Final Subsequent Environmental Impact Report

AltAir Renewable Fuels Conversion Project

City Case No. CUP 757
State Clearinghouse #2020069013

February 2022

Prepared by:

City of Paramount
Planning Department
16400 Colorado Avenue
Paramount, CA 90723

Prepared with assistance from:

MRS Environmental, Inc.
1306 Santa Barbara Street
Santa Barbara, CA 93101

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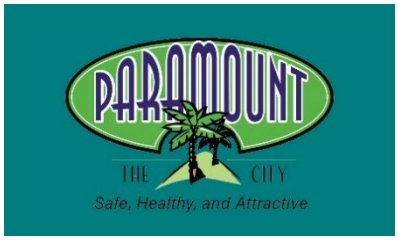

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Santa Barbara, CA 93101

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List of Abbreviations and Acronyms

°F	Degrees Fahrenheit
AAQS	Ambient Air Quality Standards
AB	Assembly Bill
ACM	Asbestos-Containing Materials
ACWM	Asbestos-Containing Waste Materials
AEP	Association of Environmental Professionals
AERMOD	AMS/EPA Regulatory Model
AF	Acre-feet
AFY	Acre-feet per year
API	American Petroleum Institute
APS	Alternative Planning Strategy
AQMD	Air Quality Management District
AQMP	Air Quality Management Plan
ARB	Air Resources Board
ARPA	Archaeological Resources Protection Act
AST	Aboveground Storage Tank
Avg.	Average
BACT	Best-Available Control Technology

List of Abbreviations and Acronyms

BAU	Business As Usual
bbl	Barrels (one barrel is 42 gallons)
BLEVE	Boiling liquid-expanding vapor explosion
BMPs	Best Management Practices
BOD	Biological Oxygen Demand
BPD	Barrels Per Day
Btu/scf	British Thermal Units per standard cubic feet
C/H	Carbon/Hydrogen ratio
CAA	Clean Air Act
CAAP	Clean Air Action Plan
CAAQS	California Ambient Air Quality Standards
CalARP	California Accidental Release Prevention Program
CalEPA	California Environmental Protection Agency
CalGEM	California Geologic Energy Management Division
CalOSHA	California Occupational Safety and Health Administration
Caltrans	California Department of Transportation
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CBMWD	Central Basin Municipal Water District
CCPS	Center for Chemical Process Safety
CCR	California Code of Regulations
CDE	California Department of Education
CEQA	California Environmental Quality Act
CERP	Community Emissions Reduction Plan
CFCs	Chlorofluorocarbons
CFR	Code of Federal Regulations
CH_4	Methane
CI	Confidence Interval
CIP	Clean in place
CMP	Congestion Management Plan
CNDDB	California Natural Diversity Data Base
CNEL	Community Noise Equivalent Level
CNG	Compressed Natural Gas
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide Equivalent
CPUC	California Public Utilities Commission
CRHR	California Register of Historical Resources
CSLC	California State Lands Commission
CUP	Conditional Use Permit
CUPA	Certified Unified Permitting Agencies
CVC	California Vehicle Code
CWA	Clean Water Act
dB	Decibel

List of Abbreviations and Acronyms

dBA	A-Weighted Decibel
DECS	Diesel Emissions Control System
DOE	Department of Energy
DPM	Diesel Particulate Matter
DTSC	Department of Toxic Substances Control
EIR	Environmental Impact Report
EPA	Environmental Protection Agency
EQAP	Environmental Quality Assurance Program
ERPG	Emergency Response Planning Guidelines
Fc	Footcandles
FCC	Fluid Catalytic Cracking
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FHWA	Federal Highway Administration
FMCSA	Federal Motor Carrier Safety Administration
FRA	Federal Railroad Administration
Ft	Feet
Ft bgs	Feet below ground surface
FTA	Federal Transit Administration
g/bhp-hr	Grams per brake horsepower-hour
GHG	Greenhouse Gas
GLC	Ground-level concentration
Gpm	Gallons per minute
GWh	Gigawatt hours
GWP	Global Warming Potential
H_2S	Hydrogen Sulfide
HARP	Hotspots Analysis and Reporting Program
HCA	High Consequence Area
HDS	Hydrodesulfurization
HFCs	Hydrofluorocarbons
HI	Hazard Index
HLRC	Historical Landmarks and Records Commission
HMBP	Hazardous Materials Business Plan
HMTA	Hazardous Materials Transportation Act
hp	Horsepower
hr	Hour
HRA	Health Risk Assessment
hrs	Hours
HUD	Federal Department of Housing and Urban Development
Hz	Hertz
ICCTA	Interstate Commerce Commission Termination Act
ICU	Intersection Capacity Utilization
IMO	International Maritime Organization
IPCC	Intergovernmental Panel on Climate Change

List of Abbreviations and Acronyms

JOS	Joint Outfall System
JWPCP	Joint Water Pollution Control Plant
kW	Kilowatts
LAC	Los Angeles County
LACFCD	Los Angeles County Flood Control District
LACFD	Los Angeles County Fire Department
LACSD	Los Angeles County Sanitation Districts
LADPW	County of Los Angeles Department of Public Works
LADWP	Los Angeles Department of Water and Power
LA Metro	Los Angeles County Metropolitan Transportation Authority
lbs	Pounds
lbs/day	Pounds per day
LCFS	Low Carbon Fuel Standard
LED	Light-emitting diode
LFL	Lower flammability limit
LNAPL	Light non-aqueous phase liquid
LOS	Level of Service
LPG	Liquefied petroleum gas
LST	Localized Significance Threshold
LSWPPP	Local Stormwater Pollution Prevention Plan
MAHI	Maximum Acute Hazard Index
MAOP	Maximum Allowable Operating Pressure
MATES	Multiple Air Toxics Exposure Study
MCHI	Maximum Chronic Hazard Index
MCLs	Maximum Contaminant Levels
MEIR	Maximum Exposed Individual Resident
MEIW	Maximum Exposed Individual Worker
MG	Million gallons
mgd	Million gallons per day
MLV	Mainline valve
MMRP	Mitigation Monitoring and Reporting Program
mmscfd	Million standard cubic feet per day
MMT	Million metric tons
$MMTCO_2e$	Million Metric Tons of Carbon Dioxide Equivalent
MND	Mitigated Negative Declaration
mph	Miles Per Hour
MPO	Metropolitan Planning Organization
MT	Metric Tons
MT/yr	Metric Tons Per Year
MTA	Metropolitan Transit Authority
$MTCO_2e$	Metric Tons of Carbon Dioxide Equivalent
MW	Megawatts
MWD	Metropolitan Water District
MWh	Megawatt hours

List of Abbreviations and Acronyms

N_2O	Nitrous Oxide
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native America Graves Protection and Repatriation Act
NAHC	Native American Heritage Commission
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NHPA	National Historic Preservation Act
NHTSA	National Highway Transportation Safety Administration
NO	Nitric Oxide
NO_2	Nitrogen Dioxide
NOAA	National Oceanic and Atmospheric Administration
NOP	Notice of Preparation
NOV	Notice of Violation
NO_X	Nitrogen Oxides
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NTC	Notice to Comply
NWS	National Weather Service
NZE	Near-Zero-Emissions
O_3	Ozone
OEC	On-site Environmental Coordinator
OEHHA	Office of Environmental Health Hazard Assessment
OHP	Office of Historic Preservation
OPR	Office of Planning and Research
OSHA	Occupational Safety and Health Administration
PAR	Population Attributable Risk
PCE	Passenger Car Equivalent
PEC	Photoelectrochemical
PEIR	Program Environmental Impact Report
PFCs	Perfluorocarbons
PHMSA	Pipeline and Hazardous Materials Safety Administration
PM	Particulate Matter
$PM_{2.5}$	Suspended Particulate Matter (aerodynamic diameter of $\leq$2.5 microns)
PM_{10}	Suspended Particulate Matter (aerodynamic diameter of $\leq$10 microns)
PMI	Point of maximum impact
PMPU	Port Master Plan Update
ppb	Parts per billion
ppm	Parts per million
PRC	Public Resources Code
PRV	Pressure Relief Valve
PSA	Pressure Swing Absorption unit
PSD	Prevention of Significant Deterioration Program
psig	Pounds per square inch gauge
PSM	Process Safety Management

List of Abbreviations and Acronyms

RCRA	Resource Conservation and Recovery Act
RMP	Risk Management Plan
RO	Reverse Osmosis
ROG	Reactive Organic Gases
ROW	Right-of-Way
RPS	Renewable Portfolio Standard
RR	Relative Risk
RTP	Regional Transportation Plan
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SCADA	Supervisory Control and Data Acquisition
SCAG	Southern California Association of Governments
SCE	Southern California Edison
Scf	Standard cubic foot
SCR	Selective Catalytic Reduction
SCS	Sustainable Communities Strategy
SEIR	Subsequent Environmental Impact Report
SELA	Southeast Los Angeles
SF_6	Sulfur Hexafluoride
SLCPs	Short-lived climate pollutants
SMR	Steam/methane reforming technology
SO_2	Sulfur Dioxide
SoCalGas	Southern California Gas Company
SOx	Sulfur Oxides
SPCC	Spill Prevention, Control and Countermeasure Plan
Sq. ft.	Square feet
STC	Sound Transmission Class
SVSL	Soil Vapor Screening Level
SWP	State Water Project
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	Toxic Air Contaminants
TIA	Traffic Impact Analysis
TOD	Transit Oriented Development
TWLTL	Two-Way Left-Turn Lane
UF	Ultrafiltration
ULSD	Ultra-low sulfur diesel
U.S. DOT	United States Department of Transportation
U.S. EPA	United States Environmental Protection Agency
U.S. STB	United States Surface Transportation Board
UST	Underground storage tank
UWMP	Urban Water Management Plan
V/C	Volume to Capacity
VMT	Vehicle Miles Traveled

List of Abbreviations and Acronyms

VOC	Volatile Organic Compounds
WHO	World Health Organization
WRP	Water Reclamation Plant
WSAB	West Santa Ana Branch Transit Corridor
WWECP	Wet Weather Erosion Control Plan
Yds^3	Cubic Yards
ZE	Zero-Emissions
ZV	Zoning Variance
µg/L	Microgram per Liter
$\mu g/m^3$	Microgram Per Cubic Meter

Executive Summary

This Final Subsequent Environmental Impact Report (SEIR) has been prepared to address the environmental impacts associated with the Renewable Fuels Conversion Project (Project). AltAir has been in partnership with Paramount Petroleum since 2013, when the Paramount Refinery (refinery) began the process of converting portions of their oil refinery into renewable fuels production, under the Original Paramount Petroleum AltAir Renewable Fuels Project (Original Renewable Fuels Project). This SEIR is a subsequent document to the Mitigated Negative Declaration (MND) that was prepared for the Original Renewable Fuels Project adopted December 2013 and revised per an Addendum May 2014. In 2018, World Energy purchased AltAir and the refinery, and AltAir became a wholly owned subsidiary of World Energy. Under World Energy, AltAir proposes to complete the conversion of the refinery to manufacturing only renewable fuels at a higher throughput level than the Original Renewable Fuels Project. The Applicant is asking the City of Paramount (City) for an amendment to Conditional Use Permit (CUP) 757 to proceed with construction and the conversion of the refinery.

The Paramount Refinery resides on a 66-acre parcel zoned M-2 (Heavy Manufacturing), APN 6268-005-013, at 14700 Downey Avenue in the City of Paramount. The City of Paramount is bounded by the cities of South Gate, Downey, Bellflower, Long Beach, Compton, and Lynwood. The refinery is bounded by Lakewood Boulevard, Somerset Boulevard, Downey Avenue, and Contreras Street. Refer to Figure ES-1 for the Project location. The refinery includes refinery processing units, renewable fuel processing units, over 1.7 million barrels of product storage; truck loading and unloading facilities; and railcar loading and unloading facilities.

The Project would also utilize the Lakewood Tank Farm, which is located at 2920 East 56th Street, Lakewood, California, approximately 2.8 miles south of the refinery. The Lakewood Tank Farm is zoned by the City of Lakewood as M-1 (Light Manufacturing). No modifications are proposed for the Lakewood Tank Farm.

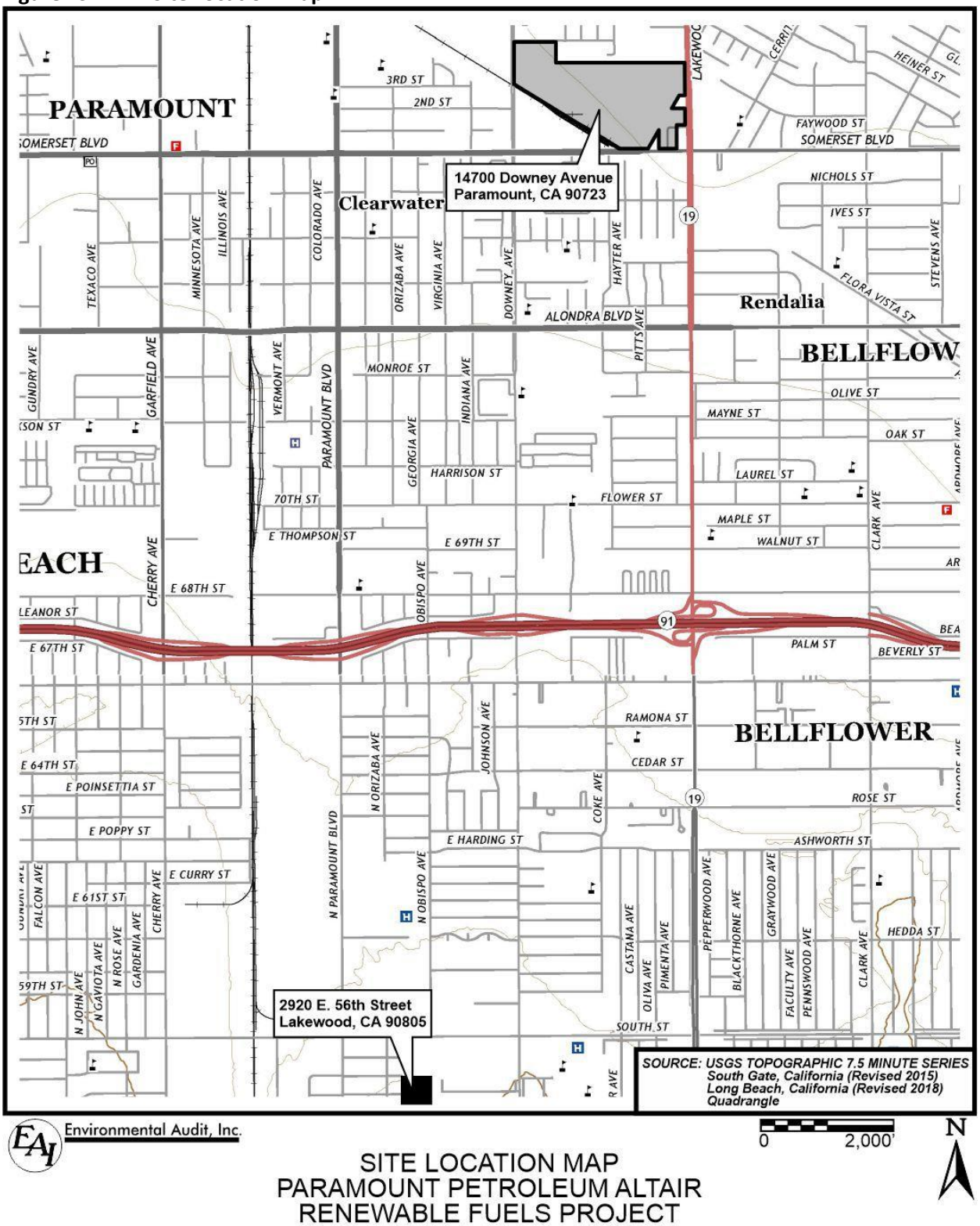
This SEIR is an informational document that is being used by the general public and governmental agencies to review and evaluate the Project. The reader should not rely exclusively on the Executive Summary as the sole basis for judgment of the Project. Specifically, the SEIR should be consulted for information about the environmental effects associated with the Project and potential mitigation measures to address or minimize those effects.

The remainder of the Executive Summary consists of the following sections:

- An introduction, which discusses the regulatory oversight in the preparation of the SEIR and public scoping process, and agency use of the SEIR;
- A brief description of the Project and the Project objectives;
- A discussion of the background environmental setting;
- A brief description of the alternatives evaluated in detail in the SEIR;
- A summary of key impacts of the Project, alternatives, and cumulative impacts; and
- A discussion of the Environmentally Superior Alternative.

Tables ES.4 through ES.6, located at the end of this Executive Summary, summarize the impacts and mitigation measures for the Project. The impacts and mitigation measures for the Project are discussed in detail in Sections 4.1 through 4.11 of this SEIR.

