting Agency (CUPA). Business plans must include an inventory of the types, quantities and locations of hazardous materials at the facility. Businesses are required to update their business plans at least once every 3 years and the chemical portion of their plans every year. Also, business plans must include emergency response plans and procedures to be used in the event of a significant or threatened significant release of a hazardous material. These plans must

identify the procedures to follow for immediate notification to all appropriate agencies and personnel of a release, identification of local emergency medical assistance appropriate for potential accident scenarios, contact information for all company emergency coordinators, a listing and location of emergency equipment at the business, an evacuation plan and a training program for business personnel. Emergency notification of a hazardous chemical releases are covered under Health and Safety Code Sections 25270.7, 25270.8 and 25507.

California Occupational Health and Safety

California Division of Occupational Health and Safety (Cal/OSHA) works to protect and improve the health and safety of workers in California by setting and enforcing safety standards; providing outreach, education and assistance; and issuing permits, licenses, certifications, registrations and approvals. Cal/OSHA is also the primary agency responsible for worker safety in the handling and use of chemicals in the workplace and requires the employer to monitor worker exposure to listed hazardous substances and notify workers of exposure (8 California Code of Regulations [CCR] Sections 337-340). The Cal/OSHA standards are generally more stringent than federal regulations.

California Hazardous Waste Control Law

The California Hazardous Waste Control Law is administered by the California Environmental Protection Agency (CalEPA) to regulate hazardous wastes within the State of California. While the California Hazardous Waste Control Law is generally more stringent than RCRA, both the state and federal laws apply in California. The DTSC, one of six departments that comprises the CalEPA, is the primary agency in charge of enforcing both the federal and state hazardous materials laws in California. The DTSC manages the federal hazardous waste program within the state and regulates the lifecycle of hazardous waste and sets goals for reducing hazardous waste production. The program follows federal and state law to ensure hazardous waste managers correctly handle, store, transport, dispose, reduce and clean waste, and are equipped in the event of an emergency.

California Accident Release Prevention Program

The California Accident Release Prevention (CalARP) Program (19 CCR Division 2, Chapter 4.5) requires the preparation of RMPs. RMPs are documents prepared by the owner or operator of a stationary source and contain detailed information including: (1) regulated substances held on site at the stationary source; (2) off-site consequences of an accidental release of a regulated substance; (3) the accident history at the stationary source; (4) the emergency response program for the stationary source; (5) coordination with local emergency responders; (6) hazard review or process hazard analysis; (7) operating procedures at the stationary source; (8) training of the stationary source's personnel; (9) maintenance and mechanical integrity of the stationary source's physical plant and (10) incident investigation.

Government Code Section 65962.5 (Cortese List)

Section 65962.5 of the Government Code requires CalEPA to develop and update a list of hazardous waste and substances sites, known as the Cortese List. The Cortese List is used by the state, local agencies and developers to comply with CEQA requirements. The Cortese List includes hazardous substance release sites identified by DTSC, State Water Resources Control Board (SWRCB) and the Department of Resources Recycling and Recovery (CalRecycle).

Hazardous Materials Disclosure Program

The Unified Program administered by the State of California consolidates, coordinates and makes consistent the administrative requirements, permits, inspections and enforcement activities for the state's environmental and emergency management programs, which include Hazardous Materials Release Response Plans and Inventories (business plans), the CalARP Program, the Underground Storage Tank Program, the Aboveground Petroleum Storage Tank Program, the Hazardous Waste Generator and On-site Hazardous Waste Treatment (tiered permitting) Programs, and the California Uniform Fire Code, Hazardous Material Management Plans and Hazardous Material Inventory Statements. The Unified Program is implemented at the local government level by CUPAs. Contra Costa County, Department of Environmental Health, Hazardous Materials Program (the County) is the CUPA for the County.

Hazardous Materials Transportation in California

California regulates the transportation of hazardous waste originating or passing through the state in 13 CCR. The CHP and Caltrans have primary responsibility for enforcing federal and state regulations and responding to hazardous materials transportation emergencies. The CHP enforces materials and hazardous waste labeling and packing regulations that prevent leakage and spills of material in transit and provide detailed information to cleanup crews in the event of an incident. Vehicle and equipment inspection, shipment preparation, container identification and shipping documentation are part of the responsibility of the CHP. Caltrans has emergency chemical spill identification teams located throughout the state.

Process Safety Management of Acutely Hazardous Chemicals (CCR Section 5189)

These regulations contain requirements for preventing or minimizing the consequences of catastrophic releases of toxic, reactive, flammable or explosive chemicals. The establishment of process safety management regulations are intended to eliminate, to a substantial degree, the risks to which employees are exposed in petroleum refineries, chemical plants and other facilities. California is a "State Plan" jurisdiction for federal OSHA regulations, and this rule is the state version of federal Process Safety Management rules.

Overview of California Pipeline Safety Regulations

State of California laws found at Sections 51010 through 51018 of the Government Code provide specific safety requirements, including: (1) periodic hydrostatic testing of pipelines, with specific accuracy requirements on leak rate determination; (2) hydrostatic testing by state-certified independent pipeline testing firms; (3) pipeline leak detection and (4) reporting of all leaks. Recent amendments require pipelines to include means of leak prevention and cathodic protection, with acceptability to be determined by the State Fire Marshal. All new pipelines must also be designed to accommodate passage of instrumented inspection devices (smart pigs) through the pipeline.

Oil Pipeline Environmental Responsibility Act (California Civil Code Section 3333.4)

This Act requires every pipeline corporation qualifying as a public utility and transporting crude oil in a public utility oil pipeline system to be held strictly liable for damages incurred by "any injured party which arise out of, or are caused by, the discharge or leaking of crude oil or any fraction thereof."

Local

San Francisco Bay Regional Water Quality Control Board

The San Francisco Bay Regional Water Quality Control Board (S.F. Bay Regional Board) regulates discharges and releases to surface and groundwater in the Project area, has direct regulatory oversight of the Project Site and generally oversees cases involving groundwater contamination. The nature and extent of soil and groundwater contamination at the Refinery has been evaluated. Extensive soil and groundwater investigations have been conducted at the Project Site with oversight by the S.F. Bay Regional Board, and ongoing remedial programs have been implemented to address the identified impacts. Groundwater and soil contamination has been and will continue to be remediated and managed with S.F. Bay Regional Board oversight.

Contra Costa County Health Services, Hazardous Materials Department

The County is the CUPA through contract with the state. The County administers the CalARP Program and Industrial Safety Ordinances (ISO) by the County as well as the Hazardous Materials Business Plan, aboveground and underground storage tank programs.

Contra Costa County Ordinance Code 450-8

The County has adopted an ISO that addresses the human factors that lead to accidents. The ordinance requires stationary sources to develop a written human factors program that considers human factors as part of process hazards analyses, incident investigations, training and operating procedures, among others.

3.9.2 Existing Conditions

The Project Site currently refines crude oil receiving the major portion of crude from the nearby Amorco Marine Terminal with the remaining balance supplied via pipeline. The facility operates three main hydroprocessing units:1) a Hydrocracking Unit, 2) the No. 2 Hydrodesulfurization (HDS) Unit and 3) the No. 3 HDS Unit, as well as maintains two hydrogen supply units, a hydrocracker gas plant for fractionation, waste and byproduct systems including systems for treating ammonia and hydrogen sulfide-contaminated water (sour water) and a conventional wastewater treatment plant. Cleaner-burning California Air Resources Board (CARB) gasoline, CARB diesel, conventional gasoline, distillates, petroleum coke, propane, heavy fuel oil and refinery-grade propylene products are generated and distributed as part of these processes.

Generated product, primarily composed of outbound shipments of gasoline, are currently distributed via truck, rail, pipeline and ship with the facility also receiving loads of butane and iso-butane via rail. The Avon Terminal is utilized for shipments of distillate as well as gasoline from the Project Site, and the Amorco Terminal primarily receives crude oil for the Project Site.

Historic operations at the Project Site have resulted in releases of hazardous materials, primarily petroleum hydrocarbons, to soil and groundwater in some areas at the Project Site. Impacted areas include the proposed Project areas as well as non-Project areas. In addition to the S.F. Bay Regional Board investigations and remedial programs discussed above, Marathon operates a groundwater monitoring network of over 150 wells within and around the perimeter of the Project Site to monitor migration of historic groundwater contamination within the Refinery. Marathon is also developing closure plans under the supervision of the S.F. Bay Regional Board

for certain areas of the Refinery that historically contained waste materials, and these areas will be managed in accordance with the plans approved by the Regional Board.

In addition to petroleum hydrocarbons, soil and groundwater impacts at the Project Site also include arsenic, benzene, chromium, gasoline, lead, nickel and other metals. The facility is currently pumping and treating contaminated groundwater and removing free-phase liquid hydrocarbons as part of the ongoing remedial programs being overseen by the S.F. Bay Regional Board. The proposed Project would have no bearing on these cleanup actions or otherwise affect implementation of the existing cleanup and abatement order (CAO; S.F. Bay Regional Board 2000); the CAO would remain in effect with or without the Project and would continue to establish requirements for Site monitoring and cleanup of existing contamination.

3.9.3 Impact Analysis

3.9.3.1 Methodology for Impact Analysis

The following describes the methodologies and assumptions that were utilized to determine potential hazards and hazardous materials impacts associated with the Project:

- Identifying present hazards and foreseeable scenarios that could result in exposure of persons or the environment to a Project hazard.
- Assessing the probability of foreseeable upset and worst-case upset scenarios, considering Project design and operational controls, existing regulatory requirements applicable to the Project and other relevant factors.
- Identifying potential consequences of foreseeable and worst-case scenarios considering existing environmental conditions and regulatory requirements for response planning and preparedness.
- Identifying significant hazardous materials risks based on probability and potential consequences of foreseeable upset and worst-case upset conditions.
- Evaluating the Project for possible effects on adopted emergency response plans.

Several sources of information were reviewed for this analysis to determine whether construction and/or operation of the Project could have the potential to create significant adverse impacts relating to hazards and hazardous materials. These sources included S.F. Bay Regional Board Geotracker files for the Project Site, local emergency response plans and local municipal codes, EIRs certified by the CSLC for the Amorco Marine Terminal (CLSC 2014) and the Avon Marine Terminal (CSLC 2015) and associated leases of the MOTs with the California State Lands Commission (Lease Nos. PRC 3453.1 and PRC 3454.1, respectively). This analysis also included review of a Hazards and Hazardous Materials Technical Analysis that was performed for the Project in 2021 (Tesoro 2021).

Hazards at a facility can occur due to natural events, such as an earthquake, and non-natural events, such as mechanical failure or human error. A hazard analysis generally considers compounds or physical forces that can migrate offsite and result in acute health effects to individuals outside the proposed Project Site. The hazards can be defined in terms of the distance that a release would travel, or the number of individuals of the public affected by a maximum single event defined as a “worst-case” scenario.

The major types of public safety risks at the Refinery consist of risk from accidental releases of regulated substances and from major fires and explosions. Shipping, handling, storing and disposing hazardous materials inherently poses a certain risk of a release to the environment. The regulated substances currently handled by the Refinery include chlorine, sulfuric acid, hydrogen sulfide and ammonia. The Refinery also handles petroleum products including propane, butane, isobutane, gasoline, fuel oils, diesel, crude oil and other products, which, if released, pose a risk of fire and/or explosion at the Refinery. Exposures can occur via exposure to toxic gas clouds, exposure to flame radiation, exposure to explosion overpressure and exposure to contaminated groundwater. Secondary effects, such as ash fallout from a fire, can also occur as a result of a potential hazard.

The principal modes of product transportation currently utilized for the Project Site are truck, rail and marine vessel as well as pipeline. These transportation modes would continue under the proposed Project, and therefore, transportation of future products is taken into consideration as part of this analysis. As noted in the risk analyses performed as part of the Amorco and Avon EIRs (CLSC 2014 and CLSC 2015) which formed the basis for the respective EIRs, the subject leases considered San Francisco Bay vessel traffic data and probabilities of upset conditions for vessels independent of vessel size or cargo volumes based on data maintained by CSLC and other authorities. Based on the analyses performed in these EIRs and the leases granted by CSLC per these EIRs, the probabilities derived from data maintained by CSLC should remain valid as the basis for the existing lease conditions. As such, the terms of the leases under which the MOTs operate represent existing regulatory conditions for the Renewable Fuels Project EIR.

As discussed above, this analysis included a review of a Hazards and Hazardous Materials Technical Analysis that was performed for the Project in 2021 (Tesoro 2021). Under County Code 450-8, the Refinery is classified as an ISO facility. Under these regulations, the County quantifies the magnitude of hazardous risk with a Hazard Score, which is used to determine if a project would pose a significant present or potential future hazard to human health and safety or to the environment if released into the workplace or the environment. The Hazard Score takes into consideration a combination of "Transportation Risk," "Community Risk" and "Facility Risk."

3.9.3.2 Significance Criteria

The Project would have a significant hazards and hazardous materials impact requiring mitigation if it would:

- Create a significant hazard to the public or the environment through the routine transport, use or disposal of hazardous materials;
- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment;
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances or waste within one-quarter mile of an existing or proposed school;

- 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;

- 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, result in a safety hazard or excessive noise for people residing or working in the project area;

- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; or

- Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires.

3.9.4 Impacts and Mitigation Measures

Construction-related Impacts

Impact HAZ-1: Create a hazard to workers, the public and/or the environment through the routine transport, use, and/or disposal of hazardous materials (Less than Significant)

As discussed above, the proposed Project would convert the Refinery from fossil fuel refining to a renewable fuels facility, and would primarily involve the alteration and addition of refinery equipment to process non-petroleum feedstocks into renewable diesel fuel, renewable propane, renewable naphtha and potentially renewable aviation fuel. Changes would also be made to the Avon Marine Terminal to equip it to receive renewable feedstocks for hydroprocessing and additional petroleum-based materials for distribution. Most of these modifications would be associated with upgrading the metallurgy of the existing equipment so that it can process renewable feedstocks, although there would be construction of some new infrastructure to allow for the transition to renewable fuels. Refinery equipment not associated with the Renewable Fuels Project or product distribution activities would be shut down.

Construction activities associated with the proposed Project would utilize hazardous and flammable substances such as fuels, lubricating oils, solvents, hydraulic fluid and compressed gases during infrastructure modification and site grading and construction. The potential exists for an accidental release of these hazardous materials during routine hazardous materials transport related to construction. Construction activities also have the potential to result in exposure to these hazardous materials by workers or by the public, if access to the construction site is not adequately controlled or if the materials are not properly handled and contained. Potential hazards to workers, the public and the environment from routine use, transport or disposal of hazardous materials handled for routine construction would be limited by existing pollution prevention, waste management, worker health and safety and transportation safety regulations such as OSHA and Cal/OSHA, CCR Title 8 and USDOT, RCRA and federal and state regulations that are currently in place for the Refinery, and would reduce the potential for releases of hazardous materials that would be routinely transported, used and disposed during the Project construction.

The amount of hazardous chemicals that would be present during construction is limited and would be in compliance with existing facility programs and government regulations. The potential for the release of hazardous materials during Project construction is low, and even if a release were to occur, it would not result in a significant hazard to the public, surrounding land uses, or environment, due to the small quantities of these materials associated with construction vehicles. Therefore, potential impacts from the routine transport, use or disposal of hazardous materials during construction of the proposed Project would be less than significant, and no mitigation would be required.

Mitigation Measure: No mitigation would be required.

Impact HAZ-2: Create a hazard to workers, the public, and/or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment. (Less than Significant)

As discussed above, there are known hazardous materials in the subsurface of the Project (near-surface soils and groundwater) and there is a potential to encounter hazardous materials during Project construction. Remediation activities have included excavation of contaminated materials and the operation of groundwater treatment systems. Based on the current Project plan, grading and excavation for the proposed Project is expected to be limited to trenching to provide utilities to new units and grading to develop stable foundations for new units and facilities. Where Project construction involves soil excavation, exposure to hazardous materials could occur if such materials are present in excavation locations. Regulations such as 8 CCR 1511 would require that, prior to construction, Site conditions be thoroughly surveyed to determine, to the extent practicable, the likelihood of encountering hazardous materials and its impact on workers. In addition to regulatory requirements, for construction activities where impacted soils and/or groundwater may be encountered, the procedures and protocols outlined in the facility Soil Management Plan (Stantec 2020) identify procedures for addressing impacted soils and/or groundwater in excavations/trenches and for handling of such soils in accordance with applicable laws and regulations, to ensure that releases to the environment or unacceptable levels of exposure by the public and workers do not occur.

In addition to subsurface impacts, there is the potential to encounter hazardous materials such as metals (lead and chromium) and asbestos in equipment that would be modified as part of construction activities. There are also other known job-site hazards (e.g., flammable liquids and gases, toxic materials, confined spaces) that would be encountered during infrastructure modifications. To address potential material encounters, a survey of equipment and safeguards necessary to conduct the work safely for these or any other hazardous materials that may be encountered would be implemented in accordance with 29 CFR 1926.1101 and 8 CCR 1511, 1529 and 1532 and existing facility programs. In situations where employees are subject to known job-site hazards, they would be instructed in the recognition of the hazard, procedures to protect themselves from injury, and first aid procedures in the event of an injury. Protective measures required by these regulations include but are not limited to training, oversight by competent individuals, personal protective equipment such as respirators and special clothing for workers and required engineering controls and work practices to limit exposure to a safe level and to prevent releases to the environment.

In summary, construction activities could result in accidental releases of hazardous materials. There is also the potential to encounter impacted soil and/or groundwater that could result in the disturbance and reuse of soil potentially impacted with hazardous materials that could result in impacts to construction workers, the public and/or the environment. Compliance with federal and state regulations discussed above as well as existing facility programs and employment of the facility's Soil Management Plan (Stantec 2020) would reduce potential impacts from an accidental release of hazardous materials, encounters with impacted soil and groundwater and/or disturbance/reuse of soil impacted with hazardous materials during construction. With these measures, unhealthful levels of exposure by workers or the public, or releases to the environment, would not be expected; and therefore, potential for exposure to existing hazardous materials would be less than significant.

Mitigation Measure: No mitigation would be required.

Impact HAZ-3: Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school (No Impact).

The closest school to the Project Site is Floyd I. Marchus, which is located over 0.5 mile south of the Refinery's southern property line. The Project would not result in physical changes or modifications that would generate hazardous emissions or result in the handling of hazardous or acutely hazardous materials, substances or waste within 0.25 mile of an existing or proposed school. Therefore, no increase in hazardous emissions that impact a school site is expected due to the proposed Project.

Mitigation Measure: No mitigation would be required.

Impact HAZ-4: 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, create a significant hazard to the public or the environment. (Less than Significant)

As discussed above, the site is subject to a CAO (Order No. 00-021). Under Government Code, Section 65962.5, a list of facilities that are subject to RCRA permits or site cleanup activities was developed, which the Project Site falls under. The current CAO addresses groundwater impacts which include arsenic, benzene, chromium, gasoline, lead, nickel, other metals and hydrocarbons, and the facility is currently pumping and treating contaminated groundwater and removing free-phase liquid hydrocarbons (SWRCB 2020). Construction during the proposed Project would have no effect on these cleanup actions nor otherwise impede activities underway pursuant to the existing CAO. The CAO will remain in effect and construction activities and the Project will be designed to minimize impacts to the in-place remedial systems with or without the Project. As a result, the currently proposed Project changes are not expected to have an impact on these cleanup actions nor create any additional hazards to the public or the environment associated with cleanup activities.

Mitigation Measure: No mitigation would be required.

Impact HAZ-5: 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 or working in the project area. (Less than Significant)

The nearest airport to the Project is the Buchanan Field Airport, which is located approximately 1.5 miles south of the Project. 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 Buchanan Field Airport Influence Area is defined as the area within 14,000 feet of the ends of the primary surfaces for runways. The County Airport Land Use Compatibility Plan (County 2000) Countywide Policy 4.3.5 requires a Federal Aviation Administration (FAA) review and approval of structures over 200 feet in height. The proposed Project includes construction of new equipment for processing of renewable feedstocks, with the tallest structure (No. 2 Hydrodeoxygenation Unit) not exceeding 140 feet in height. While the Project requires construction of some new infrastructure to allow for the transition to renewable fuels, refining equipment not associated with the Renewable Fuels Project would be shut down and demolished over time, reducing the number of operating units and physical structures on site. Therefore, the Project is not expected to result in any additional safety risk associated with operations at the Buchanan Field Airport.

Mitigation Measure: No mitigation would be required.

Impact HAZ-6: Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. (Less than Significant)

The County Emergency Operations Plan (County 2015) and County Hazard Mitigation Plan (Tetratech 2018) established policies and procedures for coordination of various emergency staff and elements utilizing the California Standardized Emergency Management System (EMSs). No potential conflicts were identified through the review of these plans. Construction activities would occur within the boundaries of the existing Project Site, therefore, no emergency response plans at other facilities would be impacted. The existing facility has prepared, adopted and implemented emergency response plans at its facility, and they may need to be updated following the completion of construction activities. The Project modifications are not expected to alter the route that employees would take to evacuate the Site, as the evacuation routes generally direct employees outside the main operating portions of the facility. The Project modifications would not be expected to result in significant impacts on the implementation of emergency response plans for the facility.

Mitigation Measure: No mitigation would be required.

Impact HAZ-7: Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fire. (No Impact)

The California Department of Forestry and Fire Protection (CalFIRE) maps areas of significant fire hazard based on fuels, terrain, weather and other relevant factors. These zones, referred to as Fire Hazard Severity Zones, determine the requirements for special building codes designed to reduce the potential impacts of wildland fires on urban structures. The Project Site and surrounding areas are not located within a Very High Fire Hazard Severity Zone, as the area is urbanized, is located adjacent to the Bay and marshlands and is not located adjacent to wildland

areas. The land in the northwestern, southern and eastern areas of the County, including the western portions of the City of Martinez, are classified as Very High Fire Hazard Zones by CalFIRE. The proposed Project Site is well outside the Very High Fire Hazard Zone, which indicates that it is not subject to significant wildfire hazard. Construction during the proposed Project would not be expected to have an impact related to wildland fires.

Mitigation Measure: No mitigation is required.

Operational Impacts

Impact HAZ-1: Create a hazard to the public or the environment through the routine transport, use, and/or disposal of hazardous materials. (Potentially Significant)

As discussed above in Construction Impacts (HAZ-1), the proposed Project would convert the Refinery from fossil fuel refining to a renewable fuels refining facility. The processing activities under the proposed Project would be similar to activities that are currently being conducted at the Refinery with the primary change being a change in feedstock from fossil fuels (crude oil) to renewable sources (rendered fats and vegetable oils) for a transition from fossil fuel petroleum refining into a renewable fuels facility. Currently, the Refinery can process up to 161,000 barrels per day (bpd) of crude oil; the proposed Project would reduce the total amount of refined feedstock processed to 48,000 bpd.

The County quantifies the magnitude of hazardous risk with a Hazard Score. The Hazard Score is used to determine if a project would pose a significant present or potential future hazard to human health and safety or to the environment if released into the workplace or the environment. The formula for Hazard Score is based on a combination of "Transportation Risk," "Community Risk" and "Facility Risk." The "Transportation Risk" is based on a combination of the type of transport (e.g. truck, rail, etc.) and quantity of material transported (e.g., new material, 5-percent increase, 25-percent increase, etc.). The "Community Risk" is based on the type of receptor (e.g., sensitive, residential, commercial) and distance of the hazard to the receptor. The "Facility Risk" is based on the size of the project (i.e., tons of hazardous materials) and the percent change in hazardous material from the baseline to the project. If more than one category of hazardous material or hazardous waste is used, the Hazard Score is calculated separately for each material category. The material hazard category that results in the highest Hazard Score is the Hazard Score for the Project. Pursuant to the County Code 84-63.1002(a), a project with a Hazard Score of 80 or more is significant and subject to additional review prior to the issuance of a land use permit.

As discussed above, the proposed Project would convert the Refinery from fossil fuel refining to a renewable fuels facility; however, the renewable fuels facility would be designed and constructed to comply with all National Fire Protection Association codes and regulations as well as ongoing compliance with these same safety codes for existing equipment that would continue to operate. The change from fossil fuel to renewable feedstock would change the Hazard Category of some of the hazardous material. The Hazard Category of the materials that would be affected by the proposed Project is Hazard Category B (flammable liquids) and Hazard Category C (combustible liquids), as defined by the County Code. The change in hazard category from the conversion from fossil fuels to renewable fuels would keep the hazard category as

Hazard Category B or reduce the hazard of the material to Hazard Category C, depending on the material.

As detailed in the Hazards and Hazardous Materials Technical Analysis that was performed for the Project in 2021 (Tesoro 2021), the Hazard Scores associated with the addition of new or increased amounts of existing hazardous materials for each transportation mode are below 80; therefore, the magnitude of hazard due to the proposed Project is considered less than significant under County Code, and the magnitude of hazard from the proposed Project is expected to be less than significant.

The Technical Analysis also evaluated the transportation mode for the commodities that are used in the production of fuels as well as finished commodities. The principal change associated with the proposed Project is that crude oil, the major portion of which is delivered to the Martinez Facility via marine vessel, would no longer be used as a feedstock. Instead, renewable feedstocks would be delivered to the Martinez Facility via marine vessel and rail. As a result of the Project, some commodities such as ammonia and sulfuric acid would no longer be transported, while commodities such as renewable feedstock, which includes vegetable oils (e.g., soybean oil and corn oil), rendered fats and other miscellaneous renewable feedstocks, would increase via rail transport.

As detailed in the impact analysis for biological resources (Section 3.4.3 of this DEIR), although the renewable feedstocks are derived from vegetable oils or animal fats and behave differently from conventional petroleum-based fuels in the environment and are readily biodegradable under both aerobic and anaerobic conditions, they have common physical properties with petroleum oils and would produce similar environmental effects when released.

As currently planned, there would be an overall decrease in crude oil and associated hazardous materials feedstocks. Due to the market conditions of renewable feedstocks and renewable fuels, the size of the vessels that would visit the marine terminal are expected to be smaller, and barges with capacities of 25,000 to 50,000 barrels would be more frequent visitors to the terminals than tankers with capacities up to 750,000 barrels per vessel. However, there will be a 3- to 4-fold increase in vessel calls for the Project relative to Baseline (e.g., 400 vessels per year versus a baseline average of 143 vessels per year). Based on the risk analyses performed as part of the Amorco and Avon EIRs, the spill probability, which would include renewable feedstocks, would be expected to increase due to the increased vessel traffic. Given that there will create a hazard to the public and the environment through the routine transport of hazardous materials, a potentially significant impact is expected and the following mitigation measure would be necessary to address that impact.

> **Mitigation Measure HAZ-1:** The permittee shall comply with mitigation measures as outlined in the Operational Safety/Risk of Accident sections of the EIRs for both Amorco and Avon MOTs and as incorporated by reference into the leases as regulatory (lease) conditions. These measures include CLSC-established MOTEMS that have set minimum requirements for preventative maintenance, including periodic inspection of all components related to transfer operations pipelines. The permittee shall comply with those requirements, as well as with the CSLC's operational requirements, including Article 5.5 Marine Terminal Oil Pipelines 17 (California Code of Regulations, Title 2,

Sections 2560-2571). The implementation of the measures, which are discussed in detail in the Avon EIR, are as follows:

- Installation of Remote Release Systems
- Maintaining of Tension Monitoring Systems
- Maintaining of Allision Avoidance Systems
- Development of a Fire Protection Assessment
- Participation in USCG Ports and Waterways Safety Assessment Workshops
- Response to any Vessel Spills near the Project

Although proposed Project transportation activities would not be expected to result in increases in the magnitude of hazardous materials handled, Project activities would result in increased vessel calls, thereby increasing the potential for corresponding accidental releases of renewable feedstocks. Even with implementation of Mitigation Measure HAZ-1, the potential for an increased transportation risk would be **significant and unavoidable**.

Impact HAZ-2: Create a hazard to workers, the public, and/or the environment through exposure to existing hazardous materials at the site. (Less than Significant)

As discussed above in HAZ-8, the processing activities under the proposed Project would be similar to activities that are currently being conducted at the Refinery. New infrastructure would be constructed as part of the conversion, including a Thermal Oxidizer, Pretreatment Unit and Wastewater Treatment Unit. However, the total amount of crude oil processed would be decreased; thereby decreasing the amount of hazardous materials used in the processing as well a reduction in air toxics such as hydrogen sulfide and benzene handled at the facility. In addition, lower quantities of crude oil would be stored on the Site, and the shutdown of petroleum refining units would result in the operation of fewer units, boilers, vessels, towers, columns, fugitive emissions and other similar equipment, generally reducing the overall hazards associated with the Project.

The Project would continue to use/handle hazardous materials (e.g., fuels to operate equipment). A number of existing regulations apply to the use, handling, storage and disposal of hazardous materials; specifically, Health and Safety Code Section 25506 requires all businesses handling hazardous materials to submit a business emergency response plan to assist local administering agencies in the emergency release or threatened release of a hazardous material. The facility's plan would be updated to reflect the changes in operations associated with the proposed Project.

The use of hazardous materials is also regulated by Cal/OSHA, and requirements include providing adequate ventilation, using recommended personal protective equipment and clothing, posting appropriate signs and warnings and providing adequate worker health and safety training. The exposure of employees is also regulated by Cal/OSHA in Title 8 of the CCR, and specifically 8 CCR 5155, which establishes permissible exposure levels and short-term exposure levels for various chemicals. Under Contra Costa County Municipal Code 450-8, the facility is required to have a Safety Plan in place and conduct audits of these plans. These requirements protect the health and safety of the workers, as well as the nearby population including sensitive receptors and for the continued operation of the facilities. Update of the facility's current Safety Plan (Injury and Illness Prevention Program [Marathon 2020]) to reflect changed conditions and

continued implementation of the Plan would assist in reducing hazards of explosive or otherwise hazardous materials. Continued compliance with these and other federal, state and local regulations and proper operation and maintenance of equipment would minimize the potential impacts of hazardous materials, and therefore, potential for exposure to existing hazardous materials would be less than significant.

Mitigation Measure: No mitigation would be required.

Impact HAZ-3: Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school (No Impact).

The closest school to the Project Site is Floyd I. Marchus, which is located over one-half mile south of the Refinery's southern property line. The Project would not result in physical changes or modifications that would generate hazardous emissions or result in the handling of hazardous or acutely hazardous materials, substances or waste within 0.25 mile of an existing or proposed school. Therefore, no increase in hazardous emissions that impact a school site is expected due to the proposed Project.

Mitigation Measure: No mitigation would be required.

Impact HAZ-4: 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, create a significant hazard to the public or the environment. (Less than Significant)

As discussed above in HAZ-4, the Site is subject to a CAO (No. 00-021), which addresses groundwater impacts associated with the presence of arsenic, benzene, chromium, gasoline, lead, nickel, other metals and hydrocarbons, and the facility is currently pumping and treating contaminated groundwater to remove free-phase liquid hydrocarbons (SWRCB 2020). The proposed Project would have no effect on these cleanup actions nor otherwise impede implementation of the existing CAO. The CAO will remain in effect and continue to establish requirements for Site monitoring and cleanup of existing contamination, with or without the Project. As a result, the currently proposed Project changes are not expected to impact these cleanup actions nor create additional hazards to the public or the environment associated with cleanup activities.

Mitigation Measure: No mitigation would be required.

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

As discussed above in HAZ-5, the nearest airport to the Project is the Buchanan Field Airport, which is located approximately 1.5 miles south of the Project and the Buchanan Field Airport Influence Area is defined as the area within 14,000 feet of the ends of the primary surfaces for runways. Further discussed in HAZ-5, the County Airport Land Use Compatibility Plan requires FAA review and approval of any structure over 200 feet in height. Because the proposed Project

would not result in new structures that would exceed 200 feet in height, implementation of the Project is not expected to result in additional safety risks associated with operations at the Buchanan Field Airport.

Mitigation Measure: No mitigation would be required.

Impact HAZ-6: Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan? (Less than Significant)

As discussed in HAZ-6 above, the County Emergency Operations and Hazard Mitigation Plans (County 2015 and Tetratech 2018, respectively) establish policies and procedures for coordination of various emergency staff and elements utilizing EMSs, and no potential conflicts were identified through the review of these plans. The existing facility has prepared, adopted and implemented emergency response plans at its facility, and they may need to be updated following completion of construction activities. The Project modifications are not expected to alter the route that employees would take to evacuate the Site, as the evacuation routes generally direct employees outside the main operating portions of the facility. The Project modifications would not be expected to result in significant impacts on the implementation of emergency response plans for the facility.

Mitigation Measure: No mitigation would be required.

Impact HAZ-7: Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fire? (No Impact)

As discussed in HAZ-7 above, CalFIRE maps areas of significant fire hazard and, based on the analysis, the Project Site and surrounding areas are not located within a Very High Fire Hazard Severity Zone. The proposed Project is situated significantly outside the Very High Fire Hazard Zone and is thereby not subject to significant wildfire hazard. Implementation of the proposed Project would not be expected to have an impact related to wildland fires.

Mitigation Measure: No mitigation would be required.

3.9.5 References

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Tesoro, 2021. Martinez Renewable Fuels Project Hazards and Hazardous Materials Technical Analysis. July 27.

3.10 HYDROLOGY AND WATER QUALITY`

This section describes the existing environment and impacts analysis of water quality issues associated with converting the existing Martinez Refinery from its current production of fossil fuels (i.e., conventional diesel fuel, gasoline, distillates, propane, and various by-products) to the production of renewable fuels, including renewable diesel, renewable propane, renewable naphtha, and potentially renewable jet. Water quality issues associated with the Project include the chronic water quality impacts of continuing operations and those related to potential spills.

Guidelines and key sources of data used in the preparation of this section include the following:

- Regional plans
- Site plans
- Hazard maps

3.10.1 Environmental Setting

3.10.1.1 Regulatory and Policy Context

Federal

National Flood Insurance Program

The National Flood Insurance Program is managed by the Federal Emergency Management Agency and provides flood insurance to property owners, renters and businesses. The Program works with communities required to adopt and enforce floodplain management regulations that help mitigate flooding effects.

Clean Water Act

The Clean Water Act (33 USC §1251 *et seq*.) regulates discharges of pollutants into the waters of the United States as well as quality standards for surface waters. Under the Clean Water Act, the United States Environmental Protection Agency (U.S. EPA) has implemented pollution control programs, such as setting wastewater standards for industry. U.S. EPA has also developed national water quality criteria recommendations for pollutants in surface waters.

Section 303(d) of the Clean Water Act authorizes the U.S. EPA to assist states in listing impaired waters and developing Total Maximum Daily Loads (TMDLs) for these waterbodies. A TMDL establishes the maximum amount of a pollutant allowed in a waterbody and serves as the starting point or planning tool for restoring water quality. The San Francisco Bay Regional Water Quality Control Board (S.F. Bay Regional Board) has classified the San Francisco Bay and many of its tributaries as impaired for various water quality constituents, as required by the Clean Water Act.

National Pollutant Discharge Elimination System

Created in 1972 by the Clean Water Act, the National Pollutant Discharge Elimination System (NPDES) stormwater program specifies minimum standards for the quality of discharged waters. It requires states to establish standards specific to waterbodies and designate the types of pollutants to be regulated, including total suspended solids and oil. Under NPDES, all point sources that discharge directly into waterways are required to obtain a permit regulating their discharge. NPDES permits fall under the jurisdiction of the State Water Resources Control Board (SWRCB) or Regional Water Quality Control Boards when the discharge occurs within the 3-nautical-mile territorial limit.

NPDES also requires permits for discharges from construction activities that disturb one or more acres, and discharges from smaller sites that are part of a larger common plan of development or sale. To obtain coverage under the Construction General Permit, a project-specific Stormwater Pollution Prevention Plan (SWPPP) must be prepared to discuss best practices to minimize impacts from discharges.

Rivers and Harbors Act

The Rivers and Harbors Act (33 USC §400 *et seq.*) governs specified activities in "navigable waters," which are defined in 33 CFR §329.4 as waters subject to the ebb and flow of the tide or that are presently used, have been used, or may be susceptible to use to transport interstate or foreign commerce. This Act also limits the construction of structures and the discharge of fill into navigable waters of the United States.

State

California Sustainable Groundwater Management Act

Encompassing multiple state Senate and House bills, the Sustainable Groundwater Management Act (SGMA) was passed in 2014 and set forth a statewide framework to help protect groundwater resources over the long-term. SGMA requires local agencies to form groundwater sustainability agencies (GSAs) for the high and medium priority basins. GSAs are responsible for developing and implementing groundwater sustainability plans.

California Water Code

The Porter-Cologne Act (California Water Code, Division 7, §13000-16104) is the principal law governing water quality regulation in California. It establishes a comprehensive program to protect water quality and the beneficial uses of water. The Porter-Cologne Act applies to surface waters, wetlands, and groundwater and to both point and nonpoint sources of pollution.

California Water Code section 13142.5 provides marine water quality policies stating that wastewater discharges shall be treated to protect present and future beneficial uses, and, where feasible, to restore past beneficial uses of the receiving waters. The highest priority is given to improving or eliminating discharges that adversely affect wetlands, estuaries, and other biologically sensitive sites; areas important for water contact sports; areas that produce shellfish for human consumption; and ocean areas subject to massive waste discharge.

California Water Code section 13170.2 directs the SWRCB to formulate and adopt a water quality control plan for the ocean waters of California. The SWRCB first adopted this plan,

known as the California Ocean Plan, in 1972, and the most recent update of the California Ocean Plan was completed in 2019. The California Ocean Plan establishes water quality objectives for California's ocean waters, provides the basis for regulation of wastes discharged into coastal waters, and identifies applicable beneficial uses of marine waters and sets narrative and numerical water quality objectives to protect beneficial uses.

California Clean Coast Act of 2005

The California Clean Coast Act (Public Resources Code, Division 38, §72400-72442) includes several requirements to reduce pollution of California waters from large vessels. The Act prohibits the operation of shipboard incinerators within 3 miles of the California coast; prohibits the discharge of hazardous wastes, other wastes, or oily bilge water into California waters or a marine sanctuary; prohibits the discharge of grey water and sewage into California waters from vessels with sufficient holding-tank capacity or vessels capable of discharging grey water and/or sewage to available shore-side reception facilities; and requires reports of prohibited discharges to the SWRCB.

Bay Protection and Toxic Cleanup Program Legislation

In 1989, the SWRCB was required to develop sediment quality objectives (SQOs) as part of a comprehensive program to protect beneficial uses in enclosed bays and estuaries. The objectives are required for "toxic pollutants" that were identified in toxic hot spots or that were identified as pollutants of concern by the SWRCB. In 2009, the SWRCB adopted SQOs and an implementation policy for bays and estuaries in the State (Part 1). Part 1 includes narrative SQOs for the protection of aquatic life and human health, identification of the beneficial uses that these objectives are intended to protect, and requirements for program of implementation.

Local

San Francisco Bay Basin Water Quality Control Plan 2019

The Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan; S.F. Bay Regional Board, 2019) is the Board's master water quality control planning document. It designates beneficial uses and water quality objectives (WQOs) for waters of the State, including surface waters and groundwater. It also includes programs of implementation to achieve WQOs. The Porter-Cologne Water Quality Act requires the development and periodic review of Basin Plans that designate beneficial uses of California's major rivers and groundwater basins and establish numerical WQOs for those waters. The Basin Plan has been updated to reflect the Basin Plan amendments adopted up through May 4, 2017. The 2019 version of the Basin Plan incorporating all amendments approved by the Office of Administrative Law was approved as of November 5, 2019.

Municipal Regional Stormwater NPDES Permit

In November 2015, the S.F. Bay Regional Board re-issued previous county-wide municipal stormwater permits as one Municipal Regional Stormwater NPDES Permit (Order No. R2-2015-0049; NPDES Permit No. CAS612008) to regulate stormwater discharges from municipalities and local agencies in Alameda, Contra Costa, San Mateo and Santa Clara counties, and the cities of Fairfield, Suisun City and Vallejo.

San Francisco Bay Plan

The San Francisco Bay Plan (Bay Plan) was prepared by the San Francisco Bay Conservation and Development Commission (BCDC 2019). The two objectives of the Bay Plan are to protect the Bay as a great natural resource for the benefit of present and future generations, as well as to develop the Bay and its shoreline to their highest potential with a minimum of Bay filling. Findings and policies related to these objectives are outlined and discussed in the most recent update of the Bay Plan.

3.10.2 Existing Conditions

The Marathon Martinez Refinery is located 3.25 miles east of downtown Martinez along Solano Way between Waterfront Road and Monsanto Way, adjacent to the Pacheco Creek, on approximately 2,000 acres of property owned by Marathon. The Refinery has marine access through two marine terminals on the Carquinez Strait, which connects the San Pablo Bay with the inland Suisun Bay in the San Francisco Bay Delta.

San Francisco Bay

Introduction

The San Francisco Bay encompasses approximately 1,600 square miles, and its estuary system is the terminus for approximately 40 percent of California watersheds. The Bay itself can be divided into several geographical sections. South San Francisco Bay is the large body south of the Bay Bridge, and the Central Bay is a smaller body located between the Bay Bridge and the Richmond-San Rafael Bridge. San Pablo Bay is the large body north of the Richmond-San Rafael Bridge. From San Pablo Bay, the San Francisco Bay extends eastward to the delta of the Sacramento and San Joaquin Rivers (Delta). The South Bay is a semi-enclosed embayment with numerous small, local freshwater inflows.

Water from the Sacramento and San Joaquin Rivers of the Central Valley flows into the Delta, then into Suisun and San Pablo Bays, and finally into the Central Bay and out the Golden Gate strait. Some freshwater flows through the Delta and into the Bay, but much is diverted from the Bay for agricultural, residential and industrial purposes, as well as delivery to other cities in southern California as part of state and federal water projects (ABAG 2017).

Interactions between Delta outflow and Pacific Ocean tides determine how far saltwater intrudes into the Delta. Therefore, the salinity of the water can vary widely, and salinity levels in the Central Bay can vary from near oceanic levels to one-quarter as much, depending on the volume of freshwater runoff, which depends on factors such as precipitation, reservoir releases and upstream diversions (ABAG 2017).

The San Francisco Bay is located in a highly industrialized area and has a history of human impacts from both regulated point sources and nonpoint-source runoff, which can carry pollutants, including heavy metals, motor oil, paints, chemicals, debris, grease and/or detergents to local waters. The S.F. Bay Regional Board has classified the San Francisco Bay and many of its tributaries as impaired for various water quality constituents, as required under Section 303(d) of the Clean Water Act (ABAG 2017). The San Francisco Bay is identified as impaired for multiple contaminants, including mercury, polychlorinated biphenyls (PCBs) and selenium (S.F. Bay Regional Board 2019).

Water quality in the San Francisco Bay may be affected by many factors, including:

- Geographic configuration of the San Francisco Bay,
- Tidal exchange with the ocean,
- Freshwater inflows,
- Industrial and municipal wastewater discharges,
- Dredging and dredge material disposal,
- Urban and agricultural runoff,
- Marine vessel discharges,
- Historic mining activities,
- Leaks and spills and
- Atmospheric deposition.

Regulatory Objectives and Criteria

To protect beneficial uses, the S.F. Bay Regional Board has established WQOs for waters covered by the San Francisco Bay Water Quality Control Plan (Basin Plan). The 2019 version of the Basin Plan and associated amendments were approved by the SWRCB, Office of Administrative Law and U.S EPA as of November 5, 2019. Water quality criteria for priority toxic pollutants for California inland surface waters, enclosed bays and estuaries were established by the California Toxics Rule (U.S. EPA 2001). The following **Table 3.10-1: California Toxics Rule Criteria for Saltwater**, shows the California Toxics Rule criteria for saltwater, which are also applicable to Suisun Bay.

Table 3.10-1: California Toxics Rule Criteria for Saltwater

Constituent	Criterion Maximum Concentration (ug/L)	Criterion Continuous Concentration (ug/L)
Arsenic	69	36
Cadmium	42	9.3
Hexavalent Chromium	1,100	50
Copper	4.8	3.1
Lead	210	8.1
Mercury	[Reserved]	[Reserved]
Nickel	74	8.2
Selenium	290	71
Silver	1.9	--
Zinc	90	81

Table 3.10-1: California Toxics Rule Criteria for Saltwater

Constituent	Criterion Maximum Concentration (ug/L)	Criterion Continuous Concentration (ug/L)
Cyanide	1.0	1.0
Pentachlorophenol	13	7.9
Aldrin	1.3	--
gamma-BHC	0.16	--
Chlordane	0.09	0.004
4,4-DDT	0.13	0.001
Dieldrin	0.71	0.0019
alpha-Endosulfan	0.034	0.0087
beta-Endosulfan	0.034	0.0087
Endrin	0.037	0.0023
Heptachlor	0.053	0.0036
Heptachlor Epoxide	0.053	0.0036
PCB-1242	--	0.03
PCB-1254	--	0.03
PCB-1221	--	0.03
PCB-1232	--	0.03
PCB-1248	--	0.03
PCB-1260	--	0.03
PCB-1016	--	0.03
Toxaphene	0.21	0.0002

Source: U.S. EPA, 2001

Physical Processes of San Francisco Bay

Water quality in the San Francisco Bay is greatly affected by tidal exchange with the Pacific Ocean. The difference between low and high tide for the San Francisco Bay Area is approximately 5 feet. Given the large surface area of the Bay, this difference results in large

volumes of water flowing into and out of the San Francisco Bay with the change of tides. Waters from the Pacific Ocean are generally colder and more saline than waters in San Francisco Bay; therefore, the higher relative density of ocean water directs the tidal exchange to the deeper waters of the San Francisco Bay.

San Francisco Bay, especially the northern reach of San Pablo Bay, Carquinez Strait, Suisun Bay and the Delta, is also strongly influenced by freshwater flows with the Sacramento and San Joaquin Rivers acting as the largest sources. These freshwater flows are highly seasonal, and more than 90 percent of annual runoff occurs during the rainy winter season from October to April (S.F. Bay Regional Board 2019). Because of the variable freshwater flows as well as the geometry of the Bay, circulation within the Bay can be relatively complicated and is driven primarily by tides. Freshwater flows into the Bay from the Delta also result in estuarine circulation, which is driven by the density difference between freshwater and saltwater.