Figure ES-1 Site Location Map



Source: Applicant 2021.

ES.1 Introduction

AltAir filed an application with the City for an amendment to CUP 757 for the Project. The City, as Lead Agency under the California Environmental Quality Act (CEQA), determined that an SEIR would be required as part of the permitting process for the Project. The City's decision to prepare an SEIR is documented in an Initial Study included in Appendix D of this SEIR. The Initial Study, which consists of a checklist of possible effects on a range of environmental topics, found that the Project may have significant environmental impacts related to:

- Aesthetics;
- Air quality;
- Greenhouse gas (GHG) emissions;
- Hazards & risk;
- Hydrology & water quality;
- Land use;
- Noise;
- Transportation;
- Tribal cultural resources; and
- Utilities & service systems.

A detailed analysis associated with an SEIR is needed to further assess potential effects. While these issue areas are the main topics of focus in this SEIR, other issue areas are included in Section 4.12 which provides a discussion of issue areas that were found not to have the potential for significant impacts.

On June 4, 2020, the City, as the Lead Agency, issued a Notice of Preparation (NOP) to inform the general public and agencies that an SEIR would be prepared for the Project and to solicit comments on environmental issues to be addressed in the document. The public scoping comment period closed on July 6, 2020. Comments received in response to the NOP were used to further refine the scope of the analysis and the technical studies in this SEIR. Written comments received in response to the NOP are provided in Appendix D with an indication of specific SEIR sections where topics related to individual comments are addressed.

The City of Paramount is the Lead Agency per CEQA Guidelines Section 15051. In addition, a number of public agencies with discretionary authority over this Project have been identified as Responsible Agencies which may rely on this SEIR, once certified, as part of the deliberative review in deciding whether to approve or disapprove a particular activity. Table 1.3 in Section 1.0, Introduction, provides a listing of these Responsible Agencies and their applicability to the Project. The City, as the CEQA Lead Agency, will act first on the Project before any of the Responsible Agencies act on the Project. City decision-makers (Planning Commission and City Council) will use the SEIR for decision-making regarding the Project. If the Project is approved by all required permitting agencies, the City would be responsible for reviewing and approving all pre-construction compliance plans and ensuring that the Project modifications and operations are conducted in accordance with the CUP conditions.

The City of Paramount issued a Draft SEIR on December 6, 2021. The public comment period on the Draft SEIR ran through February 3, 2022. The City of Paramount held a public comment meeting on January 5, 2022.

The public comments received on the Draft SEIR were reviewed and responded to as required by CEQA and the CEQA Guidelines. This Final SEIR has been prepared, incorporating all of the comments received, written responses to received comments, and the Draft SEIR, along with any changes to the Draft SEIR that result from the comments received.

The Draft SEIR (paper copy form) as well as the Final SEIR will be available to the general public for review at these locations:

- City of Paramount Planning Department
- City of Paramount Public Library

CD and paper copies of the Draft SEIR and the Final SEIR may be obtained (free of charge) at the City of Paramount Planning Department.

The Draft SEIR and the Final SEIR are also available on the City of Paramount's website at: http://www.paramountcity.com/government/planning-department/planning-division/environmental-documents

Revision marks showing the changes from the Draft SEIR are shown in the Final SEIR where changes marks are shown as lines in the margins and added text is shown underlined. Deleted text is not shown due to formatting issues. A full revision version is available by request that shows deletions also.

ES.2 Project Description

This section of the Executive Summary provides a brief description of the Project. A complete description is provided in Section 2.0, Project Description, of this SEIR.

The Project would convert the remainder of the crude oil refinery into a 25,000 barrels per day (BPD) renewable fuels production facility. This conversion would: eliminate the refining of crude oil and support use of renewable jet fuel, diesel, gasoline, and propane.

The Project would make renewable fuels out of a variety of raw materials from technical grade tallows and vegetable oils, to lower grade fats, greases and oils.

The Project modifications would include a new Pretreat Unit, modifications to the existing Renewable Fuels Unit A, a new Renewable Fuels Unit B, a new Hydrogen Generation Unit, a new Hydrogen Recovery Unit, a new Propane Recovery Unit, upgrades to the existing wastewater treatment system, a new Hydrogen Sulfide Recovery Unit, a second Sour Water Stripper, a new flare, modifications to the truck and rail loading/unloading racks, and new pipelines within the refinery. In addition, some existing tanks would be upgraded/repaired and be permitted to handle different products (e.g., non-edible vegetable oils and beef tallow). The Project would also include utilizing two existing 55,000-barrel storage tanks at the Lakewood Tank Farm. The Project would also relocate several buildings on-site and provide temporary buildings for the demolition and construction process.

The Project is expected to require up to 50 railcars per day on two trains and 312 trains per year as well as three barges per month coming into the Port of Los Angeles with associated truck trips to the refinery to supply the Project with feedstock, blend materials and products. Most refinery products (gasoline,

diesel, jet fuel and propane) will be transported from the refinery by truck. Renewable jet fuel can be transferred from the Paramount Refinery via existing pipeline to the Lakewood Tank Farm. If transferred by pipeline, the jet fuel would go to the Lakewood Tank Farm, where conventional jet fuel will also be transferred via pipeline from other suppliers to the Lakewood Tank Farm, where it would be blended with renewable jet fuel. The final blended product would be transferred via pipeline to tankage in Carson, California, where it would be delivered via other pipelines to Los Angeles International Airport.

Construction would be phased over a two- to three-year period. Demolition activities include relocation of loading and unloading racks and buildings, and removal of asphalt production facilities to make room for new equipment installation, including the Hydrogen Generation Unit and new equipment required for Unit B and the support units and utilities. Construction activities would overlap some of the demolition and operational activities. Construction activities would occur both during the daytime and during the nighttime.

Construction of the natural gas pipeline is also expected to occur during the time that the Hydrogen Generation Unit is being constructed. Construction of the natural gas pipeline would also occur both during the daytime and during the nighttime. Refer to Section 2.8 for a full discussion of Project construction activities.

ES.3 Objectives of the Project

Pursuant to Section 15124(b) of the CEQA Guidelines, the description of the Project is to contain "a clearly written statement of objectives" that would aid the lead agency in developing a reasonable range of alternatives to evaluate in the SEIR and would aid decision makers in preparing findings and, if necessary, a statement of overriding considerations. The City is the lead CEQA agency responsible for preparing the SEIR. The City decision-makers will consider the SEIR for certification and the Project for approval.

The Project would complete the conversion of the Paramount Refinery to manufacturing only renewable fuels. The Project objectives as provided by the Applicant are summarized as follows:

ES.3.1 Objectives

1. Reduce dependency on fossil fuels (both foreign and domestic);
2. Provide fuels that meet the requirements of CARB's Low Carbon Fuel Standard (Title 17, CCR Sections 95480-95490), which reduces the carbon intensity of transportation fuels in California;
3. Supply fuels that reduce individual truck and airplane emissions;
4. Convert the Paramount Refinery to a 100 percent renewable fuels production facility by eliminating the refining of crude oil at the refinery, while protecting high quality jobs;
5. Repurpose existing refinery equipment, to the extent feasible, to minimize construction activities;
6. Phase construction activities to increase the production of renewable fuels as soon as possible (i.e., modifications to Unit A would commence immediately after receipt of permits prior to completion of construction of other Project elements);
7. Increase the variety of raw materials that can be used to manufacture renewable fuels from technical grade tallows and vegetable oils, to also include lower grade fats, greases and oils;
8. Continue use of renewable fuel gases to operate the refinery's heaters and boilers;

9. Recycle hydrogen sulfide on-site to minimize the purchase and truck transport of new sulfiding agent to the site; and
10. Produce hydrogen on-site for the production of renewable fuels at the refinery.

ES.4 Background and Historic Operations

Environmental review of several projects at the Paramount Refinery have been conducted pursuant to the California Environmental Quality Act (CEQA). Section 1.0, Introduction, provides information on the history of the CEQA processes related to the refinery.

The initial CEQA and permitting efforts for the Original Renewable Fuels Project were approved by the City under CUP 757 and ZV 401, and new and modified air permits were issued by the South Coast Air Quality Management District (South Coast AQMD). The CEQA review for the previously approved project included a Mitigated Negative Declaration for the Paramount Petroleum AltAir Project adopted December 30, 2013 and revised per an Addendum May 14, 2014. Construction of the initial modifications to the refinery to produce renewable fuels occurred between 2014 and 2015, and the refinery began producing renewable fuels in 2016.

The Original Renewable Fuels Project allowed the refinery to convert up to 3,500 BPD of non-edible vegetable oils and beef tallow into renewable fuels, including aviation (jet), diesel, naphtha (gasoline), and fuel gas. The project involved the modification of certain existing refinery equipment, including the addition of new vessels and reactors, while continuing to operate as a crude oil refinery. The current original renewable fuels operation has been in continuous production since January of 2016.

ES.5 Description of Alternatives

Alternatives to the Project were developed per CEQA Guidelines Section 15126.6. Section 5.0, Environmental Analysis and Comparison of Alternatives, provides a complete description of all alternatives considered, including explanation for rejecting potential alternatives for further analysis. The following were the alternatives evaluated and carried forward to the Environmentally Superior Alternative Discussion.

ES.5.1 No Project Alternative

CEQA requires that the No Project Alternative be evaluated along with its impacts as part of the EIR (CEQA Guidelines Section 15126.6(e) (1)). The No Project Alternative would involve not modifying the refinery and most likely continuing with the smaller, Original Renewable Fuels configuration and returning the refinery to a crude oil refinery, with a range of potential impacts depending on how the refinery is operated. No construction would take place and no natural gas pipeline would be built. Hydrogen would continue to be supplied via the existing hydrogen pipeline.

ES.5.2 Relocated Natural Gas Pipeline Route Alternative

The Project will require large amounts of natural gas in order to produce hydrogen. This will require a connection to a natural gas transmission pipeline. This connection generates significant and unavoidable impacts for hazards as a new natural gas pipeline would be installed through residential neighborhoods. There are a number of natural gas transmission pipelines in Los Angeles, as shown in Figure 5-1. None of them are located in close proximity to the Paramount Refinery. The Project proposes a 3.7-mile natural gas pipeline south from the refinery along Lakewood Blvd. to the natural gas transmission pipeline on Del

Amo Blvd. Alternative natural gas pipeline routes are possible which might reduce the severity of the potential impacts by utilizing shorted routes.

ES.5.3 Pipeline Transportation of Refinery Products Alternative

The Project CEQA analysis assumes that most of the refinery products would be transported by truck and rail. The movement of refinery feedstocks and products by primarily truck and rail as proposed under the Project, instead of by pipeline as was the case historically, causes a substantial increase in air emissions and a significant and unavoidable impact in air quality. Although some material, including jet fuels and diesel, may be transported by pipeline, transferring this material movement to pipeline to the maximum extent feasible (limited by pipeline scheduling of the common carrier pipeline and available inventory capacity at either end) under this alternative could reduce the severity of the air quality impact over the Project.

ES.5.4 Other Alternatives Examined

Other alternatives were examined and eliminated from detailed consideration, including:

- Reduced Refinery Production;
- Reduced Hydrogen Plant;
- Relocated Refinery;
- Relocated Hydrogen Plant; and
- Different Hydrogen Generation Methods.

These are discussed in Section 5.0, Alternatives.

ES.6 Impacts of Project, Alternatives, and Cumulative Development

In the Impact Summary Tables (ES.1 through ES.6) in this Executive Summary and throughout this SEIR, the impacts of the Project and alternatives have been classified using the categories Class I, II, III, and IV as described below:

- ***Class I – Significant and Unavoidable***: Significant unavoidable adverse impacts for which the decisionmaker must adopt a statement of Overriding Considerations: these are significant adverse impacts that cannot be effectively avoided or mitigated. No measures could be taken to avoid or reduce these adverse effects to insignificant or negligible levels. Even after application of feasible mitigation measures, the residual impact would be significant;
- ***Class II – Less Than Significant with Mitigation***: Significant environmental impacts that can be feasibly mitigated or avoided for which the decision maker must adopt Findings and recommended mitigation measures: these impacts are potentially similar in significance to those of Class I but can be reduced or avoided by the implementation of feasible mitigation measures. After application of feasible mitigation measures, the residual impact would not be significant;
- ***Class III – Less than Significant***: Adverse impacts found not to be significant for which the decision maker does not have to adopt Findings under CEQA: these impacts do not meet or exceed the identified thresholds for significance. Generally, no mitigation measures are required for such impacts; and

- ***Class IV – Beneficial***: Impacts beneficial to the environment.

The term "significance" is used in these tables and throughout this SEIR to characterize the magnitude of the projected impact. For the purposes of this SEIR, a significant impact is a substantial or potentially substantial change to resources in the local Project area or the area adjacent to the Project in comparison to the threshold of significance established for the issue area. Within each issue area an analysis of potential impacts compared to the appropriate significance criteria is presented.

The remainder of this section provides a brief discussion of the significant and unavoidable Class I impacts identified for the Project, the alternatives, and cumulative development. A detailed listing of the impacts associated with the Project can be found in the Impact Summary Tables at the end of this section. Sections 4.1 through 4.11 provide a comprehensive discussion of impacts of the Project and discussions of the impacts associated with the cumulative development. Section 5.0, Alternatives, provides an analysis of the impacts of each selected alternative, compares the impacts of each alternative relative to the Project, and identifies the Environmentally Superior Alternative.

ES.6.1 Impacts Associated with the Project

Table ES.1 summarizes the Project impacts and mitigation measures.

Table ES.1 Summary of Project Impacts and Mitigation Measures

Issue Area	Impact	Description	Class*	Mitigation Measures
Aesthetics	A.1	Scenic Vistas	III	
	A.2	Scenic Resources	III	
	A.3	Visual Character/Quality	III	
	A.4	Lighting	II	Light Shielding
Air Quality	**AQ.1**	**Construction** *Both Localized and Regional*	**I**	Construction Management Program
	AQ.2	**Operations** *Regional Only*	**I**	Newer Trucks NOx Reduction Program
	AQ.3	Toxics	III	
	AQ.4	Odors	III	
	AQ.5	Rules and Policies	II	Recordkeeping
Climate Change GHG	GHG.1	GHG Emissions	III	
	GHG.2	Plans	IV	
Hazardous Materials	HM.1	Routine Operations	III	
	HM.2	Upsets	III	
	HM.3	**Pipeline**	**I**	None
	HM.4	Schools	III	
	HM.5	Site Contamination	III	
	HM.6	Airports	III	
	HM.7	Emergency Response	III	
	HM.8	Wildland Fires	III	
Hydrology and Water Quality	WQ.1	Standards	III	
	WQ.2	Groundwater Supplies	III	
	WQ.3	Drainage Patterns	III	
	WQ.4	Pollutants	III	
	WQ.5	Control Plans	III	
Land Use and Planning	LU.1	Create Divisions	III	
	LU.2	Policy Conflict	III	
Noise and Vibration	N.1	Pipeline and Refinery Construction	II	Daytime limits Noise Monitoring and

Table ES.1 Summary of Project Impacts and Mitigation Measures

Issue Area	Impact	Description	Class*	Mitigation Measures
		Daytime construction not significant		Management Plan
	N.2	**Operations: Rail Connection** *Refinery operations not significant*	**I**	Noise Assessment Noise Monitoring and Management Plan Railroad Noise Reduction Measures
	N.3	Vibration	III	
	N.4	Airport Noise Conflicts	III	
Transportation and Circulation	T.1	Policy Conflicts	II	Lakewood Blvd. Restriping
	T.2	VMT	III	
	T.3	Traffic Hazards	II	Traffic Management Plan
	T.4	Emergency Access	III	
Tribal Cultural Resources	TC.1	Tribal Resources	II	Monitoring, Procedures
	TC.2	Tribal Resources Specifics	II	Monitoring, Procedures
	TC.3	Human Remains	II	Procedures
Utilities and Service Systems	US.1	New Resource	III	
	US.2	Water Supplies	III	
	US.3	Wastewater	III	
	US.4	Solid Waste	III	
	US.5	Solid Waste Regs	III	
Other	All	Ag, Bio, Energy, Geo, Mineral, Housing, Public Services, Recreation, Wildfire	III	

* Class I = Significant and Unavoidable; Class II = Less than Significant with Mitigation; Class III = Less than Significant; Class IV = Beneficial.

ES.6.1.1 Significant and Unavoidable Class I Impacts

Significant and unavoidable Class I impacts occur in three issue areas: air quality, hazards, and noise. Each of these is discussed below.