Source of Pollutants to San Francisco Bay

The quality of regional surface water resources in the Bay Area varies considerably and is locally affected by point-source and nonpoint-source discharges throughout individual watersheds. The largest sources of pollutants to San Francisco Bay are nonpoint discharges, which include urban runoff, agricultural lands, and additional non-urban runoff. Nonpoint-source pollutants are transported into surface waters through rainfall, air and other pathways, and can include copper from brake linings and lead from counterweights that can contribute heavy metals to local waters as well as other pollutants such as mercury, PCBs and pesticides (ABAG 2017).

In addition to nonpoint discharges, the Bay also receives discharge from regulated point sources. Discharges from point sources are those that are associated with pollutant discharges from a single location to a specific receiving water body. Major types of point sources include:

- Treated municipal sewage discharged from Publicly Owned Treatment Works, which often consist of a combination of domestic, industrial and commercial waste streams;
- Treated industrial wastewater resulting from industrial operations, processing, cleaning and cooling;
- Treated groundwater from cleanup of groundwater pollution sites; and
- Other miscellaneous types of discharges, including certain non-point sources with a physically identifiable point of discharge.

Point source discharges are generally controlled through waste discharge requirements issued under federal NPDES permits. The NPDES program was established by the federal Clean Water Act, although the permits are prepared and enforced in California by the respective Regional Water Boards.

Atmospheric fallout can also deposit pollutants on land and surface waters. Deposits to water are a direct source, while deposits to the land can result in discharges to the San Francisco Bay via stormwater runoff. Major sources of atmospheric contamination include fuels and particulates from vehicles and other sources; building materials and products; windblown dust; and construction, manufacturing and industrial facilities (BCDC 2003).

Water and Sediment Quality in San Francisco Bay

The San Francisco Estuary Institute (SFEI) established a Regional Monitoring Program (RMP) for Trace Substances in 1993 and is a collaborative effort between the San Francisco Estuary Institute, the S.F. Bay Regional Board, and the regulated discharger community (SFEI 2015). The primary goal of the RMP is to collect data and communicate information about water quality in San Francisco Bay in support of management decisions.

Water quality is monitored biennially at 22 sites, covering each of the bay segments. Key analytes for water comprise the California Toxics Rule list. Sediment samples are collected quadrennially at 27 sites during the dry season. Key analytes for sediment include mercury, PCBs, Polycyclic Aromatic Hydrocarbons (PAHs) and metals (SFEI 2020). Typically, a number of sampled locations will have water and/or sediments that exceed regulatory objectives or criteria for one or more analytes. The primary pollutants for the Bay and its major tributaries on the 303(d) List from the Clean Water Act include (SFEI 2019):

- **Trace elements**: Mercury and selenium
- **Pesticides**: Dieldrin, chlordane and DDT
- **Other chlorinated compounds**: PCBs, dioxin and furan compounds
- **Others**: Exotic species, trash, PAHs and indicator bacteria

Sea Level Rise

Sea level rise and the droughts and floods that are anticipated due to climate change will impact pollutant pathways to the Bay (SFEI 2019). Sea level rise is of particular concern to facilities with operational infrastructure located on or near the shoreline of San Francisco Bay. These facilities include municipal wastewater treatment plants, railroads, industrial facilities and petroleum refineries. Sea level rise may also jeopardize low-lying storm drain infrastructure and/or expose contaminated shoreline areas to the forces of tides and waves.

A tide gauge at the Golden Gate Bridge has been in operation since 1854, and based on a 20-year rolling average, sea level at the Golden Gate rose 7.1 inches (0.18 meters) from 1916 to 2018 (SFEI 2019). Additionally, the San Francisco Bay Conservation and Development Commission's (BCDC) estimates that long-term global sea-level rise could be up to 16 inches over 50 years (BCDC 2011).

Suisun Bay and Carquinez Strait

Physical Characteristics

Of the water segments that make up the San Francisco Bay, Suisun Bay is the first water body that receives flows from the Sacramento and San Joaquin river watersheds. Fresh water from the rivers usually mixes with saltwater from the ocean in the vicinity of Suisun Bay. Suisun Bay is a shallow embayment located between Chipps Island to the east and the Benicia-Martinez Bridge to the west. Suisun Bay has a surface area of approximately 36 square miles, a mean depth of 14 feet and highly variable salinity levels depending on the time of year and amount of freshwater flow (USACE et al. 1998).

Previous models suggest that suspended-sediment transport within Suisun Bay follows a seasonal cycle with the majority of suspended sediment delivered during winter freshwater

flows, creating a large pool of erodible sediment within the channels and shallows (Ganju and Schoellhamer 2006). During summer months, onshore winds generate waves that resuspend sediments in the shallows for transport by tidal currents from high energy areas (such as mudflats or shallow off-channel areas) to lower-energy areas (such as marinas or deep channels). Therefore, it has been assumed that Suisun Bay is predominantly depositional in the winter, and erosional in the summer (Ganju and Schoellhamer 2006).

The Project Site is also located within the Carquinez Strait, which connects Suisun Bay to the San Pablo Bay. The Carquinez Strait has a surface area of approximately 12 square miles, a mean depth of 29 feet (USACE et al. 1998), and variable salinity due to annual fluctuations in freshwater flow from the Sacramento-San Joaquin River system (USACE et al. 1998). Studies have identified gravitational circulation within the Carquinez Strait, with lighter freshwater moving seaward in the top layer and heavier saltwater moving upstream on the bottom (Ganju and Schoellhamer 2006). Deposition in Carquinez Strait is greatest during neap tides when vertical mixing is minimized, stratifying the water column; the following spring tides then resuspend this erodible bed sediment and mix the water column.

Water Quality

The amount of freshwater flow from the Delta significantly affects water column characteristics in waters near the Project Site and can result in variable annual water quality conditions. Pollutants reach Suisun Bay through discharge from sources including wastewater treatment plants, stormwater runoff and agricultural drain water. According to the S.F. Bay Regional Board, Suisun Bay and Carquinez Strait are listed as impaired on the Clean Water Act Section 303(d) due to chlordane, DDT, dieldrin, dioxins, furan compounds, mercury, PCBs and selenium (S.F. Bay Regional Board 2019).

The following Table 3.10-2, Regional Monitoring Program Water Quality, Sampling Station SU-52W, shows RMP water quality sampling results available for sampling station SU052W, which is located in Suisun Bay and is the closest sampling point with recent data.

Table 3.10-2: Regional Monitoring Program Water Quality, Sampling Station SU052W

Constituent	2017 RMP Data[1]		Marine WQOs[2]	
	Total	Dissolved	4-Day Average	1-Hour Average
All concentrations in micrograms per liter (ug/L).				
Arsenic	Not analyzed	Not analyzed	36	69
Cadmium	Not analyzed	Not analyzed	9.3	42
Chromium VI	Not analyzed	Not analyzed	50	1,100
Copper	1.82	0.34	6.0	9.4
Cyanide	Not analyzed	Not analyzed	2.9	9.4

Table 3.10-2: Regional Monitoring Program Water Quality, Sampling Station SU052W

Constituent	2017 RMP Data[1]		Marine WQOs[2]	
	Total	Dissolved	4-Day Average	1-Hour Average
Lead	Not analyzed	Not analyzed	8.1	210
Mercury	0.00029	0.0001	0.025	2.1
Nickel	Not analyzed	Not analyzed	8.2	74
Selenium	0.01	0.12	5.0	20
Silver	Not analyzed	Not analyzed	--	1.9
Zinc	Not analyzed	Not analyzed	81	90

1) Source: RMP data from Sampling Station SU052W in Suisun Bay (SFEI 2021).
2) Source: Basin Plan (S.F. Bay Regional Board 2019). Marine waters are those in which the salinity is equal to or greater than 10 parts per thousand 95% of the time and include Suisun Bay and the Carquinez Strait.

The table includes only constituents that have a marine quality objective identified in the Basin Plan (San Francisco Bay Regional Water Quality Control Board 2019).

The Basin Plan also lists beneficial uses for waterbodies covered by the plan (S.F. RWQCB 2019). Designated beneficial uses for waters in the Project Site (Carquinez Strait and Suisun Bay) include:

- Industrial service supply
- Industrial process supply
- Commercial and sport fishing
- Estuarine habitat
- Fish migration
- Preservation of rare and endangered species
- Fish spawning
- Wildlife habitat
- Water contact recreation
- Noncontact water recreation
- Navigation

Project Site

Setting

The Project Site is located within the Ygnacio Valley Groundwater Basin. No beneficial uses for groundwater in the Ygnacio Valley Groundwater Basin have been established; however, potential beneficial uses include municipal and domestic water supply; industrial process water supply; industrial service water supply; and agricultural water supply (S.F. RWQCB 2019).

The Project Site is located east of Pacheco Slough and south of Suisun Bay in an area of low hills as well as areas of reclaimed marshland. Shallow fill and marsh deposits in the Project vicinity are underlain by older and younger alluvium ranging in age from late Pleistocene to Holocene (Hultgren-Tillis 2021). The alluvium consists of a mix of sands, silts and clays.

During a recent geotechnical investigation at the Project Site (Hultgren-Tillis 2021), groundwater was encountered in one boring location at 3 feet below the ground surface (approximately 7 feet in elevation). Groundwater in other borings was either not encountered or was obscured by rotary wash drilling methods. Cone Penetration Testing pore pressure dissipation tests indicated piezometric water pressures corresponding to hydrostatic water levels ranging from 1 to 28 feet below the ground surface (elevations ranging from approximately 0 to 6 feet). Water levels generally stabilized at depths ranging from 4 to 12 feet below the ground surface (elevations ranging from approximately 2 to 6 feet). Groundwater flow generally conforms to the overall regional hydrology with flow direction generally to the north, from the topographic highs in the south toward Pacheco Slough and the Carquinez Strait.

Sea Level Rise

Due to sea level rise, a portion of the Site that is low-lying could be vulnerable to future coastal storm flooding, and Walnut Creek could be impacted by future flooding. Simpson Gumpertz & Heger Inc. (SGH) conducted an evaluation of future water level elevations at the Avon Marine Terminal in May 2021. Elevations of the cross-beams vary along the length of the pipeway and trestle and range from 8.58 feet and 16.92 feet above mean lower low water level, respectively (SGH 2021).

Changes in water levels were assessed using the National Oceanic and Atmospheric Administration Tide and Metrological Observation Stations at Port Chicago station (ID: 9415144; approximately 2.8 miles upstream of the Avon Terminal), and the Amorco station (ID: 9415102; approximately 2.0 miles downstream of the Avon Terminal). To forecast the effects of sea level rise, future water level trendlines were developed based on historical measurements in mean sea level (MSL), which also incorporate sea level rise trends for the local area (SGH 2021)

SGH developed future water level trendlines based on 10-year, 20-year, and 40-year lookback periods. Using these trendline projections, SGH estimated MSL changes into the future to predict 2-year, 4-year, 10-year, and 30-year water levels. The 10-year data set is likely heavily influenced by the recent years of drought in California, where water levels have been below "normal" volumes; therefore, to be conservative, the 20-year lookback with the highest prediction of water level rise was used to develop estimated MSL rise (SGH 2021).

The assessment predicts that water level rise at the Avon terminal will be approximately 2.7 inches by 2030, and that based on the lookback trends for various time periods, the pipelines will not likely be inundated until 2070 assuming the measured rate of water level rise of 0.1 inches per year (SGH 2021). However, if inundation does occur, the risk of an oil spill is very low, and both the structure and the pipeline can be exposed to flood inundation without significant risk of damage (SGH 2021).

3.10.3 Impact Analysis

3.10.3.1 Methodology for Impact Analysis

Impacts of the proposed Project on hydrology and water quality were assessed by comparing existing conditions to potential changes from Project construction and operation. The following subsections describe the Project's potential impacts on water quality. Where impacts are determined to be significant, mitigation measures are described that would reduce or avoid the impact.

3.10.3.2 Significance Criteria

The Project would have a significant impact to water quality and hydrology if it would:

- Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality;
- Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin;
- Substantially alter the existing drainage pattern of area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner that would:
  - Result in substantial erosion or siltation on- or off-site;
  - Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;
  - 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
  - Impede or redirect flood flows;
- Risk release of pollutants due to project inundation in flood hazard, tsunami or seiche zones or
- Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

3.10.4 Impacts and Mitigation Measures

Construction-related Impacts

Impact HWQ-1: Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality. (Less than Significant)

Process wastewater, sanitary sewage and most of the stormwater runoff from the Project Site is currently managed in the existing wastewater treatment system and regulated by a NPDES permit. The Project Site also operates under an industrial waste discharge permit from the U.S. EPA. Conversion of the Project Site to a renewable fuel facility would primarily involve the alteration and addition of refinery equipment to process non-petroleum feedstocks into renewable diesel fuel, renewable propane, renewable naphtha and potentially renewable aviation fuel. The production of renewable fuels would primarily use existing process equipment, although some construction for new and modified equipment would be necessary.

Certain new units would be installed, including a new renewable feedstock Pretreatment Unit (PTU) and wastewater treatment equipment. The PTU produces a wastewater stream that would require partial pretreatment prior to treatment in the existing wastewater treatment facility. Existing tanks would be utilized and repurposed for equalization and biological treatment of the waste stream. New equipment purchased and installed during Project construction activities would consist of specialized wastewater treatment equipment to reduce biological oxygen demand in the waste stream.

Projects that disturb 1 or more acre of soil are required to obtain coverage under the NPDES Construction Storm Water General Permit. Project construction activities subject to this permit may include clearing, grading and/or other disturbances to the ground such as stockpiling or excavation. Prior to Project construction activities, a Stormwater Pollution Prevention Plan would be prepared, and stormwater runoff would be contained and only allowed to drain off-site when pre-treated if necessary or when subject to appropriate engineering controls and best management practices. The Air Quality and GHG Technical Analysis prepared for the Project indicates that approximately 2.4 acres of material movement activities are anticipated for the Project (Ashworth Leininger Group 2021). Due to the limited grading and excavation, the proposed Project is not expected to violate applicable water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality, and impacts would be less than significant.

Mitigation Measure: No mitigation would be required.

Impact HWQ-2: Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin. (No Impact)

Shallow groundwater underlying the Project Site is not currently used as a source of drinking water, and no additional groundwater use would be required for Project construction. Project construction activities are not expected to change recharge to groundwater. Therefore, the proposed Project construction would have no impact on groundwater supplies or interfere with groundwater recharge.

Mitigation Measure: No mitigation would be required.

Impact HWQ-3: Substantially alter the existing drainage pattern of area in a manner which would result in substantial erosion or siltation on- or off-site. (Less than Significant)

Proposed Project construction activities would be located within the existing Project Site, and Project activities are not expected to result in the construction of additional impervious surfaces that would substantially alter existing drainage patterns. There are no streams, rivers or other natural drainages within the Project Site that would be impacted by the construction of new units or equipment. Stormwater and surface runoff within the Project Site are already treated within the existing wastewater treatment plant and managed under a NPDES permit.

During construction activities, existing drainage patterns may be slightly altered by excavation and soil stockpiles but will comply with existing permit regulations and waste discharge requirements, including the Construction Storm Water General Permit, if required. Following completion, ground surface would be restored to the existing conditions. Therefore, Project impacts are anticipated to be less than significant.

Mitigation Measure: No mitigation would be required.

Impact HWQ-4: Substantially alter the existing drainage pattern of area in a manner which would substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site. (Less than Significant)

Proposed Project construction activities would be located within the existing Project Site, and Project activities are not expected to result in the construction of additional impervious surfaces that would substantially alter existing drainage patterns. There are no streams, rivers or other natural drainages within the Project Site that would be impacted by the construction of new units or equipment. Stormwater and surface runoff within the Project Site are already treated within the existing wastewater treatment plant and managed under a NPDES permit. Construction activities are not expected to result in an increase in surface water runoff that would result in flooding on- or off-site. Therefore, Project impacts are anticipated to be less than significant.

Mitigation Measure: No mitigation would be required.

Impact HWQ-5: Substantially alter the existing drainage pattern of area in a manner which would create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. (Less than Significant)

Proposed Project construction activities would be located within the existing Project Site, and Project activities are not expected to result in the construction of additional impervious surfaces that would substantially alter existing drainage patterns. There are no streams, rivers or other natural drainages within the Project Site that would be impacted by the construction of new units or equipment. Stormwater and surface runoff within the Project Site are already treated within the existing wastewater treatment plant and managed under a NPDES permit. Construction activities are not expected to create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems. Therefore, Project impacts are anticipated to be less than significant.

Mitigation Measure: No mitigation would be required.

Impact HWQ-6: Substantially alter the existing drainage pattern of area in a manner which would impede or redirect flood flows. (Less than Significant)

Proposed Project construction activities would be located within the existing Project Site, and Project activities are not expected to result in the construction of additional impervious surfaces that would substantially alter existing drainage patterns. There are no streams, rivers or other natural drainages within the Project Site that would be impacted by the construction of new units or equipment. Stormwater and surface runoff within the Project Site are already treated within the existing wastewater treatment plant and managed under a NPDES permit. Construction activities are not expected to substantially alter drainage patterns to impede or redirect flood flows, and therefore, Project impacts are anticipated to be less than significant.

Mitigation Measure: No mitigation would be required.

Impact HWQ-7: In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation. (Less than Significant)

The operating portions of the Project Site where modifications and/or construction is proposed is designated Zone X by the FEMA, which means that it is an area determined to be an area of minimal flood hazard (FEMA 2017). Project construction activities would not result in physical changes in these designated areas. Therefore, the Project would not create or substantially increase risks from flooding or expose people or structures to significant risk of loss, injury or death involving flooding.

Due to sea level rise, a portion of the Site that is low-lying could be vulnerable to future coastal storm flooding. Water level rise at the Avon terminal is predicted be approximately 2.7 inches by 2030, and, based on the lookback trends for various time periods, the pipelines will not likely be inundated until 2070 assuming the measured rate of water level rise of 0.1 inches per year (SGH 2021). Therefore, the risk release of pollutants due to inundation from sea level rise is less than significant.

A tsunami possibly affecting the Bay Area would originate in the Pacific Ocean before entering San Francisco Bay and likely dissipating through the wider and shallower water body. The Association of Bay Area Governments (ABAG) Hazard Viewer Map indicates that the Project Site is not located in a tsunami evacuation hazard zone (ABAG 2020). A seiche is the oscillation of a body of water and occurs most frequently in enclosed basins (i.e., lakes, bays, etc.). The portion of the Project Site where construction activities are proposed is not located in an inundation area.

Therefore, impacts of Project construction are not expected to result in increased risk of pollutants due to inundation and would be less than significant.

Mitigation Measure: No mitigation would be required.

Impact HWQ-8: Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. (Less than Significant)

The SWRCB's GeoTracker database indicates that the Project Site is subject to a Cleanup and Abatement Order to address existing soil and groundwater impacts, including arsenic, benzene, chromium, lead, nickel, gasoline and other petroleum hydrocarbons (SWRCB 2021). Existing cleanup actions at the site include pumping and treating contaminated groundwater and removing free-phase liquid hydrocarbons. Project construction activities would have no impact on these cleanup actions.

The proposed Project construction would not require significant groundwater extraction from an aquifer or groundwater table. Additionally, the Project would not substantially decrease groundwater resources nor interfere with groundwater recharge. Overall, Project construction activities would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan, and the Project would have less than significant impact on groundwater supplies or interference with groundwater recharge.

Mitigation Measure: No mitigation would be required.

Operational Impacts

Impact HWQ-1: Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality. (Potentially Significant.)

Once authorizations are received, the operation of the proposed Project would phase in over a period of 3 years, starting in 2022 with estimated average processing of 17,000 barrels per day (bpd) of fresh feed (short-term maximum 23,000 bpd) and reaching full capacity of 48,000 bpd fresh feed processing by the end of 2023. This throughput is notably lower than the facility's existing capacity of 161,000 bpd. The proposed Project would change the operation of the refinery from processing crude oil to processing renewable feedstocks, including biological-based oils (e.g., soybean oil and corn oil), rendered fats and other miscellaneous renewable feedstocks including but not limited to used cooking oils, other vegetable oils, alternative biological derived feedstocks and fish oils. No palm oil would be used in this Project. The facility is expected to continue to operate 24 hours per day, 7 days per week.

Process wastewater, sanitary sewage and most of the stormwater runoff from the Project Site is currently managed in the existing wastewater treatment system and regulated by a NPDES permit. The Project Site also operates under an industrial waste discharge permit from the U.S. EPA. Conversion of the Project Site to a renewable fuel facility would primarily involve the alteration and addition of refinery equipment to process non-petroleum feedstocks into renewable diesel fuel, renewable propane, renewable naphtha and potentially renewable aviation fuel. The production of renewable fuels would primarily use existing process equipment, although some construction for new and modified equipment would be necessary.

Certain new units would be installed, including a new renewable feedstock PTU and wastewater treatment equipment. The PTU produces a wastewater stream that would require partial pretreatment prior to treatment in the existing wastewater treatment facility. Existing tanks would be utilized and repurposed for equalization and biological treatment of the waste stream. New equipment purchased and installed during Project construction activities would consist of

specialized wastewater treatment equipment to reduce biological oxygen demand in the waste stream.

These new facilities would generate a new wastewater stream that would require additional treatment equipment to be added to the existing wastewater treatment plant. However, several units would also be shut down under the proposed Project, including the Crude Unit, Gasoline Hydrotreater, Alkylation Unit, Fluidized Catalytic Cracking Unit, Reformers, Delayed Coker and Steam Units. The wastewater associated with these units would be eliminated. Overall, these changes would result in a decrease in wastewater generated. As discussed above, the facility would cease processing crude oil and instead process renewable feedstocks. Because crude oil contains toxic and hazardous chemicals that are not present in renewable feedstocks, the wastewater generated in the processing of renewable feedstocks is also expected to contain lower quantities of toxic and hazardous chemicals.

When Project operations resume, it is expected that the existing NPDES permit would be modified to include the new wastewater treatment equipment and reflect the new characteristics of the wastewater stream. The NPDES permit establishes limits for various contaminants (including oil and grease, biological oxygen demand, pH, whole effluent toxicity and other contaminants such as heavy metals). Wastewater would be required to be discharged in compliance with the NPDES permit. The Project would result in an overall decrease in wastewater flow and contaminant loads generated by the new facility compared to previous refining operations. The Project also adds sufficient capacity to pretreat new wastewater generated from the feedstock PTU, and wastewater would be discharged in compliance with NPDES permit requirements.

Accidental releases of feedstocks or product during loading and unloading operations either in transit to/from the facility or at the associated Avon and Amorco Marine Oil Terminals (MOTs) could contaminate the surrounding surface water with floating feedstock or product. Spilled material would likely cause an exceedance of the Basin Plan Water Quality Objectives (WQOs) for oil and grease, which includes any visible film or coating on the surface of the water or on objects in the water that cause nuisance or that otherwise adversely affect beneficial uses. The consequences of a spill on water quality would depend on several factors, including the size of the spill, the effectiveness of the response effort, and the resources (biological, water, etc.) affected by the spill.

Marathon has prepared a Northern California Blanket Oil Spill Response Plan, last updated in April 2020, which provides spill prevention measures and protocols in the event of an accidental release. Best Management Practices (BMPs) would be implemented to reduce the risk of potential releases, and the refueling of vessels would be conducted at nearby fuel docks to the extent possible. Exposed piping, valves, and other associated equipment would be inspected during loading and unloading operations to check for leaks. Additionally, drip pans are placed beneath areas with high potential for leaks, such as hose and pipe connections.

Terminals at the Project Site are also subject to U.S. EPA regulations that require the preparation of a Spill Prevention, Control, and Countermeasures Plan (SPCC Plan), and regulations from the U.S. EPA and California Department of Fish and Wildlife (CDFW) Office of Spill Prevention and Response (OSPR) for the development and maintenance of oil spill response and

contingency plans. Marathon has contingency planning and response measures for oil releases in place, including an existing facility SPCC Plan (Tesoro 2016, revised 2018), Northern California Blanket Oil Spill Response Plan (Tesoro 2017, updated 2020), and SWPPP (2013). Additionally, the California State Lands Commission (CSLC) has developed the Marine Oil Terminal Engineering and Maintenance Standards (MOTEMS), which are standards that apply to all existing and new marine oil terminals in California and establish minimum engineering, inspection, and maintenance criteria to prevent oil spills and protect public health, safety, and the environment. These standards include conditions for operation which are specified in leases that Tesoro maintains with the CSLC. These lease conditions include the following five requirements (e.g., as mitigation measures [MMs]) designed to minimize the potential for a release during loading/unloading operations at the MOTs:

- MM OS-1a: Remote Release Systems
- MM OS-1b: Tension Monitoring Systems
- MM OS-1c: Allision Avoidance Systems
- MM OS-4a: USCG Ports and Waterways Safety Assessment
- MM OS-4b: Spill Response to Vessel Spills

Residual Impacts: As discussed above, the operational protocols in place are designed to minimize the potential for accidental releases. However, adherence to these protocols and spill response measures will not guarantee that contaminants will never be released. The probability of a serious spill would be minimized to the extent feasible with implementation of the above listed lease conditions, but the risk cannot be eliminated. Consequences of a spill would depend on the specific aspects of the release and could range from relatively small spills with less than significant impacts, to larger spills that are more difficult to clean up and could result in significant residual impacts after mitigation. Even with the implementation of the aforementioned lease conditions, contingency planning and required response measures, a large spill could still occur and result in impacts on water quality that would be **significant and unavoidable**.

Impact HWQ-2: Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin. (No impact)

Shallow groundwater underlying the Project Site is not currently used as a source of drinking water, and no additional groundwater use would be required for Project operations. Project operations are not expected to change recharge to groundwater. Therefore, the Project operations would have no impact on groundwater supplies or interfere with groundwater recharge.

Mitigation Measure: No mitigation would be required.

Impact HWQ-3: Substantially alter the existing drainage pattern of area in a manner which would result in substantial erosion or siltation on- or off-site. (Less than significant)

Following completion of construction activities, the ground surface at the Project Site would be restored to existing conditions. Stormwater and surface runoff within the Project Site are already

treated within the existing wastewater treatment plant and managed under a NPDES permit. Project operations would not substantially alter the existing drainage pattern or result in substantial erosion or siltation on- or off-site. Therefore, operational impacts are anticipated to be less than significant.

Mitigation Measure: No mitigation would be required.

Impact HWQ-4: Substantially alter the existing drainage pattern of area in a manner which would substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site. (Less than significant)

Following completion of construction activities, the Project Site would be restored to existing conditions. Stormwater and surface runoff within the Project Site are already treated within the existing wastewater treatment plant and managed under a NPDES permit. Project operations are not expected to result in an increase in surface water runoff that would result in flooding on- or off-site. Therefore, operational impacts are anticipated to be less than significant.

Mitigation Measure: No mitigation would be required.

Impact HWQ-5: Substantially alter the existing drainage pattern of area in a manner which would create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. (Less than significant)

Following completion of construction activities, the ground surface at the Project Site would be restored to existing conditions. Stormwater and surface runoff within the Project Site are already treated within the existing wastewater treatment plant and managed under a NPDES permit. Project operations are not expected to create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems. Therefore, operational impacts are anticipated to be less than significant.

Mitigation Measure: No mitigation would be required.

Impact HWQ-6: Substantially alter the existing drainage pattern of area in a manner which would impede or redirect flood flows. (Less than significant)

Following completion of construction activities, the Project Site would be restored to existing conditions. Stormwater and surface runoff within the Project Site are already treated within the existing wastewater treatment plant and managed under a NPDES permit. Project operations are not expected to alter existing drainage patterns that would impede or redirect flood flows. Therefore, operational impacts are anticipated to be less than significant.

Mitigation Measure: No mitigation would be required.

Impact HWQ-7: In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation. (Less than significant)

The operating portions of the Project Site are located within designated Zone X by the FEMA, which means that it is an area determined to be an area of minimal flood hazard (FEMA 2017). Project operations would not result in physical changes in these designated areas. Therefore, the Project would not create or substantially increase risks from flooding or expose people or structures to significant risk of loss, injury or death involving flooding.

Due to sea level rise, a portion of the Site that is low-lying could be vulnerable to future coastal storm flooding. Water level rise at the Avon terminal is predicted be approximately 2.7 inches by 2030, and, based on the lookback trends for various time periods, the pipelines will not likely be inundated until 2070, assuming the measured rate of water level rise of 0.1 inches per year (SGH 2021). Therefore, the risk release of pollutants due to inundation from sea level rise is less than significant.

A tsunami possibly affecting the Bay Area would originate in the Pacific Ocean before entering San Francisco Bay and likely dissipating through the wider and shallower water body. The Association of Bay Area Governments (ABAG) Hazard Viewer Map indicates that the Project Site is not located in a tsunami evacuation hazard zone (ABAG 2020). A seiche is the oscillation of a body of water and occurs most frequently in enclosed basins (i.e., lakes, bays, etc.). The operational portion of the Project Site is not located in an inundation area.

Therefore, impacts of Project operations are not expected to result in increased risk of pollutants due to inundation and would be less than significant.

Mitigation Measure: No mitigation would be required.

Impact HWQ-8: Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. (Less than Significant.)

The SWRCB's GeoTracker database indicates that the Project Site is subject to a Cleanup and Abatement Order to address soil and groundwater impacts, including arsenic, benzene, chromium, lead, nickel, gasoline and other petroleum hydrocarbons (SWRCB 2021). Cleanup actions at the Site include pumping and treating contaminated groundwater and removing free-phase liquid hydrocarbons. Project operations would have no impact on these existing cleanup actions.

The Project would not rely on groundwater wells requiring significant groundwater extraction from an aquifer or groundwater table. Additionally, the Project would not substantially decrease groundwater resources nor interfere with groundwater recharge. Overall, Project operations activities would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan, and the Project would have less than significant impact on groundwater supplies or interference with groundwater recharge.

Mitigation Measure: No mitigation would be required.

3.10.5 References

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3.11 LAND USE

This section describes existing uses of land surrounding the Project Site, lists applicable state and local land use policies and regulations, and evaluates the land use impacts of the proposed Project in light of adopted land use policies of the state and Contra Costa County (County). For this evaluation, guidelines and key sources of data reviewed include the following:

- Aerial photography
- Project plans and renderings

3.11.1 Environmental Setting

3.11.1.1 Regulatory and Policy Context

Federal

No federal regulations governing land use are applicable to the proposed Project.

State

Government Code

California Government Code Section 65300 requires that each city and county in the state prepare a comprehensive, long-term general plan for the physical development of the county or city, and of any land outside its boundaries which in the planning agency's judgment bears relation to its planning. In accordance with Government Code Section 65302, the general plan is a combination of development policies and diagrams that set forth objectives, principles and standards for how a community can achieve its long-term vision for itself. Each jurisdiction's general plan must include a land use element that designates the proposed general distribution and general location and extent of the uses of the land for various uses including housing, business, industry, open space, agriculture, natural resources, recreation, public buildings, waste facilities and other public and private uses of land (Government Code Section 65302). Cities and counties are authorized under Government Code Section 65800 *et seq.* to implement their general plans through adoption of ordinances that establish zoning districts, allowable land uses and standards for development of land within their boundaries.

The McAteer-Petris Act, adopted in 1965 and codified in Title 7.2 of the California Government Code, established the San Francisco Bay Conservation and Development Commission (BCDC), a 27-member commission consisting of San Francisco Bay Area residents and appointed representatives of various federal, state and local agencies. The Act authorizes the Commission, in addition to any applicable local agency, to approve or deny requests to place fill, extract materials or make any substantial change in use of water, land or structures in the Commission's jurisdiction (Government Code Sections 66620 and 66632). The Act also authorizes the Commission to develop long-range plans, including plans for unique land uses such as seaports along the Bay and shoreline, and plans for mitigating impacts of climate change on the Bay and shoreline. BCDC most recently updated its San Francisco Bay Plan (Bay Plan) in 2020 to establish guidance for future use and protection of the Bay and its shoreline lands.

Local

Contra Costa County

In accordance with Government Code Section 65300, the *Contra Costa County General Plan 2005-2020* (General Plan) is a comprehensive, long-range planning document expressing the County's goals for growth, development and conservation of resources through the year 2020, for lands within the unincorporated areas of Contra Costa (1-1). The County is in the process of updating its General Plan through its "Envision 2040" planning effort. With that effort underway but not yet approved, this EIR considers the adopted policies in the County General Plan last comprehensively amended in 2005.

City of Martinez

As stated in its preface, the *Martinez General Plan* "defines the broad goals of the city and sets policies…aimed at promoting balanced, safe and integrated development throughout Martinez" (Martinez 2010). In addition to city-wide development goals and policies, the General Plan includes Specific Area Plans outlining land use, conservation, site development, circulation and community amenities objectives for smaller subareas within the City. The City's General Plan was last comprehensively amended in 1973 and has been updated through periodic amendments since that time. Another comprehensive amendment to the City's General Plan is underway but has not yet been adopted.

3.11.2 Existing Conditions

Existing Land Uses

The Project Site is currently developed with a petroleum refinery, inclusive of oil-refining equipment and distribution terminal (Avon Marine Oil Terminal [MOT]); related infrastructure, pipelines and utilities; and administrative operations. The Project Site fronts on the open waters of the Carquinez Strait, and the lower Suisun Bay is offshore to the north. Onshore, undeveloped lands on and around the Project Site include marsh habitats between open water and onshore facilities and ruderal/upland habitat onshore between the marsh habitat and developed lands. These lands include the publicly-accessible Point Edith Wildlife Preserve.

Developed lands in the immediate and general vicinity of the Project Site include a variety of residential, commercial, industrial and public uses. The unincorporated residential community of Clyde is east of the Refinery's on-site marshlands, on the opposite side of the Port Chicago Highway from the Refinery's eastern property line. The Contra Costa County Water District's Mallard Reservoir, and multiple complexes of light industrial warehouse buildings are also located east of the Project Site.

The Refinery property's southern boundary adjoins the City of Concord municipal limit at Solano Way, and its eastern boundary is approximately 1 mile east of the city of Martinez municipal limit. Development in the city of Concord south of the Project Site includes a car dealership, retail and light industrial warehouses, a drive-in movie theater, the Buchanan Airfield and residential neighborhoods including a community park (Hillcrest). The closest residence in these neighborhoods is approximately 700 feet south of the Site's southern property line, in the Dalis Gardens Mobilehome Park. Floyd I. Marchus, a public school operated by the Contra Costa County Office of Education and the closest public school to the Site, is located in the

neighborhood southwest of the mobile home park and is approximately 2,900 feet south of the Refinery's southern property line.

Lands surrounding the Amorco MOT in the City of Martinez are developed with oil storage tanks, industrial warehouses, a chemical production plant and the PBF Energy, Martinez Refining Company Refinery. The Interstate Highway 680 and Amtrak railroad right-of-way are just east of the terminal and tank farm. Beyond adjacent industrial uses, the Martinez Waterfront Park and a neighborhood of single-family residences are approximately 0.4 miles east of the easternmost point of the tank farm.

San Francisco Bay Plan

Pursuant to the McAteer-Petris Act of 1965, the BCDC has regulatory jurisdiction over land-use activities within the first 100 feet from the shore of San Francisco Bay, which gives the BCDC jurisdiction over the Avon and Amorco MOTs. Plan Map 2 (Carquinez Strait) of the BCDC San Francisco Bay Plan (2020) identifies to Avon and Amorco MOTs and their adjoining shores as Tidal Marsh. Bay Plan Policy 12 of the Carquinez Strait subarea allows pipelines and piers to be built over marshes. The Refinery equipment, tanks, pipelines and ancillary support facilities are on lands identified on Plan Map 2 and Plan Map 3 (Suisun Bay and Marsh) as Water-Related Industry. Some Bay Plan policies concerning water-related industry and ports that are potentially applicable to the Project include:

Water-related Industry Policy 1.	Sites designated for both water-related industry and port uses in the 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 4.a	[Water-related industry and port sites should be planned and managed so as to avoid wasteful use of the limited supply of waterfront land.] Extensive use of the shoreline for storage of raw materials, fuel, products or waste should not be permitted on a long-term basis. If required, such storage areas should generally either be at right angles to the main direction of the shoreline or be as far inland as feasible, so other use of the shoreline may be made possible.
Water-related Industry Policy 4.c	Waste treatment ponds for water-related industry and port uses should occupy as little land as possible, be above the highest recorded level of tidal action, and be as far removed from the shoreline as possible.
Ports Policy 3.	Port priority use areas should be protected for marine terminals and directly related ancillary activities such as container freight stations, transit sheds and other temporary storage, ship repairing, support

> transportation uses including trucking and railroad yards, freight forwarders, government offices related to the port activity, chandlers, and marine services. Other uses, especially public access and public and commercial recreational development, should also be permissible uses provided they do not significantly impair the efficient utilization of the port area.

In addition to the Plan Maps, the Bay Plan includes a range of policies intended to support preservation of water quality; protection of sensitive native species and their habitats, including wetlands; avoidance of unnecessary fill that would reduce Bay surface area and water volume; efforts to ensure that fill that is placed in the Bay is well-designed, safe and the minimum necessary for the project's intent; mitigation for hazardous or adverse effects of projects on the environment; and provision for recreational opportunities and public access along the Bay and shoreline lands.

Contra Costa County General Plan

The Refinery equipment and related structures and facilities are on lands designated by the County General Plan as Heavy Industry (HI). While the County has jurisdiction over the land occupied by the associated onshore Refinery, the County does not have jurisdiction over the Avon Terminal. Nonetheless, the County's General Plan assigns a land use designation of Water (WA) to the Avon MOT, as the waters offshore of unincorporated lands bear relation to the County's long-term planning efforts. The pipeline between the Avon MOT and the Refinery is within a narrow strip of land designated as Open Space (OS). The General Plan describes the HI, WA and OS land use designations as follows:

> *Heavy Industry (HI): This designation allows activities requiring large areas of land with convenient truck, ship, and/or rail access. These uses are typically not compatible with residential uses in close proximity and the operations conducted may be characterized by noise or other conditions requiring spatial separation. Uses may include metalworking, chemical or petroleum product processing and refining, heavy equipment operation and similar activities. Light industrial land uses will be allowed within lands designated Heavy Industrial and they can be developed according to light industrial definition and standards found in that designation.*
>
> *Water (WA): This designation is applied to approximately 68 square miles of water in San Francisco-San Pablo Bay and the portion of the Sacramento-San Joaquin River estuary system which is within the county. The designation is also applied to all large inland bodies of water such as reservoirs. Uses allowed in areas designated Water include transport facilities associated with adjacent heavy industrial plants, such as ports and wharves, and water-oriented recreation uses such as boating and fishing. Construction of new residences or commercial uses and the subdivision of land are inconsistent with this General Plan designation.*
>
> *Open Space (OS): This land use designation includes publicly-owned open space lands which are not designated as Public and Semi-Public, Watershed, or Parks and Recreation. Lands designated Open Space include, without limitation, wetlands and tidelands and other areas of significant ecological resources, or geologic hazards.*

The Open Space designation also includes privately-owned properties for which future development rights have been deeded to a public or private agency. For example, significant open space areas within planned unit developments identified as being owned and maintained by a homeowners association fall under this designation. Also included are the steep, unbuildable portions of approved subdivisions which may be deeded to agencies such as EBRPD, but which have not been developed as park facilities. Other privately-owned lands have been designated as Open Space consistent with adopted city general plans.

The most appropriate uses in Open Space areas involve resource management, such as maintaining critical marsh and other endangered habitats or establishing "safety zones" around identified geologic hazards. Other appropriate uses are low-intensity, private recreation for nearby residents. Construction of permanent structures (excluding a single-family residence on an existing legally established lot), not oriented towards recreation or resource conservation, is inconsistent with this designation. One single-family residence on an existing legal lot is consistent with this designation.

Of the approximately 2,000 acres owned by Marathon, approximately 100 acres of undeveloped area east of the Refinery tanks, plus the undeveloped acreage outside and east of the Refinery, are designated Parks and Recreation (PR) and (OS). Approximately 93 acres of the on-site recreational fields is designated Light Industry (LI). No new development on these undeveloped or recreational areas of the property is proposed with the Project. Land use designations and zoning within the County are shown in **Figure 3.11-1: Contra Costa County General Plan Land Use Designations** and **Figure 3.11-2: Contra Costa County Zoning Map** below.

In addition to the mapped land use designation, County General Plan land use-related policies that are applicable to the proposed Project include the following:

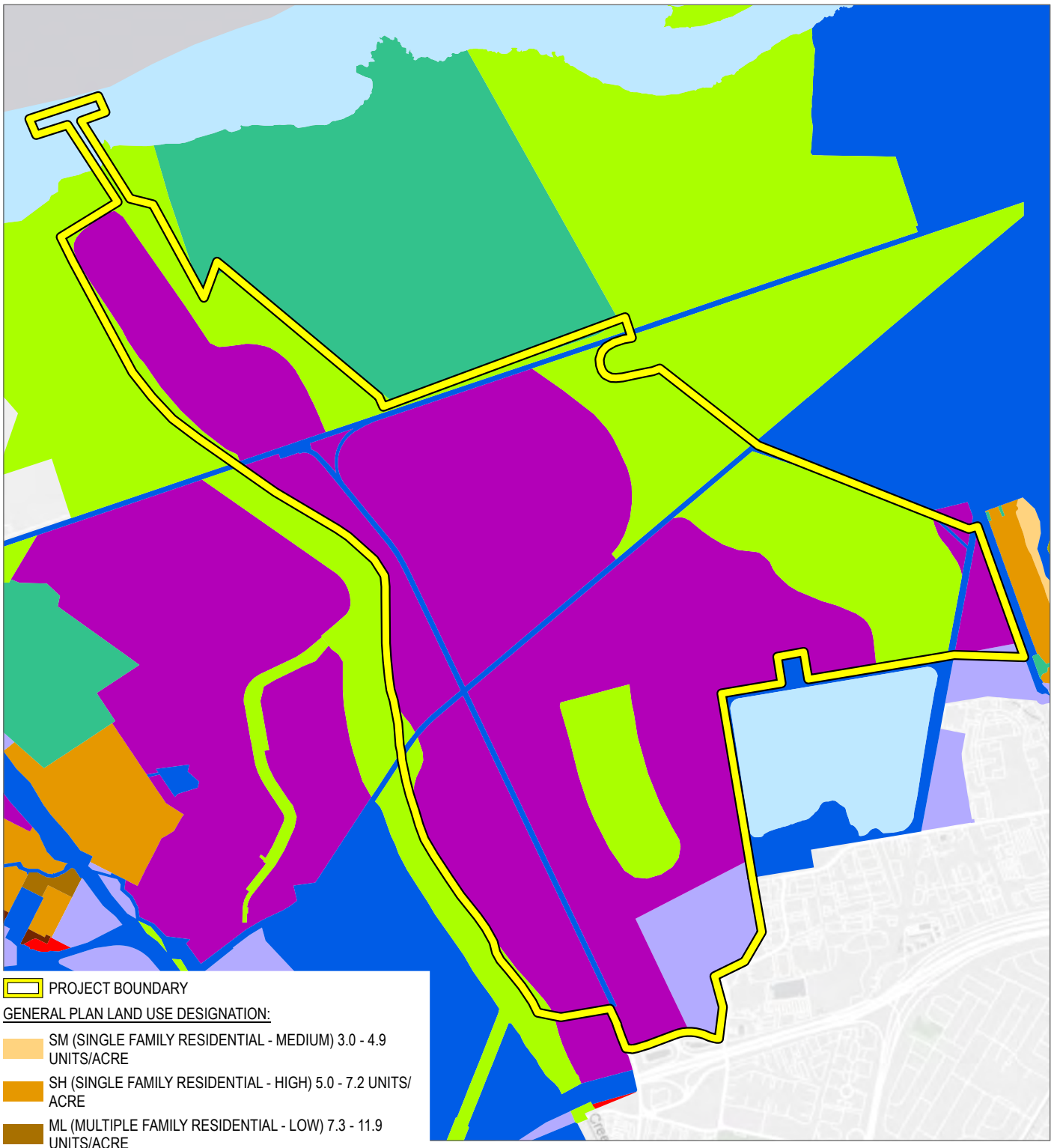
Policy 3-30	A variety of appropriately-sized, well-located employment areas shall be planned in order that industrial and commercial activities can contribute to the continued economic welfare of the people of the county and to the stable economic and tax bases of the county and the various cities.
Policy 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 3-b	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 3-d	Review proposed land development projects for consistency with land use designations and relevant policies and standards of each element of the General Plan.
Policy 3-106	(Vine Hill/Pacheco Boulevard Area): The residential neighborhood east of I-680 shall be buffered from the industrial/landfill-related uses.

Contra Costa County Zoning Ordinance

Zoning regulations for the County are adopted into Title 7, Zoning, of the Ordinance Code of Contra Costa County, which provides regulations for development of land in the unincorporated areas and includes by reference in County Code Section 84-2.002 a Zoning Map that assigns a zoning classification to each parcel within the County's jurisdiction. The Zoning Map classifies the lands on which the Refinery's equipment and tanks are located as H-I (Heavy Industrial) District. In the H-I District, heavy manufacturing, including but not limited to manufacturing or processing of petroleum, chemicals, lumber and steel, are permitted uses of land. There are no minimum lot area, maximum height or minimum setback regulations with which development in the H-I District must comply (County Code Sections 84-62.402 and 84-62.602).

Although fuel production facilities are permitted uses of land in the H-I District, the County Ordinance Code requires land use permits for specified development projects involving hazardous waste or hazardous material as specified in the County's Industrial Safety Ordinance (County Ordinance No. 98-48).

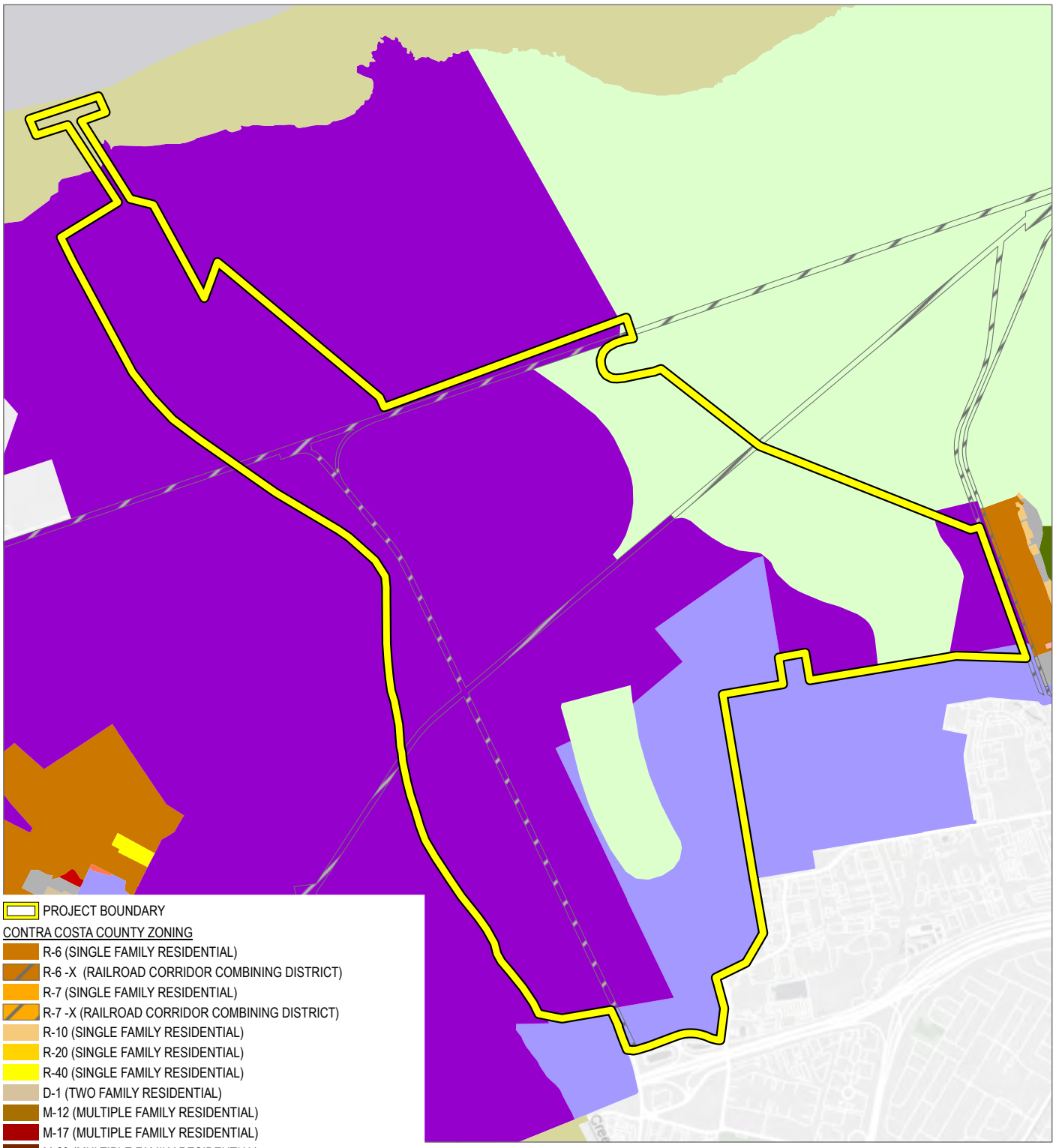


PROJECT: **CONTRA COSTA COUNTY**
MARTINEZ RENEWABLE FUELS EIR
150 SOLANO WAY, CONTRA COSTA COUNTY, CALIFORNIA

TITLE: **CONTRA COSTA COUNTY GENERAL PLAN LAND USE DESIGNATIONS**

DRAWN BY:	D. SWEENEY	PROJ. NO.:	CDLP20-02046
CHECKED BY:	R. SPRING		
APPROVED BY:	D. AYERS		**FIGURE 3.11-1**
DATE:	SEPTEMBER 2021		

FILE: MARATHONRENEWABLESFUEL.APRX



PROJECT:
CONTRA COSTA COUNTY
MARTINEZ RENEWABLE FUELS EIR
150 SOLANO WAY, CONTRA COSTA COUNTY, CALIFORNIA

TITLE:
CONTRA COSTA COUNTY ZONING

DRAWN BY:	D.SWEENEY	PROJ. NO.:	CDLP20-02046
CHECKED BY:	R. SPRING		
APPROVED BY:	D. AYERS		**FIGURE 3.11-2**
DATE:	SEPTEMBER 2021		

FILE: MARATHONRENEWABLESFUEL.APRX

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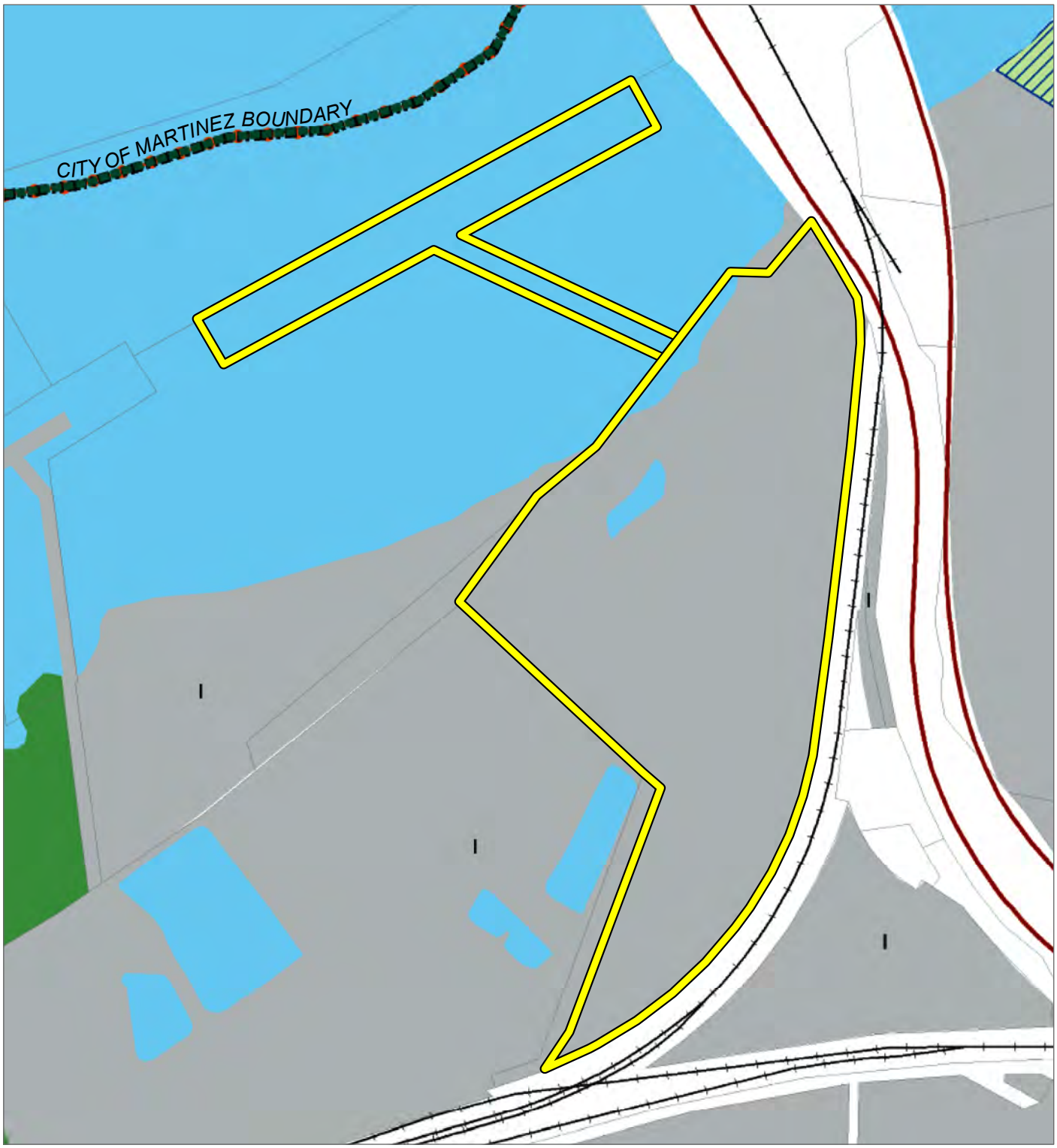
City of Martinez General Plan

As shown in **Figure 3.11-3, City of Martinez General Plan Land Use Designations** and **Figure 3.11-4, City of Martinez Zoning Map**, The City of Martinez General Plan maps the lands at the Amorco Tank Farm adjacent to the Amorco MOT as Industrial. The General Plan includes the following Land Use Policy 21.51 regarding industrial land uses. Additional policies apply to industrial land uses in the Central Martinez Specific Plan Area:

Policy 21.51	Expansion of the petroleum refining and related industries must proceed in an orderly fashion and be consistent with protection of the community's air, water, scenic and fiscal resources.
Policy 30.353	Industrial expansion accompanied by adverse environmental impact will not be permitted.
Policy 30.356	Industry should be located in a manner that protects both the adjacent land uses and the industry itself.
Policy 30.3564	Industrial activities commonly considered undesirable, but necessary, should be identified. These may be located with minimum public exposure, but with direct access to major arterials.

City of Martinez Zoning Ordinance

The City of Martinez zoning of the Amorco Tank Farm and MOT is HI (Heavy Industrial) District. Martinez Municipal Code Section 22.18.040, Subsection B, identifies petroleum and petroleum products storage and shipping docks, piers and berthing facilities as permitted uses of land. Development regulations for the HI District, including maximum coverage and building heights, and minimum yards, are specified in Sections 22.18.110 through 22.18.150 of Martinez Municipal Code.



PROJECT BOUNDARY

CITY OF MARTINEZ GENERAL PLAN LAND USES

- INDUSTRIAL
- PARKS & RECREATION
- WATER
- OPEN SPACE/CONSERVATION USE LAND

BASE MAP ACQUIRED FROM WWW.CITYOFMARTINEZ.ORG
DATA SOURCES: TRC, ESRI, CITY OF MARTINEZ

N

0 300 600

FEET

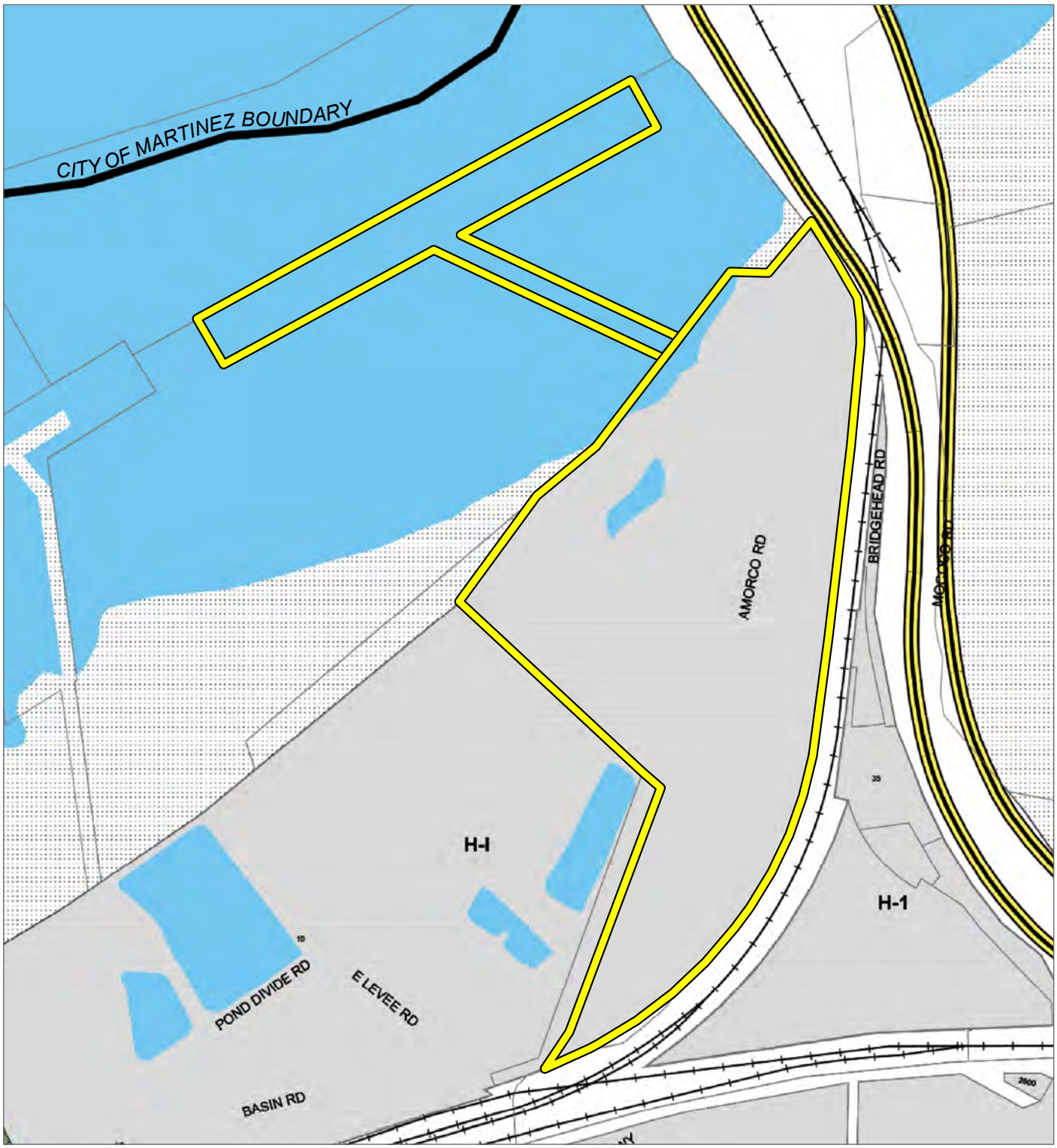
1:7,200 1" = 600'

PROJECT:
CONTRA COSTA COUNTY
MARTINEZ RENEWABLE FUELS EIR
150 SOLANO WAY, CONTRA COSTA COUNTY, CALIFORNIA

TITLE:
CITY OF MARTINEZ GENERAL PLAN LAND USE DESIGNATIONS

DRAWN BY:	D. SWEENEY	PROJ. NO.:	CDLP20-02046
CHECKED BY:	R. SPRING		
APPROVED BY:	D. AYERS		**FIGURE 3.11-3**
DATE:	SEPTEMBER 2021		

FILE: MARATHONRENEWABLESFUEL.APRX



PROJECT BOUNDARY

CITY OF MARTINEZ ZONING

- HEAVY-INDUSTRIAL
- RESIDENTIAL
- MIXED; USE; DISTRICT; (OPEN; SPACE/RECREATIONAL; FACILITIES)
- ENVIRONMENTAL CONSERVATION DISTRICT
- WATER

BASE MAP ACQUIRED FROM WWW.CITYOFMARTINEZ.ORG
DATA SOURCES: TRC, ESRI, CITY OF MARTINEZ

N

0 300 600

FEET

1:7,200 1" = 600'

PROJECT:

CONTRA COSTA COUNTY
MARTINEZ RENEWABLE FUELS EIR
150 SOLANO WAY, CONTRA COSTA COUNTY, CALIFORNIA

TITLE:

CITY OF MARTINEZ ZONING

DRAWN BY:	D. SWEENEY	PROJ. NO.:	CDLP20-02046
CHECKED BY:	R. SPRING		
APPROVED BY:	D. AYERS		**FIGURE 3.11-4**
DATE:	SEPTEMBER 2021		

FILE: MARATHONRENEWABLESFUEL.APRX

COORDINATE SYSTEM: NAD 1983 2011 STATEPLANE CALIFORNIA III FIPS 0403 FT US; MAP ROTATION: 0
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3.11.3 Impact Analysis

3.11.3.1 Methodology for Impact Analysis

To determine the potential land use impacts of the proposed Project, changes in uses of land that would directly or indirectly result from the Project are identified and evaluated for consistency with adopted land use policies and regulations of applicable permitting agencies.

3.11.3.2 Significance Criteria

For the purposes of this analysis, the Project was considered to have a significant land use impact requiring mitigation if it would:

- Physically divide an established community; or
- Cause significant environmental impact due to conflict with any land use plan, policy or regulation adopted for the purpose of avoiding or mitigating an environmental effect.

3.11.4 Impacts and Mitigation Measures

Construction-related Impacts

Impact LU-1: Physically divide an established community. (Less than Significant)

As described in Existing Conditions above, the Project Site is currently developed with a petroleum refinery, inclusive of oil-refining equipment; related infrastructure, pipelines and utilities; and supporting administrative operations. Immediately surrounding the Project Site are the open waters of the Carquinez Strait and lower Suisun Bay; undeveloped lands on and around the Project Site including marsh habitats between open water and onshore facilities and ruderal/upland habitat onshore between the marsh habitat and developed lands, including Point Edith Wildlife Preserve. Developed lands in the immediate and general vicinity of the Project Site include a variety of residential, commercial, industrial and public uses.

Construction of the Project would include conversion of existing petroleum-refining equipment to process renewable fuels. Several units used in the processing of petroleum products would be taken offline with the Project and would be demolished and recycled or disposed. This construction and demolition activity would occur within the existing footprint of the Refinery as depicted on Figure 2-3a of this Draft Environmental Impact Report. Construction work at the Avon and Amorco MOTs would include modifications to existing pipes and hoses to accommodate receipt of renewable feedstock and distribution of renewable diesel product for outbound shipments from the Refinery, and this construction would occur immediately adjacent to the existing piers of the two MOTs. No new roads, walls or other structures would be built outside the boundaries of the Refinery or MOTs; therefore, none of the existing residential neighborhoods, which are 0.4 miles or further away from the boundaries of the Refinery or MOTs, would be divided as a result of Project construction.

Mitigation Measure: No mitigation would be required.

Impact LU-2: Cause significant environmental impact due to conflict with any land use plan, policy or regulation adopted for the purpose of avoiding or mitigating an environmental effect. (Less than Significant)

Construction of the Project would require building permits for demolition of defunct refining equipment and installation of new equipment within the footprint of the Refinery, on lands zoned by the County as HI District and designated by the BCDC as Water-related Industry. Through the plan check process of the building permit application, the County can confirm compliance of Project construction with applicable standards for safety in the Building Code. County General Plan Policy 11-8 also restricts construction activities to the hours of the day that are not noise-sensitive for adjacent land uses (i.e., outside of early nighttime and early morning periods), and the County is authorized impose a condition of approval on the Project that would require compliance with the policy during construction.

At the Avon and Amorco MOTs, a pipeline along the wharf would be modified, and repairs to dolphin pilings would be conducted to accommodate the renewable feedstock and distribution vessels associated with the proposed Project. Work that would be done at the Avon MOT would utilize scaffolding fixed to the wharf, and tarps would be utilized over water and wetland areas to catch any falling tools or debris during construction. Concrete and piling repairs at the Amorco MOT would require in-water work but would not extend into the substrate. With application of these construction techniques, it is not anticipated that fill within the Bay or shoreline lands would be necessary for the Project. The Project would therefore meet the intent of Bay Plan Fills Policy 1 to minimize or avoid the need for placement of fill, as well as County General Plan policy 8-91 that requires construction near watercourses to minimize impacts from runoff, erosion and sedimentation.

Mitigation Measure: No mitigation would be required.

Operational Impacts

Impact LU-1: Physically divide an established community. (Less than Significant)

The potential for the Project to divide an established community would not change following completion of construction. Because no changes outside the footprint of the existing Refinery or MOTs would occur, the Project would not reduce any distances to existing established communities nor result in the presence of new barriers within those communities. The Project's operational impacts would be less than significant.

Mitigation Measure: No mitigation would be required.

Impact LU-2: Cause significant environmental impact due to conflict with any land use plan, policy or regulation adopted for the purpose of avoiding or mitigating an environmental effect. (Less than Significant)

The Project would continue the use of the Project Site as a refinery for the production of fuels. Refineries are among the uses listed as consistent with the HI land use designation of the County General Plan, and they are a permitted use of land in the H-I District of the County. The pipeline between the Refinery and the Avon MOT would be retrofitted to accommodate reception of renewable feedstock, but it would not be expanded in footprint, and so the Project would retain as undeveloped the majority of the lands designated as OS in the County General Plan. The use of land Petroleum and petroleum products storage and shipping docks, piers and berthing facilities are also permitted uses of land in the HI District of the City of Martinez. Bay Plan

Policy 12 of the Carquinez Strait subarea allows pipelines and piers to be built over marshes, and Bay Plan Ports Policy 3 encourages protection of port priority use areas for marine terminals. The Project is also consistent with Bay Plan Water-related Industry Policy 4.a, which encourages efficient and limited use of waterfront land for industrial purposes, because the Project would re-purpose existing equipment within the current footprint of the Refinery and would not require an expansion of refining facilities to new areas of the shoreline. Therefore, the continued use of the Refinery and Avon and Amorco MOTs for receipt, storage, distribution and manufacturing of fuels, albeit from renewable feedstock rather than petroleum, would be consistent with allowable land uses specified in applicable land use plans of the City, County and BCDC.

County Code Chapter 84-63 requires a land use permit for specified development projects involving hazardous waste or hazardous material, based on a "hazard score." The "hazard score" is determined based on specified factors, including if the development project will result in a new process unit, unless the process unit is otherwise exempt. Other input factors for determining the hazard score include the hazardous material being stored or handled, distance between the facility and the nearest sensitive receptor, size of the facility and transportation risk. As the Project includes the installation of new foundations and equipment units (e.g., pretreatment unit, hydrodeoxygenation units), a land use permit is required.

Mitigation Measure: No mitigation would be required.

3.11.5 References

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3.12 NOISE

This section describes the existing noise environment of the Project Site and identifies potential noise receptors. Applicable regulations of the local community are also discussed, along with a brief description of the generation and characteristics of sound and how sound is measured.

Key sources of data used in the analysis in this chapter include aerial views from Google Earth (July 2021), and figures presented in the Project Description, including:

- Figure 2-3: Project Site Plan
- Figure 2-5: Refinery Equipment Modification

Noise Concepts and Terminology

Terminology

This noise analysis relies on the following standard noise-related terms and principles.

- **Environmental noise:** Environmental noise is defined as unwanted sound resulting from vibrations in the air. Excessive noise can cause annoyance and adverse health effects. Annoyance can include sleep disturbance and speech interference. It can also distract attention and make activities more difficult to perform (U.S. EPA 1978).

- The range of pressures that create noise is broad. Noise is, therefore, measured on a logarithmic scale, expressed in **decibels (dB)**. Noise is typically measured on the **A-weighted scale (dBA)**, which has been shown to provide a good correlation with human response to sound and is the most widely used descriptor for community noise assessments (Harris 1998).

- To describe the time-varying character of environmental noise, various statistical noise descriptors are typically used.

  - **L_{max}**: L_{max} is the maximum noise level generated by a source at a specified distance.

  - **L_{eq}**: L_{eq} is the equivalent noise level over a specified period of time (i.e., 1 hour). It is a single value of sound that includes all of the varying sound energy in a given duration.

  - **L_{90}, L_{50} and L_{10}**: These are the A-weighted sound levels that are exceeded at the specified percentage of time. For example, L_{90} is the sound level exceeded 90 percent of the time and is often considered the background, or residual, noise level. Similarly, L_{10} is the sound level exceeded 10 percent of the time and is commonly used as a measurement of intrusive sounds such as aircraft overflight.

  - **L_{dn}:** L_{dn}, or day-night noise level, is the A-weighted sound level over a 24-hour period with an additional 10 dB penalty imposed on sounds that occur between 10:00 p.m. and 7:00 a.m.

- **CNEL:** Community Noise Equivalent Level (CNEL) is similar to L_{dn} and is the A-weighted sound level over a 24-hour period with an additional 10-dB penalty imposed on sounds that occur between 10:00 p.m. and 7:00 a.m., and a 5-dB penalty imposed on sounds that occur in the evening between 7:00 p.m. and 10:00 p.m. CNEL was developed in California for evaluating noise levels in residential communities. CNEL will always be higher than L_{dn} for the same location; therefore, it is appropriate and conservative to use CNEL when L_{dn} is not available or when comparing calculated noise to an L_{dn} threshold.

General Noise Concepts

Sound travels through the air as pressure waves caused by some type of vibration. In general, sound waves travel away from a noise source at ground level in a hemispherical pattern. The energy contained in a sound wave is spread over an increasing area as it travels away from the noise source. Typical A-weighted noise levels for various sound sources are summarized in **Table 3.12-1, Typical A-weighted Sound Levels**, below.

The nature of dB scales is such that individual dB ratings for different noise sources cannot be added directly to give the sound level for the combined noise from all sources. Instead, the combined noise level produced by multiple noise sources is calculated using logarithmic summation. For example, if one source produces a noise level of 80 dBA, then two of the identical sources side by side would generate a combined noise level of 83 dBA, or an increase of only 3 dBA.

People generally perceive a 10-dBA increase in a noise source as a doubling of loudness. Also, most people cannot detect differences of less than 2 dBA between noise levels of a similar nature, while most could probably perceive a change of approximately 5 dBA. When a new intruding sound is of a different nature than the background sound, such as a horn sounding in heavy vehicle traffic, most people can detect changes as low as 1 dBA. When distance is the only factor considered, sound levels from isolated point sources of noise are reduced by approximately 6 dBA for every doubling of distance. The following formula can also be used to determine noise reduction at any distance from an isolated point source:

Where: $L_2 = L_1 - (20 \times \log_{10}(r_2/r_1))$

L_1 is the noise level at reference distance (r_1)

L_2 is the noise level at receptor distance (r_2)

When the noise source is on a continuous line, such as vehicle traffic on a highway, sound levels decrease by approximately 3 dBA for every doubling of distance.

Noise levels can also be affected by several factors other than distance. Topographic features and structural barriers absorb, reflect and scatter sound waves and affect the reduction of noise levels. Atmospheric conditions (wind speed and direction, humidity and temperature) and the presence of dense vegetation can also affect the degree to which sound waves attenuate over distance.

Table 3.12-1: Typical A-weighted Sound Levels

Sound Source	Sound Level (dBA)	Typical Human Response
Carrier deck jet operation	140	Painfully loud
Limit of amplified speech	130	
Jet takeoff (200 feet) Auto horn (3 feet)	120	Threshold of feeling and pain
Jet takeoff (2,000 feet) Riveting machine	110	Very annoying
Shout (0.5 feet) New York subway station	100	
Heavy truck (50 feet) Pneumatic drill (50 feet)	90	Hearing damage (8-hour exposure)
Passenger train (100 feet) Helicopter (in flight, 500 feet) Freight train (50 feet)	80	Annoying
Freeway traffic (50 feet)	70	Intrusive
Air conditioning unit (20 feet) Light auto traffic (50 feet)	60	
Normal speech (15 feet)	50	Quiet
Living room Bedroom Library	40	
Soft whisper	30	Very quiet
Broadcasting studio	20	
	10	Just audible
	0	Threshold of hearing

Source: Compiled by TRC

3.12.1 Environmental Setting

3.12.1.1 Regulatory and Policy Context

Federal

There are no federal laws, ordinances or regulations that directly affect the proposed Project with respect to noise or vibration. However, there are some federal standards that can be utilized for consideration of a broad range of noise and vibration issues, as listed below.

The U.S. Department of Housing and Urban Development Noise Regulations (Title 24, Code of Federal Regulations, Part 51, Subpart B) identify sound levels that are compatible with residential land use. Sound levels not exceeding a 65-dBA L_{dn} are considered acceptable. Sound levels between 65-dBA L_{dn} and 75-dBA L_{dn} are normally unacceptable, unless noise-reduction measures are included to limit noise levels within residences to a 45-dBA L_{dn} or below. Sound levels exceeding a 75-dBA L_{dn} are unacceptable.

The U.S. Environmental Protection Agency (U.S. EPA) has not promulgated standards or regulations for environmental noise. However, it has published a guideline that specifically addresses issues of community noise. This guideline, commonly referred to as the "EPA Levels Document" (U.S. EPA 1974), contains goals for noise levels affecting residential land use including an L_{dn} equal to or less than 55 dBA for outdoors and an L_{dn} equal to or less than45 dBA for indoors. The agency is careful to stress that the recommendations contain a factor of safety and do not consider technical or economic feasibility issues and, therefore, should not be construed as standards or regulations.

The Federal Transit Administration (FTA) has not promulgated standards or regulations for environmental noise by construction. However, it has published a guideline that specifically addresses issues of community noise. This guideline recommends that hourly sound levels of 90 dBA at residential uses from construction noise, including pile driving, would be considered a significant impact (FTA 2006). The FTA guidelines also address vibration impacts.

State

The following potentially relevant State noise regulations have been identified:

- California Department of Industrial Relations, California Occupational Safety and Health Administration (Title 8, California Code of Regulations, Sections 5095-5098) requires that all facility noise levels be limited to 85 dBA to protect worker safety. If workers frequent areas of the facility that exceed 85 dBA, then all aspects of a hearing conservation program must be implemented by the employer.

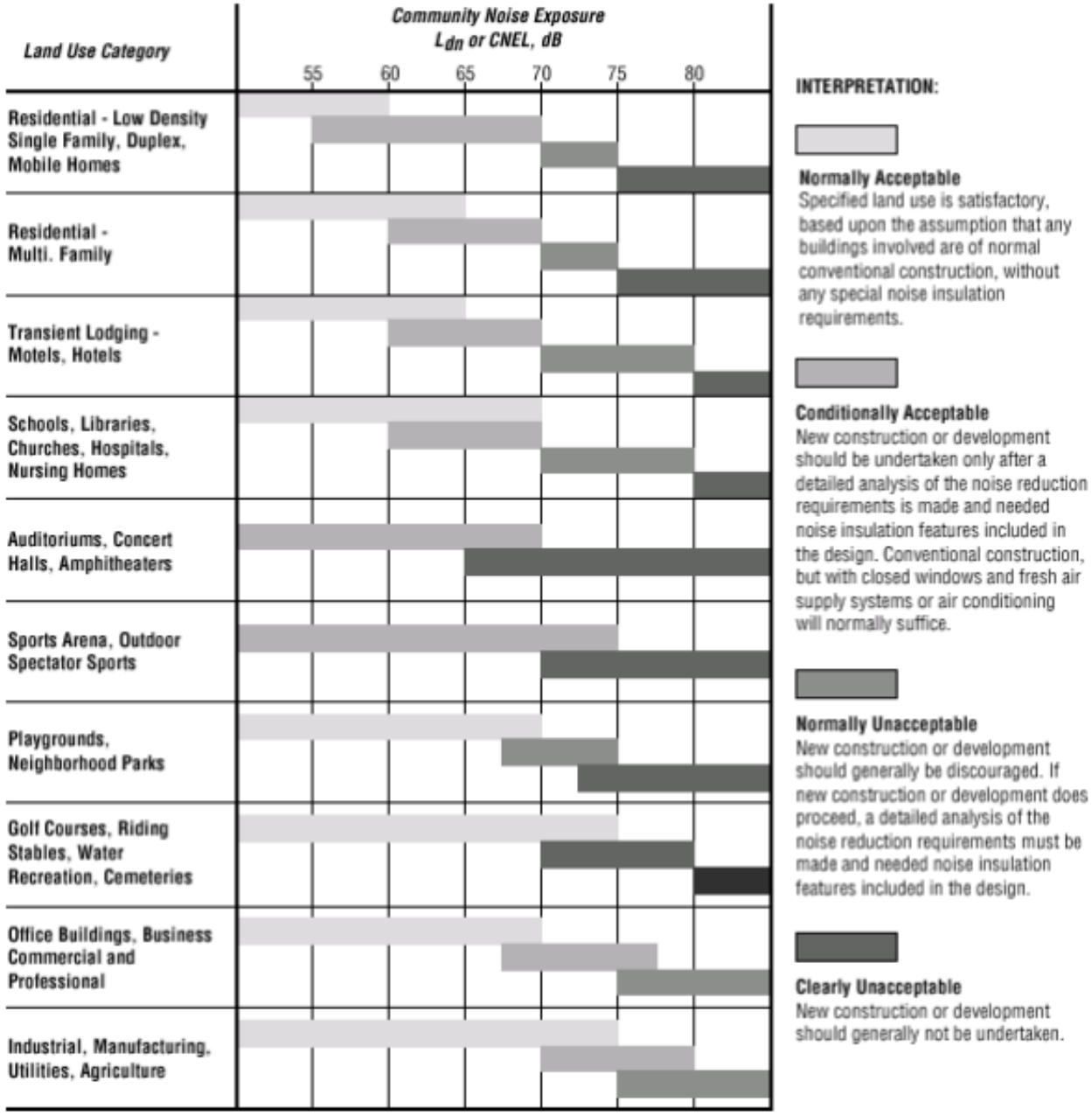
- California Government Code (Section 65302(f)) requires local jurisdictions to prepare general plans that include land use and noise elements.

Local

Section 11 (Noise Element) of the Contra Costa County General Plan 2005-2020 establishes, in Policy 11-1, the acceptability of proposed new land uses within existing noise-impacted areas in accordance with the State of California General Plan Guidelines shown in Table 3.12-2, Noise Level/Land Use Compatibility, below. This table can also be used to determine if receptors

within a current land use area would be significantly impacted by a proposed new land use in the vicinity. The maximum exterior noise level considered to be "normally acceptable" for single-family residential uses is 60-dBA $L_{dn,}$ and noise levels of up to 70-dBA L_{dn} are considered to be "conditionally acceptable." The maximum exterior noise level considered to be "normally acceptable," without condition, for industrial uses is 70-dBA L_{dn}. This policy does not apply to temporary noise levels, such as from construction.

Table 3.12-2: Noise Level/Land Use Compatibility



Source: State of California Governor's Office of Planning and Research 2017

Contra Costa County General Plan Noise Element Policy 11-8 states 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 City of Martinez Municipal Code (City of Martinez 2021) provides an acceptable standard of 60 dB L_{dn} for exterior noise (Section 8.34.020) and generally restricts operation of construction equipment to the hours from 7:00 a.m. to 7:00 p.m. on weekdays and from 9:00 a.m. to 5:00 p.m. on weekends and holidays (Section 8.34.030).

3.12.2 Existing Conditions

The Marathon Refinery is located along the Carquinez Strait east of the Benicia-Martinez Bridge. Nearby industrial facilities include the PBF Energy, Martinez Refining Company Refinery and the TransMontaigne Terminal (formerly Plains Terminal) to the west. Noise in the vicinity of the Project Site Project area is derived primarily from the mobile sources associated with the Benicia Bridge and Interstate Highway 680 (road traffic, railroad) and strait (vessel traffic). Secondary noise sources include industrial activities at the Marathon Refinery, as well as the TransMontaigne Terminal and the PBF Energy, Martinez Refining Company Refinery.

There is one sensitive receptor, the Floyd I. Marchus School, located approximately 0.5 miles south of the Refinery property's southern boundary but approximately 1.5 miles or further from any proposed areas of Project construction within the Project Site. There are no other sensitive receptors or sensitive land uses (e.g., hospitals, schools, nursing homes) located near the Project area. The nearest residences to the Refinery or Avon Marine Oil Terminal are located to the southwest of the Refinery along Blum Road and to the west along Donna Drive and Irene Drive, in the Vine Hill area of unincorporated Contra Costa County. These residences are approximately 0.8 miles or farther from the closest area of Project construction at Tank 867 within the Project Site. Residences in the City of Martinez and southwest of the Amorco Marine Oil Terminal are approximately 0.9 miles or further from the areas of construction on and adjacent to the wharf at that terminal.

Section 11 (Figure 11-5C) of the Noise Element of the *Contra Costa County General Plan* (CCC 2010) indicates that the residences near the Refinery are currently in an area impacted by noise primarily from Interstate Highway 680 (I-680) with an ambient noise level of approximately 65-dBA L_{dn}. Previous noise monitoring conducted in the Project area has included noise readings on Blum View Drive, about 300 feet from I-680. These noise readings indicated an Leq of 52 dB and an Ldn of 55 dB (City of Martinez 2015).

The Noise Element of the County General Plan indicates that Community Noise Exposure Levels at or below 75 dB L_{dn} are categorized as "Normally Acceptable" for industrial land uses.

3.12.3 Impact Analysis

3.12.3.1 Methodology for Impact Analysis

Environmental impacts are discussed in this section relative to the receptors nearest to the Project Site.

3.12.3.2 Significance Criteria

For the purposes of this analysis, the Project was considered to have a significant noise impact requiring mitigation if:

- The Project would 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;
- The Project would result in generation of excessive groundborne vibration or groundborne noise levels or
- The Project Site is 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, and it would expose people residing or working in the Project area to excessive noise levels.

3.12.4 Impacts and Mitigation Measures

Construction-related Impacts

Impact NOI-1: Generation of a substantial temporary increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. (Less than Significant)

The Martinez Renewable Fuels Project *Noise Technical Analysis* (Marathon 2021) provides an analysis and description of construction noise from the proposed Project, and concludes the following:

> *Noise from construction equipment associated with the project at the closest residential area is expected to be about 40-41 dBA, or less than existing ambient noise levels. Ambient noise levels at the closest residential area are estimated to be Leq of 52 decibels and a day/night average sound level (Ldn) of 55 decibels (City of Martinez, 2015). The addition of the construction noise would not result in an increase in noise at the closest residential area. Most of the construction noise sources will be located near ground level, so the noise levels are expected to attenuate further than analyzed herein. Noise attenuation due to existing structures or topography has not been included in the analysis. Based on the above evaluation of noise from construction equipment, noise levels at the closest residential area are not expected to increase during construction activities and would be much less than 3 dBA.*

Policy 11-8 of the Contra Costa County General Plan Noise Element established 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. This policy is also consistent with the defined working hours restrictions in the City of Martinez Municipal Code.

Since the Contra Costa County General Plan does not provide a numeric standard related to increases in ambient community noise due to construction, and the Project noise increases in residential areas are expected to be less than 3 dBA, any temporary increases in ambient noise levels in the vicinity of the Project area would be less than significant. Additionally, standard work-hour conditions of approval would limit construction activities to Monday through Friday, from 8:00 a.m. to 5:00 p.m. and limit transport of heavy equipment and trucks to Monday through Friday, from 9:00 a.m. to 4:00 p.m.

Mitigation Measure: No mitigation would be required.

Impact NOI-2: Generation of excessive temporary groundborne vibration or groundborne noise levels. (Less than Significant)

Construction of the Project has the potential for generating groundborne vibration and noise due to heavy construction equipment and large truck traffic. The types of construction equipment to be used include but are not limited to trucks, cranes, forklifts, air compressors, generators, excavators, scrapers, backhoes, front end loaders and welding machines (Marathon 2021). Impact or vibratory pile driving, which has a greater potential to generate groundborne vibration and noise are not proposed for construction of the Project (ALG and Barr 2021). Both the current land use within the Project Site and other surrounding industrial land uses also generate groundborne vibration and noise in the Project area that is characteristically similar to that of standard construction equipment. Due to the temporary nature of the groundborne noise and vibration generated by construction equipment proposed for the Project, the existing groundborne vibration and noise generated by industrial uses in the Project area, and the relative distance of more than 0.75 miles from the areas of construction within the Project Site to the sensitive receptor and residences, the potential for construction of the Project to generate groundborne vibration and noise in excess of current conditions would be less than significant.

Mitigation Measure: No mitigation would be required.

Operational Impacts

Impact NOI-3: Generation of a substantial permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. (Less than Significant)

The Martinez Renewable Fuels Project *Noise Technical Analysis* (Marathon 2021) provides an analysis and description of operational noise from the proposed Project, and concludes the following:

> *Once constructed, the project is not expected to produce noise in excess of current operations. The proposed project is expected to result in a reduction in operating processing units at the Refinery, which are also noise sources, including the*

Crude Units, No. 4 HDS Unit, Alkylation Unit, No. 4 Gas Plant, Catalytic Reformer, No. 3 Reformer, Sulfur Recovery Unit, Benzene Saturation Unit, Fluid Catalytic Cracking Unit, Boilers #6 and #7, and #1 and #2 Feed Prep (Vacuum) Units. The shutdown of existing units results in the operation of fewer units, boilers, vessels, towers, columns, fugitive emissions and other similar equipment, generally reducing the overall noise associated with the operation of the Martinez Facility. (The) proposed project will result in the shutdown of 12 existing processing units, plus two additional boilers. The proposed project will result in the construction of two new processing units (the Pretreatment Unit and Stage 1 Wastewater Treatment Unit) and one thermal oxidizer. Therefore, the number of operating processing units and the related noise sources will substantially decrease. Because the project will result in fewer operating units and noise sources, the overall noise at the facility is expected to be reduced.

The estimated noise levels during operation of the various new and existing units are expected to be an average of about 80 dBA at 50 feet from the center of the unit. The project site is located in a heavy industrial area and is surrounded by heavy industrial uses. Using an estimated six dBA reduction for every doubling distance, the noise levels would drop off to about 62 dBA or less at about 400 feet from the sources for the proposed project. The closest residential area is over one mile (5,280 feet) from the project site. Noise from operation of equipment associated with the project at the closest residential area is expected to be about 40-41 dBA, or less than existing ambient noise levels. Ambient noise levels at the closest residential area are estimated to be Leq of 52 and a day/night average sound level (Ldn) of 55 decibels (City of Martinez, 2015).

Policy 11-1 of the Contra Costa County General Plan Noise Element establishes that the maximum unconditional day-night level (L_{dn}) for an industrial land use is 70 dBA (A-weighted sound level), while the City of Martinez Municipal Code (City of Martinez 2021) provides an acceptable standard of 60 dB L_{dn} for exterior noise.

Because ambient noise levels are already below the City of Martinez standard at residences closest to the Project area, and the Project would generally produce less noise than under current conditions, the Project would not increase ambient noise levels for sensitive and residential receptors in the vicinity of the Project area and permanent noise increases would be less than significant.

Mitigation Measure: No mitigation would be required.

Impact NOI-4: Generation of excessive permanent groundborne vibration or groundborne noise levels. (Less than Significant)

Both the current land use within the Project Site and other surrounding industrial land uses generate groundborne vibration and noise in the Project area. Groundborne vibration and noise from the Project would be similar to that of the existing land use within the Project Site. Due to the existing groundborne vibration and noise generated by the industrial uses in the Project area, and the relative distance of more than 0.75 miles from the Project areas of construction to

residences, the potential for the Project to generate groundborne vibration and noise in excess of current conditions is less than significant.

Mitigation Measure: No mitigation would be required.

Construction and Operational Impacts

Impact NOI-5: The Project Site is located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, and it would expose people residing or working in the project area to excessive noise levels. (Less than Significant)

Exhibits 5D through 5G of the Contra Costa County Airport Land Use Compatibility Plan illustrate the noise contours associated with Buchanan Field Airport activity in 1999, as well as projected noise contours for future activity anticipated at the airport. The exhibits detail the surrounding properties that are, or will be, impacted by noise levels of 55 dB CNEL, or more. Some portions of the proposed Project modifications fall within the 55 dB CNEL contours for the current (as of 1999) airport activities. Since the Project, and the associated modifications, would not change levels of airport-related noise exposure for people working within the proposed Project area, exposure to excessive airport noise is less than significant.

Mitigation Measure: No mitigation would be required.

3.12.5 References

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Marathon Petroleum Corporation. 2021. Martinez Renewable Fuels Project Noise Technical Analysis. July 27.

U.S. Environmental Protection Agency (U.S. EPA). 1974. Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety. No. 550/9-74-004.

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3.13 PUBLIC SERVICES

This section describes the potential environmental impacts of the Project on standards and performance objectives for public services, including community, safety and emergency response facilities. Key sources of data used to assess the potential environmental impacts of the Project on public services include local general plans and municipal service reviews conducted by the Contra Costa Local Agency Formation Commission.

3.13.1 Environmental Setting

3.13.1.1 Regulatory and Policy Context

Federal

There are no federal regulations or policies that pertain to public services and that are applicable to the Project.

State

There are no state regulations or policies that pertain to public services and that are applicable to the Project.

Local

Contra Costa County

Contra Costa County's (the County's) goals and policies for provision of public services are encompassed in Chapter 7, Public Facilities/Services Element of the Contra Costa County General Plan 2005-2020. Goals and policies address the County's objectives for utilities, flood control, waste management and human services. Project-relevant goals and policies specific to emergency response, schools and parks and other public facilities as discussed in this chapter are summarized below:

Policy 7-58	Sheriff patrol beats shall be configured to assure minimum response times and efficient use of resources.
Policy 7-62	The County shall strive to reach a maximum running time of 3 minutes and/or 1.5 miles from the first-due station, and a minimum of 3 firefighters to be maintained in all central business district (CBD), urban and suburban areas. (These areas are defined in Section 4).
Policy 7-72	Special fire protection measures shall be required in high risk uses (e.g., mid-rise and high-rise buildings, and those developments in which hazardous materials are used and/or stored) as conditions of approval or else be available by the district prior to approval.
Policy 7-79	Local fire agencies shall be encouraged to identify and monitor uses involving the handling and storage of hazardous materials.
Policy 7-136	The environmental review process shall be utilized to monitor the ability of area schools to serve development.

Policy 9-32	Major park lands shall be reserved to ensure that the present and future needs of the county's residents will be met and to preserve areas of natural beauty or historical interest for future generations. Apply the parks and recreation performance standards in the Growth Management Element.
Policy 9-35	Regional-scale public access to scenic areas on the waterfront shall be protected and developed, and water-related recreation, such as fishing, boating, and picnicking, shall be provided.

In addition to the policies listed above, the Growth Management Element of the General Plan includes standards for neighborhood parks, with a goal to acquire and maintain 3 acres of parkland per 1,000 County residents.