Air Quality

- **Impact AQ.1:** The Project would generate emissions during construction that could exceed the South Coast AQMD thresholds.
    - **Mitigation Measure AQ-1a: Construction Management Program.** The Applicant must develop and maintain a Construction Management Program for the Project that shall incorporate the mitigation measures and Best Management Practices AQ-1a-1 through AQ-1a-12 in Section 4.2.4.1.

Impact AQ.1 is generated due to the large numbers of construction equipment and the intensity of the work effort to modify the refinery. The South Coast AQMD has thresholds associated with pollutant emissions for both regional and local impacts. The Project would exceed both regional and localized thresholds even with mitigation of the cleanest construction equipment available.

- **Impact AQ.2:** Operational emissions could exceed the South Coast AQMD thresholds.
    - **Mitigation Measure AQ-2a: Newer Trucks.** The Applicant shall require that all contracts with trucking companies for the use of heavy-duty trucks (as per DOT gross vehicle weight rating greater than 26,000 lbs) specify the required use of 2017 model year trucks or newer in order to reduce NOx emissions.

- **Mitigation Measure AQ-2b: NOx Reduction Program**. The Applicant shall implement a plan to fund NOx reduction measures in the community both locally and regionally.

Impact AQ.2 is generated due to the large increase in truck and rail transportation required under the Project. Historically, crude oil supplied to the refinery was transported in pipelines, and product produced by the refinery was transported in pipelines. With the Project, the amount of materials transported by truck and rail would substantially increase, thereby exceeding the South Coast AQMD thresholds for regional impacts. The South Coast AQMD thresholds for localized impacts would not be exceeded.

The South Coast AQMD reviewed the administrative draft SEIR prior to issuance and provided comments and corrections to the detailed air quality analysis and modeling.

Hazardous Materials/Risk of Upset

- **Impact HM.3:** The Project transportation of materials by truck, rail, marine barge and pipeline could create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.
    - No additional requirements beyond regulatory requirements detailed in Section 4.4.2.

Under impact HM.3, the installation of a large natural gas pipeline 3.7 miles in length through heavily populated areas would introduce an additional hazard to the area and would be a significant and unavoidable Class I impact. Hazards associated with marine barge spills to the environment would also be a significant and unavoidable Class I impact.

Hazards at the refinery would be slightly less than the hazards presented by the 2011 crude oil refinery and would therefore be less than significant at the refinery.

Noise and Vibration

- **Impact N.2:** Operation: The Project would result in the generation of an increase in ambient noise levels in the vicinity of the Project rail connection.
    - **Mitigation Measure N-2c: Railroad Noise Reduction Measures.** The Applicant shall work with the railroad operator to ensure that there are limits on delivery times.

Impact N.2 is generated due to Project operation activities that produce an increase in daily and annual train traffic along the connection to the rail mainline located about one mile to the west of the refinery site. This increase in rail traffic would result in a substantial noise increase. Noise increases along the rail connection in daily CNEL and average annual CNEL levels would be substantial and potentially significant and unavoidable.

Two significant and unavoidable impacts also are associated with cumulative projects for air quality and transportation. These are discussed in the cumulative section below.

ES.6.1.2 Beneficial Class IV Impacts

The renewable products to be produced by the Project provide a cleaner source of energy by reducing full life-cycle greenhouse gas emissions by over 60 percent relative to fossil fuels. The current Renewable Fuels process produces up to 50 million gallons per year of renewable fuels, equating to a reduction of approximately 365,000 metric tons (MT) carbon dioxide (CO_2). AltAir also supplies jet fuel to United Airlines, which contributes to a reduction in airlines emissions as well. AltAir's fuels meet all regulatory and commercial specifications without requiring engine modification, while securing a renewable alternative energy source. The Project modifications would continue the Original Renewable Fuels Project

started in 2013 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 10 percent by 2020. This contribution to the goals established by California to reduce GHG emissions would be a beneficial impact. Therefore, impacts for GHG.2 would be beneficial (Class IV).

ES.6.1.3 Environmental Justice

Environmental justice impacts are discussed in Section 4.12 of this SEIR. Due to the significant and unavoidable Class I impacts in air quality, hazards, and noise, and the location of high-density minority and poverty areas near the refinery and along the pipeline route, the Project would disproportionately affect minority and low-income populations at levels exceeding the corresponding median for the area in which the Project is located.

ES.6.2 Impacts Associated with the Alternatives

As discussed in Section ES.4, several alternatives to the Project were evaluated that had the potential to reduce significant impacts. The relative impacts of each of these alternatives to the Project are summarized below.

ES.6.2.1 No Project Alternative

The No Project Alternative either increases or reduces impacts relative to the Project depending on how the refinery is operated under the No Project Alternative. The No Project Alternative would not meet the objectives of the Project to further reduce dependency on fossil fuels (both foreign and domestic), to reduce the carbon intensity of transportation fuels in California, and to reduce individual truck and airplane emissions by providing lower emission fuels. As required by CEQA, this alternative has been retained for consideration in the Environmentally Superior Alternative discussion below.

ES.6.2.2 Relocated Natural Gas Pipeline Route Alternative

There are potential issues with the acquiring of permits and rights-of-ways to utilize alternative pipeline routes and these are therefore speculative. The Pacific Electric Right-of-Way (ROW) and freight ROW, for example, has plans for use by LA Metro and its availability for the installation of a natural gas pipeline is speculative. However, since this alternative could reduce the severity of the significant and unavoidable Class I hazards impact from a natural gas pipeline due to shorter routes, it was retained for analysis in the Environmentally Superior Alternative discussion in Section 5.0, Alternatives.

ES.6.2.3 Pipeline Transportation of Refinery Products Alternative

Since this alternative could provide reductions in the severity of impacts due to a reduction in truck and rail traffic, and an associated decrease in air emissions, this alternative has been retained for discussion in the Environmentally Superior Alternative section below.

ES.6.3 Impacts Associated with the Cumulative Development

Section 15130(a)(1) of the CEQA Guidelines (14 CCR, Div. 6, Ch. 3) states that a "cumulative impact consists of an impact which is created as a result of the combination of the project evaluated in the EIR together with other projects causing related impacts." CEQA requires a discussion of the cumulative impacts of a project when the project's incremental effect is "cumulatively considerable" (14 CCR §15130(a)). Section

3.0 of this SEIR provides a list of past, present, and probable future projects that could have cumulative effects with the Project. Table ES.2 provides a summary of the Project's cumulative effects.

Table ES.2 Cumulative Impacts

Issue Area	Proposed Project Cumulative Impacts	Cumulative Impacts Additional Mitigation Measures
Aesthetics	Class III	None
Air Quality	**Class I**	None
Climate Change: GHG	Class III	None
Hazardous Materials	Class II	HM-Cum1: Coordination with LA Metro during construction
Hydrology	Class III	None
Land Use	Class III	None
Noise	**Class I**	None
Transportation	**Class I**	None
Tribal	Class III	None
Utilities	Class III	None
Other	Class III	None

Significant and unavoidable Class I cumulative impacts would be realized in air quality, noise, and transportation.

- ***Air quality*** cumulatively significant and unavoidable Class I impacts could occur because other projects could generate emissions that could contribute to the Projects significant and unavoidable impacts and, by definition, a significant and unavoidable Class I impact in air quality also produces potentially significant and unavoidable Class I cumulative impacts.
- ***Noise*** cumulative significant and unavoidable Class I impacts would occur due to the West Santa Ana Branch Transit Corridor (WSAB) project's production of significant and unavoidable impacts to areas near the refinery. For residences located on the western end of the rail connection, the mitigation sound walls installed by the WSAB project would reduce the noise levels from the Project. However, other areas would not be reduced as much and would therefore remain cumulatively significant and unavoidable.
- ***Transportation*** cumulative impacts would occur because the Port of Los Angeles identified significant and unavoidable Class I transportation impacts along the Highway 710 corridor due to Port projects. This Project would contribute to those significant and unavoidable Class I impacts by adding trucks to and from the Port.

ES.7 Environmentally Superior Alternative

Section 5.0, Alternatives, provides an analysis of the impacts of each selected alternative, compares the impacts of each alternative to the Project, and identifies the Environmentally Superior Alternative. Table ES.3 provides a relative comparison of the Class I, Class II, and Class III impacts of each alternative to the Project by issue area and impact.

Table ES.3 Alternatives Comparison

Issue Area	Proposed Project	No Project	Relocated Natural Gas Pipeline Route	Pipeline Transportation of Refinery Products
Aesthetics	Class II	Class III	Class II	Class II
Air Quality	**Class I**	**Class I** or III	**Class I**	**Class I** ↓
Climate Change and GHG	Class III and IV	Class III	Class III and IV	Class III and IV
Hazardous Materials	**Class I**	**Class I**	**Class I** ↓	**Class I**
Hydrology and Water Quality	Class III	Class III	Class III	Class III
Land Use	Class III	Class III	Class III	Class III
Noise and Vibration	**Class I**	Class III	**Class I**	**Class I**
Transportation	Class II	Class III	Class II	Class II ↓
Tribal Cultural Resources	Class II	Class III	Class II	Class II
Utilities and Service Systems	Class III	Class III	Class III	Class III
Other	Class III	Class III	Class III	Class III

Notes: ↑ = increase in severity, ↓ = decrease in severity

The No Project Alternative would most likely involve the continuation of the Original Renewable Fuels Project at the Paramount Refinery at the level of 3,500 BPD and the return to a crude oil refinery with a potential range of impacts depending on the level of crude oil production. The operational air quality significant and unavoidable impacts would be eliminated if the refinery operates similar to 2011 levels or more recent levels as fewer trips would be required to transport the lower volumes of renewable fuels, or, under the crude oil refinery scenario, more feedstocks and products could be transported by pipeline, thereby reducing air emissions. If the refinery were to operate at higher levels, the air emissions could increase under the No Project Alternative scenario.

The No Project Alternative would eliminate the construction-related air quality impacts associated with the Project's refinery conversion.

The hazards impacts would also be reduced as the natural gas pipeline would not be installed. However, the existing hydrogen pipeline being used to supply hydrogen to the refinery currently may then operate on a long-term basis as the hydrogen generation unit proposed as part of the Project would no longer be installed. This long-term operation of the hydrogen pipeline would be a potentially significant and unavoidable Class I impact. In addition, the operation of the refinery as a crude oil refinery would not realize the beneficial impact associated with the increased production of renewable transportation fuels.

Other issues areas that were identified as less than significant with mitigation (aesthetics, transportation, and tribal cultural resources) would be less than significant. In addition, impacts that were identified as less than significant (climate change, hydrology, land use, utilities, and other issue areas) would continue to be less than significant.

Since the impacts of the No Project Alternative could either increase or reduce impacts of the Project depending on how the refinery is operated, and under the No Project Alternative the beneficial impact associated with GHG emissions would be eliminated, it is not selected as the Environmentally Superior Alternative. In addition, the No Project Alternative would not achieve any of the Project objectives.

The Pipeline Transportation of Refinery Products alternative would require the transportation of products by pipeline to the maximum extent feasible (limited by pipeline scheduling of the common carrier pipeline and available inventory capacity at either end), and would reduce the severity of the impacts of some issue areas, specifically the significant and unavoidable Class I impact associated with air quality during

operations due to the reduction in truck use. In addition, it would reduce the amount of truck traffic coming into and out of the refinery, which was identified as a Class II impact, thereby reducing the severity of the transportation impacts, and would nominally reduce the noise impacts (also Class II) as fewer truck trips would reduce noise levels. The Applicant has indicated that the movement of some products by pipeline would occur as part of the operations, yet the CEQA analysis assumes that most transportation would be by truck in order to be conservative. Therefore, increased transportation by pipeline over the assumptions in the CEQA analysis would be feasible as they already have access to some of these pipeline resources and historically have moved refinery products via these pipelines. At this time, however, it is difficult to quantify the exact extent to which products could be transported by pipeline instead of truck as the markets for renewable fuels are relatively new. As this alternative could provide a reduction in the severity of a significant and unavoidable Class I impact as well as reduce the severity of some Class II impacts, it has been selected as the Environmentally Superior Alternative.

Table ES.4 Proposed Project Class I Impacts

Impacts That Are Significant and Unavoidable Levels

(Impacts that must be addressed in a "statement of overriding consideration" if the Project is approved in accordance with Sections 15091 and 15093 of the State CEQA Guidelines)

Impact #	Description of Impact	Phase	Mitigation Measures
AIR QUALITY (Section 4.2)			
AQ.1	The Project would generate emissions during construction that could exceed the South Coast AQMD thresholds.	Construction	AQ-1a: Construction Management Program
AQ.2	Operational emissions could exceed the South Coast AQMD thresholds.	Operation	AQ-2a: Newer Trucks AQ-2b: NOx Reduction Program
HAZARDOUS MATERIALS AND RISK OF UPSET (Section 4.4)			
HM.3	The Project transportation of materials by truck, rail, marine barge and pipeline could create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.	Operation	No additional requirements beyond regulatory requirements detailed in Section 4.4.2.
NOISE AND VIBRATION (Section 4.7)			
N.2	Operation: The Project would result in the generation of an increase in ambient noise levels in the vicinity of the Project.	Operation	N-2a: Noise Assessment N-2b: Noise Monitoring and Management Plan N-2c: Railroad Noise Reduction Measures

Table ES.5 Proposed Project Class II Impacts

Impacts That Can Be Mitigated to Less Than Significant Levels

(Impacts that must be addressed in Findings that the mitigation measures would reduce the level of impact to insignificant in accordance with Sections 15091 of the State CEQA Guidelines)

Impact #	Description of Impact	Phase	Mitigation Measure
AESTHETICS AND VISUAL RESOURCES (Section 4.1)			
A.4	The Project would not create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.	Construction or Operation	A-4a: Light Shielding
AIR QUALITY (Section 4.2)			
AQ.5	The Project would not diminish an existing air quality rule or future compliance requirement resulting in a significant increase in air pollutant(s).	Operation	AQ-5a: Recordkeeping
NOISE AND VIBRATION (Section 4.7)			
N.1	Construction: The Project would result in the generation of a substantial temporary increase in ambient noise levels in the vicinity of the Project.	Construction	N-1a: Daytime Limits N-1b: Noise Monitoring and Management Plan
TRANSPORTATION AND CIRCULATION (Section 4.8)			
T.1	Project operations would not conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities.	Operation	T-1a: Lakewood Blvd. Restriping
T.3	The Project could substantially increase hazards due to a design feature or incompatible use.	Construction or Operation	T-3a: Traffic Management Plan
TRIBAL CULTURAL RESOURCES (Section 4.9)			
TC.1	The Project would not cause a substantial adverse change in the significance of a tribal cultural resource that is listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in PRC Section 5020.1(k), or one that is determined by the lead agency to be significant pursuant to criteria set forth in subdivision (c) of PRC Section 5024.1.	Construction	TC-1a: Retain a Native American Monitor/Consultant TC-1b: Unanticipated Discovery of Tribal Cultural or Archaeological Resources Procedures
TC.2	The Project would not cause a substantial adverse change in the significance of a historical or archaeological resource as defined in §15064.5.	Construction	Impact TC.2 requires the implementation of Mitigation Measures TC-1a and TC-1b above.

Table ES.5 Proposed Project Class II Impacts

Impacts That Can Be Mitigated to Less Than Significant Levels

(Impacts that must be addressed in Findings that the mitigation measures would reduce the level of impact to insignificant in accordance with Sections 15091 of the State CEQA Guidelines)

Impact #	Description of Impact	Phase	Mitigation Measure
TC.3	The Project would not disturb any human remains, including those interred outside of dedicated cemeteries.	Construction	TC-3a: Unanticipated Discovery of Human Remains Procedures

Table ES.6 Proposed Project Class III Impacts

Less Than Significant Impacts

Impact #	Description of Impact	Phase	Mitigation Measures
AESTHETICS AND VISUAL RESOURCES (Section 4.1)			
A.1	The Project would not have a substantial adverse effect on a scenic vista.	Construction or Operation	None required.
A.2	The Project would not substantially damage scenic resources including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway.	Construction or Operation	None required.
A.3	The Project would not substantially degrade the existing visual character or quality of public views of the site and its surroundings. (Public views are those that are experienced from publicly accessible vantage points).	Construction or Operation	None required.
AIR QUALITY (Section 4.2)			
AQ.3	Operational toxic emissions could exceed the South Coast AQMD thresholds.	Operation	None required.
AQ.4	Operational emissions could generate odors.	Operation	None required.
CLIMATE CHANGE AND GREENHOUSE GASES (Section 4.3)			
GHG.1	The Project would not generate greenhouse gas emissions, either directly or indirectly, that would have a significant impact on the environment.	Construction or Operation	None required.
GHG.2	The Project would not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.	Construction or Operation	None required.
HAZARDOUS MATERIALS AND RISK OF UPSET (Section 4.4)			
HM.1	The Project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.	Construction or Operation	None required.
HM.2	The Project refinery would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.	Construction or Operation	None required.