City of Martinez

Policies pertaining to public services can be found in the City of Martinez General Plan. Although quantified standards for public services are not specified in the General Plan, detailed policies pertaining to park and recreational facilities are contained in Chapter 23. These policies in the General Plan support the City's overarching goal to establish a comprehensive park system with diverse forms of recreation in a variety of facilities available to all residents.

3.13.2 Existing Conditions

Schools

There are 18 school districts and one community college district in the Contra Costa County. The unincorporated area surrounding the Refinery and Avon Marine Oil Terminal (MOT) is served within the boundary of the Mt. Diablo Unified School District (MDUSD), while the incorporated lands including the Amorco MOT are within the Martinez Unified School District (MUSD). The public school nearest to the Refinery or either of the MOTs is the Floyd I. Marchus School operated under the Contra Costa County Office of Education and located at 2900 Avon Avenue in Concord, just over 0.5 mile south of the south entrance gate of the Refinery at Solano Avenue.

Parks and Recreational Facilities

Recreational facilities proximate to the Project Site include publicly-owned and publicly-accessible parks and open spaces, as well as privately-owned lands on the Refinery property. Just east of the Refinery and Avon MOT are several hundred acres of undeveloped marshlands that include the Point Edith Wildlife Preserve, a 761-acre tidal area accessible to the public for wildlife viewing and hunting. The Preserve is managed by the California Department of Fish and Wildlife and located north of the Refinery's on-site marshlands. The closest Martinez City-owned park to the Amorco MOT is Waterfront Park, located approximately 2,500 feet west of the property line of the terminal. Approximately 76 acres at the southern end of the Project Site is developed with a complex of recreational baseball, softball and soccer fields that are used by local sports clubs and teams but are part of the property owned by Marathon.

Emergency Response

Fire protection and emergency medical services within the incorporated and unincorporated areas surrounding and including a portion of the Project Site are provided by the Contra Costa

County Fire Protection District (CCCFPD). The two CCCFPD stations closest to the Refinery and two MOTs are located at 521 Jones Street (Station 14) and 209 Center Avenue (Station 9). The Refinery maintains internal fire response operations and on-site fire suppression systems. Permitting authority for the majority of the Project Site falls under the Office of the State Fire Marshal.

The Refinery maintains its own private security staff and security infrastructure for day-to-day Site security needs. Public safety services for the Refinery and two terminals are and would continue to be provided by the County Sheriff's Department, the Martinez Police Department and the California Highway Patrol. Police protections services within the City of Martinez are provided by the Martinez Police Department (MPD). As of 2020, the MPD included 33 sworn officers and four vacant positions. (Martinez Police Department 2020).

3.13.3 Impact Analysis

3.13.3.1 Significance Criteria

For the purposes of this analysis, the Project was considered to have a significant impact to public services if the Project would 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 following public services:

- Fire protection
- Police protection
- Schools
- Parks
- Other public facilities

3.13.4 Impacts and Mitigation Measures

Construction and Operational Impacts

Because public services district boundaries and service needs would not be affected differently by construction or operation of the Project, potential construction and operational impacts of the Project are discussed here together.

Impact PUB-1: Substantial adverse physical impacts associated with the need or provision of 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 fire protection. (Less than Significant)

Refinery operators maintain internal fire response teams and systems for the developed areas of the Refinery. On-site fire suppression systems include fire pumps, foam systems, firefighting engines and trucks, and fire hydrants spaced 200 feet apart in refining process areas and tank farms (Marathon 2021). As a supplemental fire protection resource, the Refinery and other Bay Area refineries and industrial facilities are members of the Petrochemical Mutual Aid

Organization. Still, CCCFPD has in prior years been called to respond to incidents at the Refinery (LAFCO 2016).

A portion of the Project Site, approximately 400 acres of undeveloped grass lands and the Hastings Slough north and northeast of the on-site recreational fields, are within the service area of the CCCFPD (LAFCO 2016). The two CCCFPD stations closest to the Refinery and two MOTs are located at 521 Jones Street (Station 14) and 209 Center Avenue (Station 9). The closest operating fire station to the Project Site is Contra Costa Fire Station 9, located at 209 Center Avenue in the unincorporated community of Pacheco, approximately 1.6 miles southwest of the Refinery. As the Project would not introduce a new fuel production use to the property and would result in decreased fuel production, and with maintenance of existing on-Site fire suppression systems, significant increases in demands for fire response service from CCCFPD are not anticipated.

The CCCFPD has had an opportunity to review and comment on the Project. Their comments acknowledge that the entirety of the Project Site is not within CCCFPD boundaries and recommend that the Refinery and Avon MOT be annexed into the CCCFPD. Their comments also recommend that under the Project, the Refinery maintain its existing on-site fire suppression equipment as well as its membership in the Petrochemical Mutual Aid Organization. There has been no indication from the CCCFPD that altered or new fire protection facilities would be necessary to accommodate the proposed Project. While the CCCFPD recommends conditions of approval of the Project as summarized above, these recommended conditions address jurisdictional boundary changes and maintenance of the Refinery operators' current practices and would not result in physical changes to the environment, as would occur with construction of a new or expanded station. Therefore, this impact would be less than significant.

Mitigation Measure: No mitigation would be required.

Impact PUB-2: Substantial adverse physical impacts associated with the need or provision of 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 police protection. (Less than Significant)

As noted in the most recent Municipal Service Review for Law Enforcement Services, increased service demands for law enforcement correlates with population growth (LAFCO 2011), The proposed Project does not include a residential element that would result in a substantial population increase within the County. Work activities within the Project area would not pose a substantial risk to the County's ability to maintain the General Plan standard of having 155 square feet of Sheriff station area and support facilities for every 1,000 members of the population. Private on-site security services already in place at the Refinery would be maintained with the Project and would reduce demand for public safety services. This impact would be less than significant.

Mitigation Measure: No mitigation would be required.

Impact PUB-3: Substantial adverse physical impacts associated with the need or provision of new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios or other performance objectives for schools. (Less than Significant)

The Refinery and Amorco MOT fall within the boundaries of the MDUSD and MUSD, respectively. Government Code Section 65995 *et seq.* and Education Code Section 17620 *et seq.* authorize school districts to levy fees on new development to fund school facilities necessary to accommodate students from new development. As of May 2020, MDUSD and MUSD levy a commercial-industrial fee of $0.66 per square foot of new development. If it is determined that the new equipment proposed with the Project constitutes new industrial development, then the Project proponent would be required to pay the requisite school impact fees prior to receiving a building permit for the Project. In accordance with Government Code Subsection 65995(e), payment of school impact fees is considered mitigation for a development's potential impacts, and no additional mitigation can be required.

Because the Project is an industrial project and not a residential development, and because Refinery employment would decrease with the Project, the Project is not anticipated to result in an increase in population that would correspondingly increase demands on public schools. Thus, the Project is anticipated to generate a need for new or expanded school facilities, campuses or classrooms, and its impact would be less than significant. Payment of any requisite impact fees to the MDUSD and MUSD, as applicable for new industrial construction, would further reduce the Project's less than significant impacts to schools.

Mitigation Measure: No mitigation would be required.

Impact PUB-4: Substantial adverse physical impacts associated with the need or provision of new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios or other performance objectives for parks or other public facilities. (Less than Significant)

The proposed Project is not a residential development and thus, would not induce a significant population increase within the County. Therefore, the proposed Project would not pose a significant risk for the County being unable to maintain its General Plan standard of 3 acres of neighborhood parks per 1,000 County residents. In addition, the Project would not increase the number of employees within the County that would significantly increase the use of existing parks and recreational areas, or that would require expansion of existing or the construction of new facilities. Rather, employment is anticipated to decrease with the reduced throughput and production levels proposed with the Project. The potential for the proposed project resulting in substantial adverse physical impacts associated with the expansion of existing or construction of new parks is less than significant. It is further noted that existing athletic fields on the Refinery property would remain with the Project and would continue to be accessible to community sports clubs and leagues as recreational amenities, and the Project would result in no changes to the Point Edith Wildlife Reserve located outside the Marathon property boundaries.

Other public services such as libraries, senior centers and community centers would not be substantially affected by the Project because the Project does not include addition of new residential units that would increase the local population and thereby trigger increased demand for such services. Therefore, the potential for the Project to substantially adversely affect other public facilities would be less than significant.

Mitigation Measure: No mitigation would be required.

3.13.5 References

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3.14 TRANSPORTATION

This section describes the existing transportation network in the vicinity of the Refinery and Avon and Amorco Marine Oil Terminals (MOTs) and the proposed Project's potential impacts to the roads, automobile and non-automobile transportation modes and vehicle miles traveled (VMT). Key sources of information for this section include local and regional transportation planning documents, aerial photography of the Project Site and surrounding street network, and transit system plans and maps available online.

3.14.1 Environmental Setting

3.14.1.1 Regulatory and Policy Context

Interstate highways, state routes and bridges are governed by the Federal Highway Administration and California Department of Transportation. County roads are governed by Contra Costa County (the County) and other local streets and highways are governed by local cities. In all cases, specific standards apply with respect to the planning, design and operation of roadways and intersections. Not all governing agencies impose the same criteria (e.g., cross sections and rights-of-way for the same street may differ from jurisdiction to jurisdiction). Rail facilities are regulated in the state by the California Public Utilities Commission (CPUC). Train operations are also subject to CPUC guidelines. The design and operation of railroad grade crossings are subject to Federal Railroad Administration guidelines. Numerous other federal agencies also have regulatory authority over rail transportation.

Federal

Title 23 U.S. Code – Highways

Section 103 of Title 23 U.S. Code establishes the federal and interstate highway system consisting of highway routes that serve to support commerce and connect major population centers, ports, points of entry and travel destinations. Section 116 of Title 23 U.S. Code assigns the duty to maintain federal highways and routes to state departments of transportation.

In accordance with Section 134 of Title 23 U.S. Code, a metropolitan planning organization (MPO) must be designated for each urbanized area with a population exceeding 50,000 people. MPOs are charged with developing long-range transportation plans and improvement programs for various modes of transportation, in coordination with state transportation agencies and public transportation operators, on 4- or 5-year cycles. Compliance with the federal statute makes MPOs eligible for receipt of federal transportation funds.

State

Senate Bill 375 (Steinberg)

California Government Code Section 65080, as amended in 2008 by Senate Bill 375 (Steinberg), requires regional transportation planning agencies in the state to "prepare and adopted a regional transportation plan directed at achieving a coordinated and balanced regional transportation system." The statute further directs that the Regional Transportation Plan (RTP) address multiple modes of transportation, including transportation of goods and people by automobile, railroad, water, bicycle, pedestrian, mass transit, water and air. The RTP must also address equity in

transportation and include a sustainable community strategy (SCS) that outlines land uses, identifies areas for housing future regional population and specifies transportation network improvements that align with regional needs. The RTP describes a forecasted development pattern that would have the effect of achieving state-legislated goals for reductions in greenhouse gas emissions from light trucks and automobiles, including but not limited to the Governor's Executive Order S-3-05, which sets a greenhouse gas emission reduction target of 80 percent below 1990 levels by 2050.

Senate Bill 743 (Steinberg)

Approved by the Governor in 2013, Senate Bill 743 (Steinberg) directs a change in transportation impact analysis conducted under CEQA, wherein transportation impacts of a project are evaluated using the metric of VMT rather than level of service (LOS). LOS is a method of describing how much relative delay an automobile driver experiences on a street segment or at an intersection. LOS is described using a letter grade of LOS A through LOS F, where LOS A indicates free-flowing traffic with minimal delays, and LOS F indicates severe congestion. By contrast, VMT accounts for the number of trips generated by a project multiplied by the length in miles of each trip. The intent of the legislation is to reduce greenhouse gas emissions from automobile use by reducing the length or number of automobile trips.

California Department of Transportation

Pursuant to Article 3 of California Streets and Highways Code, the Department of Transportation (Caltrans) controls and is responsible for state highway right-of-way acquisition, construction and maintenance, including repair of highway facilities (e.g., pavement, bridges, signage), litter abatement, deicing, and installation and upkeep of lighting, landscaping and transit amenities within state highway rights-of-way. Caltrans also issues federal grant funds for transportation projects to regional and local agency projects and conducts long-range planning efforts aimed at reducing single-occupant vehicle trips and increasing use of alternative transportation modes.

Caltrans' guidance for analysis of projects' impacts on state facilities pursuant to CEQA and Senate Bill 743 is consistent with the technical guidance offered by the State Office of Planning and Research (OPR) in its "Technical Advisory on Evaluating Transportation Impacts in CEQA" (December 2018), which suggests that a development project would have a potentially significant VMT impact if it did not reduce VMT by 15 or more percent below the per capita average for the region in which the project is located. OPR's technical advisory includes a screening criterion of 110 new vehicle trips, below which a project would not be anticipated to have a significant transportation impact and no further study would be needed. The technical advisory provides no direct guidance for short-term projects or transportation impacts resulting from construction. Under the technical guidance, lead agencies may decide whether or how to include trips from heavy duty trucks in their analyses.

Local

TRANSPAC (Transportation Partnership and Cooperation), Central County Action Plan for Routes of Regional Significance

Consistent with the state's guidelines, the County's Transportation Analysis Guidelines (June 2020) includes screening criteria for VMT (110 new daily vehicle trips, transit-proximate development and small residential or commercial projects), below which a project would not be

considered to have a significant transportation impact. For office, industrial and institutional projects that do not meet screening criteria, the Project would have a potentially significant transportation impact if it could not be demonstrated that the Project would not achieve VMT of 15 or more percent below the Bay Area average commute VMT per employee.

City of Martinez

The Circulation Element of the Martinez General Plan was last updated in 1992. It describes the transportation network existing at the time of that update, including automobiles, transit, bicycle, rail and goods movement. In the vicinity of the Amorco MOT, Marina Vista Avenue is designated as a truck route, and its current design (raised median, bike lanes) is consistent with the design for Minor Arterials (Circulation Element, page 38). The Circulation Element identifies a proposed trail (Bay Trail-Martinez Shoreline Segment) along the Carquinez Strait, which would cross the Amorco MOT near the shoreline. Goals and policies in the City's Circulation Element are intended to support multiple travel modes and adequate capacity of roadways.

3.14.2 Existing Conditions

Roadway Network

Regional access to and from the Refinery and MOTs is provided by state and interstate freeways in the area. Local roadway configurations are depicted in **Figure 3.14-1: Local Street Network**, below.

- **State Route 4** is a state-managed, east-west freeway extends through the Project vicinity, south of the Project Site and 500 feet south of the Refinery's southern boundary. State Route 4 currently has two travel lanes in each direction but is under construction to be widened to add one lane in each direction. On-ramps to and off-ramps from State Route 4 are just southeast of the Refinery's Solano Avenue entrance.

- **Interstate Highway 680** is a north-south freeway that extends through the Project vicinity approximately 2 miles west of the Refinery's western property line. In the vicinity of the Project, Interstate Highway 680 has four lanes in each direction. On-ramps to and off-ramps from Interstate 680 are on Waterfront Road at signalized intersections approximately 2 miles west of the Refinery and approximately 0.4 miles southeast of the Amorco Tank Farm. Interstate Highway 680 crosses the State Route 4 right-of-way at an interchange located approximately 1 mile southwest of the Refinery.

The local street network of City- and County-maintained roads in the vicinity of the Project Site includes Solano Way, Imhoff Drive/Arnold Industrial Way and Waterfront Road/Marina Vista Avenue.

- **Solano Way** is a four-lane, north-south roadway extending northward from the City of Concord toward the Refinery's southern boundary. As the roadway extends northward, approaching and extending into the Refinery, where it becomes a private road, it narrows to two lanes with one travel lane in each direction. The roadway has striped shoulders that are not striped as bicycle lanes but could be used by bicyclists. There is a continuous sidewalk on the east side of the roadway before the roadway becomes private at the Refinery

entrance. The sidewalk provides a connection to the Via Delta De Anza Trail that intersects Solano Way approximately 0.35 miles south of the Refinery's southern entrance.

- **Imhoff Drive/Arnold Industrial Way** intersects Solano Way at a signalized intersection just south of the Refinery. West of Solano Way, the roadway is called Imhoff Drive, and east of Solano Way in the City of Concord, the roadway is called Arnold Industrial Way. Imhoff Drive/Arnold Industrial Way extends in an east-west direction just south of the Refinery, has one travel lane in each direction, and provides the connection between Solano Way and the signal-controlled on-ramps and off-ramps of State Route 4 at Arnold Industrial Way. Imhoff Drive/Arnold Industrial Way is a Class 3 bicycle route (bicyclists and automobiles share the right-of-way) with striped narrow shoulders that can be used for bicycle travel. The street has no sidewalks in the vicinity of the Refinery.

- **Waterfront Road** is a two-lane, east-west roadway extending from the City of Martinez and Interstate Highway 680, eastward toward the Refinery. It does not have sidewalks or striped bicycle lanes, though it has narrow shoulders that are asphalt-paved in some locations and gravel-paved in others. Waterfront Road provides the approximately 2-mile connection between Interstate Highway 680 and the Refinery. From the Refinery's eastern boundary, Waterfront Road continues as a private road within the Refinery premises.

- West of Interstate Highway 680, Waterfront Road is **Marina Vista Avenue.** Marina Vista Avenue has one automobile travel lane in each direction, striped bicycle lanes on both sides of the street and a monolithic sidewalk on the south side adjacent to the westbound lane. Marina Vista Avenue provides the connection between the Amorco Tank Farm and MOT and the on-ramps and off-ramps of Interstate Highway 680.

Waterfront Road was closed at Hastings Slough in the early 1990s to enhance security at the Military Ocean Terminal Concord (formerly known as the Naval Weapons Station [NWS] Concord). At the same time, Port Chicago Highway was closed at Clyde and at West Pittsburg. All vehicular traffic to/from Pittsburg and Clyde on Waterfront Road ceased. Following increased security implemented by NWS Concord, the Refinery purchased Solano Way, and made access through the Refinery a private road from Arnold Industrial Way to Waterfront Road. Access was closed to public use and security gates were installed.

Trucks and employee and visitor vehicles access the Refinery can use both the Refinery's North Gate on Waterfront Road and its South Gate on Solano Way. Approximately 90 to 95 percent of vehicular traffic uses two gates located on/near Solano Way, at the south end of the Site. The gate located on Solano Way is used for trucks and heavy equipment. A third gate, accessed just east of Solano Way, is used by Refinery employees, other tenants operating on the private road, contractors, consultants and other visitors, and requires vehicles to turn north onto Solano Way. All three access points to the Refinery are staffed by security personnel.

PROJECT BOUNDARY

BASE MAP: USGS/TNM "USGS TOPO"
DATA SOURCES: TRC, ESRI

0 2,250 4,500
FEET
1:54,000 1" = 4,500'

PROJECT:
CONTRA COSTA COUNTY
MARTINEZ RENEWABLE FUELS EIR
150 SOLANO WAY, CONTRA COSTA COUNTY, CALIFORNIA

TITLE:
LOCAL STREET NETWORK

DRAWN BY:	D.SWEENEY	PROJ. NO.:	CDLP20-02046
CHECKED BY:	R. SPRING		
APPROVED BY:	D. AYERS		**FIGURE 3.14-1**
DATE:	SEPTEMBER 2021		

FILE: MARATHONRENEWABLESFUEL.APRX

COORDINATE SYSTEM: NAD 1983 STATEPLANE CALIFORNIA III FIPS 0403 FEET: MAP ROTATION: 0
-- SAVED BY: RSPRING ON 9/15/2021 12:33:47 PM: -- FILE PATH: \\EMPLOYEES\GIS\ARCGIS\PROJ1-PROJECTS\CONTRA_COSTA_COUNTY\430721_MARATHON_RENEWABLE_FUELS_EIR\2-APRX\MARATHONRENEWABLESFUEL.APRX: -- LAYOUT NAME: 3.14-1 LOCAL STREET NETWORK

Transit

The Bay Area Rapid Transit District (BART) system provides regional light rail passenger transit services between San Francisco and communities in the East and South San Francisco Bay Area. A BART station is located in the North Concord/Martinez area approximately 2.5 miles south east of the Refinery Facility.

Heavy rail transportation service is provided in the area and region by Amtrak. The nearest station is in downtown Martinez, approximately 3.4 miles west of the Refinery. Trains stopping at the Martinez station continue on to destinations in northern California, Oregon and Washington and as far east as Chicago. Capital Corridor trains provide commuter travel to stations between the cities of Sacramento and San Jose, and Amtrak bus service offers fixed route regional transportation from the station to Solano, Napa and Sonoma counties to the north.

The Central Contra Costa Transit Authority (CCCTA) operates the County Connection bus system, which provides fixed-route and paratransit bus service for communities in Central Contra Costa County. There is no bus service proximate to the Amorco MOT. Bus routes currently in operation in the vicinity of the Refinery include County Connection Route 17 and 27. Express Route 99X runs along Imhoff Drive/Arnold Industrial Way and provides connections to the Martinez Amtrak Station and North Concord BART Station but does not stop within the vicinity of the Refinery.

- **Route 17** operates weekdays between 6:15 a.m. and 7:00 a.m. on 30-minute headways during peak commute times and 60-minute headways during other times of day. Route 17 provides connections to the John Muir Concord Medical Center, Concord BART Station and North Concord BART Station. In the vicinity of the Refinery, Route 17 buses stop near the intersection of Solano Way and Marsh Drive approximately 0.25 miles south of the Solano Way entrance to the Refinery.

- **Route 27** operates weekdays with limited service of two morning trips between 8:00 a.m. and 9:00 a.m. and one afternoon trip between 2:45 p.m. and 3:15 p.m. Route 27 provides connection to the North Concord BART Station. In the vicinity of the Refinery, Route 17 buses stop near the intersection of Arnold Industrial Way and Laura Alice Way, approximately 0.35 miles east of the Solano Way entrance to the Refinery.

Railroad Lines

Two railroad lines run through the Refinery property: the Union Pacific Railroad (UPRR) line, which runs in an east-west direction through the Refinery parallel to Waterfront Road, and the BNSF Railway line, which also runs in an east-west direction through the Refinery, roughly parallel to and north of Monsanto Way, an on-site private roadway. The UPRR tracks carry freight and Amtrak San Joaquin passenger trains from the San Francisco Bay Area to Bakersfield (10 trains per day), following the southern shore of the Carquinez Strait. The Refinery has several railroad spurs connecting to these tracks. Railroad traffic and switching of Refinery railcars can temporarily block internal Refinery access of vehicular traffic to the Avon Terminal on Waterfront Road and/or Solano Way.

3.14.3 Impact Analysis

3.14.3.1 Methodology and Assumptions

The analysis of transportation impacts of the proposed Project evaluates the average 5-year baseline period transportation and operational conditions against the transportation and operational conditions of the proposed Project. Baseline data primarily consists of vehicle trips by workers and goods transportation (trucks). Employee trips are assumed to consist of one inbound and one outbound trip per person per day to and from the Refinery. Heavy duty truck trips for receipt or delivery of products is fractioned to account for multiple stops on a "tour" (i.e., if a truck delivers product to the Refinery and two other locations, then only one-third of the trip miles are attributed to the Refinery). Calculations of estimated worker and product truck trips and mileage are included in detail in Appendix B of the applicant's Air Quality and Greenhouse Gas Technical Analysis and are referenced in summary here.

As is described in Chapter 2, Project Description, Project construction would occur over approximately 2 years. Renewable fuels processing would commence in the first year of construction, but at a reduced level of throughput (23,000 barrels per day), increasing to the proposed maximum of 48,000 barrels per day of throughput by the end of the second year. Therefore, construction and operational conditions of the Project are presumed to be concurrent for the approximately 2-year construction period.

Physical impacts of the Project are also evaluated based on changes to the transportation network that would result from the Project compared to existing conditions as described above, though it is noted that no changes to the road network are proposed with the Project.

3.14.3.2 Significance Criteria

For the purposes of this analysis, the Project was considered to have a significant transportation impact if it would:

- Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities;
- Conflict or be inconsistent with CEQA Guidelines Section 15064.3(b);
- Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment) or
- Result in inadequate emergency access.

3.14.4 Impacts and Mitigation Measures

Construction-related Impacts

Impact TRAN-1: Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities. (Less than Significant)

As described above, regulations, goals, policies and programs that would apply to the Project include those of the County and City of Martinez ordinance codes, the General Plans of the

County and City and the CBPP prepared by CCTA. These guidance and regulatory documents combined support safety, convenience and expanded opportunities for use of multiple transportation modes (walking, bicycle, bus and train transit) to reduce reliance on automobile transportation and its associated air emissions; separation to the greatest extent feasible of local neighborhood and heavy truck traffic or through traffic; adequate access for emergency response and preservation of existing facilities for transportation of goods by water and rail, where applicable.

Physical changes off-site of the Refinery are not proposed with the Project and would not be necessary during Project construction. Construction crews and equipment delivery trucks would use existing roadways, routes and access gates into the Refinery, with approximately 80 percent of vehicles using the Refinery access gate at Waterfront Road and the remaining 20 percent using the access gate at Solano Way. Operators of large or wide-load trucks for delivery of large units of equipment would have to obtain oversized/overweight transportation permits from Caltrans, as well as encroachment permits from the County pursuant to County Code Section 1002-2.008 and potentially other local agencies (City of Martinez, City of Concord) as applicable, depending on the truck route of travel. No full closures or obstructions to use of existing alternative transportation modes (bus, bike or pedestrian) on public roads and trails within the vicinity of the Project Site would be necessary during Project construction. The construction impacts of the Project would be less than significant.

Mitigation Measure: No mitigation would be required.

Impact TRAN-2: Conflict or be inconsistent with CEQA Guidelines Section 15064.3(b). (Less than Significant)

The transportation analysis guidelines of the state and County do not include criteria for analysis of VMT for construction-related trips. These trips are typically temporary, however, lasting only for the duration of project construction, and so would not have long-lasting environmental impacts. Construction of the proposed Project is estimated to continue for 22 months, after which ongoing maintenance could be performed by permanent Refinery maintenance staff. Due to their temporary nature, VMT impacts resulting from passenger and construction trips for the Project would be less than significant.

Mitigation Measure: No mitigation would be required.

Impact TRAN-3: Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment). (Less than Significant)

Construction of the Project would involve large trucks, such as delivery trucks, cement trucks, dump trucks and water trucks, for delivery of new materials and equipment for conversion of the Refinery to a renewable fuels production facility. As many as 60 large vehicles per day are projected to be necessary in the early months of Project construction. Routes that would be used by these construction and delivery vehicles would be the same routes previously used by large tractor-trailer trucks (as many as 310 per day) used for deliveries and distribution of petroleum coke and products manufactured at the Refinery. Access points for construction vehicles would

be the same access points used during refining operations, located at the Refinery's North Gate on Waterfront Road and the South Gate on Solano Way. Because existing truck routes of travel onto and around the Refinery and MOT properties would be the same as petroleum-refining operations, but in potentially fewer numbers, and with no changes proposed to any existing access route, the Project would have no change to the surrounding roadway network, and its environmental impact would be less than significant.

Mitigation Measure: No mitigation would be required.

Impact TRAN-4: Result in inadequate emergency access. (Less than Significant)

A portion of the Project Site is currently provided emergency fire and emergency medical technician response services by the Contra Costa County Fire Protection District. The closest operating fire station to the Refinery is Contra Costa Fire Station 9, located at 209 Center Avenue in the unincorporated community of Pacheco, approximately 1.6 miles southwest of the Refinery. Access to the Refinery from Station 9 is via public streets (Center Avenue, Marsh Drive and Solano Avenue). The closest fire station to the Amorco MOT is Station 14 located at 521 Jones Street in the City of Martinez. Access to the terminal from the fire station is via an approximately 1.4-mile route along Alhambra Avenue to Marina Vista Avenue. No element of the Project construction would result in permanent or temporary full obstruction of existing public access routes to that portion of the Refinery within the District's boundaries.

Within the Project Site, the Refinery and MOTs have emergency response protocols and on-site fire suppression systems including fire pumps, foam systems, firefighting engines and trucks and fire hydrants spaced 200 feet apart in refining process areas and tank farms (Marathon 2021). Existing access roads internal to the Refinery property would continue to provide internal circulation for Refinery response teams. With no change to existing access routes on and off the property, the Project's impacts would be less than significant.

Existing access routes used during the construction phase of the Project would be the same as those used for pre-Project petroleum-refining operations. With no change to existing access routes on and off the property, and no need for expansion or modification of existing access routes, the Project's impacts would be less than significant.

Mitigation Measure: No mitigation would be required.

Operational Impacts

Impact TRAN-1: Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities. (Less than Significant)

Regulations, goals, policies and programs that would apply to the Project include those of the County and City of Martinez ordinance codes, the General Plans of the County and City and the CBPP prepared by CCTA.

Neither the Refinery nor either MOT is located within a Pedestrian Priority Area identified in the CBPP. The CCTA CBPP and the City of Martinez General Plan identify proposed multi-use

trails that span the Refinery property via Waterfront Road, and that parallel the Carquinez Strait shoreline, crossing the Amorco MOT. Existing bicycle routes and sidewalks parallel to these proposed alignments are currently in place on-street on Marina Vista Avenue and Imhoff Drive/Arnold Industrial Way, providing bicycle and limited pedestrian east-west access through the vicinity. It is acknowledged that connections through the Concord NWS east of the Refinery and the Shell Refinery and MOT to the west of the Amorco MOT have not yet been acquired to provide a continuous route along the shoreline and Waterfront Road. The Project does not offer dedication of right-of-way or remove any private access privileges that would facilitate construction of either of these trail alignments at this time. However, the Project is not considered to conflict with multimodal policies in such a way as to create an adverse environmental impact the Project would not impede use of existing multimodal facilities and would be consistent with other policies in support of non-automobile travel modes.

The Project would have a less than significant impact on non-automobile travel modes and would not conflict with local and regional policies in support of alternative transportation modes and reduction of single-occupant vehicle trips. Marathon has implemented a Commuter Benefits Program which provides financial benefits for employees to subsidize certain transportation costs. Employees are offered $4 per workday to walk, vanpool, carpool, use public transportation, ride a motorcycle, drive a hybrid/electric car; or bike to work. In addition, Marathon offers compressed work schedules whereby maintenance employees work four days per week of 10-hour shifts (4/10 schedule).

Existing multi-modal facilities off-site of the Refinery, including the Iron Horse and De Anza Trails, sidewalks on Solano Avenue, bus stops on Marsh Drive and bicycle routes on Imoff Drive/Arnold Industrial Way, would not be modified or obstructed as a result of Project operations. These facilities proximate to the Refinery are and would continue to provide opportunities for Refinery employees to utilize alternative transportation modes, consistent with County General Plan policies 5-I, 5-J and 5-L. Additionally, while physical changes to the road network off-site of the Refinery are not proposed with the Project, the Project would include modifications to the Avon and Amorco MOTs to facilitate their use for receipt and distribution of renewable feedstocks and fuels, and in this way, the Project is consistent with County General Plan Policy 5-S supporting economic viability of the County's existing ports, wharves and shipping lanes.

Impact TRAN-2: Conflict or be inconsistent with CEQA Guidelines Section 15064.3(b). (Less than Significant)

The VMT analysis guidelines and their supporting statutes also do not specify methodologies for evaluation of impacts from heavy duty truck trips, as for goods and product movement. Still truck trips associated with the Project are included here for reference and information.

For the baseline period (2015-2020), during which petroleum-refining operations occurred at the Refinery, the average number of employees was 520. These 520 employees included an average of 280 shift workers per day, 76 maintenance workers and 164 administrative and support workers. Because administrative staff generally work Monday through Friday, weekdays would have been the days when most of the production, maintenance and administrative workers would have been on Site (note that only half of shift workers would have been on Site at the same time

as maintenance and administrative staff, with the other half at work during the swing 12-hour shift).

Assuming one inbound and one outbound vehicle trip per employee per over the 24-hour day, pre-Project operations are estimated to have generated 1,040 passenger vehicle trips, or 20,800 vehicle miles, per day on most days of the week. Post-construction, the Refinery employment is estimated to be 110 at full operation (40 shift workers, 20 maintenance workers, and 50 administrative and support employees) and result in approximately 220 trips. Therefore, the proposed Project would result in 410 fewer employees and an estimated 820 fewer employee trips. As noted in the County's Transportation Analysis Guidelines, projects which result in less than 110 new daily vehicle trips are considered to be less than significant, and no further VMT analysis is required.

Truck trips associated with the Project are anticipated to decrease in number from 205 average per day to 181 average per day. Since the project would generate fewer truck trips than the existing Refinery, no significant impacts on truck traffic are expected.

Mitigation Measure: No mitigation would be required.

Impact TRAN-3: Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment). (Less than Significant)

Similar to the construction period, operation of the Refinery under the Project would not result in changes to existing circulation patterns on Site that were previously used by large and passenger vehicles during petroleum-refining operations. Because existing truck routes of travel onto and around the Refinery and MOT properties would be the same post-construction as during petroleum-refining operations, and with no changes proposed to any existing access route, the Project would have no change to the surrounding roadway network, and its environmental impact would be less than significant.

Mitigation Measure: No mitigation would be required.

Impact TRAN-4: Result in inadequate emergency access. (Less than Significant)

Existing access routes used during the construction phase of the Project would be the same as those used for pre-Project petroleum-refining operations and following commencement of renewable fuels production. The Refinery and MOTs would maintain existing on-site emergency operations, protocols and fire suppression systems previously employed for petroleum-refining operations, as supplemented by the Contra Costa County Fire Protection District emergency response teams when needed. Conversion of the Refinery from petroleum-refining to renewable fuels production would not result in any changes to existing emergency access. With no change to existing access routes on and off the property, the Project's impacts would be less than significant.

Mitigation Measure: No mitigation would be required.

3.14.5 References

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3.15 UTILITIES AND SERVICE SYSTEMS

This chapter describes the existing utilities and service systems serving the Project and evaluates the potential environmental consequences of the proposed Project. Water, wastewater, solid waste, and stormwater infrastructure are each addressed in separate sections of this chapter. In each section, a summary of the relevant regulatory setting and existing conditions is followed by a discussion of potential impacts and cumulative impacts from the Project. Potential impacts associated with the need to expand existing electricity and natural gas facilities are addressed in Chapter 3.6 Energy, of this Draft EIR.

Water use and supply information for the proposed Project is drawn from the Contra Costa Water District (CCWD) 2020 Draft Urban Water Management Plan (UWMP), which quantifies CCWD's past, current, and future projected water use through 2045, and projects distribution water losses, low income households, and water use over the next 5 years. For consistency with the 2020 UWMP, the terms "water use" and "water demand" are used interchangeably.

3.15.1 Environmental Setting

3.15.1.1 Federal Regulations

The federal government regulates wastewater treatment and planning through the Federal Water Pollution Control Act of 1972, more commonly known as the Clean Water Act (CWA), as well as through the National Pollutant Discharge Elimination System (NPDES) permit program, both of which are discussed in further detail below.

Clean Water Act

The Clean Water Act (CWA, 33 USC §1251 *et seq*.), regulates the discharge of pollutants into watersheds throughout the nation. It is the primary federal law governing water pollution. Under the CWA, the United States Environmental Protection Agency (U.S. EPA) implements pollution control programs and sets wastewater standards. The objective of the CWA is to restore and maintain the chemical, physical, and biological integrity of the nation's waters by preventing point and nonpoint pollution sources, providing assistance to publicly-owned treatment works for the improvement of wastewater treatment and maintaining the integrity of wetlands.

National Pollutant Discharge Elimination System Permit Program

The National Pollutant Discharge Elimination System (NPDES) permit program was established in the CWA to regulate municipal and industrial discharges to surface waters of the United States. Federal NPDES permit regulations have been established for broad categories of discharges, including point source municipal waste discharges and nonpoint-source stormwater runoff. NPDES permits generally identify effluent and receiving water limits on allowable connections and/or mass emissions of pollutants contained in the discharge; prohibitions on discharges not specifically allowed under the permit; and provisions that describe required actions by the discharger, including industrial pretreatment, pollution prevention, self-monitoring, and other activities. Wastewater discharge is regulated under the NPDES permit program for direct discharges into receiving waters for indirect discharges to a sewage treatment plant.

Resource Conservation and Recovery Act (RCRA)

The Resource Conservation and Recovery Act (RCRA, 42 USC §6901 *et seq*.) was enacted in

1976 to address potential health and environmental issues associated with solid hazardous and non-hazardous waste disposal. Under RCRA, U.S. EPA regulates the generation, transportation, treatment, storage, and disposal of hazardous waste. Under RCRA, individual states may implement their own hazardous waste management programs, as long as they are consistent with and at least as stringent as RCRA. U.S. EPA must approve state programs intended to implement RCRA requirements.

3.15.1.2 State Regulations

California Water Code

The Porter-Cologne Water Quality Control Act (Porter-Cologne Act, California Water Code Division 7, §13000-16104) is the principal law governing water quality regulation in California. It establishes a comprehensive program to protect water quality and the beneficial uses of water. The Porter-Cologne Act applies to surface waters, wetlands, groundwater and to both point and nonpoint sources of pollution. The State Water Resources Control Board (SWRCB) and Regional Water Quality Control Boards (RWQCBs) have the authority to regulate water quality in accordance with Section 401 of the CWA and the Porter -Cologne Act.

National Pollution Discharge Elimination System (NPDES) Waste Discharge Requirements

Waste Discharge Requirements under SWRCB General Order No. 2006-0003-DWQ apply to all federal and state agencies, municipalities, counties, districts, and other publicly-owned sanitary sewer collection systems in California with more than 1 mile of sewer pipe. The General Order applies to overflows from sanitary sewer systems of domestic wastewater, as well as industrial and commercial wastewater, depending on the pattern of land uses in the area served by the sanitary sewer system. The order provides a consistent statewide approach to reducing sanitary sewer overflows by requiring public sewer system operators to take all feasible steps to control the volume of waste discharged into the system and to prevent sanitary sewer waste from entering the storm sewer system (SWRCB 2006). NPDES permit requirements are detailed in Chapter 3.10: Water Quality and Hydrology.

Water Conservation Act of 2009 (SB X7-7)

The Water Conservation Act of 2009 requires all water suppliers to increase water use efficiency. The legislation sets an overall goal of reducing per capita water use by 20 percent by 2020, with an interim goal of a 10 percent reduction in per capita water use by 2015 (DWR 2021a). Effective 2016, urban retail water suppliers who do not meet the water conservation requirements established by this bill are not eligible for state water grants or loans. Senate Bill (SB) X7-7 requires that urban water retail suppliers determine baseline water use and set reduction targets according to specified standards. It also requires agricultural water suppliers to prepare plans and implement efficient water management practices.

California Urban Water Management Act

Through the Urban Water Management Planning Act of 1983, the California Water Code requires all urban water suppliers within California to prepare and adopt a UWMP and update it every 5 years. The California Department of Water Resources (DWR) oversees compliance with the statewide UWMPs. This requirement applies to all suppliers providing water to more than

3,000 customers or supplying more than 3,000 acre-feet[1] of water annually. The Act is intended to support conservation and efficient use of urban water supplies. The Act requires that total project water use be compared to water supply sources over the next 20 years in 5-year increments, that planning occur for single and multiple dry water years, and that plans include a water recycling analysis that incorporates a description of the wastewater collection and treatment system within the agency's service area along with current and potential recycled water uses. In September 2014, the Act was amended by SB 1420 to require urban water suppliers to provide descriptions of their water demand management measures and similar information (DWR 2021b).

California Integrated Waste Management Act (Assembly Bill [AB] 939 and AB 341)

The California Integrated Waste Management Act (California Public Resources Code Sections 40050-40063), enacted in 1989, established an integrated waste management planning hierarchy that would provide guidance to a governing board on solid waste source reduction, recycling and composting, and environmentally-safe transformation and land disposal.

- **AB 939**: AB 939 requires cities and counties to prepare solid waste management plans and adopt source reduction and recycling elements (SRREs) to implement goals included in AB 939. These goals include diverting approximately 50 percent of solid waste from landfills and identifying programs to stimulate local recycling in manufacturing and the purchase of recycled products.
- **AB 341**: Enacted in 2011, AB 341 establishes a policy goal that California's solid waste generated be reduced, recycled, or composted be reduced by at least 75 percent by the year 2020. The bill also requires that a business, defined to include a commercial or public entity that generates more than 4 cubic yards of commercial solid waste per week arrange for recycling services, on and after July 1, 2012. On and after July 1, 2012, jurisdictions are required to implement a commercial solid waste recycling program or revise their SRRE to meet this requirement.

Department of Resources Recycling and Recovery (CalRecycle)

CalRecycle is a department within the California Environmental Protection Agency (CalEPA) that administers programs formerly managed by the California Integrated Waste Management Board and Division of Recycling. CalRecycle is the state department charged with the primary responsibility for permitting of solid waste facilities. CalRecycle operates through its designated local enforcement agencies, which typically are county health departments. Air pollution from solid waste facilities is regulated by local air pollution control districts or air quality management districts, while water pollution is regulated by regional water boards. CalRecycle is authorized to oversee the state's recycling and waste management programs under AB 939 and AB 341.

Groundwater Management Act (1992) and the Sustainable Groundwater Management Act of 2014

The Groundwater Management Act of the California Water Code (AB 3030), signed into law on September 26, 1992 and effective on January 1, 1993, provides guidance for applicable local agencies to develop voluntary Groundwater Management Plans (GMP) in state-designated groundwater basins. The GMPs can allow agencies to raise revenue to pay for measures influencing the management of the basin, including extraction, recharge, conveyance, facilities'

[1] An acre-foot is the amount of water required to cover 1 acre of ground (43,560 square feet) to a depth of 1 foot. One acre-foot is equivalent to 325,581 gallons.

maintenance, and water quality (DWR 2021).

The Sustainable Groundwater Management Act of 2014 (SGMA) consists of three legislative bills: SB 1168, AB 1739 and SB 1319. The legislation, which was updated in 2019, provides a framework groundwater management across the state by providing benchmarks sustaining long-term reliability and multiple benefits for current and future beneficial uses.

The DWR plays a key role in providing the framework for sustainable groundwater management in accordance with the statutory requirements of SGMA and other provisions within the California Water Code. Other state agencies, including the SWRCB and California Department of Fish and Wildlife (CDFW), play a role in SGMA implementation and are required to consider SGMA when adopting policies, regulations or criteria, or when issuing orders or determinations, where pertinent

3.15.1.3 Local Regulations

Contra Costa County Urban Water Management Plan (2015)

The County's Water Management Plan (Plan) was prepared according to the United States Bureau of Reclamation's (Reclamation) Mid-Pacific Region 2014 Standard Criteria. The Reclamation Reform Act of 1982 expanded Reclamation's responsibilities from building and managing waterworks to also ensuring federal water is put to reasonable and beneficial use. Section 210 of the Reclamation Reform Act (RRA) requires Central Valley Project (CVP) contractors to prepare and submit Water Management Plans with definite goals, appropriate water conservation measures, and timetables every 5 years. The Central Valley Project Improvement Act of 1992 (CVPIA) mandated Reclamation develop criteria for assessing the adequacy of these plans. The CVPIA further requires contractors to have adequate plans on file in order to obtain certain benefits or at such time as they renew their contracts.

Contra Costa County Draft Urban Water Management Plan (2020)

The CCWD is updating the 2015 UWMP to address the 2020 water reduction targets in the Water Conservation Act of 2009 (SB X7-7) as well as more recent legislation in AB 1668 and SB 606, with inclusion of a Drought Risk Assessment and Water Shortage Contingency Plan. The UWMP also includes a description of the plan adoption, public coordination, and planning coordination activities. The UWMP presents information on CCWD's supply and demand forecasts, conservation programs, water demand management measures (DMMs), also known as best management practices (BMPs), and recycled water opportunities through the year 2045.

Contra Costa County Municipal Code

Solid Waste

Contra Costa County has adopted recycling measures to reduce the quantity of solid waste going to landfills. The Ordinance Code of Contra Costa County (County Code) Chapter 418-14, Construction and Demolition Debris Recovery, requires that at least 50 percent of demolition and construction debris from projects covering 5,000 square-feet or more be reused, recycled, or otherwise diverted from landfills (Contra Costa County 2021).

Stormwater Drainage

County Code Division 914 mandates that all stormwater entering and/or originating from properties is to be collected and conveyed without diversion and within an adequate storm drainage system. Stormwater is to be conveyed to an adequate natural watercourse having a definable bed and banks, or to an existing adequate public storm drainage system that conveys the stormwaters to an adequate natural watercourse.

Contra Costa County General Plan (2010)

The County General Plan identifies the Refinery as a site involved in hazardous materials management. When handling hazardous materials at a site involved with groundwater extraction or construction, the site must be in compliance with permitting and other regulatory requirements.

The Public Facilities/Services Element of the Contra Costa County General Plan 2005–2020 (2010) contains the following goals and policies that are relevant to the proposed Project:

Goal 7-F To assure potable water availability in quantities sufficient to serve existing and future residents.

Goal 7-I To protect and enhance the quality of the water supplied to County residents.

Goal 7-K To provide sewer collection, treatment, and disposal facilities adequate to meet the current and projected needs of existing and future residents.

Goal 7-AE To provide for the safe, efficient, and cost-effective removal of waste from residences and businesses.

Goal 7-AG To reduce the amount of waste disposed of in landfills by

- reducing the amount of solid waste generated (waste reduction)
- reusing and recycling as much of the solid waste as possible
- utilizing the energy and nutrient value of the solid waste (waste to energy and composting)
- properly disposing of the remaining solid waste (landfill disposal)

Goal 7-AH To divert as much waste as feasible from landfills through recovery and recycling.

Policy 7-88 Solid waste disposal capacity shall be considered in County and city land use planning and permitting activities, along with other utility requirements, such as water and sewer service.

Policy 7-91 Solid waste resource recovery (including recycling, composting, and waste to energy) shall be encouraged so as to extend the life of sanitary landfills, reduce the environmental impact of solid waste disposal, and

make use of valuable resources, provided that specific resource recovery programs are economically and environmentally desirable.

Contra Costa Countywide Integrated Waste Management Plan

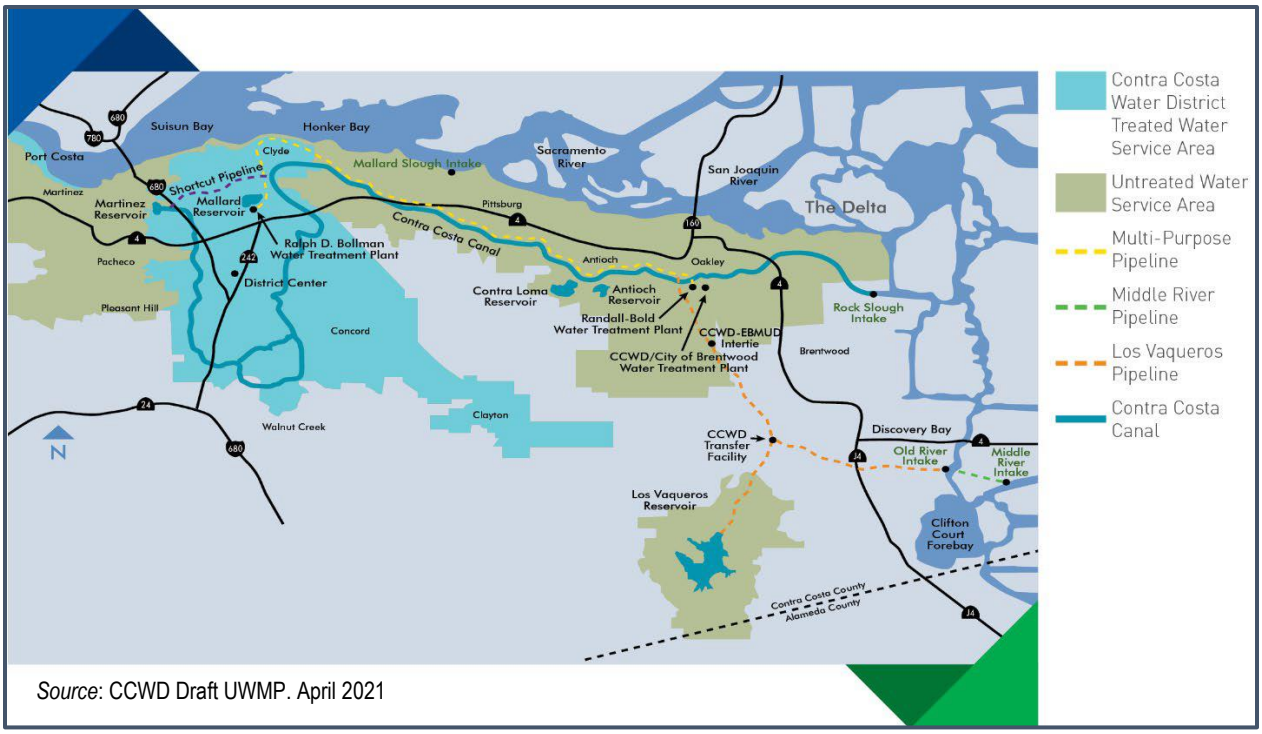
As required by the California Integrated Waste Management Act, Contra Costa County adopted a Countywide Integrated Waste Management Plan. The plan is composed of five volumes including the Source Reduction and Recycling Element, and the Household Hazardous Waste Element and the Non-disposal Facility Element that are specific to the unincorporated regions of the County; and two volumes that describe the objectives, goals, and policies of the Countywide program as well as the types of programs to support them. Every year, the County and each city within the County are required to submit a progress report to the California Integrated Waste Management Board detailing their programs' effectiveness for solid waste reduction and diversion (California Regulatory Law Reporter 1993).

3.15.2 Existing Conditions

Water Service

CCWD is a retail and wholesale water distributor, delivering treated drinking water directly to customers in central and eastern Contra Costa County. In addition, wholesale treated water is provided to the City of Antioch, the Golden State Water Company in Bay Point, the Diablo Water District in Oakley, and the City of Brentwood. CCWD provides raw (untreated) water to the Cities of Antioch, Martinez and Pittsburg, as well as to industrial and irrigation customers. CCWD serves approximately 500,000 people and is one of the larger urban water districts in northern California and a leader in the protection of the Sacramento-San Joaquin Delta. CCWD serves as the contract administrator for the East Contra Costa County Integrated Regional Water Management (IRWM) system (SF RWMP 2019).

The CCWD's service area encompasses most of central and northeastern Contra Costa County, a total area of more than 140,000 acres (including the Los Vaqueros watershed area of approximately 19,100 acres). Water is provided to a combination of municipal, residential, commercial, industrial, landscape irrigation, and agricultural customers. The cities of Antioch, Pittsburg and Martinez purchase untreated water wholesale from CCWD and operate their own plants for treating water before selling it to retail customers in those communities. Treated water is distributed directly from CCWD to individual customers living in the following communities in the Treated Water Service Area (TWSA): Clayton, Clyde, Concord, Pacheco, Port Costa, and parts of Martinez, Pleasant Hill, and Walnut Creek. In addition, CCWD delivers water to the Diablo Water District (City Oakley), the City of Brentwood and the Golden State Water Company (unincorporated Bay Point community). **Figure 3.15-1** is an overview of the CCWD service area facilities.



Source: CCWD Draft UWMP. April 2021

Figure 3.15-1: CCWD Service Area Map

CCWD System Overview

CCWD operates and maintains a complex system of water transmission, treatment, and storage facilities to supply both treated and untreated (raw) water to its wholesale and retail customers. The CCWD diverts water from the Delta at four intake facilities. The intakes are located at Rock Slough, Old River, Middle River at Victoria Canal, and Mallard Slough. The backbone of the District's water conveyance system is the 48-mile Contra Costa Canal, which starts at Rock Slough and ends at the Martinez Reservoir.

Four untreated water reservoirs, Los Vaqueros, Contra Loma, Mallard, and Martinez, provide a total of approximately 165,000 AF of storage. These reservoirs are used to store water for blending and water quality purposes, dry-year and emergency use, supply during peak demands, and flow regulation. The District operates three water treatment plants (WTP). The Randall-Bold WTP, located in Oakley, is jointly owned with the Diablo Water District (DWD) and provides treated water for DWD, a portion of the City of Brentwood, and for CCWD's wholesale and retail treated water customers. The District also designed, constructed and operates the City of Brentwood WTP, located on the same campus as the Randall-Bold WTP, which provides treated water for the remainder (majority) of the City of Brentwood that is outside the District service area. The Bollman WTP located in Concord primarily provides treated water to the TWSA. The District's treated water distribution system consists of more than 800 miles of pipelines, 40 storage reservoirs with a total capacity of 72 million gallons, and 30 pump stations (CCWD 2021).

Water Use Characteristics

The CCWD obtains its water supply almost exclusively from the Sacramento Delta (Delta), which is diverted from the Delta under a contract with Reclamation's CVP. Other water supply

sources used within the service area include surface water from the Delta diverted under CCWD's and the East Contra Costa Irrigation District's (ECCID's)water rights, recycled water, a minor amount of groundwater and water transfers.

Water Demand

Actual 2020 demands and future demand projections, summarized in Table 3.15-1, are consistent with the Draft 2020 UWMP Future Water Supply Study assumptions and are shown irrespective of the source. For water supply planning purposes, future demand projections are based on maximum dry-year demands not impacted by drought-related water shortage or economic conditions. Additionally, projected demands consider anticipated water use efficiency and conservation measures which result in reduced demands.

Water Supply

The existing and planned sources of water available in 5-year increments over the UWMP 25-year planning horizon are shown in Table 3.15-2, as well as the projected availability of these water supplies in average, single-dry, and multiple-dry water year conditions. An average water year is a year that most closely represents the average water supply available to the agency. A single-dry year is defined as the year that represents the lowest water supply available to the agency. A multiple-dry year period is defined as the period that represents the lowest average water supply availability for 5 consecutive dry years.

Existing and Planned Sources of Water

While CCWD's primary source of water supply is the Central Valley Project (CVP), the District also has water rights for the Los Vaqueros Reservoir and at Mallard Slough. In addition, ECCID, the City of Antioch, and industrial users all have rights to divert water from the Delta. While there are a number of agencies within its service area that use groundwater to meet a portion of their demands, CCWD does not utilize groundwater to meet demands. Recycled water has also been used in CCWD's service area, and its use is projected to increase in the future. Table 3.15-3 and Table 3.15-4 below indicate the amount of water, by supply type, supplied in 2020 for the District's wholesale operations and retail operations, respectively.

Table 3.15-1: Current and Projected Water Demand (AFY)

WATER USE SECTORS	2020 Actual	2025	2030	2035	2040	2045
WHOLESALE						
Treated	5,100					
Untreated	33,290					
Local Supplies [a]	2,960					
Subtotal (Wholesale)	41,350	42,700	45,300	49,200	51,900	54,800
RETAIL						
TWSA [b]	32,600	36,400	37,400	38,800	40,100	40,900
Major Industrial (untreated) [c]	26,410	39,100	40,700	0	43,800	44,300
Irrigation (untreated)	1,100	1,800	1,800	1,800	1,800	1,800
Estimated Groundwater	3,500	3,600	3,600	3,600	3,700	3,700
Subtotal (Retail)	63,610	80,900	83,500	86,400	89,400	90,700
RECYCLED WATER [d]	9,160	11,600	16,300	17,200	17,900	18,200
Untreated Water System Losses [e]	12,200	12,200	12,200	12,200	12,200	12,200
Total UWMP Service Area Demands	126,320	147,400	157,300	165,000	171,600	175,900
Contract deliveries outside Service Area [f]	6,700	7,000	7,600	8,000	8,300	8,500
Total Deliveries	133,020	154,400	164,900	173,000	179,900	184,400

NOTES:

(a) Local supplies are obtained and managed by municipal customers and not delivered by CCWD. Includes City of Antioch's San Joaquin River diversions, industrial river diversions as well as groundwater usage by the DWD, Golden State Water Company, and the City of Pittsburg.

(b) TWSA demands include treated water distribution system losses.

(c) Future projections of industrial water use are based on maximum historical use for industries that are anticipated to continue operating in a similar manner. Actual 2020 use was lower as a resultof several major industries temporarily halting operations in response to the COVID-19 pandemic.

(d) Recycled water is shown as a separate line item and does not include CCCSD plant use.

(e) Untreated Water System Losses include conveyance losses and for evaporative losses at Mallard, Contra Loma, and Martinez Reservoirs estimated at 6,700 AF, and 5,500 AF for evaporative losses at Los Vaqueros Reservoir.

(f) CCWD wheels water on behalf of the City of Brentwood that is delivered to the portion ofBrentwood outside of CCWD's service area.

Source: CCWD 2020 Draft UWMP Table 1-3, Current and Projected Water Demand (AFY)

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Table 3.15-2: Projected Water Supply (acre-feet per year)

Water Year Type [a,b]	CVP	Industrial Diversions	Mallard Slough [c]	Antioch Diversions[d]	Ground water [e]	ECCID Supply	LV Supply[f]	Recycled Water [g]	Planned Purchases	Total Planned Supply	Conservation[h]
2020											
Average	161,500	2,800	1,200	6,100	6,500	6,000	10,000	9,160	-	203,260	3,190
Single-Dry	119,000	-	-	3,900	-	10,000	20,000	9,160	-	162,060	3,190
Multi-Dry Year 1	127,500	-	-	-	-	10,000	13,000	9,160	-	159,660	3,190
Multi-Dry Year 2	119,000	-	-	-	-	10,000	13,000	9,160	-	151,160	3,190
Multi-Dry Year 3	102,000	-	-	-	-	10,000	13,000	9,160	-	134,160	3,190
Multi-Dry Year 4	93,500	-	-	-	-	10,000	13,000	9,160	-	125,660	3,190
Multi-Dry Year 5	85,000	-	-	-	-	10,000	13,000	9,160	-	117,160	3,190
2025											
Average	168,440	2,800	1,200	9,500	6,800	6,260	10,000	11,640	-	216,640	2,550
Single-Dry	124,120	-	-	8,000	-	10,260	20,000	11,640	-	174,020	2,550
Multi-Dry Year 1	132,980	-	-	8,000	-	10,260	13,000	11,640	-	175,880	2,550
Multi-Dry Year 2	124,120	-	-	7,360	-	10,260	13,000	11,640	-	166,380	2,550
Multi-Dry Year 3	106,390	-	-	6,720	-	10,260	13,000	11,640	-	148,000	2,550
Multi-Dry Year 4	97,520	-	-	6,720	-	10,260	13,000	11,640	-	139,140	2,550
Multi-Dry Year 5	88,660	-	-	6,720	-	10,260	13,000	11,640	-	130,270	2,550
2030											
Average	181,920	2,800	1,200	9,500	7,000	6,760	10,000	16,290	-	235,470	4,200
Single-Dry	134,050	-	-	8,000	-	10,760	20,000	16,290	-	189,100	4,200
Multi-Dry Year 1	143,620	-	-	8,000	-	10,760	13,000	16,290	-	191,670	4,200
Multi-Dry Year 2	134,050	-	-	7,360	-	10,760	13,000	16,290	-	181,460	4,200

Table 3.15-2: Projected Water Supply (acre-feet per year)

Water Year Type [a,b]	CVP	Industrial Diversions	Mallard Slough [c]	Antioch Diversions[d]	Ground water [e]	ECCID Supply	LV Supply[f]	Recycled Water [g]	Planned Purchases	Total Planned Supply	Conservation[h]
Multi-Dry Year 3	114,900	-	-	6,720	-	10,760	13,000	16,290	-	161,670	4,200
Multi-Dry Year 4	105,320	-	-	6,720	-	10,760	13,000	16,290	-	152,090	4,200
Multi-Dry Year 5	95,750	-	-	6,720	-	10,760	13,000	16,290	-	142,520	4,200
2035											
Average	185,250	2,800	1,200	9,500	7,300	7,310	10,000	17,260	-	240,620	5,540
Single-Dry	136,500	-	-	8,000	-	11,310	20,000	17,260	-	193,070	5,540
Multi-Dry Year 1	146,250	-	-	8,000	-	11,310	13,000	17,260	-	195,820	5,540
Multi-Dry Year 2	136,500	-	-	7,360	-	11,310	13,000	17,260	-	185,430	5,540
Multi-Dry Year 3	117,000	-	-	6,720	-	11,310	13,000	17,260	-	165,290	5,540
Multi-Dry Year 4	107,250	-	-	6,720	-	11,310	13,000	17,260	-	155,540	5,540
Multi-Dry Year 5	97,500	-	-	6,720	-	11,310	13,000	17,260	-	145,790	5,540
2040											
Average	185,250	2,800	1,200	9,500	7,600	7,740	10,000	18,100	-	242,200	6,540
Single-Dry	136,500	-	-	8,000	-	11,740	20,000	18,100	-	194,350	6,540
Multi-Dry Year 1	146,250	-	-	8,000	-	11,740	13,000	18,100	-	197,100	6,540
Multi-Dry Year 2	136,500	-	-	7,360	-	11,740	13,000	18,100	-	186,710	6,540
Multi-Dry Year 3	117,000	-	-	6,720	-	11,740	13,000	18,100	-	166,570	6,540
Multi-Dry Year 4	107,250	-	-	6,720	-	11,740	13,000	18,100	-	156,820	6,540
Multi-Dry Year 5	97,500	-	-	6,720	-	11,740	13,000	18,100	-	147,170	6,540
2045											
Average	185,250	2,800	1,200	9,500	7,900	8,110	10,000	18,250	-	243,010	7,310
Single-Dry	136,500	-	-	8,000	-	12,110	20,000	18,250	-	194,860	7,310
Multi-Dry Year 1	146,250	-	-	8,000	-	12,110	13,000	18,250	-	197,610	7,310
Multi-Dry Year	136,500	-	-	7,360	-	12,110	13,000	18,250	-	187,220	7,310

Table 3.15-2: Projected Water Supply (acre-feet per year)

Water Year Type [a,b]	CVP	Industrial Diversions	Mallard Slough [c]	Antioch Diversions[d]	Ground water [e]	ECCID Supply	LV Supply[f]	Recycled Water [g]	Planned Purchases	Total Planned Supply	Conservation[h]
2											
Multi-Dry Year 3	117,000	-	-	6,720	-	12,110	13,000	18,250	-	167,080	7,310
Multi-Dry Year 4	107,250	-	-	6,720	-	12,110	13,000	18,250	-	157,330	7,310
Multi-Dry Year 5	97,500	-	-	6,720	-	12,110	13,000	18,250	1,930	149,510	7,310

NOTES

(a) Water year supply data is based on the historical conditions in CalSim as follows: Average (Normal) represents availability of water supply in wet, above normal, below normal and normal years. Single-Dry Year represents availability of water supply in dry and critically dry years. Multiple-Dry Yearsequence represents a five-year drought such as 1929-1933 conditions.

(b) The CVP conditions used for supply planning are defined as follows: Average (Normal) is Adjusted Historical Use per CVP municipal and industrial (M&I) Water Shortage Policy and is 95% of Historical Use. Single-Dry Year supply is 70% of Historical Use. Multi-Dry Years 1 through 5 are 75%, 70%, 60%, 55%, an50% of Historical Use, respectively.

(c) Industrial River diversions and Mallard Slough diversions are based on average annual diversion over ten-year period (2010-2020).

(d) Antioch River diversions are based on historical use and projected increase as a result of the desalination project currently being implemented byAntioch.

(e) Groundwater represents production from municipal customer owned wells and an estimate of private wells within CCWD's service area.

(f) Water supply reliability benefit resulting from expansion of Los Vaqueros Reservoir is based on modeling performed for the project's EnvironmentalImpact Report.

(g) Per DWR UWMP guidebook, recycled water does not include CCCSD plant use.

(h) Demand projections shown in Chapter 4 of the UWMP have been adjusted to reflect anticipated reductions due to passive and active conservation savings. Conservation is an integral part of CCWD's water supply portfolio and anticipated future passive and active conservation savings are included inthis table for informational purposes. The values reflect anticipated savings going forward from 2020, and do not reflect conservation savings from past programs that have been implemented since the early 1990s.

Table 3.15-3: CCWD Wholesale Water Supply (Actual)

Water Supply	Additional Detail on Water Supply	2020	
		Actual Volume (AFY)	Water Quality
Purchased or Imported Water	Central Valley Project	88,820	Other Non-Potable Water
Surface water (not desalinated)	Mallard Slough	0	Other Non-Potable Water
Supply from Storage	Los Vaqueros Reservoir	4,590	Other Non-Potable Water
Transfers	ECCID Supply	6,000	Other Non-Potable Water
Surface water (not desalinated)	Industrial River Diversions	5,400	Other Non-Potable Water
Surface water (not desalinated)	Antioch River Diversions	770	Other Non-Potable Water
Groundwater (not desalinated)	Estimated Groundwater	2,190	Other Non-Potable Water
Recycled Water	Industrial, irrigation, and commercial, wetland uses	9,160	Recycled Water
	Total	**116,930**	

NOTES:

(a) Industrial river diversions are estimated based on average use.

(b) Groundwater represents production from municipal customer owned wells and an estimate of private wells within CCWD's service area.

(c) Recycled water supplies include DEC/LMEC industrial, CCCSD Zone 1, and Cities of Antioch and Pittsburg irrigation, and wetland/wildlife habitat uses. It does not include approximately 1,000 AFY of CCCSD plant use.

(d) Passive and active conservation savings are not included in this table.

Source: CCWD Draft 2020 UWMP Table 6-8W: Water Supplies — Actual

Table 3.15-4: Retail Water Supply (Actual)

Water Supply	Additional Detail on Water Supply	2020	
		Actual Volume	Water Quality
Surface water (not desalinated)	CCWD Wholesale Supply	63,600	Other Non-Potable Water
Recycled Water	Industrial, irrigation, and commercial, wetland uses	8,700	Recycled Water
Total		**72,300**	

NOTES:

(a) CCWD's retail supply in 2020 is equal to total retail demand, including losses as shown inTable 4-1R.

(b) Recycled water supplies include DEC/LMEC industrial, CCCSD Zone 1, and wetland/wildlifehabitat uses. It does not include approximately 1,000 AFY of CCCSD plant use.

(c) Passive and active conservation savings are not included in this table.

CCWD's long-term CVP contract was renewed in May 2005 and has a term of 40 years (contract No. 175r-3401a-LTR1). The contract with Reclamation provides for a maximum delivery of 195,000 acre-feet per year (AFY) from the CVP, with a reduction in deliveries during water

shortages including regulatory restrictions and drought. The Municipal and Industrial (M&I) Water Shortage Policy defines the reliability of CCWD's CVP supply and was developed by Reclamation to establish CVP water supply levels that would sustain urban areas during severe or continuing droughts and provide for minimum health and safety. The M&I Water Shortage Policy provides for a minimum allocation of 75 percent of adjusted historical use until irrigation allocations fall below 25 percent.

Los Vaqueros Water Rights

CCWD obtained additional water rights for surplus Delta flows as part of the Los Vaqueros Project. Up to 95,980 acre-feet may be diverted for storage in Los Vaqueros Reservoir from November 1 of each year to June 30 of the succeeding year under Water Rights Permit No. 20749. The Los Vaqueros Water Rights supply can be used in lieu of the CVP supply. When Los Vaqueros Water Rights water is used, CVP supplies are reduced by an equivalent amount. Combined deliveries of Los Vaqueros Water Rights water and CVP water are limited to 195,000 AFY. Little or no Los Vaqueros Water Rights water is available for diversion to storage in dry years.

In 2012, CCWD completed Phase I of the Los Vaqueros improvements project. Phase II of the project is expected to be completed in 2021. The project includes upgrades to the regional water conveyance system, including improved pump stations and pipelines, with the goal of increasing the reservoir's capacity up to 275,000 acre-feet (CCWD 2021b). Phase II objectives include enhanced reliability of Delta water supplies for municipal, industrial and agricultural purposes. Once completed, the Los-Vaqueros improvements project benefits would:

- increase water supply reliability from 44,000 to 504,000 AFY in dry periods;
- add emergency water supply storage for Bay Area agencies ranging from 80,000 to 120,000 AFY; and
- increase environmental water supply ranging from 50,000 to 790,000 AFY.

East Contra Costa Irrigation District (ECCID)

CCWD entered into an agreement with the ECCID in 2000 to purchase surplus irrigation water for M&I purposes in ECCID's service area. Only a portion of ECCID is within the existing CCWD service area (estimated current demand of 6,000 AFY). The current ECCID agreement allows CCWD to purchase up to 8,200 AFY for service in the areas common to both districts. The agreement also includes an option for up to 4,000 AFY of groundwater (by exchange) when the CVP is in a shortage situation. The groundwater exchange water was utilized during the 2007-2009 drought, and the 2013-2015 drought. This exchange water can be used anywhere within CCWD's service area. Water delivered by CCWD to the City of Brentwood is purchased by the City from ECCID under a separate contract.

Bay Area Regional Reliability (BARR)

The CCWD together with seven other Bay Area water agencies, including Alameda County Water District (ACWD), Bay Area Water Supply and Conservation Agency (BAWSCA), East Bay Municipal Utility District (EBMUD), Marin Municipal Water District (MMWD), San Francisco Public Utility District (SFPUC), Valley Water, and Zone 7, are participating in the BARR partnership to improve water supply reliability in the Bay Area. Benefits of a regional approach include leveraging existing infrastructure investments, facilitating the transfer of water

during shortages, bolstering emergency preparedness, and improving climate change resiliency. The BARR partners are currently working on the Shared Water Access Program to develop a guide for sharing resources among the BARR agencies to improve regional resilience and reliability. As part of the BARR Shared Water Access Program, CCWD and Valley Water, which are both CVP contractors, are seeking to implement an exchange wherein CCWD makes available to Valley Water up to 5,000 AF of CCWD's CVP allocation in 2021, in exchange for Valley Water returning the same amount of water to CCWD in a later year. This pilot project will both provide valuable water supply to Valley Water during a critically dry year as well as identify institutional and regulatory considerations relevant to future transfers or exchanges between BARR partners (CCWD 2021).

As part of the CCWD 2020 UWMP, CCWD compiled and assessed a comprehensive list of supply alternatives based on supplies considered in the 1996 FWSS, 2007 FWSS review, 2005 Water Transfer Alternatives Analysis, recycled water master plans, groundwater management plans, urban water management plans, and other local and regional planning documents. Pre-screening conditions were applied to develop a meaningful range of potential water supply options. The UWMP supply alternatives are generally categorized as conservation, recycled water, groundwater, desalination, or water transfers.

It is anticipated that CCWD would implement the following supply options in the future. Together, these projects will achieve a total of 24,000 AFY of dry year supply by the year 2060 to address the District's projected shortfalls.

- **Recycled Water Projects**: CCWD continues to evaluate an Industrial Recycled Water Project to serve up to 3,400 AFY to major industrial customers, either in coordination with an exchange with Valley Water or separately. This amount could increase depending on costs, water quality, and reliability considerations. Additionally, as previously noted, approximately half the water demand for the redevelopment at the Concord Naval Weapons Station is to be met with recycled water. The timing and scope of these recycled water projects would depend on the overall water use within CCWD's service area and timing of redevelopment. The UWMP estimates these projects, along with other minor increases in recycled water use, would provide an additional 23,610 AFY of supply.
- **Long-Term Water Use Efficiency Measures**: CCWD would continue to implement enhanced conservation to maintain the per capita water use required by SB X7-7 as well as future water use efficiency targets into the future. Taking into consideration the most cost-effective implementation strategies, the CCWD would add an additional 8,800 AFY generated by long-term projects by the year 2060.

New Dry Year Supplies to Meet Projected Shortfalls: Assuming anticipated passive conservation savings are realized in the future, and all planned water use efficiency projects (conservation and recycled water) are implemented, the CCWD anticipates no supply shortfalls until the year 2040, and at that time only under multiple-year drought conditions (CCWD 2021) . This also assumes that the CCWD will abide by its current Board policy of meeting 100 percent of demand during normal years and at least 85 percent of demand during drought conditions, with 15 percent being met through customer response to short-term DMMs. The CCWD would

continue to monitor and evaluate appropriate water supply alternatives as 2040 approaches.

Summary of Existing and Planned Sources of Water

While CCWD's primary source of water supply is the CVP, CCWD also has water rights for the Los Vaqueros Reservoir and at Mallard Slough. In addition, ECCID, the City of Antioch, and industrial users all have rights to divert water from the Delta. While there are a number of agencies within its service area that use groundwater to meet a portion of their demands, CCWD does not utilize groundwater to meet demands. Recycled water has also been used in CCWD's service area, and its use is projected to increase in the future. **Table 3.15-5** and **Table 3.15-6** below indicate the amount of water, by supply type, supplied in 2020 for the District's wholesale operations and retail operations, respectively.

Table 3.15-5: CCWD Wholesale Water Supply (Actual)

Water Supply	Additional Detail on Water Supply	2020	
		Actual Volume (AFY)	Water Quality
Purchased or Imported Water	Central Valley Project	88,820	Other Non-Potable Water
Surface water (not desalinated)	Mallard Slough	0	Other Non-Potable Water
Supply from Storage	Los Vaqueros Reservoir	4,590	Other Non-Potable Water
Transfers	ECCID Supply	6,000	Other Non-Potable Water
Surface water (not desalinated)	Industrial River Diversions	5,400	Other Non-Potable Water
Surface water (not desalinated)	Antioch River Diversions	770	Other Non-Potable Water
Groundwater (not desalinated)	Estimated Groundwater	2,190	Other Non-Potable Water
Recycled Water	Industrial, irrigation, and commercial, wetland uses	9,160	Recycled Water
	Total	**116,930**	

NOTES:

(a) Industrial river diversions are estimated based on average use.

(b) Groundwater represents production from municipal customer owned wells and an estimate of private wells within CCWD's service area.

(c) Recycled water supplies include DEC/LMEC industrial, CCCSD Zone 1, and Cities of Antioch and Pittsburg irrigation, and wetland/wildlife habitat uses. It does not include approximately 1,000 AFY of CCCSD plant use.

(d) Passive and active conservation savings are not included in this table.

Source: CCWD Draft 2020 UWMP Table 6-8W: Water Supplies — Actual

Table 3.15-6: Retail Water Supply (Actual)

Water Supply	Additional Detail on Water Supply	2020	
		Actual Volume	Water Quality
Surface water (not desalinated)	CCWD Wholesale Supply	63,600	Other Non-Potable Water
Recycled Water	Industrial, irrigation, and commercial, wetland uses	8,700	Recycled Water
Total		**72,300**	

NOTES:

- CCWD's retail supply in 2020 is equal to total retail demand, including losses as shown inTable 4-1R.
- Recycled water supplies include DEC/LMEC industrial, CCCSD Zone 1, and wetland/wildlifehabitat uses. It does not include approximately 1,000 AFY of CCCSD plant use.
- Passive and active conservation savings are not included in this table.

Wastewater

The CCWD coordinates wastewater collection, treatment and disposal with four wastewater agencies that operate within its service area. Water recycling is a component of CCWD's long term sustainable water supply strategy, and CCWD collaborates with local wastewater agencies proposing to provide recycled water for appropriate designated uses.

Central Contra Costa Sanitary District (CCCSD)

The CCCSD wastewater treatment plant is located in unincorporated County land between Interstate Highway 680 (I-680) and and State Highway 4 (SR-4). The treatment plant has a current dry weather permitted capacity of 53.8 million gallons per day (mgd) with an average dry weather flow of 33.2 mgd to the treatment plant. CCCSD provides wastewater collection and treatment for approximately 500,000 residents and 3,000 businesses in central Contra Costa County, including portions of the CCWD service area. Effluent from the activated sludge secondary treatment process is disinfected with ultraviolet (UV) light and then discharged into Suisun Bay via submerged outfall. A portion of the UV-disinfected secondary effluent is diverted to CCCSD's recycled water production plant for tertiary treatment using direct filtration followed by disinfection with sodium hypochlorite. CCCSD's recycled water conforms to Title 22 requirements for unrestricted use. CCCSD currently provides approximately 700 AFY (approximately 228 million gallons per year or 0.6 mgd) to recycled water customers within the cities of Concord, Pleasant Hill, and Martinez and utilizes up to 1,090 AFY (approximately 355 million gallons per year or 1 mgd) for plant use. Other water treatment agencies operating within the County are as follows.

Mt. View Sanitary District (MVSD) The MVSD wastewater treatment plant is located near the Martinez Refinery and I-680 on unincorporated land in Contra Costa County. MVSD serves approximately 21,100 people in the City of Martinez and adjacent unincorporated areas. Treatment processes include two stage trickling filtration for ammonia removal, secondary clarification, sand filtration, UV disinfection and anaerobic digestion of biosolids. Treated

effluent from MVSD enters a constructed marshland west of I-680, flows to Peyton Slough, which then combines with surface runoff, and tidal flows supplying a natural marshland east of I-680, before ultimately discharging to the Carquinez Strait. The plant has a dry weather permitted capacity of 3.2 mgd and currently treats an average of 1.25 mgd.

Current and Projected Water Uses

Project Conditions

Marathon Petroleum Refinery operations consumed approximately 8.5 to 9 million gallons of water per day sourced from potable water and refinery-owned wells. The Refinery's main use of water is to supply refining processes with steam and cooling water. The water supply was also used as a back-up source of water for emergency fire suppression, as needed. The proposed project is expected to reduce the overall water use at the facility by about 70 percent or about 3.6 million gallons of fresh water per day.

Over the baseline period, the refinery used on average 3,249,320 thousand gallons per year. The CCWD and Refinery entered into an agreement to supply water to the Refinery's existing industrial operations and/or water service area. The water supply system includes water intake and treatment facilities, water transmission pipelines operated by the CCWD, and water supply pipelines to the Refinery and MOTs.

Aside from internal reuse of stripped sour water as crude desalter make up wash water and a portion of treated effluent reused as industrial water, the refinery does not use any recycled water.

Wastewater Treatment

Refining Operations

The Refinery wastewater streams from the previous refining operations and most of the stormwater runoff is collected and managed in the existing wastewater treatment system that is regulated by the San Francisco RWQCB under a NPDES discharge permit (Order No. R2-2015-0033). The existing permit expired in 2020 but has been temporarily extended until an updated permit can be issued that reflects the new operations. The updated permit application is currently under review by the RWQCB, but given that discharges are expected to decrease, no additional impacts from the discharges are expected. The Refinery treats and discharges process wastewater, including water from boiler blowdown, cooling tower blowdown, sanitary wastewater, sour water stripper bottoms, contaminated groundwater, stormwater runoff, and off-site wastewater generated at other Refinery facilities including remediation wastewater and cargo hold washwater. Current treatment volumes average 4.4 mgd with a total plant capacity of 10.44 mgd.

Existing wastewater flows into the API separators to remove oil and sediment[2]. Wastewater from the separators then flows to dissolved nitrogen flotation (DNF) units that remove additional oil and solids. Oil, water, and solids are further separated in a centrifuge and recovered oil is shipped offsite for processing. DNF effluent is next routed through an air stripper and then sent

[2] API Separators frequently used in the treatment of refinery wastewater that has been contaminated by oil and oil-bearing sludge. American Petroleum Institute Application Data Sheet ADS 2900-08/rev.C. November 2010.

for biological treatment through a series of biological aerated and facultative lagoons (Surge Pond 1, Surge Pond 2, and Bio-Oxidation Pond). Wastewater is then pumped to clarifiers where coagulants and flocculants are added to remove algae and improve solids settling. From the clarifiers, wastewater flows to sand filters and Granular Activated Carbon (GAC) adsorption vessels and is discharged to the historical coke storage area retention pond (Coke Pond) and/or Clean Canal. The Clean Canal can also receive neutralized demineralizer reject water from the water treatment plant.

The existing NPDES permit authorizes the discharge of treated wastewaters and neutralized demineralizer reject water via the Clean Canal to a final outfall, Discharge Point No. 001, in Suisun Bay under the Avon Wharf. An additional 10 discharge points are authorized under the NPDES permit for discharge of stormwater to lower Walnut Creek, immediately west of the Refinery, and Hasting Slough, onsite and east of the Refinery. The additional capacity of the oxidation/polishing ponds allows for an intermittent daily discharge based on pump operations. The instantaneous discharge rate, based on pump operations, is typically three scenarios:

- No pumps operational (i.e. zero discharge);
- One pump operational (3,500 – 4,000 gpm); or
- Two pumps operational (8,000 gpm).

Under the revised NPDES Permit, "Discharge Point No. 001 is prohibited when treated wastewater does not receive an initial dilution of at least 15:1, as modeled. Compliance shall be achieved by proper operation and maintenance of the discharge outfall to ensure that it (or its replacement, in whole or part) is in good working order and is consistent with provision stated in this permit.

Groundwater

See West Coast Basin Report from the Department of Water Resources. This report sets limits for annual limits by gallons or acre feet under the agreement. The County's Urban Water Management Plan shows allocations for residential, commercial and industrial customers.

Solid Waste Management

The Department of Resources Recycling and Recovery (CalRecycle), along with local enforcement agencies, regulates the operation of solid waste facilities. It is a core value of CalRecycle to manage and mitigate the impacts of solid waste on public health and safety and the environment by enforcing compliance with regulations and state minimum standards, through integrated and consistent permitting, inspection, and enforcement efforts. The Contra Costa County Health Services Department, Environmental Health Division is the local enforcement agency for collection, treatment, and disposal of hazardous solid waste.

AB 39 requires solid waste facilities to report existing capacity, future projects, and service projections for the life of the facility. CEQA reports should include facility operations' conformance with the County's Waste Management Plan and General Plan land use designation. CalRecycle provides guidance for lead agencies in the preparation of CEQA documentation and to responsible agencies for their review of documentation for the construction and/or operation of a solid waste facility requiring a full solid waste facility permit (SWFP).

Regulated businesses include recycling, disposal and composting facilities, landfills, transfer/processing facilities, and municipal solid waste conversion facilities. Permitted facilities are required to register with the state Recycling and Disposal Reporting System (California Public Resources Code [PRC] Section 41821.5[g]). Reporting entities must report accurately as required by statute and regulation. Local governments may review some reporting entity records pursuant to Public Resources Code Section 41821.5(g).

The Central Contra Costa Solid Waste Authority is a joint powers authority that franchises solid waste and recycling collection services in Lafayette, Moraga, Orinda, Walnut Creek, and surrounding unincorporated communities. Operating landfills in Contra Costa County include the Acme Landfill near Martinez, which is restricted to receiving construction and demolition wastes and yard debris; Keller Canyon Landfill near Pittsburg; and West Contra Costa Sanitary Landfill in Richmond. **Table 3.15-1** indicates the daily permitted capacity, the remaining capacity, and the estimated site life at the three operating landfills in Contra Costa County.

Contra Costa County has one Class II landfill, the Keller Canyon Landfill and West Contra Costa Landfill. The Keller Canyon Landfill has a maximum permitted daily disposal of 3,500 tons per day with a remaining capacity of 63,408,410 tons and an anticipated closure date of December 31, 2030. Other landfills in the Bay Area include the Altamont Landfill in Alameda County, Forward Landfill in San Joaquin County; Potrero Hills Landfill in Solano County, and the Vasco Road Landfill in Alameda County.

Nonhazardous and Recyclable Waste

According to the California Integrated Waste Management Board, two active solid waste disposal sites are within Contra Costa County: Acme Landfill near Martinez and Keller Canyon Landfill near Pittsburg. Additionally, the Potrero Hills Landfill in Solano County is currently an active solid waste disposal site. Acme Landfill is a Class III disposal site that is permitted to accept 1,500 tons per day. The remaining capacity for the landfill was approximately 506,590 cubic yards as of June 2021, and it is scheduled to close in 2021. Keller Canyon Landfill is a Class II landfill that is permitted to accept 3,500 tons per day. The remaining capacity for the landfill was approximately 63 million cubic yards as of June 2021; the landfill is scheduled to close in 2050. The landfill accepts agricultural, construction/demolition, industrial, mixed municipal, and sludge waste. Potrero Hills Landfill is a Class III landfill that is permitted to accept 4,330 tons per day. The remaining capacity of this landfill was approximately 8.2 million cubic yards in January 2006 (California Integrated Waste Management Board 2007). Estimated landfill capacity in Contra Costa County is shown in **Table 3.15-7**.

Table 3.15-7: Estimated Remaining Capacity and Site Life for Contra Costa County Landfills

Landfill	Maximum Permitted Capacity (Cubic Yards)	Remaining Capacity (cubic yards)	Maximum Permitted TPD	Estimated Year of Closure	Classification
Keller Canyon Landfill	75,018,280	63,408,410	3,500	2050	Industrial Biosolids/Agriculture
Acme Landfill	6,195,000	506,590	1,500	July 2021	Solid Waste Class III Landfill
West Contra Costa	51,000 tons/day	--	196	Planned	Large Volume

Table 3.15-7: Estimated Remaining Capacity and Site Life for Contra Costa County Landfills

Landfill	Maximum Permitted Capacity (Cubic Yards)	Remaining Capacity (cubic yards)	Maximum Permitted TPD	Estimated Year of Closure	Classification
Sanitary Landfill (WCCSL)					Transfer/Processing
Brentwood Transfer Station	400	--	400	Not Reported	Large Volume Solid Waste
CWM Kettleman Hills[b]	8,000	6,000	15,600	--	Large Volume Solid Waste
Potrero Hills Landfill	83,100,000	13,872,000	4,330	2048	Solid Waste
Clean Harbors Buttonwillow LLC	13,250,000	--	10,500	2040	Industrial Waste Codisposal Facility

[a] Source: Cal Recycle Solid Waste Information System (SWIS) database. https://www2.calrecycle.ca.gov/SolidWaste/Site/Search Website accessed July 28, 2021

[b] USEPA 2020. https://www.epa.gov/sites/default/files/2020-07/documents/cat000646117-khf-tsca-approval-2020-07-29.pdf Website accessed July 28, 2021.

Hazardous Waste

Kettleman Hills is a chemical waste disposal and treatment facility with a capacity of 5.6 million cubic yards; it is operated by Chemical Waste Management, a subsidiary of WMX Technologies headquartered in Oak Brook, Illinois. The 1,600-acre site accepts waste from all over the western United States, but primarily serves California. It is one of fewer than 30 commercial chemical waste sites in the country and one of fewer than 10 sites licensed to accept polychlorinated biphenyl. The Kettleman Hill hazardous waste facility was permitted to increase its capacity from 10.7 million cubic yards to 15.6 million cubic yards in July 2020 (USEPA 2020). The expansion is expected to provide another 12 to 14 years of life.

The Buttonwillow Facility has been in operation since 1982 and is located on 320 acres in the unincorporated community of Buttonwillow in Kern County. The site is operated by Clean Harbors Environmental Services and is fully permitted to manage a large number of RCRA hazardous wastes, California hazardous waste, and non-hazardous waste for stabilization treatment, solidification, and landfill. Typical waste streams include contaminated soils, hazardous waste for treatment of metals, plating waste, and hazardous and non-hazardous liquids and the facility can accept 300 loads of waste per day. The permitted capacity at the Buttonwillow landfill is in excess of 10 million cubic yards. Clean Harbors has applied for modifications to its facility that would include the addition of four new hazardous waste treatment buildings and increase the landfill capacity for non-hazardous waste (Kern County Planning Department 2020).

3.15.3 Impact Analysis

3.15.3.1 Methodology for Impact Analysis

Utilities and services data within the Project area were obtained from available area plans and associated environmental documents, urban water management plans, and the service providers. The locations and conditions of local water supply, storm drainage, sanitary sewer, and solid waste have been identified. This section also identifies relevant utility or service-related capital improvement programs in Contra Costa County.

For this analysis, direct impacts are defined as primary effects that occur as a result of Project construction and operation. This section also addresses the Project's compliance with federal, state, and local laws. Marathon Refinery's new operating permit may require amendments and/or administrative modifications that may result in direct or indirect changes to existing water, sewer, gas, electric, and telecommunications services. Reasonably foreseeable changes to utility infrastructure that may occur that would also affect utility services.

Consistent with the urban water master planning cycle prescribed in Water Code Section 10621, the baseline years for utilities usage in this Draft EIR is a 5-year period. The years 2015 through 2020, the 5 years preceding submittal of the land use and air permit applications for the Project, comprise the baseline years for this analysis.

3.15.3.2 Significance Criteria

For the purposes of this analysis, the proposed Project is considered to have a significant impact on utilities and service systems if it would:

- require or result in the relocation or construction of new or expanded water, wastewater treatment, or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects;
- have insufficient water supplies available to serve the Project and reasonably foreseeable future development during normal, dry, and multiple dry years;
- result in a determination by the wastewater treatment provider, which serves or may serve the Project that it has adequate capacity to serve the Project's projected demand in addition to the provider's existing commitments;
- 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; or
- be out of compliance with federal, state, and local statutes and regulations related to solid waste.

3.15.4 Impacts and Mitigation Measures

The Marathon facility will continue to receive electricity from the Foster Wheeler Martinez cogeneration facility onsite, which is the primary source of electricity for the refinery. The Marathon facility will reduce the amount of feedstock processed from 161,000 bpd to 48,000 bpd, reducing the processing activities at the facility. Units that are expected to be shutdown include the Crude Units, No. 4 HDS Unit, Alkylation Unit, No. 4 Gas Plant, Catalytic Reformer, UOP Platforming Unit, Sulfur Recovery Unit, Benzene Saturation Unit, Fluid Catalytic Cracking Unit, Boilers #6 and #7, and Vacuum Units. Several units will be modified including the No. 2 and No. 3 HDS, Hydrocracker Stage 1 and 2, No. 1 and No. 5 Gas Plants, and some storage tanks. New units that will be installed include a Thermal Oxidizer, Pretreatment Unit, and Wastewater Treatment Unit. Overall, the proposed Project will result in the shutdown of a number of refinery units, as well as heaters and boilers, resulting in a decrease in electricity and natural gas use.

The purchases of electricity from a public utility company will decrease under the proposed project. Current electricity use at the Refinery is approximately 1,200,000 MWH per year. The electricity used after implementation of the proposed Project is an estimated to be 855,000 MWH

per year. Current natural gas use at the Refinery is approximately 60,000 mmBtu/day. The natural gas use after implementation of the proposed Project is estimated to be approximately 31,080 mmBtu/day. The reduction in electricity and natural gas use is further documented in Section 3.8 - Greenhouse Gas section of this EIR which shows an emission reduction of over 885,000 metric tons per year of GHG emissions, most of which are carbon dioxide emissions generated by combustion sources.

UTIL-1: Need for relocation or construction of new or expanded water, wastewater treatment, or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects. (Less than Significant)

Telecommunications service for the Martinez refinery is privately contracted through telecommunications companies. Proposed renewal fuels conversion would have **no impact** on telecommunications services and will not be discussed further in this EIR.

Gas Facilities

The operation of the proposed Project would not require new gas facilities. The Marathon facility would continue to operate its Cogeneration Units onsite. Units that are expected to be shutdown include the Crude Units, No. 4 HDS Unit, Alkylation Unit, No. 4 Gas Plant, Catalytic Reformer, UOP Platforming Unit, Sulfur Recovery Unit, Benzene Saturation Unit, Fluid Catalytic Cracking Unit, Boilers #6 and #7, and Vacuum Units. Several units would be modified, including the No. 2 and No. 3 HDS, Hydrocracker Stage 1 and 2, No. 1 and No. 5 Gas Plants, and some storage tanks. New units that would be installed include a Thermal Oxidizer, Pretreatment Unit, and Wastewater Treatment Unit. Overall, the proposed Project will result in the shutdown of a number of refinery units, as well as heaters and boilers, resulting in a decrease in electricity and natural gas use.

All major construction activities would be within the confines of the existing refinery, where the locations of existing natural gas pipelines are well known. No modifications would be required to any PG&E transmission or distribution pipelines. No grading or trenching would be required off-site, e.g., at Amorco. Therefore, construction activities would not be expected to impact any PG&E critical facilities.