Table ES.6 Proposed Project Class III Impacts

Less Than Significant Impacts

Impact #	Description of Impact	Phase	Mitigation Measures
HM.4	The Project would emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.	Operation	None required.
HM.5	The Project would not create a significant hazard to the public or the environment by being located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5.	Construction	None required.
HM.6	The Project would not be 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; the Project would not result in a safety hazard or excessive noise for people residing or working in the Project area.	Construction or Operation	None required.
HM.7	The Project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.	Construction or Operation	None required.
HM.8	The Project would not expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires.	Construction or Operation	None required.
HYDROLOGY AND WATER QUALITY (Section 4.5)			
WQ.1	The Project would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality.	Construction or Operation	None required.
WQ.2	The Project would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the Project may impede sustainable groundwater management of the Basin.	Construction or Operation	None required.
WQ.3	The Project would not substantially alter the existing drainage pattern of the site in a manner which would: result in substantial erosion; substantially increase	Construction or Operation	None required.

Table ES.6 Proposed Project Class III Impacts

Less Than Significant Impacts

Impact #	Description of Impact	Phase	Mitigation Measures
	surface runoff which would result in flooding; create runoff which would exceed the capacity of existing stormwater drainage systems or provide polluted runoff; or impede or redirect flood flows.		
WQ.4	The Project would not risk release of pollutants due to Project inundation in flood hazard, tsunami, or seiche zones.	Construction or Operation	None required.
WQ.5	The Project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.	Construction or Operation	None required.
LAND USE AND PLANNING (Section 4.6)			
LU.1	The Project would not physically divide an established community.	Construction or Operation	None required.
LU.2	The Project would not conflict with a land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect	Construction or Operation	No additional requirements beyond mitigation measures N-1a, N-1b, N-2a, N-2b, and N-2c detailed in Section 4.7
NOISE AND VIBRATION (Section 4.7)			
N.3	The Project could result in the generation of excessive ground-borne vibration or ground-borne noise levels.	Construction or Operation	None required.
N.4	The Project would not result in excessive noise for people residing or working within two miles of a public, or public use, airport.	Construction or Operation	None required.
TRANSPORTATION AND CIRCULATION (Section 4.8)			
T.2	Project operations would increase vehicle miles traveled (VMT).	Construction or Operation	None required.
T.4	The Project would not result in inadequate emergency access.	Construction or Operation	None required.

Table ES.6 Proposed Project Class III Impacts

Less Than Significant Impacts

Impact #	Description of Impact	Phase	Mitigation Measures
UTILITIES AND SERVICE SYSTEMS (Section 4.10)			
US.1	The Project would result in the construction of new or expanded water, wastewater treatment, electric power, and natural gas facilities, the construction of which could cause significant environmental effects. The Project would not result in the construction of expanded stormwater drainage or telecommunications facilities.	Construction or Operation	None required.
US.2	The Project would have sufficient water supplies available to serve the Project and reasonably foreseeable future development during normal, dry, and multiple dry years.	Construction or Operation	None required.
US.3	The Project would 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.	Operation	None required.
US.4	The Project would not 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.	Construction or Operation	None required.
US.5	The Project would comply with federal, state, and local management and reduction statues and regulations related to solid waste.	Construction or Operation	None required.

1.0 Introduction

This Final Subsequent Environmental Impact Report (SEIR) has been prepared to address the environmental impacts associated with the Renewable Fuels Conversion Project (Project). AltAir has been in partnership with Paramount Petroleum since 2013, when the Paramount Refinery (refinery) began the process of converting portions of their oil refinery into renewable fuels production, under the Original Paramount Petroleum AltAir Renewable Fuels Project (Original Renewable Fuels Project). This SEIR is a subsequent document to the Mitigated Negative Declaration (MND) that was prepared for the Original Renewable Fuels Project adopted December 2013 and revised per an Addendum May 2014. In 2018, World Energy purchased AltAir and the refinery, and AltAir became a wholly owned subsidiary of World Energy. Under World Energy, AltAir proposes to complete the conversion of the refinery to manufacturing only renewable fuels at a higher throughput level than the Original Renewable Fuels Project.

Existing refinery equipment would be used to the extent possible and new equipment would be brought in as needed. Some existing refinery equipment would be eliminated in areas where new equipment would be installed. Several upgrades are being included that would improve efficiencies and reduce emissions throughout the operation. Refer to Figure 1-1 for the Project location.

The Applicant is asking the City of Paramount (City) for an amendment to Conditional Use Permit (CUP) 757 to proceed with construction and the conversion of the refinery. This section is organized as follows:

1.1 Overview of the Project
1.2 The Environmental Impact Report Process
1.3 SEIR Contents

1.1 Overview of the Project

The Paramount Refinery resides on a 66-acre parcel at 14700 Downey Avenue and includes refinery processing units, renewable fuel processing units, over 1.7 million barrels of product storage; truck loading and unloading facilities; and railcar loading and unloading facilities. The current renewable fuels operation has been in continuous production since January 2016.

The Original Renewable Fuels Project allowed the refinery to convert up to 3,500 barrels per day (BPD) of non-edible vegetable oils and beef tallow into renewable fuels, including aviation (jet), diesel, naphtha (gasoline), and fuel gas. AltAir is now proposing to revise the Original Renewable Fuels Project to include a more comprehensive conversion of the refinery. The Project would convert the remainder of the 50,000 BPD crude oil refinery into a 25,000 BPD renewable fuels production facility. This conversion would: eliminate the refining of crude oil; support use of renewable jet fuel, diesel, gasoline, and propane; and reduce mobile fuel emissions.

The Project modifications would include a new Pretreat Unit, modifications to the existing Renewables Fuels Unit A, a new Renewable Fuels Unit B, a new Hydrogen Generation Unit, a new Hydrogen Recovery Unit, a new Propane Recovery Unit, upgrades to the existing wastewater treatment system, a new Hydrogen Sulfide Recovery Unit, a second Sour Water Stripper, a new flare, modifications to the truck and rail loading/unloading racks, and new pipelines within the refinery. In addition, some existing tanks would be upgraded/repaired and be permitted to handle different products (e.g., non-edible vegetable oils and beef tallow). The Project would also include utilizing two existing 55,000-barrel storage tanks at the Lakewood Tank Farm.

Construction would be phased, with the modifications to Unit A to be completed immediately following receipt of South Coast Air Quality Management District (South Coast AQMD) permits to construct. Unit A would be onstream while demolition activities are being completed to allow space for new construction. Demolition activities would include relocation of loading and unloading racks and buildings, and removal of asphalt facilities to make room for new equipment installation, including the pretreatment unit, Hydrogen Generation Unit, and new equipment required for Unit B and the support units and utilities. Construction activities would overlap some of the demolition activities and then continue through completion. Full construction and commissioning activities would take place over a two- to three-year timeframe (refer to Figure 2-8). The demolition activities are expected to occur over a 10-month period and would overlap an estimated 19 months of Unit B construction activities.

The refinery accounts for slightly more than half of the total acreage within the Somerset Ranch Area of the 1990 Paramount General Plan. The Somerset Ranch Area of Paramount is designated as "Mixed Use" and includes a mix of residential, commercial, industrial, and public uses. The refinery is zoned M-2 (Heavy Manufacturing). The Lakewood Tank Farm is zoned by the City of Lakewood as M-1 (Light Manufacturing).

Land uses surrounding the Project site include schools, residential areas, a mobile home park, apartments, commercial buildings, and transportation corridors. The land use pattern varies widely in the Paramount area on a parcel-by-parcel basis and reflects an area in transition from a variety of older land uses (that include the Paramount Refinery) to newer development (including apartment houses and commercial land uses, e.g., grocery stores and a Walmart). Land uses surrounding the Lakewood Tank Farm include commercial and residential land uses, as well as Davenport Park. A summary of Project planning information is presented in Table 1.1 below.

1.2 Historical Operations of the Refinery

The Paramount Refinery has been in operation since the 1930s. The refinery historically has produced a variety of products including gasoline, jet fuel, diesel fuel, petroleum, gases, asphalt, and liquid sulfur from crude oil. Crude oil is a mixture of hydrocarbon compounds and relatively small amounts of other materials, such as oxygen, nitrogen, sulfur, salt, and water. Petroleum refining is a manufacturing process that produces physical and chemical changes to crude oil as a means to remove most of the non-hydrocarbon substances, to break-down the crude oil into its various components, and to blend the resulting byproducts into various products. The refinery historically has had the ability to produce about 7,500 BPD of reformulated gasoline and 8,500 BPD of ultra-low sulfur diesel (ULSD). Except for those periods of maintenance or repair activity, or reduced activity due to market conditions, the refinery operates 24 hours per day, 365 days per year. The refinery did not have a coker or catalytic cracking unit and so was considered a less complex refinery.

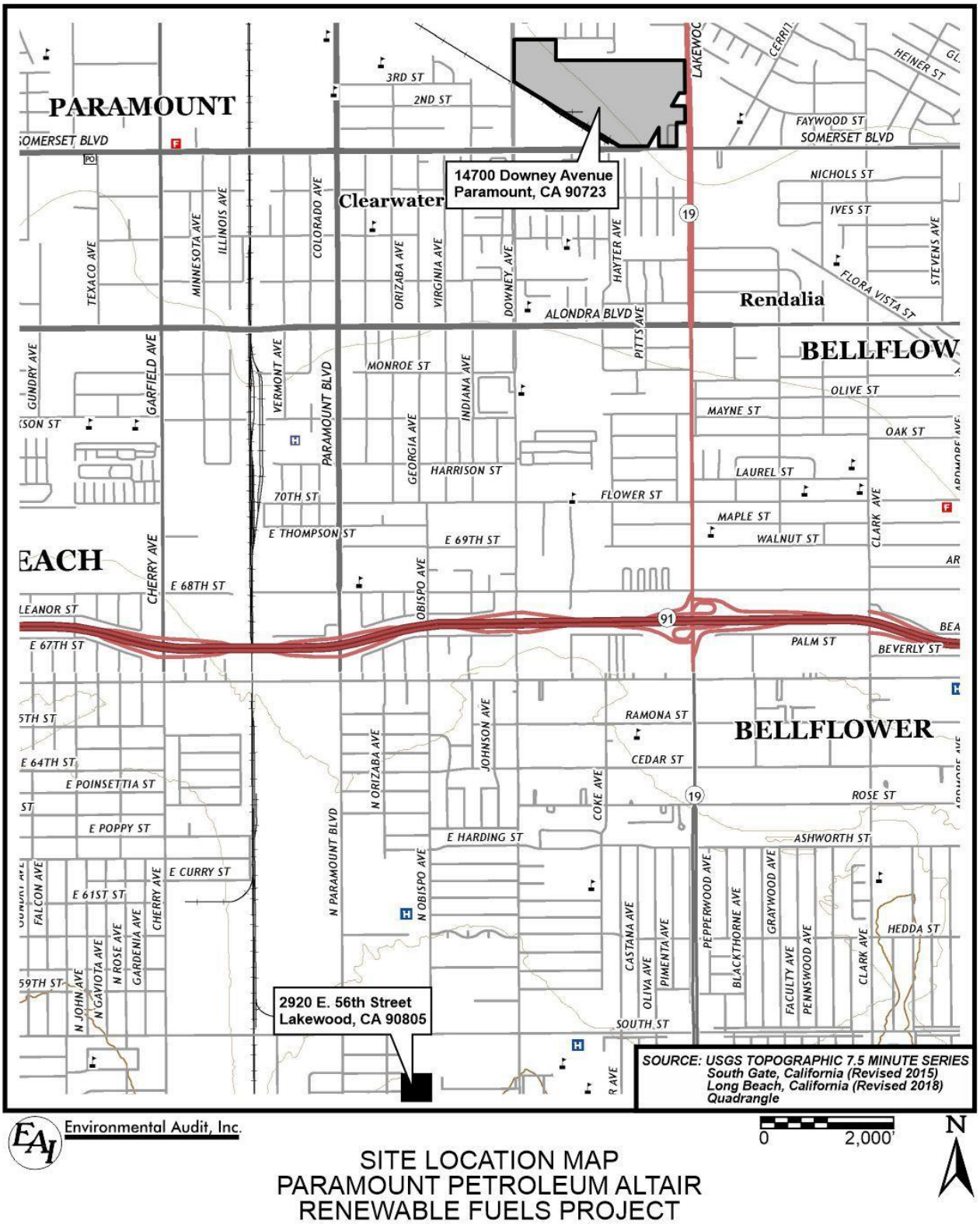
The refinery historically received most of its crude oil (approximately 96 percent) via underground pipelines. The remainder was generally received using truck or rail transport. Most of its distilled products (gasoline, full range naphtha, military fuels, diesel products, and gas oil) were shipped out via underground pipelines or in trucks. The refinery historically transports all of its asphalt products via trucks or rail.

The original rated capacity of the refinery was 20,000 BPD of crude oil. Between 1970 and 1976, a second crude unit, with a rated capacity of 30,000 BPD, as well as other hydroprocessing units were installed which increased the refining capability to produce light petroleum products such as gasoline and diesel fuel. Figure 1-2 shows the historical crude oil processing.

Table 1.1 Project Planning Information

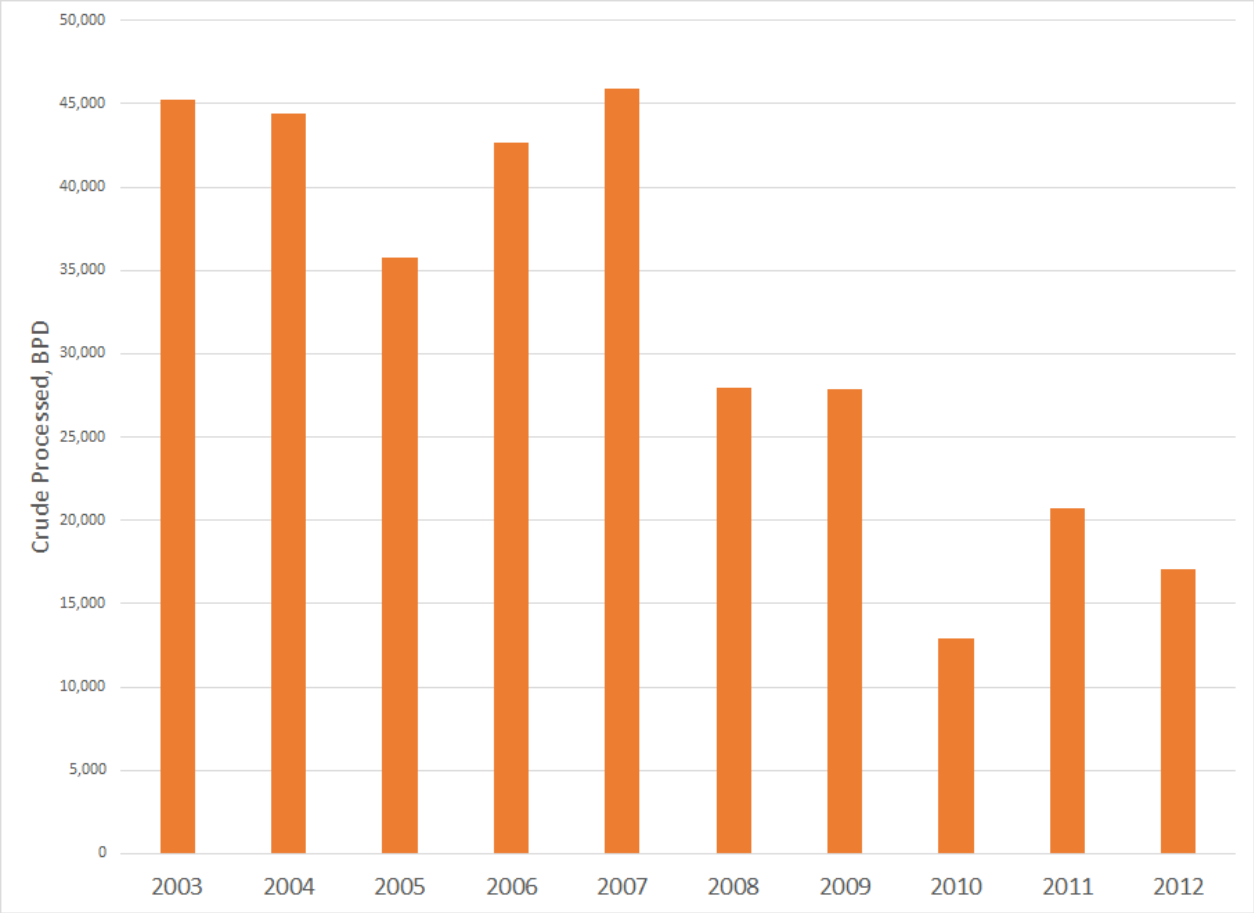
Project Information	
Project Title	AltAir Renewable Fuels Conversion Project
Case Number	CUP 757 Amendment
State Clearinghouse Number	SCH# 2020069013
Lead Agency	City of Paramount, Planning Department 16400 Colorado Avenue, Paramount, CA 90723
Contact Person	John Carver, Planning Director City of Paramount, Planning Department 16400 Colorado Avenue, Paramount, CA 90723 (562) 220-2048 JCarver@paramountcity.com http://www.paramountcity.com/government/planning-department/planning-division/environmental-documents
Applicant	Kathryn Gleeson, Director Environmental Services AltAir Paramount, LLC. (AltAir) 14700 Downey Avenue, Paramount California 90723 (562) 748-4613
General Plan Designation and Zoning	General Plan Designation: Somerset Ranch Area Plan Zoning: M-2 – Heavy Manufacturing (Paramount Refinery) M-1 – Light Manufacturing (Lakewood Tank Farm)
Site Size	Approximately 66 square acres
Project Location	14700 Downey Avenue, Paramount, California 90723
Assessor's Parcel Numbers	APN 6268-005-013
Latitude and Longitude	Longitude 33, 53, 58; Latitude 118, 08, 51

Figure 1-1 Site Location Map



Source: Applicant 2021.