Overall, the Project operations would result in a reduction in the number of combustion sources. Renewable refinery fuel gas would be used to operate heaters associated with the project, to the extent feasible. Current natural gas use at the Refinery is approximately 60,000 mmBtu/day. The natural gas consumption after implementation of the proposed Project is estimated to be approximately 31,080 mmBtu/day.

Natural gas would still be supplied to the facility; however, the operation of the renewable fuels facility would require less purchased natural gas than the operating refinery, so impacts on natural gas facilities would be **less than significant**.

Electric Facilities

The operation of the proposed Project would not require new electricity facilities. As with

Refinery activities involving natural gas consumption, major construction activities would occur within the confines of the existing Marathon Refinery, and would not require modifications to any of PG&E's transmission and distribution equipment. New construction would avoid overhead and underground T&D infrastructure. No major construction activities would be required outside of the existing refinery, e.g., at Amorco. Therefore, construction activities would not be near any PG&E overhead electric lines.

Electricity would still be purchased from PG&E to operate the facility; however, the operation of the renewable fuels facility would require less purchased electricity than the existing Refinery. The purchases of electricity from a public utility company would decrease under the proposed project. Current electricity use at the Refinery is approximately 1,200,000 MWH per year. The electricity used after implementation of the proposed Project would be estimated to be 855,000 MWH per year. Therefore, construction and operational impacts on electrical facilities are expected to be **less than significant.**

Stormwater

No new stormwater management infrastructure would be necessary for the converted Refinery operations. Most stormwater and surface runoff generated within the Refinery would be contained and treated within the Refinery's wastewater treatment plant. At the MOTs, work would be limited to pipeline modifications at the terminal piers; no new impervious surfaces would be created that would increase the current volume of stormwater runoff.

Stormwater is not considered a source of supply for CCWD. While the Canal intercepts minor quantities of stormwater from the surrounding area, the stormwater is not intentionally diverted for beneficial reuse. Stormwater volumes captured directly in local reservoirs are offset by evaporation. Therefore, the proposed Project would have a less than significant impact on stormwater supply levels as a potable water source, and it would not result in environmental impacts from new storm drainage infrastructure.

Water Service

Baseline and Targets

The County's water conservation baseline conditions include:

- Baseline daily per capita water use – how much water is used within an urban water supplier's distribution system area on a per capita basis. It is determined using water use and population estimates in 5-year increments.
- Urban water use target – how much water is planned to be delivered in 2020 pursuant to the CCWD UWMP to each resident within an urban water supplier's distribution system area, taking into account water conservation practices that currently are and plan to be implemented.
- Interim urban water use target – the planned daily per capita water use 2015-2020, a value halfway between the baseline daily per capita water use and the urban water use target.

Water service for commercial and industrial facilities operations in Contra Costa County is managed through individual agreements with the water district. Marathon's water service is through an existing service agreement with CCWD. As discussed below, the renewable fuels project is expected to result in a substantial decrease in water use associated with the conversion of the facility from refining crude oil to renewable feedstocks. Therefore, the proposed project would not result in the relocation or construction of new or expanded public water conveyance facilities.

The proposed Project would result in a reduction in operating units at the Refinery. Units that are expected to be shutdown include the Crude Units, No. 4 HDS Unit, Alkylation Unit, No. 4 Gas Plant, Catalytic Reformer, UOP Platforming Unit, Sulfur Recovery Unit, Benzene Saturation Unit, Fluid Catalytic Cracking Unit, Boilers #6 and #7, and Vacuum Units. Several units will be modified including the No. 2 and No. 3 HDS, Hydrocracker Stage 1 and 2, No. 1 and No. 5 Gas Plants, and some storage tanks. New units that will be installed include a Thermal Oxidizer, Pretreatment Unit, and Wastewater Treatment Unit. The Refinery currently consumes 3,100 to 3,300 million gallons of fresh water per year. The proposed Project would be expected to reduce the overall water use at the facility by about 70 percent or about 1,310 to 1,320 million gallons of fresh water per year. The proposed Project is also expected to decrease the wastewater flow generated from the Facility. Further, the Avon and Amorco Marine terminals would not require water for operation, so no increase in water use would occur at either marine terminal. Therefore, the proposed project would not require additional water.

Proposed Refinery water use is shown in **Table 3.15**-8 below.

Table 3.15-8: Marathon Refinery Operations Water Consumption

Water Type	Million Gallons per Year
Wash Water – Stripped FW	171
Wash Water – Clean Cond	79
Wash Water – Demin	92
Zeolite Water (incl RO) – To Boilers	288
Demin Water – To Boilers	18
Demin Water – Total	110
Cooling Tower Make-Up	787
Raw Water – Total	**1,300**

Wastewater and Sewage Treatment

As explained above, a number of existing refinery units would be shutdown. Certain existing refinery units will be modified. Several new units would be installed including a new renewable feedstock Pretreatment Unit (PTU) and wastewater treatment equipment. The PTU produces a

wastewater stream that would require partial pretreatment to reduce the biological oxygen demand prior to treatment in the existing wastewater treatment facility. Existing tanks would be utilized and repurposed for equalization and biological treatment of the waste stream. New equipment purchased and installed during Project construction activities would consist of specialized wastewater treatment equipment to reduce biological oxygen demand in the waste stream. All wastewater, including sewage, generated at the Refinery is treated at the Refinery and discharged under an existing NPDES permit. Therefore, no public wastewater treatment facilities will be affected by the proposed Project. Because of the installation of new equipment and the changes to the wastewater treatment system, the project modifications would require modifications to the NPDES permit.

The existing Refinery operations generate approximately 1,590 million gallons of wastewater per year or approximately 4.4 million gallons per day. As discussed previously, the Project would result in a reduction in operating units including the Crude Units, No. 4 HDS Unit, Alkylation Unit, No. 4 Gas Plant, Catalytic Reformer, UOP Platforming Unit, Sulfur Recover Unit, Benzene Saturation Unit, Fluid Catalytic Cracking Unit, Boilers #6 and #7, and Vacuum Units. Wastewater generation from these units will cease.

The Pretreatment Unit will generate wastewater that requires pretreatment before further processing in the Facility's existing wastewater treatment plant, which will occur in the new #2 Wastewater Treatment System. Neutralized wastewater from the Pretreatment Unit will be pumped to a dissolved air flotation (DAF) unit to primarily remove suspended solids and any residual oil and grease. Chemicals (coagulants and polymer) will be injected ahead of the DAF to aid in phosphorus precipitation, solids separation and oil removal. Adjustments to pH and addition of coagulants/polymer are also expected to reduce metals (through a process of precipitation/co-precipitation) that may potentially be present in the wastewater. The DAF effluent will then be routed to another cooler to reduce temperature prior to introducing the wastewater into a flow through moving bed biofilm reactor (MBBR) unit to biologically degrade organics and reduce the Biochemical Oxygen Demand (BOD) of the wastewater.

The pretreated wastewater from the new #2 Wastewater Treatment System will be routed to the surge pond and follow the remainder of the downstream units of the existing wastewater treatment plant for further polishing. Some modifications will be made to the existing wastewater treatment system including the relocation of four aerators within Surge Pond 1 to optimize aeration and a new oxidation pond return line which allows for recycle of oxidation pond discharge to Surge Pond 1. The anticipated daily dry weather discharge volume associated with the completed project is approximately 3.1 million gallons per day (mgd) as shown in Table 3.15-9 below.

Table 3.15-9: Renewable Fuels Wastewater Flow Balance

Wastewater Streams	Units	Wastewater Volume
No. 2 Wastewater Treatment System	gpm	417
Wash Pad	gpm	200
RFF Process Water	gpm	70
RFF Process Blowdown	gpm	56

Table 3.15-9: Renewable Fuels Wastewater Flow Balance

Wastewater Streams	Units	Wastewater Volume
Foul Water Strippers	gpm	500
Cooling Tower Blowdown	gpm	243
Balance of Plant Sources	gpm	646
Sanitary Wastewater	gpm	70
MECS Calalyst Plant	gpm	7
Cogen Boiler Blowdown	gpm	167
Raw Water Treatment	gpm	132
Tank Water Draws and Extracted GW	gpm	49
Miscellaneous Utility Water / Firewater / Condensate	gpm	200
Cardox SW Retention Pond	gpm	21
Total	gpm	2,132
	MGD	3.1

The wastewater volumes following completion of the project would be approximately 3.1 million gallons per day which is less than the pre-project refinery wastewater generation of 4.4 million gallons per day. Therefore, the project will result in a reduction in wastewater generated by the Facility. Further, the proposed Project would not result in the relocation or construction of new or expanded public wastewater treatment facilities.

The proposed Project will not result in any wastewater generation at the Avon or Amorco Marine Terminals.

Impact UTIL-2: Adequacy of available water supplies to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years. (Less than Significant)

Current and Future Water Demand

According to the County's 2015 Urban Water Management Plan (June 2016), California Water Code Section 10631 requires the UWMP to include past and future population and demand projections in five-year increments over the next 20 years. The UWMP uses the terms water demand and water use interchangeably. The demand projections presented in Chapter 4 of the UWMP are consistent with the District's FWSS and were developed in coordination with the District's municipal customers. Factors influencing future water demand such as weather and growth in population were considered.

2021 Water Conservation/Dry Year Information

The CCWD noted that rain and snowfall precipitation in recent years has been well below normal. As of early April 2021, precipitation in the Northern Sierra was just over 50 percent of average for that time of year. The dry year meant the water district was given only 55 percent of item normal water allocation by the federal government (CCWD 2021a). However, because of

the District's conservation programs and infrastructure improvements, the Los Vaqueros Reservoir storage is at 79 percent capacity as of April 1, 2021 (CCWD April 2021a).

CCWD has actively and consistently implemented a variety of effective water conservation programs since 1988. CCWD is a signatory to the Memorandum of Understanding Regarding Urban Water Conservation in California (MOU) developed by the California Urban Water Conservation Council (CUWCC). The District implements Best Management Practices (BMPs), as prescribed in the MOU and as required in the Standard Criteria for Evaluating Water Management Plans.

The Water District's water conservation programs involve participation by residential, commercial, and industrial customers, and have saved approximately 6,200 AFY in annual water usage. Cumulative savings exceed 73,000 AF since the program's inception in 1991. For example, the 2015 UWMP estimates approximately 10,000 AFY of recycled water was put to beneficial use within the District's service area, including wildlife habitat enhancement and wetlands. Future use is anticipated to grow to nearly 18,000 AFY through additional projects implemented under the current agreements, potential future industrial use.

CCWD's Water Conservation Program fulfills their mission by reducing long-term water demand in an environmentally-responsible and cost-effective manner. The long-term water savings goal for the Conservation Program is to reduce demand by 5 percent of what it would be in 2050 without District-implemented conservation measures. This equates to approximately 10,000 acre-feet in the year 2050.

Current and Projected Recycled Water Uses

The CCWD 2020 UWMP describes current and potential uses of recycled water in the wholesale and retail service areas, respectively. Potential uses include agricultural irrigation, urban landscape irrigation, wildlife and wetlands and enhancement, and industrial reuse. Future projects could supply highly treated recycled wastewater to select industrial customers for process and cooling purposes. Industries typically demand very high-quality water, requiring tertiary and sometimes de-mineralized treatment and nutrient removal. Potential customers include the Marathon and PBF Martinez (formerly Shell Oil) refineries, power plants and other manufacturing facilities. Other uses of recycled water being considered include construction dust control, sewer line cleaning, and other appropriate construction-related uses. Recycled water supply availability was assumed to be constant in normal, dry, and multiple dry year scenarios. Most projects which would increase recycled water use would require construction of additional water treatment and distribution facilities.

The potential water use and wastewater impacts associated with the proposed Project were discussed under Hydrology and Water Quality (Section 3.10). The proposed Project would result in a reduction in operating units at the Refinery. Units that are expected to be shutdown include the Crude Units, No. 4 HDS Unit, Alkylation Unit, No. 4 Gas Plant, Catalytic Reformer, UOP Platforming Unit, Sulfur Recover Unit, Benzene Saturation Unit, Fluid Catalytic Cracking Unit, Boilers #6 and #7, and Vacuum Units. Several units will be modified including the No. 2 and No. 3 HDS, Hydrocracker Stage 1 and 2, No. 1 and No. 5 Gas Plants, and some storage tanks.

New units that would be installed include a Thermal Oxidizer, Pretreatment Unit, and Wastewater Treatment Unit.

The Refinery currently consumes 3,100 to 3,300 million gallons of fresh water per year. The proposed Project is expected to reduce the overall water use at the facility by about 70 percent or about 1,310 – 1,320 million gallons of fresh water per year. As discussed in Section 3.10 – Hydrology and Water Quality, the proposed Project is also expected to decrease the wastewater flow generated from the Facility. Therefore, the proposed Project would not require additional water or generate additional untreated wastewater and would decrease both water use and wastewater flow discharged to the environment. Further, the proposed Project would not result in the relocation or construction of new or expanded public water, public wastewater treatment or storm water drainage facilities.

The existing water supply would have the capacity to meet the increased demands of the project as the project would reduce the amount of water used at the Marathon Facility, thus a less than significant impact is expected due to the adequacy of water supplies to serve the project.

Groundwater

No economically feasible alternatives for using recycled water for groundwater recharge and IRP have been identified within CCWD's service area at this time. Generally, groundwater within CCWD's service area is not suitable for municipal, industrial or irrigation uses, or has limited use potential because of water quality (including high salinity, hardness, boron concentrations and other factors).

As discussed in Section 3.15-2, the DWR sustainable groundwater management program classifies high-priority basins by acreage and adjacent populations which rely on groundwater resources for potable water. The Project site is adjacent to the Clayton Valley Groundwater Basin, which encompasses an area of approximately 17,846 acres, or about 27 square-miles. According to the 2019 SGMA results, Clayton Valley Groundwater Basin classified as "very low" priority (DWR 2019) and because the basin is not within a state-designated groundwater sustainability area, project operations would have **no impact** on groundwater supplies for beneficial reuse.

Impact UTIL-3: Project construction and operations result in a determination by the wastewater treatment provider that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments. (Less than Significant)

As discussed in Section 3.10 Hydrology and Water Quality, process wastewater, sanitary sewage, and most of the stormwater runoff from the Project Site is currently managed in the existing wastewater treatment system and regulated by a NPDES permit issued by the Regional Water Quality Control Board. The Project Site also operates under an NPDES permit from the U.S. EPA. Conversion of the Project Site to a renewable fuel facility would primarily involve the alteration and addition of Refinery equipment to process non-petroleum feedstocks into renewable diesel fuel, renewable propane, renewable naphtha, and potentially renewable aviation

fuel. The production of renewable fuels would primarily use existing process equipment, although some construction for new and modified equipment would be necessary.

Certain new units would be installed, including a new renewable feedstock Pretreatment Unit (PTU) and wastewater treatment equipment. The PTU produces a wastewater stream that would require partial pretreatment prior to treatment in the existing wastewater treatment facility. Existing tanks would be utilized and repurposed for equalization and biological treatment of the waste stream. New equipment purchased and installed during Project construction activities would consist of specialized wastewater treatment equipment to reduce biological oxygen demand in the waste stream.

The Pretreatment Unit produces a wastewater stream that would require partial pretreatment prior to treatment in the existing wastewater treatment facility. Existing tanks would be utilized and repurposed for equalization and biological treatment of the waste stream. New equipment purchased and installed during this phase would consist of specialized wastewater treatment equipment to reduce biological oxygen demand in the waste stream. Since Marathon treats its wastewater generated from the facility, the project will have no impact on any public wastewater treatment provider. The proposed revisions to the wastewater treatment system would ensure the proper treatment of wastewater streams generated by the Project. Revisions to the wastewater treatment system require modifications to the Facility's wastewater system NPDES permit. Compliance with the NPDES permit assures that all wastewater discharged by the Facility meets applicable water quality requirements.

Impact UTIL-4: Generation of solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals. (Less than Significant)

The Project would result in decreases in throughput, production and employment at the Refinery, which in turn would be anticipated to result in generation of a lower volume of solid waste as compared to prior Refinery operations. The Refinery would continue to be required to participate in business programs (e.g., recycling) to reduce solid waste deposits to landfills. The Project's impacts would be less than significant.

Mitigation Measure: No mitigation would be required.

3.15.5 References

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4 CUMULATIVE IMPACTS

In accordance with CEQA (CEQA Guidelines Section 15130 *et seq*.), an environmental impact report (EIR) is required to analyze the cumulative impacts of a proposed project in conjunction with other developments that affect or could affect the project area. This chapter identifies other related past, present, and future projects near the location of the proposed Project Site and summarizes potential cumulative impacts.

State CEQA Guidelines Section 15355 requires that an EIR consider the cumulative impacts of a project when the project's incremental effect is cumulatively considerable, as identified in CEQA Guidelines Section 15065, subdivision (c). Where a lead agency is examining a project with an incremental effect that is not "cumulatively considerable," a lead agency need not consider that effect significant but shall briefly describe its basis for concluding that the incremental effect is not cumulatively considerable. As defined in CEQA Guidelines Section 15355, a cumulative impact consists of an impact that is created as a result of the combination of the project evaluated in the EIR, together with other projects causing related impacts. An EIR should not discuss impacts that do not result in part from the project evaluated in the EIR.

CEQA Guidelines Section 15355 defines cumulative impacts as follows:

"Cumulative impacts" refers to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts.

a) The individual effects may be changes resulting from a single project or a number of separate projects.
b) The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present and reasonably foreseeable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time.

4.1 APPROACH TO THE CUMULATIVE ANALYSIS

CEQA Guidelines section 15130 provides that cumulative impacts analysis may be undertaken in one of two ways:

> Either: (A) A list of past, present and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the agency, or (B) A summary of projections contained in an adopted general plan or related planning document, or in a prior environmental document which has been adopted or certified, which described or evaluated regional or areawide conditions contributing to the cumulative impact. Any such planning document shall be referenced and made available to the public at a location specified by the lead agency.

This EIR uses the first approach, that is, using a list of past, present and probable future projects as the basis for the cumulative impact analysis. Probable future projects may include:

- Private projects requiring agency approval for an application that has been received at the time the Notice of Preparation is released, unless a project has been abandoned by the applicant;
- Public projects for which money has been budgeted or included in an adopted capital improvement program, general plan, regional transportation plan or other similar plan;
- Projects included in a summary of projects in a general plan or similar plan or
- Projects anticipated as later phases of a previously approved project.

The cumulative effects analysis is required to discuss not only approved projects under construction and approved related projects not yet under construction, but also unapproved projects currently under environmental review with related impacts or which would result in significant cumulative impacts. This analysis should include a discussion of projects under review by the Lead Agency and projects under review by other relevant public agencies.

4.1.1 Content of the Cumulative Effects Discussion

The cumulative impacts discussion herein will include or address the following:

- The nature of each environmental resource being examined (refer to Chapter 3).
- The location of the cumulative project and its type (refer to Chapter 2).
- The geographic scope of the area affected by the cumulative effect.
- A summary of the expected environmental effects to be produced by related projects, with specific reference to additional information stating where that information is available.
- Reasonable, feasible options for mitigating or avoiding the proposed Project's contribution to any significant cumulative effects.

4.1.2 Considerations in Cumulative Effects Analysis

An EIR may determine that a project's contribution to a significant cumulative impact will be mitigated to a less-than-significant level and thus, is not significant.

A project's contribution is less than cumulatively considerable and therefore, less than significant if the project is required to implement or fund its fair share of mitigation measures designed to alleviate the cumulative impact.

An EIR may determine that a project's contribution to a significant cumulative impact is *de minimis* and thus, not significant. A *de minimis* contribution means that the environmental conditions would essentially be the same whether or not the proposed project is implemented.

4.1.3 Significance Criteria

When considering cumulative impacts of the Project, the environmental consequences of Project-related actions were evaluated, using the criteria checklist from the CEQA Guidelines, Appendix G, to determine whether implementing such actions would make a cumulatively considerable contribution to a significant cumulative impact.

The effects of Project actions were evaluated in combination with the effects of other past, present and reasonably foreseeable future actions to determine whether: 1) the overall cumulative impact would be significant; and 2) the actions would considerably contribute to that overall cumulative impact. Both circumstances must exist to conclude that an environmental consequence would be cumulatively significant.

Cumulatively significant effects would do any of the following:

- Cause a significant adverse impact on a resource by exceeding a threshold of significance;
- Make a considerable contribution to the trend of an already degraded or declining resource that has experienced substantial adverse effects from other past, present or reasonably foreseeable future projects; or
- Cause an effect that was initially not significant by itself, but that would be part of a cumulatively degrading or declining future trend resulting from other reasonably foreseeable future actions.

The potential cumulative impacts that would be significant based on the criteria above may be reduced to a less-than-significant level if the Project would comply with the requirements of an approved plan or mitigation program designed to reduce the Project's potential incremental contribution to a cumulative effect to a level that is not cumulatively considerable. The approved plan or mitigation program must contain specific requirements that, if implemented, would avoid or substantially lessen the cumulative problem within the geographic area where the effect would occur.

4.2 RELATED PROJECTS CONSIDERED IN THE CUMULATIVE IMPACT ANALYSIS

Past, present and probable future projects considered for the cumulative analysis in this EIR are those identified on lands generally within 2 miles of the Project Site or the Avon and Amorco Marine Oil Terminals (MOTs). Each project considered is listed and briefly described below.

Avon Connectivity Project (Contra Costa County Project No. CDLP18-02027). Chevron Pipe Line Company (CPL), 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 (BAPL) and the TransMontaigne Partners (TMP) pipeline 191 to the existing Chevron Avon Terminal. The project would 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. The proposed project is primarily located within the existing Chevron Avon Terminal on private property owned by the Chevron Pipe Line Company. The approximately 16-acre Avon Terminal property is entirely surrounded by the Marathon Martinez Refinery, in an industrial area east of Highway 680 and north of California State Route 4. Construction of the project is currently anticipated to begin in 2022 and is estimated to last approximately 12 months.

Martinez to Shell/Chevron 16-inch Connection Project (Contra Costa County Project No. CDLP16-2011). Proposed by the TransMontaigne Operating Company, the proposed project consists of construction of an approximately 8,100-foot-long, 16-inch-diameter welded steel bidirectional pipeline between the TransMontaigne Martinez Terminal and Chevron and Shell pipeline tie-ins at points located approximately 1.15 miles southwest of the TransMontaigne Martinez Terminal. The TransMontaigne Operating facility is located in the city of Martinez, approximately 1 mile west of the Marathon Martinez Refinery (Refinery). The pipeline would extend from the tank farm within the TransMontaigne Martinez Terminal through unincorporated lands south and west of the Terminal (Assessor's Parcels Nos. 159-210-038, 380-010-025, -024, -023 and -009). The project is currently undergoing revisions by the project proponent and review by the County, including analysis of the project's potential environmental impacts. Though construction of the project is uncertain, construction could potentially coincide with construction of the proposed Refinery Project if the TransMontaigne entitlements are approved by the County by 2022.

Lower Walnut Creek Restoration Project. This approved project, initiated by the Contra Costa County Flood Control and Water Conservation District, will restore and enhance tidal wetlands, adjacent lowland grasslands and seasonal wetlands, and uplands along the southern shore of Suisun Bay and from Suisun Bay upstream along Walnut Creek and its tributary, Pacheco Creek. The project, now underway, will restore and enhance approximately 252 acres of tidal marsh, 52 acres of adjacent lowland terrestrial grasslands and seasonal wetlands, and 50 acres of uplands, portions of which adjoin the western property line of the Refinery property north of the BNSF railroad line. The project has been designed to accommodate future opportunities for public trail and passive recreational access. Construction of the first of three phases of restoration work, inclusive of excavating tidal channels, grading soil to create a variety of habitat zones, transporting soil, constructing levees and access roads and planting and maintaining native vegetation, began in May 2021 and could take up to two construction seasons (April to October) to complete. The second construction phase, also encompassing grading and vegetation management, could also take up to two construction seasons. The third phase will consist of construction of public access and recreational amenities in the project area.

Bay View Estates Residential Project (Project Nos. CDSD04-8809, CDGP04-0013, CDRZ04-3148, CDDP04-3080). Proposed by Discovery Builders, Inc., the project would be a subdivision of 78.2 acres of land for development of 144 single-family residences, preservation of approximately 40 acres in open space as undeveloped land and marshes, construction of an approximately 2-acre stormwater treatment basin and a 4.5-acre private park, and construction of on-site roads and off-site improvements to existing roads. The project site is in unincorporated Contra Costa County (County), east of the city of Martinez and bounded by the Contra Costa Canal and BNSF railroad to the southwest and south, other residential development to the northwest, a self-storage facility to the west, Pacheco Creek to the east and Central Avenue to the northeast (Assessor's Parcel No. 380-030-046). The project is currently undergoing environmental review by County staff; the Notice of Preparation of an EIR was released in June 2017, and public comment on the draft EIR for the project closed in July 2021. If the County grants entitlements for the project and issues grading and building permits, construction would be anticipated to commence in early 2022;

construction of the engineering improvements and housing units is expected to be complete by 2024.

Conco Industrial Subdivision (County Project No. CDSD17-9459). The applicant, Gonsalves & Santucci, received approval from the County Zoning Administrator in November 2019 to subdivide 66.57 acres into six industrial lots. Entitlements granted with the tentative subdivision map included a land use permit to allow the establishment of up to five contractor's yards, roadway and utility improvements and import of approximately 155,600 cubic yards (cy) of fill material. The project site is located north of the BNSF railroad, approximately 0.74 miles south of the Waterfront Road bridge/crossing, along the western bank of Walnut Creek and approximately 1,000 feet east of the Refinery on the eastern bank, north of the BNSF railroad and (Assessor's Parcel Nos. 159-250-018, -019, -020, -021 and -022). The property owner has initiated the first project phase of importing fill to the site.

Clear Channel Outdoor Digital Billboard (County Project No. CDLP21-02016). The project is a request by Clear Channel Outdoor to convert an existing billboard sign into a digital sign display. The billboard is located at 5915 Pacheco Boulevard in the County (Assessor's Parcel No. 125-046-009), approximately 1.5 miles southwest of the Project Site. No approvals have been granted by the County for the project, which is currently undergoing application review by County staff. For purposes of this analysis, it is assumed that, if approved, conversion of the existing sign would occur in 2022.

4500 Blum Road Subdivision (County Project No. CDSD18-09500). The proposed project would subdivide 2 acres into six lots ranging in size from 7,212 square feet to 13,944 square feet, plus a 30,146-square foot remainder. Subsequent to the subdivision of the property, it is expected that up to 18 code-protected trees ranging in size from 6.5 to 30 inches in diameter would be removed from the property, and a residence would be constructed on each new lot created with the subdivision. The project would include approximately 4,000 cy of grading (2,000 cy cut and 2,000 cy fill) to accommodate excavation for bioretention treatment facilities, building pads, and grading of the areas to be paved. The site is approximately 600 feet south of the BNSF railroad and 0.8 mile west of the Refinery (Assessor's Parcel No. 159-170-028). The proposal is undergoing environmental review by County staff. For purposes of this analysis, it is assumed that, if approved, construction of the project would occur in 2022.

Concord Airport Self-Storage (City of Concord Project No. PL19237). This proposed project would develop a moving truck rental franchise and two-story self-storage facility within four buildings with a combined floor area of approximately 121,900 square feet. This site is located on 4.5 acres on the northwestern corner of Marsh Drive and Solano Way (Assessor's Parcel No. 125-210-012), less than 0.25 mile south of the Refinery's southern boundary. For purposes of this analysis, it is assumed that, if approved, construction of the project would commence in 2022 and be complete by 2023.

Concord Industrial Center (City of Concord Project No. PL19144). This approved project in the City of Concord consists of subdivision of 13.5 acres (former Assessor's Parcel Nos. 159-090-047, -048 and -049) into four parcels ranging in size from 59,991 to 212,058

square feet. The project includes construction of three light industrial buildings ranging in size from 11,720 to 65,700 square feet, to be occupied by a wholesale food service supplier and a lessor of commercial dishwashing equipment. The project site is located on the north side of Arnold Industrial Way, approximately 0.25 mile west of the recreational sports fields at the southern end of the Refinery property. Development of the project is currently underway with the first two of the three buildings under construction. Design review for another, approximately 43,000-square foot sales, rental and service dealership building (Pape Material Handling, City of Concord Project No. PL20104), is pending review by City staff and encompasses the northern 4.7 acres of the center. For purposes of this analysis, construction of the three buildings and site improvements within the center is anticipated to continue until 2023.

Interstate 680 and State Route 4 Improvements. These approved plans managed by the Contra Costa Transportation Authority encompass multiple projects planned or under construction on Caltrans highway facilities. Each of the projects listed below will occur on highway onramps, offramps or interchanges or includes a highway segment within 1 mile of the Refinery or MOTs.

- *State Route 4 Operational Improvements (Interstate 680 to Bailey Road)*. Addition of a high occupancy vehicle (HOV) lane on eastbound State Route (SR) 4 from the northbound Interstate 680 (I-680) onramp to the existing HOV lane east of SR 242, and addition of mixed flow lanes on eastbound and westbound SR 4 between SR 242 and Bailey Road. The initial phase of the project consists of extension of auxiliary lanes between Port Chicago Highway in Concord eastward to Willow Pass Road in Bay Point and has a target construction completion date between 2023 and 2025. Additional phases of the project are unfunded.
- *I-680 HOV Completion and Express Lanes project*. Within the vicinity of the Project Site, this transportation project includes conversion of the HOV lane to an express lane on southbound I-680 from just south of Marina Vista Avenue in Martinez to Rudgear Road in Walnut Creek. Construction of the project is substantially complete, though corridor equipment testing remains underway.
- *I-680/SR 4 Interchange Improvements.* The purpose of this project is to increase capacity, reduce congestion and improve traffic operations and safety of the interchange of these two freeways. Phase 3 of the project, consisting of widening of SR 4 from Morello Avenue in Martinez to SR 242 to the east and replacement of Grayson Bridge, is anticipated to be completed in fall 2021. Four other phases of the project include new connectors and ramps; two of these phases are unfunded and two others are partially funded for design.
- *Innovate 680*.The Innovate 680 program includes several projects aimed at improving efficiency and expanding opportunities for enhanced transit utilization to encourage mode shift along the I-680 corridor. The I-680 Express Lane completion project of the Innovate 680 program would convert the existing I-680 northbound HOV lane to an express lane between SR 242 and Marina Vista Avenue and has a target construction date of 2025.

Marsh Drive Bridge over Walnut Creek Replacement. This County-initiated project, co-sponsored by Caltrans, consists of replacing the two-lane-wide Marsh Drive Bridge over the

Walnut Creek channel west of Solano Way, approximately 0.25 mile southwest of the Refinery. The purpose of the project is to replace the existing bridge, which has been identified as structurally, seismically and hydraulically deficient, with a new bridge that meets current design standards for safe public access. Project construction began in summer 2021 and is anticipated to take 24 to 30 months to complete.

In addition to the projects located within an approximately 2-mile radius of the Project Site, the following regional County project was considered in the analysis of cumulative impacts to air quality, biological resources, energy and greenhouse gases (GHG):

Phillips 66 Rodeo Renewed Project (County Project No. LP20-2040). The Phillips 66 Rodeo Refinery is located at 1380 San Pablo Avenue on approximately 1,100 acres of land in the unincorporated community of Rodeo, approximately 10 miles west of the Refinery. The Rodeo Renewed Project would transform the existing Rodeo Refinery into a facility that would process renewable feedstocks into renewable diesel fuel, renewable components of other transportation fuels and renewable fuel gas. The modified facility would mostly use existing process units and storage facilities converted to handle new feedstocks and renewable fuels, though limited other new equipment would also be installed. The project includes decommissioning and potential demolition of existing related facilities off-site in Santa Maria, California, and a petroleum coke-processing facility approximately 9 miles west of the Refinery in Franklin Canyon in unincorporated Contra Costa County. The project is currently undergoing environmental review by County staff; the Notice of Preparation of an EIR was released on December 21, 2020. If approved, construction of the project is anticipated to occur over 24 months. For purposes of this analysis, construction is anticipated to commence in 2022 and be complete by 2024.

Cumulative impacts are analyzed below for each of the resource areas discussed in this EIR (Sections 3.2 through 3.15). As explained in Section 3.1, the Project is anticipated to have no impacts in the resource areas of Agriculture and Forestry, Mineral Resources, Population and Housing, Recreation and Wildfire and therefore, is not anticipated to contribute to any cumulative impacts in those resource areas.

4.3 CUMULATIVE IMPACTS TO ENVIRONMENTAL RESOURCES

4.3.1 Aesthetics

Potential aesthetics impacts of the Project are analyzed in Section 3.2. The Project is not anticipated to have significant aesthetic impacts, and the Project would not contribute to cumulative aesthetic impacts. Cumulative aesthetic impacts of the Project would be influenced by development projects in the vicinity of the Project Site and that could add to degradation of scenic resources. Other development in the Project vicinity would be at elevations at or lower than 100 feet, similar to those elevations on the property where the Refinery and MOTs are located. Construction of other projects would either be at-grade, as in the case of the Lower Walnut Creek Restoration Project, or would include construction of commercial, light industrial or residential buildings not exceeding 40 feet in height on infill sites surrounded by existing development. Construction of buildings at these heights and lower elevations would not significantly impair views of Mt. Diablo or scenic ridgelines south of the Refinery. I-680 and SR

4 near the Project Site are not designated scenic highways; therefore, neither the Project nor cumulative projects would adversely affect views from those roadways.

The existing Refinery and MOTs are in a heavy industrial area in the County and near a number of other industrial facilities in Martinez and Benicia. The Project is expected to primarily use or repurpose existing equipment with replacement pipelines installed at the MOTs and one new reactor being installed in an existing unit on the Refinery. One new storage tank is expected to be constructed near the existing truck-loading operations to be used for storage prior to truck loading. Both the reactor and storage tank would be installed within the operating portions of the existing Refinery and would be shorter than the tallest equipment currently on the Project Site. The views of the Refinery and MOTs would remain essentially unchanged and continue to include views of heavy industrial equipment on the Project Site along the waterfront. The cumulative aesthetic impacts of the Project plus other projects would be **less than significant**.

The Project would result in the reactivation of existing equipment in the operating portions of the Martinez Refinery, which is already lighted for 24-hour operations and nighttime work activities. The nearest source of potential new light or glare among the projects considered in this cumulative analysis, a proposed digital billboard approximately 1.5 miles south of the Refinery, would not be close enough to the Refinery to cumulatively increase nighttime lighting observed in any single location. The cumulative light, glare and visual impacts of the Project plus other projects would be **less than significant**.

4.3.2 Air Quality

Potential air quality impacts of the Project are analyzed in Section 3.3. A health risk assessment (HRA) and a particulate matter ($PM_{2.5}$) modeling analysis were prepared to evaluate the impacts of emissions of air toxics and $PM_{2.5}$ from the Project. The HRA showed that the Project would reduce cancer and chronic risk at all receptors. Similarly, the $PM_{2.5}$ modeling analysis showed that $PM_{2.5}$ concentrations would decrease at all receptors. Bay Area Air Quality Management District (BAAQMD) CEQA Guidelines require that a cumulative analysis examining toxic and $PM_{2.5}$ sources within 1,000 feet of the Project Site also be performed.

The screening results of the cumulative analysis of sources within 1,000 feet of the Project Site were compared to BAAQMD's applicable Thresholds of Significance for determining cumulative impacts. Results of the analysis show that cumulative cancer and chronic risks would be below the applicable CEQA thresholds. With respect to $PM_{2.5}$, modeled $PM_{2.5}$ concentrations would be above CEQA thresholds. Modeled $PM_{2.5}$ concentrations above CEQA thresholds are attributed to existing traffic on SR 4 and I-680 near the Project Site, and two off-site cement and aggregate-handling facilities in the area. Due to the proposed reduction in throughput, the proposed Project would reduce modeled $PM_{2.5}$ concentrations at all receptors near the facility and would not increase modeled cumulative $PM_{2.5}$ concentrations.

Other cumulative projects in the vicinity would generate air emissions from construction equipment; resident, customer and employee vehicle trips; woodburning stoves in residences; and production of energy for lighting, space conditioning and other electricity-demanding equipment and appliances inside buildings. Regionally, the Phillips 66 Rodeo Renewed Project would involve a reduction in throughput of renewable feedstocks compared to petroleum, and would reduce its emissions compared to its baseline conditions. I-680 and SR 4 improvements

are also intended to improve operation of the transportation system and to increase transit use by making transit more efficient and desirable; and thus, would be expected to reduce tailpipe emissions and vehicle emissions from single-occupant vehicle use. Despite the decreases in air emissions from the Project and other projects in the vicinity and region, non-Project sources surrounding the facility would continue to result in $PM_{2.5}$ concentrations that are above the significance threshold. Additional emission reductions from non-Project sources would be required to reduce the $PM_{2.5}$ concentration to below the thresholds of significance defined by the BAAQMD.

Potential reductions in $PM_{2.5}$ emissions from other non-Project sources are outside the purview of this Project, and those sources would continue to have a significant and unavoidable impact on cumulative emissions of $PM_{2.5}$. However, the proposed Project would result in overall reductions in air emissions and criteria pollutants from stationary and mobile sources as a result of reduced production of fuels and conversion of the Refinery to process a lower volume of renewable feedstock compared to petroleum feedstock. Therefore, the Project's contribution to cumulative air quality impacts would be ***de minimis***.

4.3.3 Biological Resources

Potential Project impacts to biological resources are analyzed in Section 3.4. During construction, the Project would include in-water work to repair wharf facilities and over-water work to modify pipelines. Vibration, noise and disruption associated with construction of the Project would have the potential to impact sensitive wildlife species, and mitigation measures have been identified to reduce the Project's potential impacts to special-status wildlife to a less-than-significant level. During Project operations, potential impacts from a major spill of feedstocks or products, as well as introduction of non-native invasive species from marine vessels, would be significant and unavoidable even after mitigation. Because biological impacts of the Project include both local impacts to species on and near the Project Site, as well as waterways used by vessel traffic, consideration of cumulative impacts to biological resources includes projects in the vicinity of the Project Site as well as regional projects.

The Project is not anticipated to have cumulative impacts to biological resources during construction. Construction of the Project could occur contemporaneously with construction of other habitat restoration, roadway construction and residential and commercial/light industrial development projects near the Project Site. Construction impacts to sensitive species could, therefore, be cumulatively significant, although they would be temporary. As stated above, however, mitigation measures identified in Section 3.4 would reduce the construction impacts of the Project on sensitive species to a less-than-significant level. Mitigation measures are similarly identified for biological resources in the environmental analyses conducted for the Bayview Residential, Lower Walnut Creek Restoration and Marsh Drive Bridge Replacement projects, and with mitigation, the impacts of each of those projects was determined to be less than significant. Other development projects proposed in the City of Concord would be built on infill sites surrounded by roads and existing light industrial development, and where ground disturbance has previously occurred from site grading or temporary uses, such as construction yards and seasonal outdoor retail. On these properties, habitat value is considered to be low due to this prior grading and disconnection of the properties from other undisturbed lands.

Operation of the Refinery would potentially result in impacts pertaining to: 1) introduction of non-native invasive species from marine vessel traffic associated with the transport of feedstocks and fuels; 2) injury or death of fish and marine mammals as a result of strikes by shipping vessels (most commonly bow or propeller); and 3) injury or death of wildlife as a result of accidental release of animal fats and vegetable oils into water or on land. Each of these is considered to be a significant and unavoidable impact of the Project. With marine vessel traffic and renewable feedstock and fuels transportation also a component of the Phillips 66 Rodeo Renewed Project, there is greater opportunity for introduction of non-native invasive species, vessel strikes and spills, even with mitigation measures implemented by the Project as described in Section 3.4. Therefore, the Project would contribute to a **cumulatively significant impact** on biological resources.

4.3.4 Cultural and Tribal Cultural Resources

Potential cultural and tribal cultural resources impacts of the Project are analyzed in Section 3.5. The proposed Project consists primarily of a change in operation rather than a change in facilities (i.e., construction), as it would mostly use existing refining equipment and transportation facilities. Still, the proposed Project includes construction activities to install new pieces of equipment or to upgrade existing equipment within the developed footprint of the Refinery. With this construction, there is a potential to encounter previously unidentified buried archaeological or cultural resources during grading or other ground disturbance. Mitigation measures are recommended in Section 3.5 to ensure that: 1) work stops should there be any indications of the presence of an unanticipated cultural resource discovery (e.g. wood, stone, foundations, and other structural remains; debris-filled wells or privies; deposits of wood, glass, ceramics); and 2) that the discovered resources are evaluated. No tribal cultural resources have been identified on the Project Site or within the immediate vicinity, though the County and Applicant have agreed to a condition of approval that, if adopted by the County decision-making body, would require a tribal monitor to be present during ground disturbance associated with construction of the Project. The likelihood of presence of paleontological resources on the Project Site is low.

Other projects under construction or planned to be built in the vicinity would be subject to similar mitigation measures requiring evaluation of potential archaeological or cultural resource finds. Further, in association with CEQA review, future consultations with Native American tribes in accordance with Public Resources Code Section 21080.3.1 to identify tribal cultural resources would be required for projects that have the potential to cause significant impacts to tribal cultural resources. With permit conditions, mitigation measures and procedural requirements in place for the Project and other projects, cumulative impacts on cultural and tribal cultural resources would be **less than significant**.

4.3.5 Energy

Potential energy impacts of the Project are analyzed in Section 3.6. The Refinery would continue to consume energy for the receipt of petroleum to be conveyed to other refineries, as well as for administrative operations of the Refinery. The Project would require energy for the proposed processing of renewable feedstocks and transport of fuels. Other projects in the vicinity and in the region, particularly development projects that involve new construction of buildings and residences, would add to existing area and regional demands for energy use for lighting, space conditioning, and resident, customer and employee transportation. Combined with other

development, increases in energy demand from the proposed Project could be cumulatively considerable. However, regulations applicable to projects in California have been adopted to promote and require energy efficiency. Developers of new construction projects must demonstrate in their building permit applications that the new structures would comply with Energy Efficiency Standards in Title 24 of California Building Code, to ensure that new buildings would not use energy inefficiently. Increasingly stringent emissions standards for vehicles, such as those required pursuant to California Health and Safety Code Sections 42823 and 43018.5, are intended to promote fuel efficiency in transportation. With application of these regulations, cumulative impacts from energy usage of other projects is not anticipated to be significant.

Further, the energy efficiency impacts of the Project are anticipated to be *de minimis* and therefore, would not significantly contribute to any impacts in this resource area. As noted in analyses in Section 3.6, Energy and Section 3.8, Greenhouse Gas Emissions, energy (electricity and gas) demands of the Project compared to previous years' average operations are anticipated to decrease as a result of the decrease in the volume of feedstock processed at the Refinery. With this decrease, the cumulative energy impacts of the Project plus other development would be **less than significant**.

4.3.6 Geology and Soils

Potential geological and soils impacts of the Project are analyzed in Section 3.7. Geological impacts of development tend to be localized, as impacts are dependent upon the underlying soil and geological characteristics of a site. However, geological impacts of development can be cumulative if several projects combined exacerbate a risk to safety, for example, construction of multiple developments on a range of unstable slopes where landsliding could occur, or construction of several projects on poorly draining soils where multiple septic systems are installed.

Ground shaking at the Refinery has the potential to directly or indirectly cause potential substantial adverse effects. Upset conditions at the facility could result in fire, explosions, and significant air quality impacts if the structural design of the facility does not address strong seismic ground shaking. Mitigation is recommended in Section 3.7 to reduce Site-specific geological impacts by requiring the proposed Project plans to comply with applicable regulations and recommendations of the Site-specific geotechnical report.

No significant geological impacts of the Project beyond the boundaries of the Project Site are anticipated to occur as a result of the Project. New equipment installations associated with the Project would occur on relatively flat lands within those portions of the Project Site that are already developed with refining equipment. With over 0.75 miles of distance between construction of new equipment in the Refinery and the nearest new development (the Bayview Residential project), cumulative geological impacts of the Project would also be less than significant. Neither the Refinery nor future developments in the vicinity of the Project Site would rely on leach fields for wastewater treatment. The nearest active earthquake fault, the Concord-Green Valley fault, is approximately 1 mile west of the Project Site, so that ground rupture on or near the Project Site resulting directly from an earthquake fault would be unlikely. Cumulative geological impacts of the Project would be **less than significant**.

4.3.7 Greenhouse Gas Emissions

Potential greenhouse gas impacts of the Project are analyzed in Section 3.8. Refinery operations would continue to generate GHGs from the import of petroleum to be conveyed to other refineries, as well as from the administrative operations of the Refinery and administrative and maintenance employee vehicle trips. The Project would generate additional GHG from the proposed processing of renewable feedstocks and transport of renewable feedstocks and fuels, and refining employee vehicle trips. Construction and installation of new or upgraded equipment at the Refinery and MOTs would also generate GHG from construction equipment and worker trips. Other development projects in the immediate vicinity and in the region would further contribute to increases in GHG emissions from energy usage and transportation during and after construction. Combined with other development, GHG emissions from the Martinez Renewable Fuels Project could be cumulatively considerable.

Construction of new residences and businesses in the vicinity of the Project Site, and other regional projects, would result in increases in GHG emissions. As noted in the discussion of cumulative energy impacts, above, developers of new construction projects must demonstrate to permitting agencies prior to construction that their projects comply with codified energy efficiency standards to reduce GHG from energy generation, and increasingly stringent emissions standards for vehicles are being applied to car manufacturers to reduce global GHG emissions from cars. While these other projects are still anticipated to generate GHG, transportation improvements in the vicinity of the Project Site are planned and constructed with the intent of improving roadway system efficiency and promoting transit use, thereby reducing GHG from transportation. Similarly, the Project would result in fewer GHG emissions due to the decrease in the volume of feedstock processed at the Refinery, from 161,000 to 48,000 maximum barrels per day. Therefore, GHG impacts of the Project would be reduced compared to the Refinery's baseline operations, and combined with other transportation system improvements, would reduce regional GHG emissions compared to previous years of Refinery operations. The cumulative GHG impacts of the Project plus other projects is potentially significant, but because of the Project's overall reduction in GHG emissions, the Project's contribution would be ***de minimis*.**

4.3.8 Hazards and Hazardous Materials

Potential hazards and hazardous materials impacts of the Project are analyzed in Section 3.9. The Project would continue to use/handle hazardous materials (e.g., fuels to operate equipment). A number of existing regulations apply to the use, handling, storage and disposal of hazardous materials, including California Health and Safety Code Section 25506 that requires all businesses handling hazardous materials to submit a business emergency response plan to assist local administering agencies in response to the emergency release or threatened release of a hazardous material.