Figure 1-2 Historical Volumes of Crude Oil Processed



The refinery ownership has changed multiple times over the years, as follows:

- Ajax Oil Company: 1930s–1937;
- Krieger Oil Co: 1937–1940s;
- Douglas Oil Co: 1940s–1961;
- Continental Oil Company (Conoco): 1961–1981;
- EI du Pont de Nemours & Co: September 1981–1983;
- Pacific Oasis, Inc: January 1983–1984;
- Paramount Petroleum Corp: 1984–2006;
- Alon USA Energy Inc: 2006–2017;
- Delek US: 2017–2018; and
- World Energy: 2018–present.

1.3 The Environmental Review Process

1.3.1 Historical Environmental Review for the Paramount Refinery

Environmental review of several projects at the Paramount Refinery have been conducted pursuant to the California Environmental Quality Act (CEQA). Table 1.2 provides a list of the historical CEQA documents prepared for the Paramount Refinery.

Table 1.2 Historical CEQA Documents for the Paramount Refinery

Date of Project Approval	Project Name and Type of CEQA Document Prepared	Lead Agency
December 20, 2001	Paramount Petroleum Refinery Cogeneration Plant Project – Negative Declaration	South Coast AQMD
April 9, 2004	Paramount Petroleum Refinery Clean Fuels Project – Environmental Impact Report (EIR)	South Coast AQMD
February 13, 2007	Paramount Petroleum Refinery NOx Reduction Project – Negative Declaration	South Coast AQMD
September 14, 2007	Paramount Petroleum Refinery Clean Fuels Project – Addendum	South Coast AQMD
July 25, 2008	Paramount Petroleum Refinery Clean Fuels Project – SEIR	South Coast AQMD
July 9, 2013	Conditional Use Permit (CUP) 751 Paramount Petroleum Asphalt and Crude Terminal – MND	City of Paramount
December 30, 2013	CUP 757 and Zoning Variance 401 Paramount Petroleum AltAir Project – MND	City of Paramount
May 14, 2014	CUP 757 and Zoning Variance 401 Paramount Petroleum AltAir Project – Addendum	City of Paramount
November 10, 2014	CUP 757 and Zoning Variance 401 Paramount Petroleum AltAir Project – Addendum	City of Paramount
September 13, 2016	CUP 751 Paramount Petroleum Asphalt and Crude Terminal – Addendum	City of Paramount
June 24, 2020	AltAir Paramount, LLC. Terminaling Operation Project – Notice of Determination	South Coast AQMD

1.3.2 Purpose and Intended Uses of the SEIR

The City as Lead Agency under the California Environmental Quality Act (CEQA) determined that the Project required the preparation of an SEIR since the Project could have significant environmental effects. CEQA Public Resources Code Sections 21000 et seq., requires that all state and local governmental agencies consider the environmental consequences of projects over which they have discretionary authority prior to taking action on those projects. This Final SEIR has been prepared to satisfy CEQA requirements pursuant to Public Resources Code Sections 21000-21989 and the CEQA Guidelines, Title 14 of the California Code of Regulations, Division 6, Chapter 3, Section 15000 et seq.

CEQA requires preparation of an EIR for any project that a lead agency determines may have a significant impact on the environment. EIRs are informational documents "which will inform public agency decision-makers and the public generally of the significant environmental effect of a project, identify possible ways to minimize the significant effects, and describe reasonable alternatives to the project" (Guidelines Sec. 15121).

Once a project has undergone CEQA review, no further environmental review may be required unless substantial changes are proposed in the project that will require major revisions of the prior CEQA document; or substantial changes occur in circumstances under which the project is being undertaken that

will require major revisions in prior CEQA document; or new information of substantial importance to the project that was not known and could not have been known when the EIR was certified as complete becomes available. (Pub Res C §21166; Guidelines §15162.)

When a project has already undergone CEQA review and changes in the project necessitate development of a subsequent CEQA document, the later CEQA analysis should be limited to effects that were not examined in the prior CEQA analysis (Guidelines Sec. 15152[d]).

"*The purpose behind the requirement of a subsequent or supplemental EIR or negative declaration is to explore environmental impacts not considered in the original environmental document. … The event of a change in a project is not an occasion to revisit environmental concerns laid to rest in the original analysis. Only changed circumstances … are at issue*. (*San Mateo Gardens* (2016) 1 Cal.5th 937, 949-950.)

An SEIR is a public informational document designed to provide decision-makers and the public with an analysis of the environmental effects of a proposed project, to indicate possible ways to reduce or avoid significant effects, and to describe reasonable alternatives to a project. An SEIR must also disclose significant environmental impacts that cannot be avoided, growth-inducing impacts, effects not found to be significant, and significant cumulative impacts of past, present, and reasonably foreseeable probable future projects, as well as mitigation measures, alternatives to the Project, and areas of controversy.

As an "informational document" (see Section 15121(a) of the CEQA Guidelines) this SEIR is intended to inform the City, other public agencies with discretionary authority over aspects of the Project, the general public, the local community and other organizations, entities and interested persons of the Project's scope, significant environmental effects, feasible measures to avoid or minimize the significant effects, and a reasonable range of feasible alternatives to the Project that would avoid or substantially lessen the significant effects. The environmentally superior alternative is selected as required by CEQA. The State CEQA Guidelines, Section 15126.6 (e)(2), state that if the environmentally superior alternative is the No Project Alternative, then an environmentally superior alternative must be identified from among the other alternatives. While identification and disclosure of the environmentally superior alternative is required by CEQA, the Lead Agency is not required to approve the environmentally superior alternative.

Before any action may be taken on the Project, the City of Paramount, as Lead Agency under CEQA, must certify that it has reviewed and considered the information in the Final SEIR (consisting of the Draft SEIR, comments submitted during the Draft SEIR public review period and responses to all comments) that it has exercised its independent judgment and analysis, and that the Final SEIR has been completed in compliance with the requirements of CEQA. Certification of the Final SEIR by the Lead Agency does not constitute approval or denial the Project.

1.3.3 Agency Use of the SEIR

The City of Paramount is the Lead Agency per CEQA Guidelines Section 15051. In addition, a number of public agencies with discretionary authority over this Project have been identified as Responsible Agencies which may rely on this SEIR, once certified, as part of the deliberative review in deciding whether to approve or disapprove a particular activity. Table 1.3 provides a listing of these Responsible Agencies and their applicability to the Project. The City, as the CEQA Lead Agency, will act first on the Project before any of the Responsible Agencies act on the Project. City decision-makers (Planning Commission and City Council) will use the SEIR for decision-making regarding the Project. If the Project is approved by all required permitting agencies, the City would be responsible for reviewing and approving all pre-construction compliance plans and ensuring that the Project modifications and operations are conducted in accordance with the permit conditions.

Table 1.3 Federal, State and Local Agency Discretionary Actions and Permit Actions Needed for the Project

Agency Permit or Approval	Requirement	Applicability to Project
Federal		
U.S. EPA	Title V of the 1990 Clean Air Act	Modifications to the refinery's Title V permit are required.
State		
Caltrans	Caltrans Transportation Permit	Required for the transport of oversized equipment on California highways
	Right-of-Way	Southern California Gas Company (SoCalGas) will obtain permits for natural gas pipeline.
Regional Water Quality Control Board	Stormwater Pollution Prevention Permit Construction and Future Operation	Construction activities will require a Notice of Intent and preparation of a Stormwater Pollution Prevention Plan (SWPPP) under the statewide general stormwater National Pollutant Discharge Elimination System (NPDES) permit. Project is removing and replacing existing Stormwater drains. The site specific NPDES permit will need to be updated and a new SWPPP prepared.
	Above Ground Petroleum Storage Tanks	New Spill Prevention Control & Countermeasures (SPCC) plan will be required following tankage changes.
	Groundwater Remediation	A portion of the remediation wells will need to be relocated due to the construction activities. Approval of a work plan will be required.
CalOSHA	Construction Permits	CalOSHA Sections 341: Permit Requirements. To conduct the demolition or dismantling of any building or structure more than 36 feet in height, the Project Administrator shall hold a Project Permit and all other employers directly engaging in demolition or dismantling activity shall hold an Annual Permit.
Local		
South Coast Air Quality Management District (South Coast AQMD)		Applications are required to modify air emission sources.
	Permits to Construct and Permits to Operate	Applications are required to install new equipment, modify or remove existing equipment, or add new, modify or remove permit conditions pursuant to Rule 201 - Permit to Construct, Rule 203 - Permit to Operate, Regulation XX - Regional Clean Air Incentives Market (RECLAIM) and Regulation XXX - Title V Permits (which implements U.S. EPA's facility permit program under Title V of the 1990 Clean Air Act). Regulation XVII - Prevention of Significant Deterioration (PSD)
	Filing/Registration for Specific Emissions Sources	Rule 222: Filing Requirements for Specific Sources Not Requiring a Written Permit Pursuant to Regulation II, requires filing/registration for

Table 1.3 Federal, State and Local Agency Discretionary Actions and Permit Actions Needed for the Project

Agency Permit or Approval	Requirement	Applicability to Project
		certain specified equipment or sources that would otherwise be exempt from permit requirements.
	Soil Contamination Mitigation Plan	Rule 1166: VOC Emissions from Decontamination of Soil, requires a soil contamination mitigation plan to control VOC emissions during soil remediation activities.
	Demolition involving Asbestos	Rule 1403 – Asbestos Emissions from Demolition/Renovation Activities, requires a survey and plan for removal of asbestos containing materials during demolition or renovation activities.
City of Paramount	California Environmental Quality Act (CEQA) Review	The City is the Lead Agency for preparation of the environmental document (Public Resources Code § 21067).
	Conditional Use Permit	Required for modifications to the refinery.
	Water Supply Assessment (Water Code Sections 10910 through 10915)	Required because the Project is a water demand project as identified under CEQA Section 15155.
	Zone Variance	Project components would exceed height limit of 55 feet in heavy industrial zones.
	Building Permits	Required for foundations for new equipment, new construction and electrical work
	Right-of-Way	Required for new pipelines. SoCalGas will obtain permits for natural gas pipeline.
Los Angeles County Sanitation Districts (LACSD)	Industrial wastewater discharge permit, joint with Los Angeles County Public Works	Industrial wastewater permit requires modification due to increased wastewater discharge.
Los Angeles County Department of Public Works (LADPW)	Industrial wastewater discharge permit, joint with Los Angeles County Sanitation Districts	Industrial wastewater permit requires modification due to increased wastewater discharge.
	Underground storage tanks (UST)	Permits will be modified for some wastewater sumps that will be removed. Permits are required for any UST that is installed.
Los Angeles County Fire/Hazmat Division	CUPA permit for hazardous materials inventory, aboveground storage tanks, underground storage tanks, risk management, contingency planning	To be updated for Project modifications
Metropolitan Transportation Authority and Union Pacific Railroad	Modified railroad tracks.	Approval required to modify the rail within and adjacent to the refinery.
Local Jurisdictions (potentially Caltrans and cities of Bellflower, Lakewood, and Long Beach)	Right-of-Way	Required for new pipelines. SoCalGas will obtain permits for natural gas pipeline.

1.3.4 Notice of Preparation and Initial Study

AltAir filed an application with the City for an amendment to CUP 757 for the Project. The City, as Lead Agency under CEQA, determined that an SEIR would be required as part of the permitting process for the

Project. The City's decision to prepare an SEIR is documented in an Initial Study included in Appendix D of this SEIR. The Initial Study, which consists of a checklist of possible effects on a range of environmental topics, found that the Project may have significant environmental impacts related to aesthetics, air quality, greenhouse gas (GHG) emissions, hazards & risk, hydrology & water quality, land use, noise, transportation, tribal cultural resources, and utilities & service systems and that a detailed analysis of an SEIR is needed to further assess potential effects. The Initial Study defined the preliminary scope of the SEIR's analysis, suggesting that aesthetics, air quality, GHG emissions, hazards & risk, hydrology & water quality, land use, noise, transportation, tribal cultural resources, and utilities & service systems would be the main topics to be addressed as having potentially significant and unavoidable impacts. While these issue areas are the main topics of focus in this SEIR, other issue areas are included in the body of the document as appropriate. In addition, Section 4.12 provides a discussion of issue areas that were found not to have any impacts.

On June 4, 2020, the City, as the Lead Agency, issued a Notice of Preparation (NOP) to inform the general public and agencies that an SEIR would be prepared for the Project and to solicit comments on environmental issues to be addressed in the document. The public scoping comment period closed on July 6, 2020. Comments received in response to the NOP were used to further refine the scope of the analysis and the technical studies in this SEIR. Written comments received in response to the NOP are provided in Appendix D with an indication of specific SEIR sections where topics related to individual comments are addressed.

1.4 SEIR Contents and Guide to the Reader

1.4.1 SEIR Contents

The Final SEIR contains the following major sections:

Executive Summary – Provides an overview of the Project, a summary of the significant impacts and associated mitigation measures identified for the Project.

Impact Summary Table – Provides a summary of the identified impacts for the Project. The table also provides a summary of identified mitigation measures for each impact.

Section 1: Introduction – Provides an overview of the Project evaluated in the SEIR. This section also discusses agency use of the document and provides a summary of the contents of the SEIR.

Section 2: Project Description – Provides objectives stated by AltAir for the Project, and a detailed description of the Project.

Section 3: Cumulative Projects Description – Provides a description of the projects that have been included in the cumulative projects' analysis. The cumulative analysis contained in this document covers the cumulative impacts of past, present, and reasonably foreseeable projects located in the vicinity of the Project.

Section 4: Analysis of Environmental Issues – Describes the existing conditions found in the Project area and vicinity and assesses the potential environmental impacts that could occur if the Project were implemented. These potential impacts are compared to various "Thresholds of Significance" (or significance criteria) to determine the severity of the impacts. Mitigation measures intended to reduce significant impacts are identified where feasible.

Section 5: Description of Alternatives/Environmentally Superior Alternative– Provides descriptions of the proposed alternatives that were considered and rejected for further analysis, and the Project alternatives selected to be evaluated in this document. It also provides an analysis of alternatives to the Project that could lessen any identified significant impacts while still achieving most of the basic Project objectives. It also includes the impact analysis for the alternatives evaluated in the SEIR. Finally, it summarizes the environmental advantages and disadvantages of the alternatives compared to the Project, and it identifies the environmentally superior alternative.

Section 6: Other CEQA-Mandated Sections – Discusses the significant irreversible environmental changes which would be caused by the Project should it be implemented. This section also discusses the growth inducing impacts that may result from the Project and known areas of controversy.

Section 7: Summary of Mitigation Measures and Mitigation Monitoring Program – Contains a listing of all identified mitigation measures that should be included as conditions of Project approval for the Project.

Section 8: List of SEIR Preparers, Agencies and Individuals Consulted During SEIR Preparation – Identifies and presents the qualifications of those who prepared the document. Lists reference materials used and persons contacted to prepare the document.

The SEIR also contains a number of appendices that support the SEIR and its analysis:

Appendix A – Project Design Information

Appendix B – Air Quality Report and Modeling

Appendix C – Hazards Report and Modeling

Appendix D – Notice of Preparation, Initial Study, Comments, and Responses

Appendix E – Noise Assessment

Appendix F – Traffic Assessment

Appendix G – Water Demand Assessment

Appendix H – Draft SEIR Comments and Responses

These appendices are available in electronic format.

1.4.2 Thresholds of Significance

The California Environmental Quality Act requires that the SEIR base its determination of whether or not a project impact is significant on adopted policies and standards, which serve as significance thresholds. The policies and standards applied by the SEIR to serve as significance thresholds are derived for the most part from City policies (primarily in the City's adopted General Plan) and other adopted standards such as the Municipal Code. For some environmental issues, the SEIR applies standards established by other regulatory agencies, such as the South Coast AQMD (in the case of air pollutant standards). These criteria have been found to be acceptable and utilized by various jurisdictions.

Appendix G of the State CEQA Guidelines provides a list of generic questions intended to guide lead agencies in determining what level of CEQA documentation is appropriate for a given project (e.g., a Negative Declaration or EIR). These questions were used in the Initial Study presented in Appendix D. The SEIR follows the City's practice of using those questions as a framework for addressing project impacts in more detail with careful consideration given to specific pertinent policies adopted by the City or other

relevant agencies. Each analytic section of the SEIR identifies the significance thresholds used to assess impacts related to the specific environmental issue under consideration. The same significance thresholds are used again when the SEIR evaluates the effectiveness of any mitigation measures or Project Alternatives to reduce or avoid potential impacts.

1.4.3 SEIR Preparation and Certification Process

The City of Paramount issued a Draft SEIR on December 6, 2021. The public comment period on the Draft SEIR ran through February 3, 2022. The City of Paramount held a public comment meeting on January 5, 2022.

The public comments received on the Draft SEIR were reviewed and responded to as required by CEQA and the CEQA Guidelines. This Final SEIR has been prepared, incorporating all of the comments received, written responses to comments, and the Draft SEIR, along with any changes to the Draft SEIR that resulted from the comments received.

The Draft SEIR (paper copy form) as well as the Final SEIR will be available to the general public for review at these locations:

City of Paramount Planning Department
City of Paramount Public Library

CD and paper copies of the Draft SEIR may be obtained (free of charge) at the City of Paramount Planning Department.

The Draft SEIR and the Final SEIR are also available on the City of Paramount's website at:
http://www.paramountcity.com/government/planning-department/planning-division/environmental-documents

Revision marks showing the changes from the Draft SEIR are shown in the Final SEIR where changes marks are shown as lines in the margins and added text is shown underlined. Deleted text is not shown due to formatting issues. A full revision version is available by request that shows deletions also.

2.0 Project Description

AltAir has been in partnership with Paramount Petroleum since 2013, when the Paramount Refinery (refinery) began the process of converting portions of their oil refinery into renewable fuels production, under the Paramount Petroleum AltAir Renewable Fuels Project (Original Renewable Fuels Project). In 2018, World Energy purchased AltAir and the refinery, and AltAir became a wholly owned subsidiary of World Energy. Under World Energy, AltAir proposes to complete the conversion of the refinery to manufacturing only renewable fuels (Renewable Fuels Conversion Project or the "Project").

2.1 Project Overview

The Project would convert the remainder of the 50,000 barrels per day (BPD) crude oil refinery into a 25,000 BPD renewable fuels production facility. This conversion would eliminate the refining of crude oil and support use of renewable jet fuel, diesel, gasoline, and propane.

The Paramount Refinery currently operates 24 hours per day, 365 days per year, except during unit turnarounds for routine maintenance when operations are reduced. Once construction of the Project is completed, the refinery is expected to continue to operate 24 hours per day, 365 days per year, except during unit turnarounds for routine maintenance when operations are reduced.

The Project modifications would include a new Pretreat Unit, modifications to the existing Renewable Fuels Unit A, a new Renewable Fuels Unit B, a new Hydrogen Generation Unit, a new Hydrogen Recovery Unit, a new Propane Recovery Unit, upgrades to the existing wastewater treatment system, a new Hydrogen Sulfide Recovery Unit, a second Sour Water Stripper, a new flare, modifications to the truck and rail loading/unloading racks, and new pipelines within the refinery. In addition, some existing tanks would be upgraded/repaired and be permitted to handle different products (e.g., non-edible vegetable oils and beef tallow). The Project would also include utilizing two existing 55,000-barrel storage tanks at the Lakewood Tank Farm. The Project would also relocate several buildings on-site and provide temporary buildings for the demolition and construction process.

The Project is expected to require up to 50 railcars per day of feedstock, blend materials and products. Renewable jet fuel can be transferred from the Paramount Refinery via existing pipeline to the Lakewood Tank Farm. If transferred by pipeline, the jet fuel would go to the Lakewood Tank Farm, where conventional jet fuel would also be transferred via existing pipeline from other suppliers to the Lakewood Tank Farm, where it would be blended with renewable jet fuel. The final blended product would be transferred via pipeline to tankage in Carson, California, where it would be delivered via other pipelines to Los Angeles International Airport.

Construction of the Project would be phased over a two-to three-year schedule. Initially, the existing unit (Unit A) would be upgraded. Unit A would then be in operation while other demolition and construction activities take place for the rest of the planned refinery unit installations and upgrades.

Table 2.1 shows a summary of the Project characteristics in comparison to the environmental setting and 2011 refinery operations (see Introduction and Section 4.0 for a discussion of the baseline). The peak day values are conservative (utilizing peak truck rack throughput levels, for example) in order to ensure conservative estimates of peak day air emissions and traffic impacts. Note that average operations would be substantially less than the peak day levels.

Table 2.1 Project Operational Characteristics

Characteristics	2011 Refinery Operations (Pre-Project)	Project Operations (Post-Project)
Feedstock Throughput, BPD	50,000 BPD crude oil	25,000 BPD tallow and vegetable oils
Feedstock transportation method	Pipeline	Trucks, ocean vessels and rail
Trucks per day, average/peak	75/156	300/540
Employees per day, average	155	130
Railcars per day, peak	33	50
Train visits, max per day/annual	1/95	2/312
Ocean vessels per month	0	3
Product transportation method	Rail, Pipeline, Truck	Rail, Pipeline, Truck
Trucked materials (% of trucks per day)	Feedstock: 9% Products: Asphalt 62%, gasoline/jet fuel/diesel 29%	Feedstocks: 33%, Renewable Products: Propane 4%, Gasoline 24%, Jet Fuel 15%, Diesel 23%, Other 1%
Hydrogen production	No storage, produced on-site	50 - 75 mmscfd, produced on-site
Hydrogen refinery use	Use on-site by hydroprocessing units	50 - 75 mmscfd, produced on-site
Hydrogen import	None	None, unless Hydrogen Generation Unit down
Hydrogen export	None	None
Purchased water, million gallons	133	817
Reclaim water use, million gallons	0	711
Natural gas use, SoCalGas, mmscfd	4.5	28
Purchased Electricity use, MW	1.4	29.0

Notes: Recent operations under the Original Renewable Fuels Project: 3,500 BPD, 7 mmscfd hydrogen use delivery by truck, 5-7 trucks per day. mmscfd = million standard cubic feet per day, BPD = barrels per day. Purchased water includes potable and reclaimed.

2.2 Project Location

The existing Paramount Refinery is located at 14700 Downey Avenue, Paramount, California (see Figure 2-1). The City of Paramount (City) is located east of the Los Angeles River and is approximately 16.5 miles southeast of downtown Los Angeles. The City of Paramount is bounded by the cities of South Gate, Downey, Bellflower, Long Beach, Compton, and Lynwood. The refinery is bounded by Lakewood Boulevard, Somerset Boulevard, Downey Avenue, and Contreras Street.

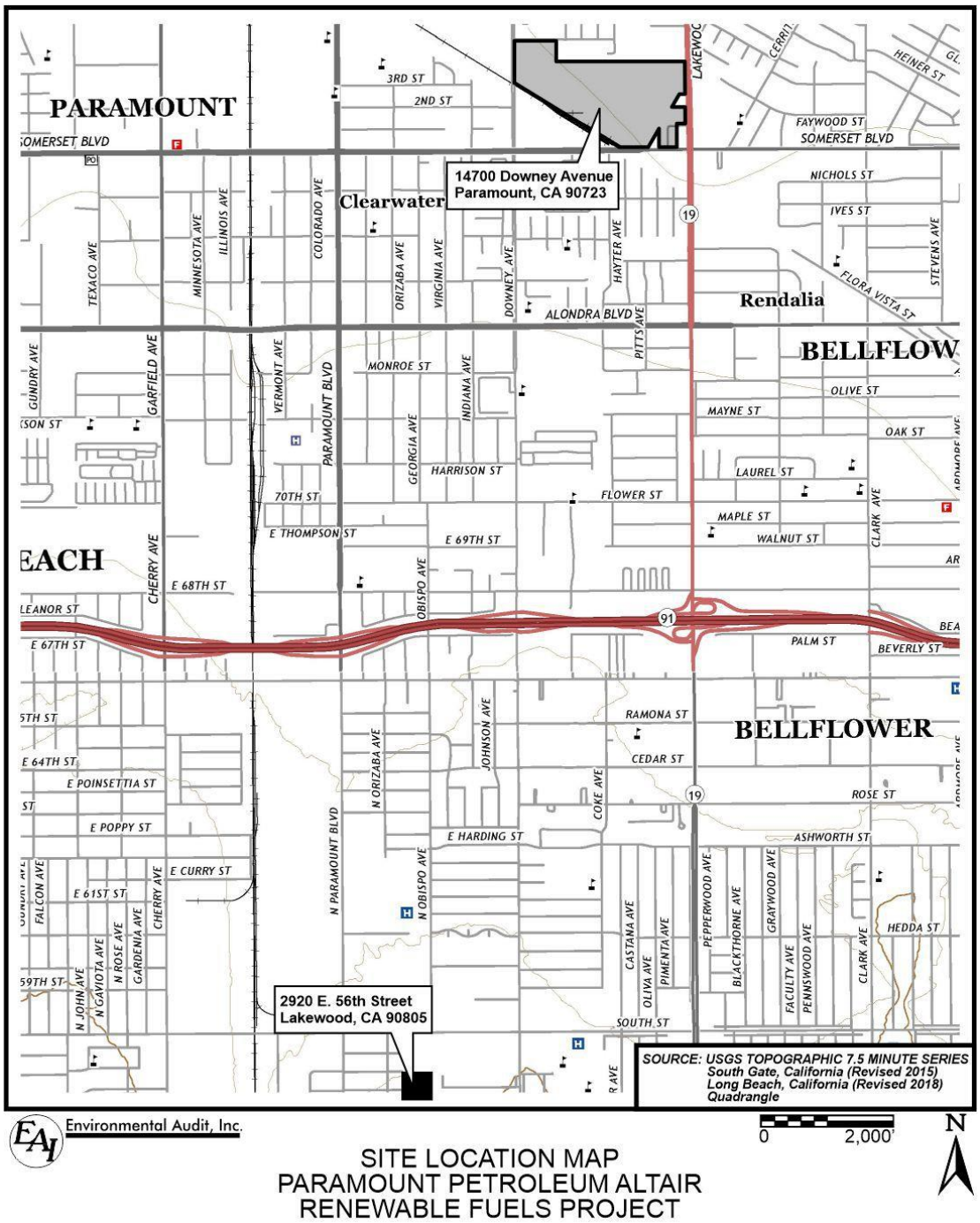
The refinery is located immediately west of the City of Bellflower municipal boundary lines, and approximately one-quarter mile south of the City of Downey boundary line. Regional access to the refinery is provided by Interstates 605 and 710 which run north-south approximately two-and-one quarter miles east and west of the refinery, respectively. State Route 91 runs east-west and is located approximately two miles south of the refinery. Interstate 105 runs east-west and is located about three-quarters of a mile north of the refinery (see Figure 2-1).

The Lakewood Tank Farm is located at 2920 East 56th Street, Lakewood, California, west of Downey Avenue (see Figure 2-1). The tank farm is just east of Paramount Boulevard and East 56th Way. Regional access to the Lakewood Tank Farm is also provided by Interstates 605 and 710. The 605 Freeway is located approximately three miles east and the 710 Freeway is located approximately 4.5 miles west of the tank farm.

2.2.1 Existing Project Site

The Paramount Refinery resides on a 66-acre complex and includes refinery processing units, renewable fuel processing units, over 1.7 million barrels of product storage; truck loading and unloading facilities; and railcar loading and unloading facilities. The current original renewable fuels operation has been in continuous production since January 2016.

Figure 2-1 Site Location Map



Source: Applicant 2021.

The refinery accounts for slightly more than half of the total acreage within the Somerset Ranch Area of the 1990 Paramount General Plan. The Somerset Ranch Area of Paramount is designated as "Mixed Use" and includes a mix of residential, commercial, industrial, and public uses. The refinery is zoned M-2 (Heavy Manufacturing). The Lakewood Tank Farm is zoned by the City of Lakewood as M-1 (Light Manufacturing).

2.2.2 Land Use and Zoning

Land uses surrounding the Project site include two adjacent schools, residential areas, a mobile home park, apartments, commercial buildings, and transportation corridors. The land use pattern varies widely in the Paramount area on a parcel-by-parcel basis and reflects an area in transition from a variety of older land uses (that include the refinery) to newer development (including apartment houses and commercial land uses, e.g., grocery stores and a Walmart).

Land uses surrounding the Lakewood Tank Farm include commercial and residential land uses, as well as Davenport Park.

2.3 Background and Historical Operations

AltAir has been in partnership with Paramount Petroleum since 2013 when the Paramount Refinery began the process of converting portions of their oil refinery into renewable fuels production under the Original Renewable Fuels Project. Historical operations prior to this period are discussed in Section 1.0, Introduction.

The California Air Resources Board (CARB) began implementing the Low Carbon Fuel Standard (LCFS) in 2011 (Title 17, California Code of Regulations, Sections 95480-95490). The LCFS requires a reduction in greenhouse gas (GHG) emissions by reducing the carbon intensity of transportation fuels used in California by at least 10 percent by 2020, and CARB is initiating a more aggressive regulation that will update the current goal of 20 percent for 2030. Carbon intensity is a measure of the GHG emissions associated with the various production, distribution, and use steps in the "lifecycle" of a transportation fuel. It was these state requirements that resulted in a partnership between the Paramount Petroleum Refinery and AltAir to produce renewable fuels[1] at the Paramount Refinery.

AltAir's renewable products provide a cleaner source of energy in support of California and Federal Low Carbon Fuel Standards. The goals of the standards are to reduce carbon intensity of transportation fuels, complement other state measures for reducing greenhouse gases, transform and diversify the transportation fuel pool, reduce petroleum dependency, and reduce overall air emissions. AltAir's fuels meet all regulatory and commercial specifications without requiring engine modification, while securing a lower emission alternate renewable energy source. AltAir currently supplies renewable gasoline, diesel and jet fuel to fleet services such as UPS, United Airlines, Boeing, the Department of Defense and several California municipalities and school systems, reducing both truck and airline emissions.

2.3.1 CUP 757 and ZV 401 (Original Renewable Fuels Project)

The initial CEQA and permitting efforts for the Original Renewable Fuels Project were approved by the City of Paramount under Conditional Use Permit (CUP) 757 and Zone Variance (ZV) 401, and new and modified air permits were issued by the South Coast Air Quality Management District (South Coast AQMD). The CEQA review for the previously approved project included a Mitigated Negative Declaration for the Paramount Petroleum AltAir Project adopted December 30, 2013 and revised per Addendum May 14,

[1] Renewable fuels are fuels derived from plants (i.e., vegetable oils) and animal fats rather than fossil fuels.

2014. While the Original Renewable Fuels Project was inclusive of the rest of the refinery continuing to process crude oil with the remaining units, the crude oil and asphalt processing at the refinery was discontinued in 2014. The Project will require modification to CUP 757 to allow for the conversion of the crude oil refinery into the renewable fuels facility. A new zoning variance will be needed for new equipment exceeding 55 feet in height.

The Original Renewable Fuels Project allowed the refinery to convert up to 3,500 BPD of non-edible vegetable oils and beef tallow into renewable fuels, including aviation (jet), diesel, naphtha (gasoline), and fuel gas. The project involved the modification of certain existing refinery equipment, including the addition of new vessels and reactors, while continuing to operate as a crude oil refinery.

The Original Renewable Fuels Project resulted in the repurposing and modification of existing refinery equipment, primarily the No. 5 Hydrodesulfurization Unit (No. 5 HDS), and the Isomerization Unit as well as some auxiliary treating, vessels, reactors, and stripping units to produce renewable diesel, jet fuel, and naphtha; modifications to the commodities permitted in storage tanks; modifications to loading racks; as well as a change in the fuel gas composition for the heaters and boilers resulting from beef tallow and non-edible vegetable oils processing. CUP and South Coast AQMD permit modifications were made as the project continued to evolve, with the most recent modification approval occurring in November 2015. Construction of the initial modifications to the Paramount Refinery to produce renewable fuels occurred between 2014 and 2015, and the refinery began producing renewable fuels in 2016. The Original Renewable Fuels Project required and received the approval of a Zone Variance for the increased height of a new fractionation tower that was planned to exceed the Heavy Industrial Zone height limit of 85 feet. The final design provided in the 2014 Addendum did not include the new fractionation tower and therefore, the fractionation tower was not installed.