As detailed in Section 3.9 of this EIR, the Project would result in an overall decrease in crude oil and associated hazardous materials feedstocks. Sizes of the vessels that would visit the MOTs are expected to be smaller, and barges in the range of 25,000 to 50,000 barrels would be more frequent calls at the terminals than tankers with capacities up to 750,000 barrels per vessel. However, there would be a three- to four-fold increase in vessel calls for the Project relative to baseline averages (estimated 400 vessels per year compared to the baseline average of 143

vessels per year). Therefore, although the proposed Project transportation activities would not be expected to result in changes or increases in the transportation of hazardous materials, Project activities would result in increased vessel calls and the potential for an increase in accidental releases of renewable feedstocks, making the transportation risk significant and unavoidable.

Development of other residential, commercial and light industrial projects in the vicinity would likely use chemicals for purposes of cleaning and property maintenance activities but are not typically generators or users of significant quantities of hazardous materials. During construction associated with those projects, some hazardous materials, such as building coatings and adhesives would be used. Given the quantities of hazardous materials and the limited duration of construction, their use on-site would result in a less than significant cumulative impact. However, the Project individually would increase risk of accidental releases of feedstocks, even after implementation of Mitigation Measures HAZ-1. Therefore, the Project would contribute to a **cumulatively significant impact** related to hazards and hazardous materials.

4.3.9 Hydrology and Water Quality

Potential hydrology and water quality impacts of the Project are analyzed in Section 3.10. The Lower Walnut Creek Habitat Restoration Project would have beneficial impacts on water quality New residential, commercial and industrial developments in the vicinity of the Project Site would increase impervious surfaces and potentially increase volumes of stormwater runoff from their respective project sites. Developers of projects in the County must demonstrate, as part of their entitlement process, that their projects would comply with Provision C.3 of the Countywide Municipal Regional Permit (National Pollutant Discharge Elimination System [NPDES] Permit No. CAS612008) issued by the California Regional Water Quality Control Board. More specifically, projects must include measures to pre-treat stormwater runoff from impervious surfaces prior to discharge of the stormwater to the storm drain system, and post-construction runoff volumes cannot exceed pre-construction volumes. All cumulative projects discussed herein, including the proposed Project, that would disturb 1 or more acres of land during construction must also comply with regulations of the NPDES Construction Storm Water General Permit. The proposed Project would not rely on groundwater, nor would the new residential, commercial or light industrial developments nearby.

The Refinery and MOTs operate under an industrial waste discharge permit from the United States Environmental Protection Agency (U.S. EPA). Process wastewater, sanitary sewage and most of the stormwater runoff from the Project Site are currently managed in the existing wastewater treatment system and regulated by a NPDES permit. New facilities proposed with the Project would generate a new wastewater stream that would require additional treatment equipment to be added to the existing wastewater treatment plant. New equipment installed during Project construction activities would consist of specialized wastewater treatment equipment to reduce biological oxygen demand in the waste stream. The wastewater associated with units currently used for petroleum refining would be eliminated. Because crude oil contains toxic and hazardous chemicals that are not present in renewable feedstocks, the wastewater generated in the processing of renewable feedstocks would be expected to contain lower quantities of toxic and hazardous chemicals. When Project operations commence, it is expected that the existing NPDES permit would be modified to include the new wastewater treatment equipment and reflect the new characteristics of the wastewater stream. Wastewater would be

required to be discharged in compliance with the NPDES permit. The Project would result in an overall decrease in wastewater flow and contaminant loads generated by the new facility compared to previous refining operations, and impacts of the Project would be **less than significant**.

Accidental releases of feedstocks or product during loading and unloading operations either in transit to or from the facility or at the associated Avon and Amorco MOTs could contaminate the surrounding surface water with floating feedstock or product. The consequences of a spill on water quality would depend on several factors, including the size of the spill, the effectiveness of the response effort, and the resources (biological, water, etc.) affected by the spill. As described in Section 3.10, Hydrology and Water Quality, best management practices, engineering and maintenance standards, and spill prevention, response and control plans are required by various agencies including the U.S. EPA, California Department of Fish and Wildlife and California State Lands Commission to minimize the potential for a reduction in water quality from an accidental release of feedstock or product. However, even with implementation of these best practices and plans, a large spill could still occur and result in impacts on water quality that would be a **significant and unavoidable** impact of the Project.

The Project's individual impacts on water quality due to spills would be significant even after implementation of best management practices, engineering and maintenance standards, terms of the State Lands Commission Lease, and spill prevention, response and control plans. However, cumulative impacts of other projects on hydrology and water quality are anticipated to be less than significant due to mandatory compliance with NPDES regulations during and after construction. Although accidental spills could present an individual Project impact, other hydrology and water quality impacts of the Project would be reduced with compliance with water quality regulations to which cumulative projects would also be subject. Therefore, the cumulative impact on hydrology and water quality would be **less than significant**.

4.3.10 Land Use

Potential land use impacts of the Project are analyzed in Section 3.11. Developments proposed or approved that would occur within the vicinity of the Project Site would be subject to respective analysis and compliance with adopted land use policies applicable to each project. None of the projects considered in the cumulative analysis would divide an established community. Rather, the cumulative projects would be on infill sites surrounded by industrial or residential development similar to the proposed or approved project; roadway improvement projects would occur within existing roadway rights-of-way; and the habitat restoration projects would maintain and enhance currently undeveloped land for water quality and habitat improvement purposes.

Land use impacts of the Project would be less than significant. The Project Site is currently being used for industrial purposes. No development would occur outside the properties already owned by Marathon, and thus, the Project would not result in division of an established community. The Project is consistent with allowable uses identified in City of Martinez and County General Plan policies and land use regulations and would not conflict with any adopted land use policies intended to minimize or avoid an environmental effect. Cumulative projects would have less-than-significant impacts on land use. Therefore, cumulative impacts of the Project plus other projects would be **less than significant**.

4.3.11 Noise

Potential noise impacts of the Project are analyzed in Section 3.12. Noise in the vicinity of the Project Site is generated primarily from the mobile sources associated with the Benicia Bridge and I-680 traffic, BNSF and UP railroad lines and maritime operations in Carquinez. Secondary noise sources include industrial activities at the Refinery (prior to its current shutdown of operations), and the TransMontaigne Terminal and the PBF Energy, and Martinez Refining Company Refinery. With implementation of the Project and reduced feedstock throughput, the Refinery would not produce more noise than under baseline operating conditions.

Other cumulative projects in the vicinity include residential, commercial, light industrial, transportation, and habitat restoration projects. With the exception of the transportation system improvements, none of these developments would generate excessive noise outside a building or that would be atypical of their respective residential or business settings. The I-680 and SR 242 projects are intended to improve operations of the transportation system in the vicinity of the Project Site, including promotion of transit use, but would not eliminate either highway as an existing noise source. The Lower Walnut Creek Habitat Restoration Project would maintain existing open space as undeveloped land and would not be an ongoing noise source.

Contemporaneous construction of the Project and cumulative projects could increase noise in the vicinity of the Project Site. However, construction noise would be temporary and subject to conditions of approval limiting hours of construction to daytime hours, typically between 7:00 a.m. and 7:00 p.m. Cumulative noise impacts of the Project plus other projects would be **less than significant**.

4.3.12 Public Services

Potential impacts of the Project on public services are analyzed in Section 3.13. Residential and commercial developments in the vicinity of the Project Site would introduce new residents, employees, and businesses to the area, and it is anticipated that demands on public services, including public safety, educational and recreational services, could increase with these other projects. However, the proposed Project would not be anticipated to contribute to a cumulative public services impact. The existing facilities and operations at the Project Site, noted below, would offset the Project's demands for public services.

Public safety, educational and recreational impacts of the Project would be less than significant as described in Section 3.14. The Project would reduce Refinery employment and thereby reduce demands on schools, parks and other facilities, the use of which is correlated with population. Additionally, the Refinery maintains its own private security, fire suppression equipment and fire response teams, and those services would continue to be used with the Project. Sports fields currently on the Project Site would also remain. Cumulative public services impacts of the Project plus other projects would be **less than significant**.

4.3.13 Transportation

Potential transportation impacts of the Project are analyzed in Section 3.14. Construction for the proposed Project would be conducted by as many as 1,400 workers divided approximately evenly across two shifts per day. Project construction would be anticipated to be concurrent with construction of several residential, commercial, habitat restoration and transportation systems

improvement projects in the vicinity. Construction of some cumulative projects is currently underway. Project construction concurrent with other projects would increase construction-related traffic cumulatively. However, due to the temporary nature of construction periods, this short-term increase in construction trips would not be a cumulatively considerable transportation impact.

Cumulative development of new residences and businesses in the vicinity, and other regional projects, would result in increases in vehicles and vehicle-miles traveled (VMT) in the vicinity of the Project Site. While these other projects are anticipated to generate new vehicle trips and additional VMT, transportation improvements in the vicinity of the Project Site are being planned and constructed with the intent of improving roadway system efficiency and promoting transit use; thereby, reducing vehicle trips and VMT. Similarly, compared to pre-Project conditions, the Project would result in fewer VMT from light-duty trucks and passenger vehicles, due to the decrease in the Refinery employment from an average of 520 workers during the baseline period (2015-2020) to 110 employees with the proposed Project. Therefore, transportation and VMT impacts of the Project would be ***de minimis*** and would not significantly contribute to areawide transportation and VMT impacts. Combined with other transportation system improvements planned or underway, the Project would reduce vehicle trips and VMT compared to prior operations. Cumulative transportation and VMT impacts of the Project plus other projects would be **less than significant**.

4.3.14 Utilities and Service Systems

Potential impacts of the Project on utilities and service systems are analyzed in Section 3.15. The TransMontaigne pipeline project, of the projects planned or approved in the vicinity, could result in cumulatively considerable utilities impacts. The pipeline project application is currently on hold with the County. The Project would incorporate self-generating energy sources that would decrease reliance on public electric and natural gas facilities. Reclaimed water would not be used in Project operations, so the impacts on water demand were considered significant for both construction and operation. The Refinery's on-site wastewater treatment facilities would not require an expansion of water and wastewater treatment infrastructure outside the Project Site to accommodate Project operations.

Water quality impacts associated with cumulative projects would not be expected to result in adverse cumulative impacts. The cumulative projects would comply with applicable stormwater pollution prevention requirements during project construction and operation, as well as applicable NPDES requirements for commercial and industrial facilities. Compliance with those stormwater and wastewater discharge requirements would be expected to ensure that cumulative water quality impacts would be less than significant during both construction and operation. Cumulative public utilities and services systems impacts of the Project plus other projects would be **less than significant**.

4.3.15 References

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Contra Costa County Flood Control and Water Conservation District. Initial Study/Notice of Intent to Adopt a Mitigated Negative Declaration for the Lower Walnut Creek Restoration Project. September 2019. Online: https://www.contracosta.ca.gov/5792/Reports-Documents. Site accessed August 1, 2021.

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5 ALTERNATIVES

The California Environmental Quality Act (CEQA) requires Contra Costa County (County), as the CEQA lead agency for purposes of environmental evaluation of the Martinez Refinery Renewable Fuels Project (Project), to analyze the proposed Project that could feasibly achieve the objectives of the Project while substantially reducing significant environmental effects. This chapter describes the alternatives considered for the Project and evaluates their environmental impacts in comparison to those from the proposed Project.

5.1 SELECTION OF ALTERNATIVES

5.1.1 Alternatives and Screening Development

An important aspect of the environmental review process is the identification and assessment of reasonable alternatives that have the potential to avoid or reduce the significant impacts of a proposed project to allow for a comparative analysis for consideration by decision-makers. The State CEQA Guidelines provide the following guidance for evaluating alternatives in Environmental Impact Reports (EIRs).

- 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. An EIR is not required to consider alternatives which are infeasible (Section 15126.6[a]).
- The discussion of alternatives shall focus on alternatives to the project or its location which 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 (Section 15126.6[b]).
- In selecting a range of potential reasonable alternatives to the proposed project, the Lead Agency 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. Among the factors that a Lead Agency may use to eliminate alternatives from detailed consideration are: (i) failure to meet most of the basic project objectives, (ii) infeasibility, or (iii) inability to avoid significant environmental impacts (Section 15126.6(c]).
- The EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project. If an alternative would cause one or more significant effects in addition to those that would be caused by the project as proposed, the significant effects of the alternative shall be discussed, but in less detail than the significant effects of the project as proposed (Section 15126.6[d]).

CEQA also requires an EIR to evaluate a “no project” alternative. The purpose of describing and analyzing a no project alternative is to allow decision-makers to compare the impacts of approving the proposed project with the impacts of not approving the project. The analysis of the no project alternative must discuss the existing conditions at the time the Notice of Preparation is published, as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved.

5.1.2 Alternatives Screening Method

Alternatives to the proposed Project were selected based on input from the EIR study team, the Applicant (Marathon Petroleum Corporation) and comments received from the public and other public agencies during the EIR scoping process. The alternatives screening process consisted of three steps:

Step 1: Define the alternatives to allow comparative evaluation.

Step 2: Evaluate each alternative in the context of the following criteria:

- the extent to which the alternative would accomplish most of the basic goals and objectives of the Project as listed in Section 2.2 of the Project Description;
- the extent to which the alternative would avoid or lessen one or more of the identified significant environmental effects of the Project;
- the potential feasibility of the alternative, taking into account site suitability, economic viability, availability of infrastructure, general plan consistency and consistency with other applicable plans and regulatory limitations and
- the requirement of the State CEQA Guidelines to consider a "no project" alternative and to identify, under specific criteria, an "environmentally superior" alternative. Pursuant to State CEQA Guidelines Section 15126.6(e), "if the environmentally superior alternative is the 'no project' alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives."

Step 3: Determine the suitability of the proposed alternative for full analysis in the EIR based on Steps 1 and 2 above. If the alternative is unsuitable, eliminate it, with appropriate justification, from further consideration.

Feasible alternatives that did not clearly offer the potential to reduce significant environmental impacts, and infeasible alternatives, were removed from further analysis. In the final phase of the screening analysis, the environmental advantages and disadvantages of the remaining alternatives were carefully weighed with respect to potential for overall environmental advantage, technical feasibility, and consistency with the Project objectives.

If an alternative clearly does not provide any environmental advantages as compared to the proposed Project, it is eliminated from further consideration. At the screening stage, it is not possible to evaluate potential impacts of the alternatives or the proposed Project with absolute certainty. However, it is possible to identify elements of the proposed Project that are likely to be the sources of impact. A preliminary assessment of potential significant effects of the proposed Project resulted in identification of the following environmental resource areas for which potentially significant Project-related impacts may occur:

- Air Quality
- Biological Resources
- Geology and Soils
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials

- Hydrology and Water Quality

For the screening analysis, the technical and regulatory feasibility of various potential alternatives was assessed at a general level. Specific feasibility analyses are not needed for this purpose. The assessment of feasibility was directed toward reverse reason, that is, an attempt was made to identify anything about the alternative that would be technically or regulatorily infeasible. CEQA does not require elimination of a potential alternative based on cost of construction and/or operation/maintenance. For the proposed Project, those issues relate to:

- engineering feasibility and feasibility of implementation
- reasonableness when compared to other alternatives under consideration
- adequacy of the alternative to meet the Project's purpose and need

Those alternatives that were found to be technically feasible and consistent with the Applicant's objectives were reviewed to determine if the alternative had the potential to reduce the environmental impacts of the proposed Project.

5.1.3 Alternative Considered But Eliminated From Full Consideration: Refinery Decommissioning

In this alternative, which was suggested in response to the Notice of Preparation of the EIR, the Refinery is permanently shut down. All existing refining equipment and feedstock and fuel transmission pipelines and tanks would be idled permanently and removed from the Refinery premises, likely over a period of some years. Refining of crude oil or renewable feedstock would no longer occur at the premises. Emissions from demolition under this alternative would be greater than those associated with Project construction. This is due to the extensive work necessary to clear the site rather than work within a limited footprint within the Refinery, as would occur for installation of new equipment for conversion to renewable fuels processing. This alternative has the potential to restore the natural visual quality of the shoreline and would result in fewer air emissions and minimal risk of water quality reduction compared to the proposed Project operations. However, industrial zoning classifications of the Refinery and MOT premises could also facilitate redevelopment of the Site with new industrial uses, absent zoning map amendments or imposition of specific land use restrictions. Thus, depending on the nature of that new development, operational impacts of the Project could occur under this alternative to varying unknown degrees.

While this alternative has the potential to result in fewer environmental impacts compared to the Project, the extent of that reduction cannot be measured due to the lack of clarity in the description of future land uses, and whether future uses would consist of open space or new industrial development. Further, without definition of future land uses, it cannot be stated with certainty that environmental impacts would be lesser than the proposed Project. This alternative would not achieve several of the goals of the Project to repurpose the Refinery into a renewable fuels production facility, to repurpose/reuse existing Refinery infrastructure or to produce renewable fuels that help the state progress toward achieving renewable energy goals and reducing emissions from mobile sources by providing cleaner burning fuels.

5.2 ALTERNATIVES EVALUATED IN THIS EIR

5.2.1 Alternative 1: No Project

Under the No Project scenario, the proposed Renewable Fuels Project would not proceed. Instead, Refinery operations would resume as described in Section 2.4 of this EIR. Current permits and entitlements for crude oil refining would remain unmodified and in effect, and the Refinery would operate under those current permits and entitlements. The Refinery's operations are currently permitted by the Bay Area Air Quality Management District (BAAQMD) to have a crude oil-refining capacity of 161,000 barrels per day (bpd). For the 5 years prior to the submittal of land use and air permit applications for the Project, actual Refinery throughput averaged approximately 121,000 bpd.

The majority of crude oil refined at the site was received via ship, with additional crude arriving at the facility by pipeline, and other (non-crude) refinery commodities arriving by rail. In addition to refining crude oil, the facility received crude oil at the facility's marine oil terminals (MOTs) for storage and distribution to other facilities for refining. Products that would be produced at the Refinery with existing equipment would include conventional diesel fuel, gasoline, distillates, petroleum coke, liquefied petroleum gas (LPG), heavy fuel oil and refinery-grade propylene. Distribution of products from the Refinery to the market would be conducted by truck, rail, ship and pipeline, consistent with refining operations prior to Refinery idling in April 2020.

No structures or equipment would be added to or removed from the Site, and existing equipment and crude oil-refining units would be maintained. The 12 units proposed with the Project to be permanently shut down, including the Delayed Coker, Crude Units and Alkylation Unit, would remain in operation. Modifications to the existing units, including No. 2 and No. 3 Hydrodesulfurization Unit, Hydrogen Plant, Hydrocrackers and Gas Plants for renewable fuels production would be unnecessary. The new units proposed with the Project would not be installed, including the Sour Water Stripper Thermal Oxidizer, the Pretreatment Unit, and the Stage 1 Wastewater Treatment Unit. No physical changes would occur at either the Avon or Amorco MOTs.

The Refinery would operate 24 hours a day, 7 days a week with an estimated 700 workers consisting of production and maintenance employees on rotating shifts, and administrative staff.

5.2.2 Alternative 2: Reduced Renewable Feedstock Throughput

This alternative would involve conversion of the Refinery from a crude oil-processing facility to a facility for the refining of renewable fuels at a reduced capacity compared to the proposed Project. As noted in Section 2.5.2 of the Project Description, the proponent anticipates phasing in the Project over two years, with an interim throughput of 23,000 bpd. In this alternative, renewable feedstock throughput would not increase beyond this interim maximum. Other components of the Project, including installation of equipment necessary for renewable fuels refining, decommissioning and demolition of crude oil-refining units, and changes to pipelines at the Avon and Amorco MOTs, would be components of this alternative. The Refinery would continue to operate 24 hours per day, seven days per week, with a comparable level of staffing (130 to 150 workers) on a rotating shift basis.

5.2.3 Alternative 3: Green Hydrogen

In this alternative, also suggested in comments made during the EIR scoping process, green hydrogen would be used in the renewable fuels-refining process. In contrast to the existing steam methane-reforming technology that separates hydrogen atoms from hydrocarbon fuel molecules using the Refinery's existing infrastructure, green hydrogen uses electricity from renewable energy sources to produce hydrogen via the electrolysis of water molecules into its constituent elements of hydrogen and oxygen. Under this alternative, the proposed throughput would not change from the proposed Project's throughput of 48,000 barrels per day (bpd) of renewable feedstock, though green hydrogen from water electrolysis would be used in the refining process instead of the steam methane-reforming process, which separates hydrogen atoms from hydrocarbon fuel molecules.

The proposed Project would require up to 125 million standard cubic feet per day (MMscfd), roughly equal to 295,000 kilograms, of hydrogen to convert biomass-based feedstocks into renewable fuels. The Refinery's existing 90 MMscfd No. 1 Hydrogen Plant and 35 MMscfd No. 2 Hydrogen Plant, owned and operated by Marathon and Air Products, respectively, would supply the hydrogen required for the proposed Project's refining of 48,000 bpd of renewable feedstock. Thus, use of the existing steam methane reforming technology, which separates hydrogen atoms from hydrocarbon fuel molecules, would use the Refinery's existing infrastructure to provide the hydrogen needed for the production of renewable fuels. By contrast, use of green hydrogen for refining operations would require the construction of a new hydrogen plant and potentially new renewable energy infrastructure such as wind turbines or photovoltaic panels as a power source for the new hydrogen plant.

Use of green hydrogen would meet Project objectives of facilitating conversion of the Refinery to a renewable fuels production facility, eliminating refining of crude oil at the Martinez Refinery, maintaining Refinery jobs, supporting progress toward achieving California's renewable energy goals, and reducing mobile source emissions by providing cleaner burning fuels from renewable sources. This alternative would not meet the objective of the Project to repurpose and reuse existing Refinery infrastructure and instead would require installation of a new hydrogen plant and renewable energy source. It is assumed for this Alternative that the renewable energy source would be solar, as wind farms in the County are limited to the County's easternmost areas pursuant to General Plan policy (Policy 8-49). Because this alternative would instead require introduction of a renewable energy source to the Project Site, the footprint of the Refinery could increase by installation of solar panels in currently undeveloped lands on Marathon's premises.

5.3 Comparative Evaluation of Alternatives

The following evaluation describes the relative impacts of the Project, the No Project Alternative, the Reduced Renewable Feedstock Throughput Alternative and the Green Hydrogen Alternative for each resource area for which Project impacts are anticipated.

5.3.1 Aesthetics

Visual impacts of the proposed Project were evaluated in Section 3.2 Aesthetics, and determined to be less than significant. The proposed Project, No Project Alternative and Reduced Renewable Feedstock Throughput Alternative each would have similar less-than-significant impacts on

aesthetic resources because each alternative involves maintaining Refinery operations and refining units on the site. The Green Hydrogen Alternative would potentially have greater visual impacts than the proposed Project or other alternatives due to the addition of renewable energy infrastructure to the site.

For the proposed Project, No Project Alternative and Reduced Renewable Feedstock Throughput Alternative, the overall industrial character of the Site would remain unchanged, and views of the Site would continue to consist of heavy industrial equipment. New renewable feedstock refining equipment would be installed for the proposed Project and Reduced Renewable Feedstock Throughput Alternative. However, the tallest new structure (HDO Reactor) to be installed for renewable fuels production would have an elevation of 140 feet above mean sea level and would be shorter than the tallest structure currently on the property that extends as high as 190 feet above mean sea level and is illuminated for nighttime safety and security.

The Green Hydrogen Alternative could have additional aesthetic impacts compared to the Project and the other alternatives. Green hydrogen is produced using renewable energy sources, including solar and wind. Use of green hydrogen for refining operations would require the construction of a new hydrogen plant and potentially new renewable energy infrastructure such as photovoltaic panels as a power source for refining operations. New renewable energy infrastructure would likely extend the footprint of the Refinery to encompass acres of currently undeveloped lands. As reported by Marathon and noted in Section 3.6, Energy, electricity use after conversion of the Refinery to renewable fuels production is estimated at 855,000 megawatt-hours (MWh) per year. A photovoltaic array of 800 to 900 acres would be necessary to provide this amount of energy to the Refinery (U.S. EPA 2021). Such large energy generation facilities could create a new source of light and glare along the Site's marshes or shoreline. This expansion of infrastructure into largely natural areas outside of the Refinery equipment area would change the existing industrial appearance of the property and could interfere with views of Mt. Diablo from the shoreline, in conflict with County General Plan Goal 9-F and Policy 9-25.

5.3.2 Air Quality

Air quality impacts of the proposed Project were analyzed in Section 3.3, Air Quality, and were determined to be potentially significant for cumulative criteria pollutant health risk and odors. Mitigation measures described in Section 3.3 would potentially reduce impacts of odors and construction grading activities to less-than-significant levels. However, because non-Project sources surrounding the facility currently generate concentrations of particulate matter that are above the significance threshold of the BAAQMD, the cumulative criteria pollutant health risk would remain significant and unavoidable, despite decreases in air pollutants that would result from the proposed Project implementation.

The proposed Project, Reduced Renewable Feedstock Throughput and Green Hydrogen alternatives would all result in reductions of air pollutant emissions compared to existing conditions and the No Project Alternative. The Green Hydrogen Alternative would generate the most short-term construction-related emissions due to the expansion of the Refinery area to include a new photovoltaic array, but his alternative would also have the greatest reduction in ongoing operational emissions among all scenarios.

The cumulative criteria pollutant health risk identified for the Project would remain significant and unavoidable for Reduced Renewable Feedstock Throughput Alternative and Green Hydrogen Alternative because of the emissions from non-Project sources that are beyond the control of the Refinery operators. The No Project Alternative would result the same emissions levels as baseline emissions levels because the Refinery would continue to operate under existing entitlements and permits. While this lack of change does not present an impact to the environment, the No Project Alternative would generate the highest level of operational emissions compared to the proposed Project and other alternatives and would eliminate the benefit of emissions reductions of the other scenarios.

5.3.3 Biological Resources

Biological resources impacts of the proposed Project were analyzed in Section 3.4 and were determined to be potentially significant. Mitigation measures recommended in Section 3.4, Biological Resources, would reduce construction-related impacts of the proposed Project to less-than-significant levels. However, operational impacts of the proposed Project resulting from oil spills, marine vessel strikes with aquatic wildlife and introduction of nonindigenous aquatic species into the San Francisco Bay Estuary through marine vessel traffic would be significant and unavoidable despite mitigation. As with the proposed Project, the No Project, Reduced Renewable Feedstock Throughput, and Green Hydrogen alternatives would include continued use of the Avon and Amorco MOTs, and all scenarios would involve refining of renewable or petroleum feedstock. In addition, all scenarios would have the same potentially significant operational impacts to biological resources with respect to oil spills and non-native species due to marine vessel traffic. Compared to the proposed Project and other alternatives, the Green Hydrogen Alternative would result in the greatest long-term impacts to biological resources as a result of modification of the natural environment to develop several hundred undeveloped acres for use as a photovoltaic array.

The proposed Project, Reduced Renewable Feedstock Throughput, and Green Hydrogen alternatives would involve new construction and would have potentially significant construction impacts requiring mitigation. The No Project Alternative would have no construction-related impacts to biological resources.

5.3.4 Cultural and Tribal Cultural Resources

Cultural and tribal cultural resources impacts of the proposed Project were evaluated in Section 3.5 and were determined to be less than significant with mitigation. The proposed Project, Reduced Renewable Feedstock Throughput Alternative and Green Hydrogen Alternative would have comparable, potentially significant impacts because each alternative involves ground disturbance that could uncover previously undiscovered archaeological or cultural resources. The No Project Alternative involves no new construction and would have no impacts.

The proposed Project and Reduced Renewable Feedstock Throughput alternatives would involve demolition of existing crude oil-refining equipment and construction of new equipment to facilitate conversion of the Refinery to a renewable fuels production facility. Although the Site has been previously disturbed, and new construction that would occur at the Refinery for either of these alternatives would occur within the developed industrial footprint of the Refinery, there is a potential to encounter previously unidentified buried archaeological resources during

demolition and excavation for new equipment foundations. This impact is potentially significant for the proposed Project and Reduced Renewable Feedstock Throughput Alternative, and recommended mitigation identified in Section 3.5 would apply to both scenarios to reduce the impact to less than significant.

The Green Hydrogen Alternative would also require installation of new renewable energy infrastructure (e.g., solar panels), which could involve construction outside the existing developed footprint of the Refinery. Because construction of this new infrastructure would have potential to disturb unknown historic archeological and cultural resources, the potentially significant impact on cultural resources would also apply to this alternative, and application of recommended mitigation would reduce the impact to less than significant.

The No Project Alternative would not require construction of new renewable fuel-refining equipment nor the removal of existing crude oil-refining units. The No Project Alternative would have no impact on cultural and tribal cultural resources.

5.3.5 Energy

Energy resources impacts of the proposed Project were analyzed in Section 3.6 and were determined to be less than significant with no mitigation required. The Reduced Renewable Feedstock Throughput Alternative would demand less energy than the proposed Project, and the Green Hydrogen Alternative would have a similar energy demand as the proposed Project but with energy created from a renewable resources, such as solar or wind. Both alternatives would also have less-than-significant energy impacts. The No Project Alternative would represent no change from existing conditions but would have a higher energy demand than the proposed Project and other alternatives.

Energy demands of the No Project Alternative would be consistent with recent years of Refinery production of fossil fuels, with an estimated 1,200,000 MWh of electricity use per year and approximately 60,000 Metric Million British Thermal Units (MMBtu) per day. Each of the remaining alternatives would result in fewer energy demands than the No Project Alternative because each of the remaining alternatives would refine lower quantities of feedstock than the No Project Alternative, would generate fewer employee and product transportation vehicle trips and would include shutdown of a number of crude oil-refining units, heaters and boilers. It is noted, however, that the No Project Alternative would have fewer energy impacts related to construction in the short-term because no new construction is necessary for the No Project Alternative.

Electricity demand for the proposed Project is estimated to be reduced to an estimated 855,000 MWh per year, and natural gas use would decrease to approximately 31,080 MMBtu/day as compared to the No Project Alternative. Due to lower throughput volumes than the proposed Project, the Reduced Renewable Feedstock Throughput Alternative would have comparably lower electricity and natural gas demands than either the Project or the No Project Alternative. The Green Hydrogen Alternative would draw energy needs of the Refinery from renewable solar or wind resources and therefore, would be the most energy-efficient alternative.

5.3.6 Geology and Soils

Geology and soils impacts of the proposed Project were analyzed in Section 3.7 and were determined to be less than significant. The proposed Project, Reduced Renewable Feedstock Throughput Alternative and Green Hydrogen Alternative would result in comparable, potentially significant geological impacts to structures from groundshaking and soil instability because the Project and each alternative involves site grading, new construction of new refining equipment and demolition of crude oil-refining units. Construction and demolition activities under the three scenarios would be required to comply with California Building Code regulations and geotechnical recommendations, as specified in recommended mitigation identified in Section 3.7, to reduce risks of damage from seismic activity and soils conditions. The No Project Alternative would involve no changes from existing conditions and would have no new impacts.

5.3.7 Greenhouse Gas Emissions

Greenhouse gas (GHG) impacts of the proposed Project were analyzed in Section 3.8 and were determined to be less than significant. The proposed Project, Reduced Renewable Feedstock Throughput Alternative and Green Hydrogen Alternative would result in a reduction of GHG emissions compared to existing conditions and the No Project Alternative. The Green Hydrogen Alternative would generate the most short-term construction-related GHG emissions due to the expansion of the Refinery area to include a new photovoltaic array, but it has the greatest reduction in ongoing operational emissions. The green hydrogen process results in hydrogen and oxygen instead of the hydrogen, carbon monoxide and carbon dioxide emissions generated from the existing steam-methane-reforming hydrogen production plants.

The No Project Alternative would result in no change to baseline GHG emissions, and while this lack of change does not present an impact to the environment, the No Project Alternative would generate the most operational GHG emissions compared to the proposed Project and other Alternatives and would eliminate the benefit of emissions reductions of the other scenarios.

5.3.8 Hazards and Hazardous Materials

Hazards and hazardous materials impacts of the proposed Project were evaluated in Section 3.9 and were determined to be potentially significant due to risk of accidental releases of renewable feedstocks or product. More specifically, during loading and unloading operations either in transit to or from the facility or at the associated Avon and Amorco MOTs, spills of renewable feedstocks or fuels could occur. Refinery operating programs and mitigation measures previously imposed through lease agreements at the MOTs are referenced in Section 3.9, Hazards and Hazardous Materials, to reduce this operational impact; however, the impact remains significant and unavoidable after implementation of these programs and measures. Other potential impacts pertaining to hazards and hazardous materials were determined to be less than significant.

The proposed Project, No Project Alternative, Reduced Renewable Feedstock Throughput Alternative and Green Hydrogen Alternative would all involve the handling of feedstocks or fuels produced at the Refinery. Thus, impacts of the proposed Project, No Project Alternative, Reduced Renewable Feedstock Throughput Alternative and Green Hydrogen Alternative would be similar.

5.3.9 Hydrology

Hydrology and water quality impacts of the proposed Project were analyzed in Section 3.10 and were determined to be potentially significant due to risk of accidental releases of renewable feedstocks or product. More specifically, during loading and unloading operations either in transit to or from the facility or at the associated Avon and Amorco MOTs, spills could occur and contaminate the surrounding surface water with floating feedstock or product. Refinery operating programs and mitigation measures previously imposed through lease agreements at the MOTs are referenced in Section 3.10, Hydrology and Water Quality, to reduce this operational impact; however, the impact remains significant and unavoidable after implementation of these programs and measures. Impacts of the No Project Alternative, Reduced Renewable Feedstock Throughput Alternative and Green Hydrogen Alternative would involve handling of feedstocks or fuels produced at the Refinery. Thus, impacts of the proposed Project, No Project Alternative, Reduced Renewable Feedstock Throughput Alternative and Green Hydrogen Alternative would be similar.

The proposed Project, Reduced Renewable Feedstock Throughput Alternative and Green Hydrogen Alternative would involve new construction and would be subject to regulations to preserve stormwater quality during construction. In complying with these regulations, construction impacts would be less than significant, and the proposed Project, Reduced Renewable Feedstock Throughput Alternative and Green Hydrogen Alternative would have similar less-than-significant impacts. The No Project Alternative would have no construction-related impacts.

5.3.10 Land Use and Planning

Land use impacts of the proposed Project were discussed in Section 3.11 and were determined to be less than significant. The proposed Project, Reduced Renewable Feedstock Throughput Alternative and Green Hydrogen Alternative would have similar less-than-significant impacts because the Project and each alternative would continue the currently permitted use of the Project Site for refining and fuels production. No changes outside the existing MOTs or Refinery premises owned by Marathon would occur, and the Project would not reduce any distances to existing established communities nor result in the presence of new barriers within those communities. All scenarios, excluding the No Project scenario, would be subject to discretionary permit review by the County; the Green Hydrogen Alternative would be subject to additional discretionary permit review for construction of a renewable power generation infrastructure (County Code Title 7, Division 718). However, overall, the proposed Project and each of the alternatives would be consistent with adopted zoning and land use policies supporting use of the Project Site for industrial activity.

5.3.11 Noise

Noise impacts of the proposed Project were analyzed in Section 3.12 and were determined to be less than significant. The proposed Project, No Project Alternative, Reduced Renewable Feedstock Throughput Alternative and Green Hydrogen Alternative would have similar less-than-significant operational impacts because the Project and each alternative would continue the currently permitted use of the Project Site for refining and fuels production. No residences or other noise-sensitive receptors are immediately adjacent to the Project Site. Solar panels installed under the Green Hydrogen Alternative would represent the largest addition to the Marathon

premises of the Project and alternatives but would not be a new source of noise once they are activated. There is no air traffic component of the proposed Project or the alternatives.

5.3.12 Public Services

Public services impacts of the proposed Project were evaluated in Section 3.13 and were determined to be less than significant. The proposed Project, No Project Alternative, Reduced Renewable Feedstock Throughput Alternative and Green Hydrogen Alternative would have comparable less-than-significant impacts because the Project and each alternative would continue the use of the property for fuel production. Each alternative would include maintaining existing private fire response, fire suppression and site security operations of the Refinery to reduce the need for public emergency response. The proposed Project, Reduced Renewable Feedstock Throughput Alternative and Green Hydrogen Alternative would be subject to payment of development impact fees as applicable for new construction.

5.3.13 Transportation

Transportation impacts of the proposed Project were analyzed in Section 3.14 and were determined to be less than significant. The proposed Project, Reduced Renewable Feedstock Throughput Alternative and Green Hydrogen Alternative would result in reductions of vehicle miles traveled (VMT) compared to existing conditions and to the No Project Alternative, as a result of the decrease in renewable products and employment related to the reduction in feedstocks and throughput. The Green Hydrogen Alternative would generate the most short-term construction-related vehicle trips due to the construction of a new photovoltaic array, but this impact would be temporary. The No Project Alternative would result in no change to baseline VMT, and while this lack of change does not present an impact to the environment, the No Project Alternative would generate the most operational VMT compared to the proposed Project and other Alternatives and would eliminate the benefit of VMT reductions of the other scenarios.

5.3.14 Utilities and Service Systems

Utilities and service systems impacts of the proposed Project were analyzed in Section 3.15 and were determined to be less than significant. The proposed Project, Reduced Renewable Feedstock Throughput Alternative and Green Hydrogen Alternative would result in reductions in water and energy consumption and wastewater generation compared to existing conditions and the No Project Alternative, due to the decrease in feedstocks refined at the facility. The Reduced Renewable Feedstock Throughput would have fewer utilities and service systems impacts compared to the proposed Project, and the Green Hydrogen Alternative would have the greatest reduction in potential impacts due to the on-site generation of renewable power. Although some alternatives would have comparably lower impacts than others, none of the alternatives or the proposed Project would result in significant impacts. The No Project Alternative would result in no change to existing effects on utilities and service systems, and while this lack of change does not present an impact to the environment, the No Project Alternative would demand the highest utilities and services compared to the proposed Project and other Alternatives and would eliminate the benefit of emissions reductions of the other scenarios.

5.4 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

CEQA Guidelines Section 15126.6(e)(2) states:

The "no project" analysis shall discuss the existing conditions at the time the notice of preparation is published, or if no notice of preparation is published, at the time environmental analysis is commenced, as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services. If the environmentally superior alternative is the "No Project" Alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives.

Table 5-1, Comparison of Proposed Project with Project Alternatives, Comparison of the Proposed Project with Project Alternatives, summarizes the above comparison of the proposed Project with the No Project Alternative, Reduced Renewable Feedstock Throughput Alternative and Green Hydrogen Alternative.

Table 5-1: Comparison of Proposed Project with Project Alternatives

Section	Proposed Project	Impact Assessment Compared to Proposed Project		
		Alternative 1: No Project	Alternative 2: Reduced Renewable Feedstock Throughput	Alternative 3: Green Hydrogen
Aesthetics	Less-than-Significant Impact	**Same** as Proposed Project	**Same** as Proposed Project	**Greater** than Proposed Project
Air Quality	Significant and Unavoidable Impact	**Greater** than Proposed Project	**Less** than Proposed Project	**Less** than Proposed Project
Biological Resources	Significant and Unavoidable Impact	**Same** as Proposed Project	**Same** as Proposed Project	**Greater** than Proposed Project
Cultural and Tribal Cultural Resources	Less-than-Significant Impact	**Less** than Proposed Project	**Same** as Proposed Project	**Greater** than Proposed Project
Energy	Less-than-Significant Impact	**Greater** than Proposed Project	**Less** than Proposed Project	**Less** than Proposed Project
Geology and Soils	Less-than-Significant Impact	**Less** than Proposed Project	**Same** as Proposed Project	**Same** as Proposed Project
Greenhouse Gases	Less-than-Significant Impact	**Greater** than Proposed Project	**Less** than Proposed Project	**Less** than Proposed Project
Hazards and Hazardous Materials	Significant and Unavoidable Impact	**Same** as Proposed Project	**Same** as Proposed Project	**Same** as Proposed Project
Hydrology and Water Quality	Significant and Unavoidable Impact	**Same** as Proposed Project	**Same** as Proposed Project	**Same** as Proposed Project
Land Use and Planning	Less-than-Significant Impact	**Same** as Proposed Project	**Same** as Proposed Project	**Same** as Proposed Project
Noise	Less-than-Significant Impact	**Same** as Proposed Project	**Same** as Proposed Project	**Same** as Proposed Project
Public Services	Less-than-Significant Impact	**Same** as Proposed Project	**Same** as Proposed Project	**Same** as Proposed Project

Table 5-1: Comparison of Proposed Project with Project Alternatives

Section	Proposed Project	Impact Assessment Compared to Proposed Project		
		Alternative 1: No Project	**Alternative 2: Reduced Renewable Feedstock Throughput**	**Alternative 3: Green Hydrogen**
Transportation	Less-than-Significant Impact	**Greater** than Proposed Project	**Less** than Proposed Project	**Same** as Proposed Project
Utilities and Service Systems	Less-than-Significant Impact	**Greater** than Proposed Project	**Less** than Proposed Project	**Less** than Proposed Project

Because it would not result in any impacts that would be greater than the proposed Project, and in many cases would result in reduced impacts compared to the proposed Project, the Reduced Renewable Feedstock Throughput Alternative is the environmentally superior alternative. The Reduced Renewable Feedstock Throughput Alternative, however, would generate fewer jobs and result in a lower volume of renewable fuels being brought to the market to support the State's low-carbon fuel goals, and would not achieve Project objectives as well as the proposed Project.

5.4.1 References

United States Environmental Protection Agency (U.S. EPA). Green Power Equivalency Calculator – Calculations and References. Online https://www.epa.gov/greenpower/green-power-equivalency-calculator-calculations-and-references. Site accessed August 25, 2021.

6 OTHER CEQA CONSIDERATIONS

CEQA Guidelines Section 15126.2(b) requires an environmental impact report (EIR) to discuss unavoidable significant environmental effects, including those that can be mitigated but not reduced to a level of less than significant. In addition, CEQA Guidelines Section 15093 allows the decision-making agency to determine whether the benefits of a project outweigh the significant unavoidable adverse environmental impacts of implementing the project. A lead agency may decide to approve a project with significant unavoidable adverse impacts if the agency prepares a statement of overriding considerations setting forth the specific reasons for making such a decision.

The California Supreme Court confirmed that, while conditions at the time of the notice of preparation "normally" constitute the baseline for the environmental analysis under CEQA, the lead agency has flexibility in defining the appropriate baseline (*Communities for a Better Environment v. South Coast Air Quality Mgmt. Dist.* (2010) 48 Cal.4th 310, 328). Therefore, State CEQA Guidelines allow a lead agency some leeway in determining the baseline by stating that the environmental setting at the time the notice of preparation is published will "generally" constitute the baseline physical conditions against which the impacts of a project are evaluated. However, State CEQA Guidelines recognize that a point-in-time snapshot of environmental conditions at the time environmental review begins does not always provide an accurate or informative baseline against which to measure a proposed project's environmental effects. In circumstances "[w]here 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," provided that choice is supported by substantial evidence in the record (CEQA Guidelines Section 15125(a)(1)).

For any adverse environmental impact of the Martinez Refinery Renewable Fuels Project (the Project) that is considered to be potentially significant when compared to the baseline condition, this EIR identifies mitigation measures and Best Management Practices (BMPs) to avoid that impact or to reduce the potentially significant adverse impact to less-than-significant levels. This EIR also identifies and evaluates alternative scenarios to the proposed Project, including a "no project" scenario, wherein the Refinery would continue to operate under current entitlements, as well as alternative production scenarios for renewable fuels. Cumulative impacts of the Project, plus other projects planned to occur in the vicinity of the Refinery, are also discussed.

Before an action can be taken to approve the proposed Project, Contra Costa County (the County) must make the necessary findings and certify that the County has reviewed and considered the information in the EIR, that the EIR has been completed in conformity with the requirements of CEQA, and that the EIR reflects the County's independent judgment and analysis. Certification of an EIR by the decision-making body does not constitute an approval or denial of the Project.

Should the Project be approved, the County and other public agencies with permitting authority over the Project must impose mitigation measures as conditions or require Project modifications to reduce or avoid the significant adverse impacts of the Project on the environment. The

Applicant may also choose to modify the Project to mitigate or avoid potentially significant adverse environmental impacts. The County and permitting agencies may only approve the Project with significant adverse environmental impacts that are not mitigated if the agency finds that specific economic, legal, social, technological or other considerations, including provision of employment opportunities for highly trained workers, make imposition of mitigation measures or Project alternatives infeasible (CEQA Guidelines Section 15091). As noted above, under the CEQA Guidelines Section 15093, the County may also approve the Project with significant unavoidable adverse impacts, after adopting a statement of overriding considerations supported by substantial evidence in the record.

In addition to land use permit approval by the County, the Project requires permits from other federal, state, and local agencies including the United States Army Corps of Engineers, National Marine Fisheries Service, Bay Area Air Quality Management District (BAAQMD), San Francisco Bay Conservation and Development Commission (BCDC), San Francisco Regional Water Quality Control Board, and California State Lands Commission. California state and regional agencies are considered to be responsible agencies under CEQA and would comply with CEQA by considering the EIR prepared by the lead agency. However, responsible agencies must each reach their own conclusions on whether or how to approve their respective permits for the Project (CEQA Guidelines Section 15096).

As there were three significant and unavoidable impacts identified in this EIR, Project approval would require the adoption of a Statement of Overriding Conditions.