The Original Renewable Fuels Project resulted in the following modifications under CUP 757:

2.3.1.1 Original Renewable Fuels Project Raw Materials

- **Raw Material Supplies.** Technical grade animal fats and vegetable oils were used as feed material for the new process. Hydrogen was delivered by truck. Subsequently, due to supply issues, a new supplier of hydrogen repurposed an existing crude oil pipeline to supply hydrogen to the refinery by pipeline as an alternative to delivery by truck, which began operations in 2021; and
- **Raw Material Unloading Facilities.** The existing rail unloading rack was modified to add an off-loading manifold, pump, and piping to unload up to 25 railcars per delivery of tallow and vegetable oil. One existing truck unloading rack was also modified to receive the same feed materials.

2.3.1.2 Original Renewable Fuels Project Process Units

- **First Stage Processing – Renewable Fuels Feed Pretreatment and Deoxygenation (Renewable Fuels Unit A).** The first stage process was developed using two reactors to remove particulates and trace contaminants from the feed and then remove the oxygen. The feed is heated and then separated, with gases going to the amine scrubbing system to be cleaned for fuel usage; and liquid products (i.e., green paraffinic diesel) going to a stripper tower and then to the Second Stage Processing unit; and residual water going to the sour water stripper and then to the existing wastewater treatment system;
- **Second Stage Processing – Renewable Fuels Isomerization Process (Renewable Fuels Unit A).** The second stage process was designed to hydrocrack, isomerize, and fractionate the green paraffinic diesel from the First Stage Processing and produce renewable jet fuel and diesel, as well as naphtha (gasoline

component) and liquefied propanes, butanes and pentanes. Most of the second stage process, including vessels, heaters, exchangers, pumps, piping, and fugitive components, were repurposed refinery equipment from the No. 5 HDS Unit and the Isomerization Unit. The fractionation of the second stage reactor effluent into finished products takes place in a fractionation tower that was repurposed from the Naphtha Hydrotreater Unit. Vessels, pumps, and heat exchangers associated with the fractionation tower were repurposed from other units in the complex; and

- **Naphtha Stabilization Unit.** The lightest products produced in the Renewable Fuels Units are naphtha and gases. The existing naphtha stabilizer separates the lighter gas components from the renewable naphtha so that stabilized (less volatile) renewable naphtha can be blended into a renewable gasoline. The lighter gases go into the fuel gas system.

2.3.1.3 Original Renewable Fuels Project Support Units

- **Hydrogen**. Additional hydrogen was required for the Original Renewable Fuels Project in both the first and second stage reactors. The new hydrogen system included three 18,000-gallon capacity storage tanks. Liquid hydrogen was delivered to the refinery via truck, stored, and then converted to gas as needed to provide hydrogen to the Original Renewable Fuels Project. As discussed above, this has been replaced by a hydrogen pipeline;
- **Acid Gas Disposal**. Acid gas is gas that contains hydrogen sulfide (H_2S). Acid gas is generated in the process reactors and is carried by the gaseous overhead product from the unit into the fuel gas treatment system. The fuel gas treatment system consists of an existing Amine Scrubber that removes hydrogen sulfide from the gas so that the treated gas can be used for fuel. For the Original Renewable Fuels Project, the amine solution used in the amine treating unit was replaced with an amine solution that separates out hydrogen sulfide and carbon dioxide (CO_2). Treated gases go into the fuel gas system. The acid gas, laden with the hydrogen sulfide and carbon dioxide go to an incinerator, where the hydrogen sulfide is converted to sulfur dioxide (SO_2). The sulfur dioxide is then removed with a caustic solution; and
- A second stand-alone caustic scrubber and incinerator system is available as a back-up for the incinerator and scrubber system. This back-up caustic scrubber removes the hydrogen sulfide from the gas and then sends the treated gas to its associated incinerator.

2.3.1.4 Original Renewable Fuels Project Utilities

- Existing equipment for process fuel, heating, cooling, and instrument air (i.e., compressed air) was sufficient for the renewable fuels process. Electrical infrastructure, natural gas pipelines, water supply, and wastewater discharge connections were sufficient to accommodate the Original Renewable Fuels Project.

2.3.1.5 Original Renewable Fuels Project Products and Logistics

- **Finished Products:** The renewable fuels process units produce renewable fuel gas, naphtha, jet fuel, and diesel. Renewable diesel can be used directly as motor vehicle fuel or blended with conventional or other biofuels. Renewable jet fuel is blended with conventional jet fuel to make the finished product to supply airlines. Conventional jet fuel is brought into the refinery and stored in existing storage tanks for blending with the produced renewable jet fuel. Renewable naphtha can be blended with ethanol for a

fully renewable gasoline or with conventional gasoline components including conventional gasoline and alkylate;

- **Storage Tanks:** The renewable fuels process used existing storage tanks and no new storage tanks were required. However, storage tank permits were modified as needed to allow for the storage of the feed material and renewable products; and
- **Loading and Unloading Racks:** Existing loading racks and pipeline were used to ship renewable and blended products. No permit modifications were required. One unloading truck rack was modified to receive raw feed material.

The City of Paramount approved the first addendum to the 2013 Mitigated Negative Declaration and Initial Study that was adopted November 24, 2014. The November 2014 Addendum approved modifications to use the existing Naphtha Splitter and existing equipment in the Isomerization Unit Stabilizer Section during initial implementation of the project, allowing a delay in the installation of the fractionation tower. The modifications included minor fugitive component changes and piping changes.

Additional CUP and South Coast AQMD permit modifications were made as the previously approved project continued to evolve. The second addendum was approved by the City of Paramount in the June 3, 2015 Addendum to CUP 757, which approved the rerouting of sour gas to the refinery's existing asphalt incinerator and sulfur oxide (SOx) scrubber as an alternative to the caustic scrubber for the treatment of the sour gas from the process units. The modifications required minor piping changes and the addition of one exchanger. A third addendum occurred in November 2015. The November 2015 Addendum included new language to clarify the potential future use of the existing storage tank #80003, which was converted to raw feed storage for the project, or the conversion of another existing tank to maintain the refinery's overall crude oil storage capacity.

2.3.2 Additional Recent Refinery Modifications (CUP 751)

As a separate, independent project, the Planning Commission of the City of Paramount adopted a Mitigated Negative Declaration relative to CUP 751 on July 9, 2013. Approval of CUP 751 for the Paramount Petroleum Asphalt and Crude Terminal Improvement Project permitted the construction and operation of a new asphalt and crude terminal within the existing Paramount Refinery and included the installation of a dome roof on one external floating roof tank. CUP 751 Mitigated Negative Declaration and Initial Study was revised per an addendum adopted September 13, 2016. The 2016 Addendum allowed for expanded terminal capabilities and to permit the existing railway facilities for the transport of additional products related to its renewable fuels operation to be brought into the plant. The Project will not alter CUP 751.

2.3.3 Background on Renewable Fuels and Hydrogen Demand

All crude oil has a higher carbon/hydrogen (C/H) ratio than the refined product that is produced; the heavier the crude, the larger the disparity between crude and product C/H ratios. In other words, crude oil is hydrogen deficient. Refineries must eliminate this disparity when transforming crude oil into refined products. The conversion processes in refineries accomplish this task by removing carbon (coking and FCC) or by adding hydrogen (hydrocracking). Hydrocracking produces more product per barrel of crude oil. Generally, hydrogen demand in crude oil refineries range up to 500 scf hydrogen per bbl of crude oil for heavy crude oils to 200 scf hydrogen per bbl crude oil for light crude oils. In a less complex crude oil refinery, such as the Paramount Refinery where there is no coking process or FCC, hydrogen is produced in

a process called catalytic reforming, where hydrogen is removed from the hydrocarbon to create a higher octane product for gasoline blending. The hydrogen removed from the product is then used later in the hydrotreating processes. The crude oil Paramount Refinery was hydrogen balanced and normally did not require the purchase of hydrogen.

However, biofuels feedstocks have substantially higher C/H ratios (e.g., more carbon and less hydrogen) than crude oils, and therefore even greater hydrogen demands. The Original Renewables Fuels Project has a hydrogen to feedstock ratio of over 2,000 scf hydrogen per bbl of feedstock. With the variety of raw materials anticipated for the Project, the hydrogen to feedstock ratio is expected to increase. Therefore, the goals of increasing the use of biofuels and renewable fuels in California goes hand-in-hand with the requirement to substantially increase hydrogen production. As most hydrogen is produced from natural gas, the production of hydrogen is the primary contributor to the greenhouse gas emissions associated with manufacturing biofuels; although the feedstock itself is "carbon neutral", the process of producing bio-gasoline or other fuels requires hydrogen and energy, which produces greenhouse gases.

Although, the Project is estimated, based on engineering assumptions and the Original Renewable Fuels Project plant operations, to require a minimum of 50 mmscf per day of hydrogen to operate the Project's expanded Renewable Fuels Unit A and the new Renewable Fuels Unit B, the actual amount of hydrogen that will be required by the Project is difficult to determine for the scale now proposed by the Project (3,500 BPD current to a 25,000 BPD commercial operation). A 75 mmscf per day Hydrogen Generation Unit has been proposed to assure the refinery has sufficient hydrogen available to produce renewable fuels. Considerations in determining this capacity include accommodating various operating scenarios (over 15+ year contract life), standard sizing steps/intervals (i.e., 5–10 mmscf per day) and overall uncertainty/inexperience around actual hydrogen demand for a renewable fuels project of this size.

When the Hydrogen Generation Unit is online, it is expected to meet the full demand of both expanded Unit A and new Unit B, meaning the repurposed pipeline indicated above would only be utilized to import hydrogen in the event of unplanned loss of production (due to malfunction/emergency), unplanned/planned maintenance, etc. While there are no specific plans at this time, once hydrogen demand for the Project has been established via actual operation (including any acceptable/normal optimization of process variables), there is the potential that additional hydrogen could be generated within the unit's capacity design for other beneficial purposes in the Los Angeles area. To facilitate use of hydrogen off-site, an undefined, separate project would need to be completed that is not part of the Project and is speculative at this time. Per CEQA Guidelines Section 15145 no further evaluation is required for impacts that are determined to be speculative, and any future actions related to the off-site use of hydrogen that may be pursued would be subject to CEQA review by the appropriate agencies at that time.

2.4 Project Objectives

Pursuant to CEQA Guidelines Section 15124(b), the description of the Project is to contain "a clearly written statement of objectives" that would aid the lead agency in developing a reasonable range of alternatives to evaluate in the SEIR and would aid decision makers in preparing findings and, if necessary, a statement of overriding considerations. The City is the lead CEQA agency responsible for preparing the SEIR. The City decision-makers will consider the SEIR for certification and the Project for approval.

The Project would complete the conversion of the Paramount Refinery to manufacturing only renewable fuels. The Project objectives are summarized as follows:

Objectives

1. Reduce dependency on fossil fuels (both foreign and domestic);

2. Provide fuels that meet the requirements of CARB's Low Carbon Fuel Standard (Title 17, CCR Sections 95480-95490) to reduce the carbon intensity of transportation fuels in California;
3. Supply fuels that reduce individual truck and airplane emissions;
4. Convert the Paramount Refinery to a 100 percent renewable fuels production facility by eliminating the refining of crude oil at the refinery, while protecting high quality jobs;
5. Repurpose existing refinery equipment, to the extent feasible, to minimize construction activities;
6. Phase construction activities to increase the production of renewable fuels as soon as possible (i.e., modifications to Unit A would commence immediately after receipt of permits prior to completion of construction of other Project elements);
7. Increase the variety of raw materials that can be used to manufacture renewable fuels from technical grade tallows and vegetable oils, to also include lower grade fats, greases and oils;
8. Continue use of renewable fuel gases to operate the refinery's heaters and boilers;
9. Recycle hydrogen sulfide produced on-site to minimize the purchase and truck transport of sulfiding agent to the site; and
10. Produce hydrogen on-site for the production of renewable fuels at the refinery.

2.5 Project Components

This section provides a summary of the key Project components and covers construction and operation of the Project.

2.5.1 Proposed Renewable Fuels Conversion Project (Project)

The Project is being proposed to complete the Paramount Refinery's conversion to manufacturing only renewable fuels. Existing refinery equipment would be used to the extent possible and new equipment would be brought in as needed. Some existing refinery equipment would be eliminated in areas where new equipment would be installed. Several upgrades are being proposed that would improve efficiencies and reduce emissions throughout the operation. The proposed modifications to the refinery are identified below.

Table 2.2 summarizes the changes made to the refinery as part of the Original Renewable Fuels Project, as well as those proposed under the Project.

Table 2.2 Comparison of Original Renewable Fuels Project and Project

ORIGINAL RENEWABLE FUELS PROJECT	CURRENT PROJECT
Raw Material	
Continue processing of crude oil. Only process technical grade feed material on site.	Discontinue processing of crude oil. Along with technical grade feed materials, additional and various grades of raw feedstocks will be available for Renewable Fuels Units A and B. Feedstocks will be received from domestic and international suppliers, with approximately 25% of the supply arriving by barge to LA Harbor, transferred to tankage and then loaded to trucks for delivery to the Paramount Refinery. The balance (75%) is expected to be received via rail directly to the

Table 2.2 Comparison of Original Renewable Fuels Project and Project

ORIGINAL RENEWABLE FUELS PROJECT	CURRENT PROJECT
	refinery.
Process Units	
No process changes required for crude oil refining.	Repurpose and/or demolish existing crude oil refining units.
No pretreatment is required for technical grade feed material for renewable fuels processing.	Install a pretreatment unit so that a greater variety and grade of feed materials can be processed.
Convert existing refinery equipment into Renewable Fuels Unit A with additional equipment installed.	Increase the capacity of Renewable Fuels Unit A. Install new Renewable Fuels Unit B using existing and new equipment.
Use the existing Naphtha Stabilizer that separates naphtha and gases from light products for the same purpose for Renewable Fuels Unit A. The gases (propanes and butanes) are mainly used as refinery fuel gas for combustion sources in the refinery.	Install a new Propane Recovery Unit to recover propane and butane from light process gases from the Naphtha Stabilizer for use in product blending, feed to the Hydrogen Generation Unit or refinery fuel gas. The remaining light gases will continue to go to the refinery fuel gas system.
Support Units	
Multiple support units exist for crude oil processing and product refining as described below:	Remove or repurpose support units for renewable fuels processing as described below:
Receive liquid hydrogen by truck to new storage vessels, convert to a gas and then compress using a hydrogen compressor for renewable fuels processing. Subsequently, under a different project, a crude oil pipeline was converted to gaseous hydrogen service and used as a supply of hydrogen for the unit.	Install New Hydrogen Generation Unit. Initially upon completion of Unit A upgrade, use existing pipeline to receive additional hydrogen. After construction of the Hydrogen Generation Unit is complete, the pipeline will be used to receive back-up hydrogen supply when the Hydrogen Generation Unit is being maintained.
Modify existing Amine Scrubber to use an amine solution that removes carbon dioxide in addition to hydrogen sulfide from refinery fuel gas. Route sour gas from the amine treating unit to H-907 incinerator and caustic scrubber for sulfur removal. Purchase sulfiding agent for processing needs.	Modify amine treating unit Incinerator and Sulfur Oxide Control Unit for Unit A. Install a new Hydrogen Sulfide Recovery Unit for Unit B to remove hydrogen sulfide from acid gas and route it to the renewable fuel process units in lieu of fresh sulfiding agent, which reduces purchases and truck trips of sulfiding agent and reduces the volume of acid gas requiring treatment at the incinerator.
Process sour water (water containing hydrogen sulfide and ammonia) in existing Sour Water Stripper.	Install a new Sour Water Stripper and Ammonia Recovery Unit to process the additional sour water that will be generated by the increased renewable fuels operation. The resulting recovered 19% aqueous ammonia will be used in the SCR emission control system for the facility heaters.
Use existing flare and flare vapor recovery system for Renewable Fuels Unit A.	Install a new flare and vapor recovery system, which will be balanced with the existing flare and vapor recovery system to serve existing and new processing units and new Hydrogen Generation Unit.
Utilities	
Use existing boiler feed water system	Install new water treatment unit for boiler feed water used at the Hydrogen Generation Unit will be installed.
Use existing boilers for steam.	Use steam produced in the Hydrogen Generation Unit and existing boilers.
Use existing cooling tower systems.	Refurbish and upgrade the two existing, operating cooling tower systems. Use third existing cooling tower until refurbishment is complete and then demolish third system.
Use existing plant air compressors (C-055 and C-001)	Upgrade existing plant air compressors or replace if needed.
Use electricity provided by Southern California Edison (SCE) and the existing Cogeneration Unit.	Cogeneration Unit will be idled. Some electricity will be generated by the hydrogen generation plant. Additionally, new SCE transformers will be installed to enhance the power supply to accommodate the increased demand at the refinery.
Use existing natural gas supply from Southern California Gas Company (SoCalGas).	Install a new pipeline to transmit additional quantities of natural gas from SoCalGas for use in the Hydrogen Generation Unit.