6.1 GROWTH-INDUCING IMPACTS

CEQA Guidelines Section 15126.2(d) requires that an EIR evaluate the growth-inducing impacts of a proposed action. A growth-inducing impact is defined by the CEQA Guidelines as:

> The way in which a proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects which would remove obstacles to population growth.

A project can have direct and/or indirect growth inducement potential. For example, direct growth inducement potential would result if a project involved construction of a new retail shopping center or residential subdivision. A project would have indirect growth inducement potential if it established substantial new permanent employment opportunities or if it involved a construction effort with substantial short-term employment opportunities that would indirectly stimulate the need for additional housing and services to support the new employment demand (*Napa Citizens for Honest Government v. Napa County Board of Supervisors, (2001) 91 Cal.App.4th 342*). Similarly, a project would indirectly induce growth if it removed an obstacle to additional growth and development, such as removing a constraint on a required public service. A project providing an increased water supply in an area where water service historically limited growth could be considered growth-inducing.

The CEQA Guidelines further explain that the environmental effects of induced growth are considered indirect impacts of the project. These indirect impacts or secondary effects of growth may result in significant, adverse environmental impacts. Potential secondary effects of growth

include increased demand on other community and public services and infrastructure, increased traffic and noise, and adverse environmental impacts such as degradation of air and water quality, degradation or loss of wildlife habitat and conversion of agricultural and open space land to developed uses.

Growth inducement may constitute an adverse impact if the growth is not consistent with or accommodated by the land use plans and growth management plans and policies for the area affected. Local land use plans define land use development patterns and growth policies that allow the orderly expansion of urban development supported by adequate urban public services, such as water supply, roadway infrastructure, sewer service, and solid waste service.

6.1.1 Growth Effects of the Project

6.1.1.1 Direct Growth Effects

The Project would convert the existing Refinery from its current production of fossil fuels to the production of renewable fuels, including renewable diesel, renewable propane, renewable naphtha and potentially renewable jet fuel. The Project would not include any housing or surrounding retail. The proposed Project would involve short-term construction activities and is not anticipated to create a significant increase in the number of permanent jobs at the Refinery. In this context, the proposed Project would not spur new regional population or employment growth and would not result in significant growth-inducing impacts.

6.1.1.2 Indirect Growth Effects

Project construction is expected to last approximately 22 months with no long-term employment opportunities. The construction crew would vary in size and would be approximately 1,400 people employed during various times during the Project construction period. The crew would not require the construction of additional housing or facilities. Construction traffic would be temporary and short in duration. This number of short-term employees would not be considered significant in terms of overall employment in the County.

The Refinery would replace crude oil feedstock with renewable feedstocks. The proposed Project would include the creation of approximately 110 full-time jobs offered to employees who worked at the Refinery prior to its idling of petroleum refining activities. While Refinery operations would result in an economic benefit by restoring some of the 520 jobs terminated in 2020, the Refinery would not employ full-time workers at the same level as it did under petroleum-refining operations. The Project would not add a substantial number of residents who would require additional housing. The Project would not involve other growth-inducing effects, such as a road extension or expansion of utility services outside the boundaries of the Refinery. As such, the Project would have no indirect growth effects during construction or operation.

6.2 SIGNIFICANT IRRETRIEVABLE ENVIRONMENTAL CHANGES

CEQA requires that an irreversible and irretrievable commitment of resources be addressed for certain categories of projects, including "[t]he adoption, amendment, or enactment of a plan, policy, or ordinance of a public agency" (CEQA Guidelines Section 15127[a]). Uses of nonrenewable resources during the initial and continued phases of the Project may be irreversible because a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as highway improvements that

provide 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. Irretrievable commitments of resources should be evaluated to assure that such current consumption is justified.

Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the associated impacts that this consumption could have on future generations. Commitments of resources could be current, as well as future. Future commitments of resources would be associated with the secondary effects of growth-inducing impacts. Irreversible impacts result primarily from the use or destruction of a specific resource (e.g., energy and minerals) that cannot be replaced within a reasonable timeframe. Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored as a result of the action (e.g., extinction of a threatened or endangered species or the disturbance of a significant cultural resource).

Some resources, such as timber used for construction, are generally considered renewable and could ultimately be replenished within a reasonable timeframe. Human resources are also considered a renewable resource. Non-renewable resources, such as petrochemical construction materials; steel, copper, lead, and other metals; and gravel, concrete and other materials are typically considered finite and would not be replenished over the lifetime of a project.

The construction and implementation of the proposed Project would entail the irreversible and irretrievable commitment of some land, energy, and human resources. These resources include:

- a commitment of natural resources during construction activities associated with the Project, including the use of construction materials (e.g., steel, ballast, concrete);
- a commitment of rail and marine resources for transportation purposes;
- consumption of plant-based fuels in the form of corn or soybeans crops grown for conversion to renewable fuel, and
- consumption of nonrenewable energy resources, including diesel, natural gas, hydrogen fuel, jet fuel and electricity as a result of construction, operation, and maintenance of the Project.

This EIR identifies potentially significant impacts on air quality, biological resources, energy, greenhouse gas (GHG) emissions, hazardous waste and transport, transportation and utilities and services, as described in Section 6.3 below.

Development of the Project would irretrievably commit building materials and energy to the construction and maintenance of the Refinery infrastructure. Renewable, nonrenewable and limited resources that would likely be consumed as part of the development of the Project would include but are not limited to oil, gasoline, lumber, sand and gravel, asphalt, water, steel and similar materials. However, development of the Project would not result in significantly increased demand on public services and utilities (see Section 3.15, Utilities and Service Systems). Development in the Project area would be required to comply with California's Building Efficiency Standards (Code of Regulations Title 24) and would not be expected to use energy or any other resources in a wasteful manner.

Sections 6.2.1 to 6.2.5 below discuss the Project's effect on use of land, forest, and agricultural resources.

6.2.1 Reduction of Land and Forest Resources

Agriculture and the environment are interconnected. A healthy environment, including soil and water quality, is necessary for successful crop and livestock production. However, crop production can diminish habitat for wildlife, while soil erosion, nutrient and pesticide runoff and irrigation can pollute the air and water, degrade soil quality and diminish water supplies. The connections between agricultural production and environmental quality are complex and vary widely across the country.

In the search to develop renewable energy, agricultural crops are considered an important source of low environmental impact feedstocks for electrical generation and biofuels production. In countries like the U.S., the bioenergy feedstock potential is dominated by agriculture. In others like Finland, the largest feedstock source comes from forest resources. Forest bioenergy operational activities encompass activities of a continuing and cyclical nature such as stand establishment, mid-rotation silviculture, harvesting, product transportation, wood storage, energy production, ash recycling and then back to stand establishment. All these activities have the potential to produce disturbance that might affect site quality and water resources, but the frequency for any given site is low. Agricultural production of feedstocks involves annual activities that have a much higher potential to affect soils and water resources. Because the rotational cycle for forestry is much less frequent, the potential for disturbance to water and soil resources is greatly reduced.

Sustainability of biomass production depends on soil quality monitoring, which requires evaluating the effects of forestry and agricultural management practices on soil functions that might affect site productivity (Neary and Page et al. 2018). Evaluation of soil conditions are used to assess the sustainability of land management practices and renewable energy programs.

6.2.2 Regulatory Environment

Regulatory policies that can affect agriculture include the Coastal Zone Management Act Reauthorization Amendments (for polluted runoff), the Clean Water Act (for polluted runoff), the Federal Insecticide, Fungicide and Rodenticide Act (for pesticide use), the Clean Air Act (for airborne particulates) and the Endangered Species Act (for wildlife habitat).

The oil and gas industry is regulated by the Energy Independence and Security Act 2007 Renewable Fuels Standard. In 2018, Congress added a provision to the law that directs the United States Environmental Protection Agency (U.S. EPA) to produce a report every three years on "the impacts to date and likely future impacts on air quality, water quality, water availability, soil conservation, ecosystem health and biodiversity, and other environmental issues."

6.2.3 Resource Impacts

6.2.3.1 Feedstock Crop Selection

Extensive root systems, long-term soil cover and protection and the reduced need for tillage and weed suppression make semi-perennial crops excellent choices for bioenergy feedstocks. Crops such as sugarcane, perennial grasses like switchgrass, elephant grass, and trees grown in short rotations tend to have lower water quality impacts than conventional crops. While many perennial crops considered for bioenergy have relatively high water use efficiency, their total water requirements can also be relatively large. Such crops are ideally suited to areas with high water availability and flows where water quality can be easily managed. The United States Department of Agriculture (USDA) estimates that approximately 50 percent of agricultural acreage in most areas of the Midwest U.S. could be dedicated to corn crops without adversely affecting the hydrologic cycle. In drier regions, corn acreages should be limited to 25 percent (USDA 2021).

6.2.3.2 Forest Bioenergy Systems

Forest lands provide an important regulation of both water quality and seasonally available water quantity in most large watersheds. Forest bioenergy systems are judged to be compatible with maintaining high quality water supplies in forested catchments. This general statement is true as long as BMPs that are designed for environment and resource protection and that include nutrient management principles are followed. While short-term water impacts, including increased sediment, nitrates, phosphates and cations can occur, there is no evidence of long-term adverse impacts in forest catchments subject to normal management operations.

6.2.3.3 Water Quality Impact Assessment

The cultivation of conventional annual crops as bioenergy feedstocks affects soil and water resources similar to crop cultivation for food and livestock feed. Water withdrawals and the effects of agrochemicals must be carefully managed to avoid human health impacts, water quality degradation and damage to ecosystems. As in other agricultural and forestry activities, the adoption of BMPs is crucial to minimizing the risk of water quality impacts and promoting sustainable resource use. Assessing BMPs and their effectiveness further requires defining appropriate water quality expectations, determining what site conditions limit BMP effectiveness and identifying the specific watershed characteristics and appropriate spatial and temporal scales for assessment (USDA 2021).

6.2.4 Best Management Practices (BMPs)

The focus on renewable energy sources has raised concerns about environmental effects. In particular, the increase in the use of woody biomass, agricultural crops, agricultural residues and processing wastes residues as feedstocks for bioenergy production has intensified questions about potential impacts on water quality and soil sustainability. Intensification of forestry and agriculture raises concerns about cumulative effects on water quality and soil integrity.

Best Management Practices (BMPs) function to ensure that forest and agricultural bioenergy programs can be a sustainable part of land management and renewable energy production. BMPs have been developed and implemented since the early 1970s to ensure that land management for wood fiber and agricultural crop production can occur with minimum impact on the

environment. Although BMPs were originally designed to minimize water quality impacts, they can be used to ensure soil sustainability and biodiversity. The use of BMPs is widespread in developed countries and some developing nations, and the use varies from mandatory to voluntary depending on the degree of legislative support. For example, in many countries, BMPs are already incorporated in "Codes of Practice" that guide forest managers and farmers through the complete bioenergy life cycle. BMPs have been developed and implemented in many agricultural countries to deal with water quality problems. The use and implementation of BMPs is not a static process, but one that depends on a continual cycle of application, assessment and monitoring, refinement and application. Although some countries have "national standards," the complex matrix of forest and agricultural ecosystems, climates, soils and topography, crop establishment and tending systems and harvesting systems requires ongoing evaluation and refinement to achieve BMPs to best fit local management and environmental conditions.

6.2.5 Conclusions

Forest and agricultural bioenergy systems that use accepted BMPs should be capable of maintaining soil quality and high-quality water. Excessive removal of plant material from the field or forest may jeopardize soil and water quality. Extended or intensified cultivation of plant annual crops for bioenergy feedstock will produce the same impacts as when the objective of crop cultivation is for food. Cultivation of perennial grasses and woody plants commonly causes less impact on water and soil resources. These production systems can, through well-chosen siting, design, management and system integration help mitigate potential soil and water problems associated with current or past land use. Ultimately, careful land management through the implementation of BMPs will improve soil and water use efficiency.

Matching bioenergy feedstocks, management practices and conversion technologies to local conditions and constraints is essential for the development of sustainable bioenergy systems. Successful implementation would require investments in the development of suitable plant varieties and conversion systems, systems integration to use resources effectively, and implementation of BMPs in forestry and agriculture.

Based on the considerations presented above, the Project would not have significant irretrievable impacts on land, forest, or agricultural resources.

6.2.6 Climate Change and Sea Level Rise

The County's climate change policies are the result of collaboration with several state and regional agencies. This section references recent programs analyzing climate change impacts on the County's industrial centers. The Project Applicant has prepared an evaluation of future water level elevations at the Marathon Avon (Avon) Wharf in Martinez (Simpson, Gumpertz & Heger Inc. 2021). This report provides guidance for future planning at the terminal.

6.2.6.1 Hazardous Materials Commodity Flow Study

In November 2016, a two-year program, sponsored by the San Francisco Bay Conservation and Development Commission and titled Adapting to Rising Tides (ART) was completed. The ART Program conducted a climate adaptation planning effort in the County, which built understanding of projected risk due to sea level rise and developed planning objectives for the diverse challenges and opportunities presented by adapting to sea level rise in the county. The Program

included areas of the County that interface with the San Francisco Bay, which include areas extending from the city of Richmond to the unincorporated community of Bay Point.

The initial County ART Program identified risks that exist within the County's shorelines, specifically in regard to hazardous materials along the Union Pacific (UP) and BNSF railways. Railway data from UP covered from January through December 2004, and the data from BNSF covered from April 1, 2004, through March 31, 2005. Data was presented in the County's *Hazardous Materials Commodity Flow Study* (TAIT, 2019) with a special focus on sea level rise and flood risk. The study provides a greater understanding of how major hazardous materials transportation can be impacted by sea level rise/flooding, as well as increased risk of hazardous materials incidents negatively impacting the health and safety of County residents. In addition to shipping data for hazardous materials via railroad, the study also includes information concerning toxic hazards from inhalation of chemicals after an accidental release. The study identifies County-wide emergency response and safety shoreline planning programs in collaboration with the County's business and community partners. The Program further focuses on current transportation contingency planning and needed resources to mitigate future flood events. Hazardous Materials Commodity Flow Study reports were prepared for the Marin County Department of Public Works in September 2014, and for the Solano County Department of Resource Management, Environmental Health Division in May 2016.

6.2.6.2 Emergency Climate Resolution

On September 22, 2020, the Contra Costa County Board of Supervisors adopted an Emergency Climate Resolution (No. 2020/256) resolving that the County establish an interdepartmental task force to prioritize implementing the County's Climate Action Plan (CAP 2015). The task force is charged with identifying additional actions, policies and programs that the County can undertake to reduce and adapt to the impacts of a changing climate. The task force is staffed by the Department of Conservation and Development partnering with the Department of Public Works. The task force is directed to report to the Board on a semi-annual basis starting in March 2021. The first report was released March 30, 2021, and presented at the County Sustainability Task Force Meeting on April 26, 2021.

The emergency resolution acknowledges the consequences of climate changes on public health and the environment, as well as the need for immediate action to mitigate the effects of extreme weather and rising sea levels in the County. The emergency resolution addresses vulnerability of the County's agricultural, industrial and manufacturing centers and reliance on fossil fuels as a key contributor to climate change.

The County has already taken a number of steps to address climate change impacts. In addition to implementing the aforementioned 2015 CAP, the County is in the process of updating its General Plan (Envision Zero 2040) and zoning codes to align with the California Air Resources Board (CARB) 2017 Climate Change Scoping Plan (discussed in Section 3.6, Greenhouse Gas Emissions). The County's land use goals and policies within unincorporated areas focus on investments in clean energy, efficient building technologies, and more efficient energy, conservation, transportation and waste management strategies. The task force has identified several sustainable strategies and procedures already in place. For example, the COVID-19 global pandemic declared by the World Health Organization in March 2020, combined with local and state emergency health orders, necessitated that most services and staff operations be

conducted virtually. The County has realized a number of advantages in virtual operations in addition to reducing GHG emissions, including reduced travel time, improved convenience for residents, reduced traffic congestion, less pollution from driving, increased quality of life and lower transportation costs for both residents and County employees. The task force will consider other operational activities such as recycling, composting, fleet enhancements, lighting and building systems and solar power as additional CAP implementation measures.

6.2.6.3 Future Water Level Assessment for the Marathon Avon Wharf

To comply with terms of San Francisco BCDC Permit No. 2014.006.00, Article II, Section I, the Refinery's parent company prepared a technical memorandum estimating future water levels at the Avon Terminal (Simpson, Gumpertz & Heger Inc., 2021). Under conditions of the BCDC permit, the Refinery is required to monitor water levels periodically for Marine Oil Terminal Engineering and Maintenance Standards (MOTEMS) auditing purposes. The assessment includes water level monitoring under 100-year flood events, extreme storm events and extreme tidal events in years 2030 and 2070. The assessment compares the Avon Wharf water levels to available data from National Oceanic Atmospheric Administration (NOAA) Tide and Metrological Observation Stations at Port Chicago and the Martinez-Amorco Pier.

The assessment determined that 2030 water levels would increase by approximately 2.7 inches (0.221 foot), resulting from an extreme tide or 100-year flood conditions; the Avon terminal pipeway infrastructure would not be inundated, and the risk of oil spills associated with cross beam or pipeline inundation is considered very low. The assessment further concluded that, assuming a measured water level rise of approximately 0.1 inch per year, the pipelines would not likely be inundated until 2070. Technical recommendations include a study of water levels at the next MOTEMS audit to incorporate the revised 100-year flood conditions.

6.3 SIGNIFICANT, UNAVOIDABLE ENVIRONMENTAL IMPACTS

As discussed in Section 3.1, Resources with No Project Impacts, the Project would not result in a physical environmental impact individually or cumulatively on Agriculture and Forest Resources, Mineral Resources, Population and Housing, Recreation, and Wildfire. The Project is also not anticipated to have any significant impacts to Aesthetics, Energy, Land Use, Noise and Public Services as discussed in Sections 3.2, 3.6, 3.11 and 3.13. Therefore, those topics will not be addressed further in this section.

6.3.1 Air Quality

As discussed in Section 3.3, Air Quality, Project construction may result in significant adverse volatile organic compounds (VOCs) and oxides of nitrogen (NO_x) impacts on air quality and exceed the localized significance thresholds for NO_2. However, air quality impacts from construction would be short-term and temporary in nature and would be reduced when peak construction work is completed. **Mitigation Measure AQ-1: Implement BAAQMD Basic Construction Measures** would reduce construction air quality impacts and would place limits on idling of construction vehicles; require dust control measures for exposed surfaces, such as parking and staging areas; and other restrictions on traffic. Construction air quality impacts would be **less than significant.**

Operational air quality impacts of criteria pollutants would be a beneficial reduction for carbon monoxide (CO), and less-than-significant impacts for VOC, NO_x, sulfur oxides (SO_x), Particulate Matter ($PM_{10,}$ $PM_{2.5)}$ and Toxic Air Contaminants (TACs), and thus, would not be expected to have a significant adverse impact on the environment. A cumulative health risk assessment (HRA) was conducted for the proposed Project to analyze human health risks for cancer risk, chronic non-cancer risk and exposure to $PM_{2.5}$ emissions. The HRA included both stationary and mobile sources from the Project and sources within 1,000 feet of the Project Site. Results of the HRA concluded that cumulative cancer and chronic risks resulting from Project implementation would be **less than significant**.

Renewable fuels processing, as described in Section 3.3, would result in both existing and new sources of potentially objectionable odors. Equipment from petroleum-refining processes would be taken out of service; and odor management practices for feedstock processing would be implemented. These management practices would include installing carbon canisters, nitrogen blanketing of storage tanks and a vapor recovery system that would be used to reduce odors from the storage tanks and loading and unloading activities. These control measures would be incorporated into applicable permits issued by the BAAQMD. Implementation of the above control measures and odor monitoring would reduce objectional odors from Project operations to **less-than-significant** levels.

Because non-Project emissions in the Project area account for 95 percent of $PM_{2.5}$ concentrations in the Project area, these facilities would be required to adopt additional emissions reduction strategies to reduce these concentrations to below screening-level thresholds established by the BAAQMD. Because concentrations of particulate matter at the Refinery, together with emissions from nearby industrial facilities, would exceed BAAQMD screening levels, cumulative impacts on $PM_{2.5}$ concentrations would be **significant and unavoidable**.

6.3.2 Biological Resources

Section 3.4, Biological Resources, discusses how in-water work to repair wharf facilities, pipeline modifications, vibration, noise and disruption associated with proposed Project construction would potentially impact special status-species of mammals, fish and birds, known to inhabit areas within and around the Refinery and marine oil terminals (MOTs). **Mitigation Measure BIO-1e: In-water Work Restrictions** would minimize adverse noise and vibration impacts on special-status species during construction and operations.

Introduction of non-indigenous aquatic species has resulted from the transfer of fuels from ships to the Avon and Amorco MOTs along the Suisun Bay and the Carquinez Strait shorelines, and discharge ballast water in California waters. **Mitigation Measure BIO-1f: Nearshore Habitat Disturbance Minimization**, **Mitigation Measure BIO-1g: Demarcation of Limits of Work** and **Mitigation Measure BIO-1h: Weed Spread Prevention** would reduce occurrence of non-indigenous species along MOT shoreline areas.

As discussed in Section 3.4, the Marathon Refinery has no control over, ownership of or authority to direct vessels that dock at its terminals; therefore, specific details of how vessels manage biofouling or ballast water are not discussed in this EIR. Under **Mitigation Measure 7b: Sturgeon Action Funding** and **Mitigation Measure BIO-9a: Invasive Species Action Funding**, the Refinery would continue to participate and assist in funding ongoing and future

actions related to non-indigenous aquatic species at a level determined through cooperative effort with the Marine Invasive Species Program agencies. However, even with compliance with the Marine Invasive Species Alliance and research into invasive species, the potential impact of introducing new non-indigenous aquatic species via ballast water and vessel biofouling to the San Francisco Bay Estuary waters remains **significant and unavoidable**.

6.3.3 Cultural and Tribal Cultural Resources

Section 3.5, Cultural and Tribal Cultural Resources, describes existing cultural, paleontological and tribal cultural resources in the vicinity of the Project Site and addresses the potential cultural resources impacts that could result from the Project. As described in Section 3.5, there is no evidence of cultural resources older than 8000 calibrated Before Present (cal. B.P.), and the area is presumed to have been submerged or buried. Since 8000 cal. B.P, lands in which the Project Site is located were occupied by the Native American group known to the Spanish as the Costanoan. Beginning in the late 18th century, a number of Spanish expeditions passed through the area, and the Spanish government founded missions and secular towns in the area. The Mexican government closed the missions in the early 1830s, and former mission lands were given to individuals as land grants. Cities and towns, including the city of Martinez and unincorporated communities, grew along the waterfront where ferry and goods transport by water could be provided. After the California gold rush in the mid-19th century, the area continued to flourish due to agriculture, predominantly wheat and fruit. Commercial salmon fishing began in the 1870s, and soon thereafter, two fish canneries opened in Martinez.

Martinez became an industrial center in the early 20th century when chemical and petroleum facilities were built. The Mountain Copper smelter was built at Bull's Head Point, and several refineries were opened in 1915. The Martinez location provided a deep-water harbor and rail connections for these industrial facilities.

The archaeological record search for the Project Site identified six cultural resources (07-000130, 07-000501, 07-000502, 07-000806, 07-002402 and 07-002921) within the footprint of the Project Site, and 26 previously recorded resources within the 1-mile radius. It is likely that some of these sites were previously and paved over during the course of constructing the Refinery, or that they were plowed in the years just prior. There are no sites currently listed on the National Register, California Register, Contra Costa County Historic Resources Inventory or the list of California Historical Landmarks within 1 mile of the Project Site. Paleontological record search for the Project Site concluded that there is minimal potential for fossils, due to previous dredging and because the depositional environment for fossil preservation is low.

With the history of the Project Site and surrounding lands, there is a potential to encounter previously unidentified buried archaeological resources during construction. This is particularly true for the paved pipeline segments, where the natural ground surface was not visible during survey. While the depth of excavation necessary for the construction of the Project equipment foundations likely will not generally be more than 5 feet, there is the potential to encounter previously undocumented archaeological resources. **Mitigation Measure CR-1: Discovery of Unknown Cultural or Archaeological Resources**, would reduce impacts of the Project on cultural and tribal cultural resources to **less than significant.**

6.3.4 Geology and Soils

Section 3.7, Geology and Soils, describes the environmental conditions and impacts analysis of geology, sediments and seismicity issues associated with the Project. The Project Site is located in a region defined by a number of fault zones associated with the San Andreas Fault system, but the Project Site is not located in any Alquist-Priolo Earthquake Fault Zone, and therefore, direct rupture from an earthquake fault would be unlikely. Liquefaction potential at the Project Site is also judged to be low based on the structure of the soil beneath the Refinery, and landsliding and soil erosion potential is also not expected to be significant because of the limited grading and excavation necessary for construction of Project improvements on the generally flat site. Potential damage to structures could result from seismic ground shaking caused by earthquakes on faults in the region, or from expansion and contraction of soil. **Mitigation Measure GEO-2: Submittal of Final Geotechnical Evaluation Report** would ensure that, as part of the grading and building permit plan check process for the equipment changes associated with the Project, professional recommendations for seismically and structurally sound installation of new structures, equipment and foundations are incorporated into plan drawings and constructed with the Project. With implementation of this mitigation measure, the Projects geology and soils impacts would be **less than significant**.

6.3.5 Greenhouse Gas Emissions

Section 3.8, Greenhouse Gas (GHG) Emissions, describes the County as home to some of the largest GHG-emitting stationary source facilities in California. Stationary sources are non-moving, fixed-site producers of pollution such as power plants, chemical plants, oil refineries, manufacturing facilities and other industrial facilities. This EIR describes baseline conditions for GHGs as of the time the environmental analysis commenced in 2019 to the extent that information was available. CEQA Guidelines Section 15183.5(b) includes provisions for local governments to employ adopted plans in reducing GHG emissions, and to address the cumulative impacts of individual future projects on GHG emissions. While not a regulatory document, the County's 2015 Climate Action Plan (CAP) demonstrates the County's commitment to addressing the challenges of climate change by reducing local GHG emissions while improving community health.

GHG reduction strategies are regulated by the U.S. EPA pursuant to the Federal Clean Air Act and implemented by California's regional Air Districts. California's emissions strategies include reducing GHG emissions to pre-1990 levels (below 80 percent) by 2050. The state's low carbon fuel standard goals aim to reduce the carbon intensity by 20 percent of transportation fuels by 2030. The CARB expansion of California's Renewables Portfolio Standard regulations assists the state in meeting its goal of 33 percent renewable energy. CARB's latest Climate Change Scoping Plan establishes measures to reduce the state's GHG emissions in 2030 to levels 40 percent below 1990 emissions. California's Cap-and-Trade Program is designed to reduce GHG emissions from major sources ("covered entities") by setting a firm cap on statewide GHG emissions and employing market mechanisms to achieve California Assembly Bill 32's emission-reduction mandate of returning to 1990 levels of emissions by 2020. Under the Cap-and-Trade Program, covered entities that emit more than 25,000 metric tons (MT) of carbon dioxide equivalents (CO_2e) per year must comply with program requirements by 2010.

As the regulatory body enforcing regional air quality standards in the Project area, the BAAQMD quantifies GHG from both existing and future emissions resulting from activities within a defined geographic area projected over a specified time period. The Refinery's 2015 to 2020 baseline emissions for stationary and non-stationary sources was 2,033,524 MT for carbon monoxide (CO_2e) and 2,040,746 MT for carbon monoxide equivalents (COe).

GHG emissions would occur from Project construction activities. GHG emissions would be estimated to be 2,655 MT for off-road diesel equipment and 1,899 MT for on-road equipment.

The proposed Project would comply with the federally-mandated Tier 3 gasoline specifications and with state and local regulations mandating emission reductions. The Project would be expected to substantially reduce GHG, SO_x, NO_x and CO at the Refinery. This would in part be accomplished by discontinuing petroleum-refining operations. Some existing Refinery equipment would be altered or replaced, and additional new equipment units and tanks would be installed to facilitate production of fuels from renewable feedstock. Crude oil-processing equipment that cannot be repurposed for processing of renewable feedstock would be shut down and removed from the Refinery. Additionally, heat recovery would be optimized by installing new heat exchangers and modifying specified units to further minimize criteria pollutant and GHG emissions.

Operational emissions would be the same as the proposed Project. GHG emissions from hydrogen generation at the Refinery would not produce additional GHG emissions, as the hydrogen would not be required to be produced at any other location. Also, as the hydrogen used by the Refinery would be gaseous hydrogen, this alternative would produce fewer GHG emissions per unit of hydrogen than the baseline operations because less energy would be needed than is required to liquify the hydrogen and to transport the hydrogen. However, worst-case operations of a hydrogen plant would exceed the BAAQMD thresholds. As most of these emissions would be covered by the Cap-and-Trade program, GHG emissions increases would be **less than significant**.

Project construction would be completed in approximately 22 months; GHG emissions during construction would be estimated to be less than 2,000 MT of CO_2, per year, estimated by year of construction. Construction emissions would be below the BAAQMD thresholds and, in combination with operational emissions, GHG impacts would be **less than significant**.

6.3.6 Hazards and Hazardous Materials

6.3.6.1 Contaminated Soils

Site preparation, grading and construction activities for the proposed Project have the potential to encounter contaminated soils or subsurface groundwater. The construction phase of the proposed Project may require construction workers to excavate soil for the construction of foundations for the Pretreatment Unit described in Chapter 3.0, Project Description. Generally, a hazards analysis focuses on impacts to off-site receptors because they are unlikely to have undergone safety training or have safety equipment available in the event of a hazard event. On-site workers are provided with protection against many types of hazard impacts as a result of having access to safety equipment, participating in safety exercises and undergoing profession-specific training to safely work around the potentially hazardous conditions that exist within a Refinery. Further,

extensive rules, regulations, laws and other requirements are in place, specifically designed to ensure a safe working environment for industrial workers, including Refinery workers and construction workers. Effects of any construction hazards identified would also be evaluated for construction workers.

Grading and excavation for the proposed Project would be expected to be limited to trenching to provide utilities to new units and grading to develop stable foundations for new units and facilities. Construction activities associated with the proposed Project would have the potential to expose workers or the public to contaminated soils, both on the Project Site and during routine transport or disposal of those hazardous materials. However, in addition to regulatory requirements, the Refinery's Soil Management Plan includes comprehensive policies and procedures for handling impacted soils and/or groundwater to minimize potential releases to the environment or unacceptable levels of exposure to Refinery employees and the public. Therefore, the potential for the release of hazardous materials during Project construction is unlikely, and significant hazard to the public, surrounding land uses or environment would be **less than significant**.

6.3.6.2 Risk of Accidental Spill

The proposed Project would result in a significant, unavoidable impact related to risk of upset and release of hazardous materials into the environment. In order to define a "significant hazard" under CEQA related to upset conditions, this EIR uses a quantitative approach to estimating risk levels and compares these to the baseline risk levels and the acceptability levels defined in other jurisdictional CEQA thresholds, including the U.S. EPA and the State Water Resources Control Board. The County does not currently have thresholds related to risk of upset for projects using hazardous materials.

Impacts from spills into the San Francisco Bay Estuary and surrounding natural lands would be significant and unavoidable. The severity of impacts from these spills would depend on the material and quantity spilled. The proposed Project could result in significant adverse hazard impacts related to "worst-case" accidental releases of hazardous materials associated with the proposed unloading of fuels at the Martinez or Amorco refineries, or the Avon MOT. The Project would comply with the Hazardous Materials Transportation Act discussed in Section 3.9, Hazards and Hazardous Materials, of this EIR. Under the Federal Accidental Release – Risk Management Plans (40 Code of Federal Regulations Part 68), the Project would be required to develop a Remediation Management Plan that identifies the potential effects of a chemical accident, identifies steps the facility is taking to prevent an accident and outlines emergency response procedures should an accident occur. Additionally, the Project would be required to develop a Hazardous Materials Business Plan. This plan would include inventories of hazardous materials, an emergency plan and a training program for employees. The plan is required to be submitted to the Certified Unified Permitting Agencies, which is Contra Costa County Health Services in the Martinez area, for use by state and local emergency response agencies. Refinery operations would further be required to comply with United States Department of Transportation (U.S. DOT) regulations regarding the handling and transport of hazardous materials, Pipeline and Hazardous Materials Safety Administration regulations and applicable federal, state and local laws regarding hazardous materials.

Research and previous spills have shown that a release of animal fats and vegetable oils into water or over land can kill or injure wildlife. Wildlife, including waterbirds and fish, that become coated with animal fats or vegetable oils are unable to keep themselves warm and may suffer from dehydration, diarrhea or starvation. Aquatic life can suffocate because of depletion of oxygen caused by spilled animal fats and vegetable oils in water. Mitigation Measures detailed in Section 3.4, Biological Resources, including **Mitigation Measure BIO-2: Spill and Accidental Discharge Prevention**, **Mitigation Measure BIO-3: Emergency Spill and Containment Plan** and **Mitigation Measure BIO-4: SWPPP** would reduce the severity of construction and operational impacts on special-status species.

Compliance with existing regulations, implementation of the recommended safety measures and implementation of the mitigation measures noted above would reduce the potential impacts associated with a release but would not be expected to eliminate the potential hazard impacts. No feasible mitigation measures were identified to further reduce significant adverse hazard impacts. Therefore, hazards and hazardous material impacts due to accidental discharges from Project operations would remain **significant and unavoidable.**

6.3.7 Hydrology and Water Quality

As discussed in Section 3.10, Hydrology and Water Quality, the largest sources of pollutant input to the surface water in the Project study area are nonpoint discharges including urban and nonurban runoff and inputs from rivers. Sources of pollutants in urban runoff are varied and include commercial, industrial and residential land uses, as well as pollutants from managed open space areas such as parks, planted road dividers and construction sites. Human activities in these areas, such as the application of pesticides and fertilizers to gardens and landscaping, operation of motor vehicles and construction of roads and buildings all contribute pollutants to urban runoff.

Nonurban sources of nonpoint pollution include runoff from agricultural lands, forests, pastures and natural ranges, and are contributed to the San Francisco Bay by rainfall runoff, excess irrigation return flows and subsurface agricultural drainage. Pollutants of concern in nonurban runoff include trace elements, synthetic organic pollutants (particularly pesticides) and solvents used for pesticide application.

Water quality within waterbodies and creeks adjacent to the Project Site have been degraded by the presence of high levels of suspended solids, traces of contaminants associated with the operation of motor vehicles such as oil and grease, gasoline and other hydrocarbons, lead, rubber, etc. Upland areas along the creeks are not all serviced by municipal wastewater treatment facilities, and runoff or seepage to the creeks from septic systems is possible.

Site clearing, grading, excavation and other disturbances to the ground within staging and laydown areas could potentially affect surface water quality. During construction of the proposed Project, water would be needed for dust suppression as required during grading operations to prepare the construction areas for the placement of foundations for new equipment. Solid and liquid waste from on- and off-Site hauling equipment, employees personal vehicles and equipment. As described in Section 6.3.2 above, grading and excavation activities would be limited to accommodate new Refinery units, utilities and foundation work.

Drainage from urbanized areas contributes to the water quality of local creeks and streams. The San Francisco Bay Regional Water Quality Control Board (RWQCB) periodically reviews available data on surface water bodies and evaluates whether beneficial uses for the body may be impaired by a particular pollutant, then the water body is listed under Section 303(d) of the Clean Water Act (CWA). The RWQCB lists the Carquinez Strait and Walnut Creek as impaired water bodies. Specifically, Carquinez Strait is listed due to concentrations of chlordane, dichlorodiphenyltrichloroethane, dieldrin, dioxin compounds, mercury, polychlorinated biphenyls, selenium and exotic species; the latter suspected to be from ballast water of ships. Walnut Creek is listed for diazinon from urban runoff and storm sewers. Refinery equipment that is taken out of service and replaced with new equipment to accommodate renewable fuels processing would not involve on- or off-Site changes to existing topography or drainage patterns in the Project area.

Process wastewater, sanitary wastewater and most of the stormwater runoff from the Project Site is currently managed in the existing Refinery wastewater treatment system and regulated by a National Pollutant Discharge Elimination System (NPDES) permit. The Project Site also operates under an industrial waste discharge permit from the U.S. EPA. The production of renewable fuels would primarily use existing process equipment, although some construction for new and modified equipment would be necessary. The existing NPDES permit would be modified to include the new wastewater treatment equipment and to reflect the new characteristics of the wastewater stream. The NPDES permit establishes limits for various contaminants (including oil and grease, biological oxygen demand, pH, whole effluent toxicity and other contaminants such as heavy metals). Wastewater would also be required to be discharged in compliance with the NPDES permit. The Project would install new units to include specialized wastewater treatment equipment to reduce biological oxygen demand in the waste stream. A Stormwater Pollution Prevention Plan would be prepared, and stormwater runoff would be contained and only allowed to drain off-Site when pre-treated if necessary or when subject to appropriate engineering controls and BMPs. It is expected that the reduced production levels associated with the Project would result in an overall decrease in wastewater flow and contaminant loads generated by the new facility compared to previous refining operations.

Groundwater underlying the Project Site is not currently used as a source of drinking water, and no additional groundwater use would be required for Project operations. Project construction activities would not be expected to violate the applicable water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality.

Neither Project construction or operations would increase flood hazards to structures, people or the environment. Refinery construction and operations would comply with federal and state CWA and NPDES permit requirements. Therefore, environmental impacts on Hydrology and Water Quality with respect to changes in drainage patterns, flooding and groundwater would be **less than significant**. However, as also noted in Section 3.10, adherence to operational protocols in place designed to minimize the potential for accidental releases will not guarantee that contaminants will never be released in the environment. The probability of a serious spill would be minimized to the extent feasible with implementation of the terms of the leases of the Avon and Amorco MOTs, but the risk of upset cannot be completely eliminated. Consequences of a spill would depend on the specific aspects of the release and could range from relatively small spills with less than significant impacts, to larger spills that are more difficult to clean up and

could result in significant residual impacts after mitigation. Even with the implementation of the aforementioned lease conditions, contingency planning and required response measures, a large spill could still occur and result in impacts on water quality that would be **significant and unavoidable.**

6.3.8 Transportation

Normal Project operations would not interfere or conflict with existing transit, roadway, bicycle or pedestrian activities. Transportation impacts during Project operation would be **less than significant.**

During construction, the proposed Project would have the potential to disrupt normal traffic and circulation on roadways and bicycle or pedestrian activities. Designated areas of aboveground construction for the proposed Project are zoned for industrial uses and operate at low traffic volumes and a high level of service under existing conditions. As discussed in Chapter 2, Project Description, initial construction activities for the proposed Project are expected to begin in the first or second quarter of 2022, and are expected to be completed by 2024. Fuel processing would begin within the first year of construction. The construction activities for most of the components of the proposed Project would be expected to overlap during the Project's peak construction period. Construction work shifts are expected to last about 10 hours per day during most portions of the construction schedule. During normal construction periods, one work shift per day is expected. During Refinery turnaround periods (when some of the Refinery Units would be shut down), two work shifts are expected and work may be conducted 24 hours per day.

Transportation conditions during construction were analyzed assuming the maximum number of construction trips. The traffic analysis in Section 3.14, Transportation, is based on a construction schedule that presumes a total of 1,400 workers, most working day shifts. During construction, the number of truck trips would be estimated at between 60 and 310 trips per day, depending on timing and phasing. A number of trips would be used for deliveries and distribution of petroleum coke and products manufactured at the Refinery.

Caltrans began a major construction project in 2019 to modify the Interstate 680 and State Route 4 (SR) interchange configuration, which includes widening approximately four miles of SR 4 in both directions between Morello Avenue in Martinez and SR 242 by adding a third lane in both directions to improve on- and off-ramp merging. This construction project will be continued during various phases of Project construction. Interchange modifications span the unincorporated community of Pacheco and the cities of Martinez, Concord and Walnut Creek. The interchange construction is expected to be completed in 2022, potentially overlapping with the near-term construction period of the proposed Project. However, Project truck trips would be scheduled to avoid peak travel times along major highways, and full road closures would not be expected. It is also anticipated that the Caltrans project would be near completion by the initial phases of Project construction and would not overlap with peak Project construction conditions.

Due to the number of employees expected during Project construction, a short-term increase in vehicle trips and construction traffic would last for the duration of construction. The transportation impacts during Project construction would be less than significant. The Project would not require an increase in the number of workers required to operate the Refinery, and no

long-term operational traffic impacts would be expected. Transportation impacts during Project construction would be **less than significant.**

Refinery operations would not result in noticeable changes to emergency access or emergency response conditions. Project construction may have the potential to cause temporary traffic disruption and may require the use of alternate traffic routes. Emergency response providers in the vicinity of construction areas would be given advance notice of construction schedules and locations, road closures and possible alternate routes. Potential impacts on emergency services access would be **less than significant**.

6.3.9 Utilities

Proposed Project operation would not require relocation of existing electric or gas infrastructure, nor construction of additional electric or gas facilities. Overall, the proposed Project would result in the shutdown of a number of Refinery units, as well as heaters and boilers, resulting in a decrease in electricity and natural gas use over previous Refinery use.

The Refinery includes on-site wastewater treatment facilities. The proposed Project would not include any uses that would typically have the potential to exceed wastewater treatment requirements, or generate wastewater of different quality and treatability than that generated by current and proposed land uses in the Contra Costa Water District (CCWD) service area.

The CCWD Urban Water Management Plan 2020 includes water supply levels at 5-year increments for single and multiple dry years between 2020 and 2045. The water service area would provide approximately 276,240 million gallons (or 75 percent) of available water to customers in the water district service area (see Section 3.15, Utilities and Services, Table 3.15-2: Projected Water Supply). During its last years of operation, the Refinery consumed 3,100 to 3,300 million gallons of fresh water per year. The proposed Project would be expected to reduce overall water use by about 70 percent or about 1,310 to 1,320 million gallons of fresh water per year. Project construction and operations would not be expected to exceed water demand in the CCWD service area beyond existing entitlements.

Refinery operations would be anticipated to result in the generation of a lower volume of solid waste as compared to prior Refinery operations. The Refinery would continue to be required to participate in business programs (e.g., recycling) to reduce solid waste deposits to landfills.

Proposed construction would not interfere with existing on- or off-Site electric and gas infrastructure. Refinery operations would not increase energy demand over existing conditions. Project construction and operation would not interrupt water supply service to the immediate service area because the Refinery would draw from a dedicated wholesale supply through the CCWD. In addition, the Refinery operates its own wastewater treatment facility and would not draw from municipal wastewater treatment sources. Therefore, the Project's impact on utilities and services would be **less than significant**.

6.3.10 References

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7 LIST OF PREPARERS

Contra Costa County Department of Conservation and Development

Joseph W. Lawlor Jr, AICP
Project Planner, Current Planning Section

Lashun Cross
Principal Planner, Current Planning Section

Marathon Petroleum Company, LP

Greg F. Myers, M.S., QEP
Manager of Corporate Environmental Support

Amber Larsen
Manager – Environmental, Safety, Security

TRC Solutions

Jonathan E. Scheiner, PhD
Project Director
Hazards and Hazardous Materials Analysis

Dana H. Ayers, AICP
Project Manager
Technical Lead, Transportation and Land Use

Brenda Peters
Technical Lead, Aesthetics and Visual Analysis

Karin Greenacre, PE
Technical Lead, Air Quality and Greenhouse Gas Emissions

Naomi S. Goff
Air Quality Permitting and Compliance Specialist

Stephen V. Huvane, PE
Technical Lead, Noise and Vibration

Rosalie Annand
EIR Author

Paula DeMichele
Energy, Utilities and Services; Project Quality Control

Lee Hovey, E.I.T.
Hazardous Materials and Groundwater Analysis

Gary Lieberman, CEM
Technical Lead, Hazards and Hazardous Materials

Brandon Reed, PE
Air Quality and CalEEMod Air Modeling Analysis

Michael Rice
Senior Advisor, California Environmental Quality Act

Molly Sandomire
Technical Lead, Terrestrial, Aquatic and Marine Mammal Biological Resources

Cody H. Knopp-Sargoni
Groundwater Analysis

Rebecca Spring
Mapping and GIS Services

Laura D. Tait, GIT
Geology and Soils; Hydrology and Water Quality Analysis

Matthew J. Wetherbee, MSc., RPA
Technical Lead, Archeological, Historic, and Tribal Cultural Resources

Amy Wilson, PhD, PE
Technical Lead, Hydrology and Water Quality Technical Lead

Ashworth, Leinginer Group/Barr

Air Quality and Greenhouse Gas Technical Analysis

Environmental Audit, Inc.

Debbie Stevens, Senior Vice President

*Initial Study for: Tesoro Refining & Marketing Company LLC – Marathon Martinez Refinery Renewable Fuels Projec*t

Agencies and Organizations Consulted

Adams Broadwell Joseph & Cardozo for Contra Costa Building and Construction Trades Council

Amah/Mutsun Tribal Band

Bay Area Air Quality Management District

Chicken Ranch Rancheria of Me-Wuk

San Francisco Bay Conservation and Development Commission

California Air Resources Board

California Energy Commission

California Department of Fish and Wildlife, Bay-Delta Region

California State Lands Commission

California Department of Toxic substances Control

California Department of Transportation (Caltrans)

City of Concord

The Confederated Villages of Lisjan

Contra Costa County:

- Flood Control & Water Conservation District
- Building Inspection Department
- Consolidated Fire District
- Environmental Health
- Food Bank
- Local Agency Formation Commission
- Public Works Department
- Transportation Engineering

East Bay Regional Parks District

Guidiville Indian Rancheria

Indian Canyon Mutsun Band of Costanoan

Muwekma Ohlone Indian Tribe of the SF Bay Area

Mountain View Sanitary District

Nashville Enterprise Miwok-

Maidu-Nishinam Tribe

Native American Heritage Commission

North Valley Yokuts Tribe

Ohlone Indian Tribe

Operations Branch

Pacific Gas & Electric Company

San Francisco Bay Regional Water Quality Control Board

United States Army Corps of Engineers

United States Fish and Wildlife Service

Wilton Rancheria