Table 2.2 Comparison of Original Renewable Fuels Project and Project

ORIGINAL RENEWABLE FUELS PROJECT	CURRENT PROJECT
Use existing potable water supply from the City.	Use reclaimed water provided by Central Basin Water District (through the City of Paramount) for the increased water demand. Install additional treatment facilities to purify the reclaimed water prior to use in the process units.
Use existing Wastewater Treatment System.	Upgrade Wastewater Treatment System to handle increased process generated wastewater. Install additional treatment facilities for wastewater generated by the Pretreat Unit.
Continue petroleum oil recovery as part of the Wastewater Treatment System.	Install a pretreat unit oil recovery system for the pretreat unit to recover usable renewable oil from the pretreat system and minimize waste generation. Recovered renewable oil will be reprocessed in the Renewable Fuels Units.
Products and Logistics	
Modify select existing storage tanks permits to change the permitted materials/commodities to be stored to include renewable fuels feed and products.	Modify approximately 25 additional existing storage tank permits to change the materials/commodities to be stored to include additional types of renewable feedstocks and remove the storage of crude oil. Enlarge the size of up to three tanks to accommodate the loss of storage from some of the tanks being demolished storing feedstock. Remove multiple storage tanks to repurpose the locations (e.g., asphalt storage tanks).
Use existing truck loading racks.	Convert additional existing truck loading racks from asphalt to renewable fuels and relocate to support new operation.
Modify rail unloading rack and one truck unloading rack to unload tallow and vegetable oil.	Convert additional existing rail loading and unloading facilities to receive raw materials. Install new rail track internal to the refinery. Install additional rail loading and unloading facilities.
Keep tankage at existing off-site Lakewood Tank Farm in conventional service and unaffected by the Original Renewable Fuels Project.	Use existing off-site Lakewood Tank Farm for storage and blending of jet fuel in addition to on-site tankage.
Pipelines	
Keep existing feedstock pipelines in petroleum service unaffected by the Original Renewable Fuels Project.	Use the existing hydrogen pipeline, which was recently converted from crude oil service under a separate project (to supply hydrogen in lieu of trucked liquid hydrogen to Unit A), to continue to supply hydrogen to Unit A during construction of the Hydrogen Generation Unit and later when the Hydrogen Generation Unit is undergoing maintenance.
Keep existing product pipelines in petroleum product service unaffected by the Original Renewable Fuels Project.	Change the existing product pipelines between the refinery, the Lakewood Tank Farm, and third-party terminals from petroleum product service to renewable and blended products (mixture of renewable and petroleum products).
Keep existing natural gas pipelines in service and unaffected by the Original Renewable Fuels Project.	Continue use of the existing natural gas pipelines. Install a new natural gas pipeline to supply the new Hydrogen Generation Unit.
Continue use of reclaimed water for landscaping irrigation unaffected by the Original Renewable Fuels Project.	Expand reclaimed water use to supply reclaimed water to renewable fuels processing units. Install an additional connection to the existing delivery pipeline.

Source: Applicant 2021.

Figure 2-2 shows the plot plan of the refinery and the location of the proposed new and modified facilities. The following sections describe the Project modifications in more detail.

2.5.1.1 Project Raw Materials

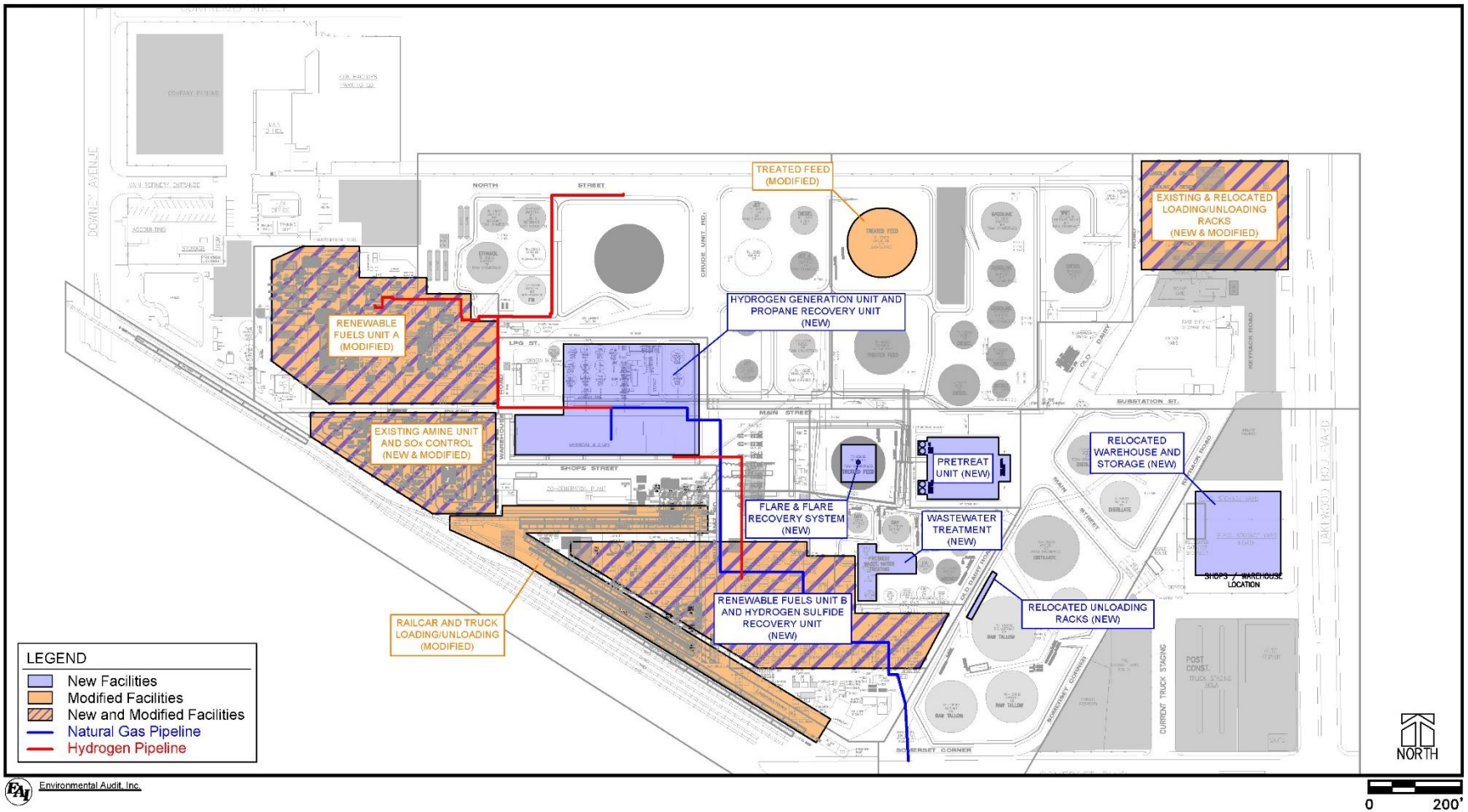
- **Raw Materials:** In addition to technical grade tallows and vegetable oils, lower grade fats, greases and oils, such as used cooking oil, would be received to support the production of renewable fuels. These

lower grade materials would require pretreatment prior to entering the process units. As discussed below, a Pretreat Unit would also be installed for the Project. Crude oil would no longer be a feed material; and

- **Unloading Facilities:** Raw materials would continue to be received by rail or by truck. Approximately 25 percent of the raw material (e.g., raw tallow) is expected to be transported by barge to the Port of Los Angeles area, where it would be transferred to local tank storage prior to loading into trucks for transport to the Paramount Refinery and offloaded at an on-site unloading rack (see Figure 2-3 for the location of the terminal where barges would be received in the Port of Los Angeles). Up to 36 shipments per year with an average of 70,000 barrels per shipment are expected.
- A new Pretreat Unit would be installed to condition (i.e., purify and filter) the new lower grade raw feed materials for the new and modified Renewable Fuels Units;
- The existing Renewable Fuels Unit A would be upgraded to increase capacity and more efficiently produce renewable diesel, jet fuel and gasoline. The unit also produces gases that are used as process heater fuel or may be used as feed to the new Hydrogen Generation Unit, once operational;
- A new Renewable Fuels Unit B would be installed to produce additional renewable diesel, jet fuel and gasoline. The unit would also produce gases that may be used as process heater fuel or feed to the new Hydrogen Generation Unit, once operational; and
- The existing Naphtha Stabilizer would be modified to add new Propane Recovery Unit to recover and separate renewable propane and mixed butanes for product sale or fuel for the refinery. Currently, propane and butane are mainly directed into the fuel gas system. The remaining renewable fuel gas generated from the Propane Recovery Unit would be supplemented with natural gas if needed to meet the refinery's fuel gas demand.

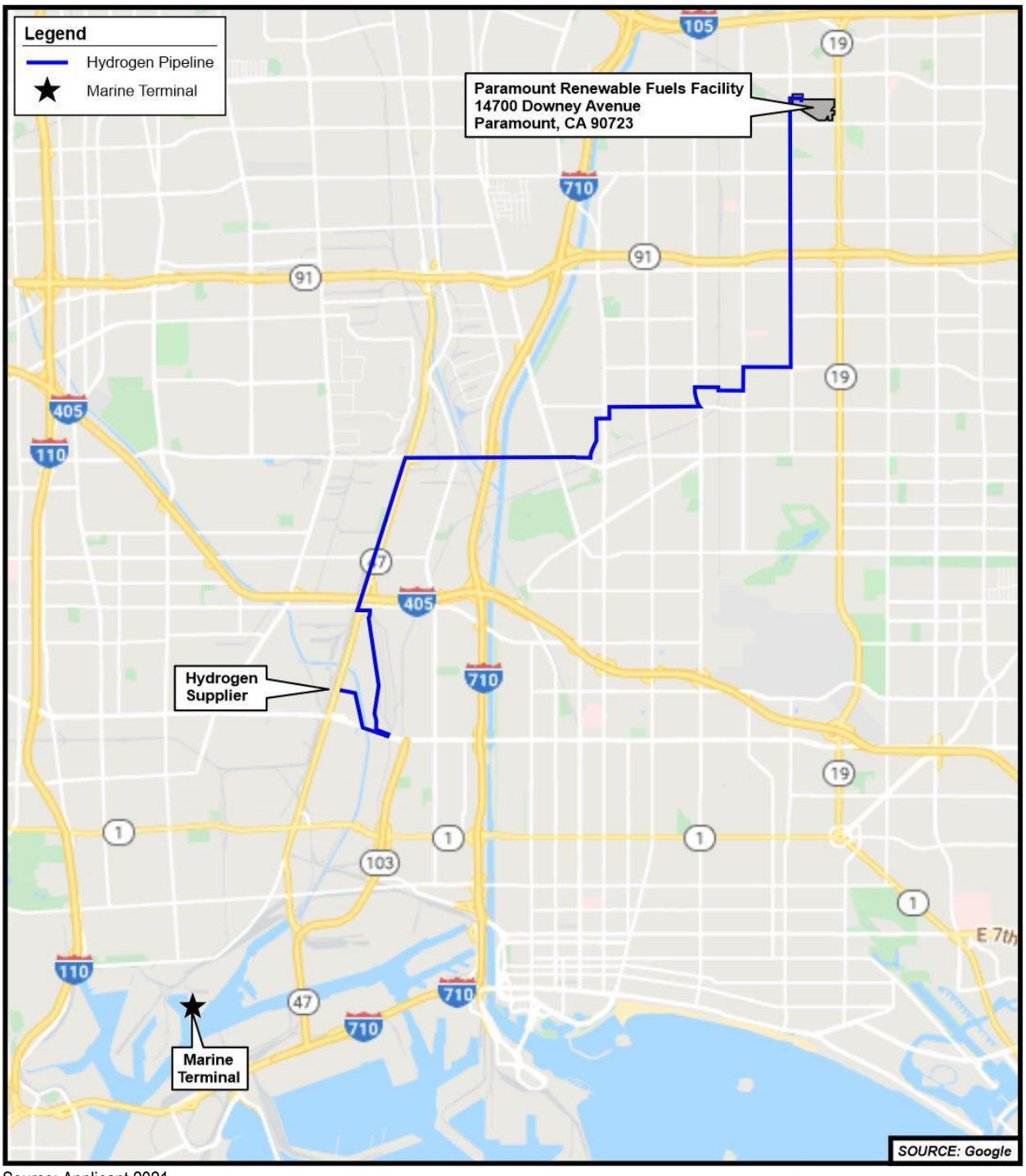
New Pretreat Unit: The new Pretreat Unit would be built to allow AltAir to receive and process a greater variety of raw materials. Raw feedstock, including animal fats, greases and vegetable oils, including used cooking oils, would be unloaded from railcars or trucks and sent to raw feed storage tanks. Prior to processing in the Renewable Fuels Units, this feed requires conditioning to remove various gums and other contaminants that would adversely impact catalysts and other performance aspects. To further clean the feedstock, water would be added and the spent water would be removed using mechanical centrifugal separation. The final step would continuously bleach and filter using various filter media to yield a treated oil stream that is suitable feedstock for the Renewable Fuels Units.

Figure 2-2 Plot Plan



Source: Applicant 2021.

Figure 2-3 Off-Site Support Activities at Marine Unloading Terminal/Existing Hydrogen Pipeline



Source: Applicant 2021.

The configuration of the unit would be as two series of equipment to treat the full capacity of the processing units. After conditioning, pretreated feedstock would be stored in the Treated Feed Tanks routed to the Renewable Fuels Units.

The Pretreat process would also include an oil recovery unit to recover oil from the filtration process to minimize waste generation. The filter media used for bleaching and filtration during pretreatment is expected to contain up to 30 percent residual feedstock after discharge from the filtration vessels, which would make the used bleaching clay difficult to dispose of and would represent a significant feedstock yield loss. The Oil Recovery Unit would mix the spent bleaching clay with renewable fuel unit naphtha in a series of mixers and horizontal centrifugal decanters to remove the oil from the clay. Residual naphtha would be removed from the spent clay using steam, allowed to dry and cool prior to disposal. The separated naphtha/feedstock mixture would be sent through a series of evaporator/separators and a lean/rich mineral oil absorber to remove the naphtha from the feedstock oil. The fully recovered oil would return to the pretreatment process as part of the primary feedstock stream. The naphtha would be recycled back to the beginning of the Oil Recovery Unit for re-use.

Upgraded Existing Renewable Fuels Unit A: The Original Renewable Fuels Project consisted of the conversion of the refinery No. 5 HDS Unit and portions of the isomerization unit into the Renewable Fuels Unit A, capable of processing up to 3,500 BPD of renewable fuels. The Project would modify the Renewable Fuels Unit A to increase efficiency and capacity. The unit currently consists of: (1) reaction to remove impurities and add hydrogen; (2) fractionation to separate products; and (3) stabilization to separate gases from the light liquids (naphtha). In the first step, the feed is sent through two reactors, where oxygen, nitrogen, and trace metals are removed in the presence of hydrogen, and then a third reactor, where the feed from the first step undergoes isomerization/hydrocracking in the presence of hydrogen to convert it to renewable fuel products produced. The fractionator section separates the reactor products into renewable diesel, jet fuel, mixed naphtha, propanes, butanes, pentanes, and fuel gas. A Naphtha Stabilizer Unit separates the lighter components from the naphtha so that stabilized (less volatile) renewable naphtha can be blended into renewable gasoline. The Renewable Fuels Unit A would be expanded in two phases, initially to increase capacity to run additional technical tallow and then secondly to modify the unit to be able to run the variety of feed material planned. The second modification would require a longer shutdown. Therefore, this would not be initiated until Unit B is up and running. Upon completion, modifications would include adding a pretreatment reactor, potentially a second isomerization reactor, and some additional supporting equipment (separator, surge drum, spare compressor, flash drums, piping, etc.)

Renewable Fuels Unit B: Renewable Fuels Unit B would be a new unit using available equipment on-site when possible (e.g., existing heaters, reboilers, compressors, reactors, stripper, product fractionator, vessels, and drums), and supplemented with new equipment (heaters, pretreatment reactors, deoxygenation reactors, isomerization reactor, amine absorber, separators, piping, etc.). Renewable Fuels Unit B would have an identical process configuration as existing Renewable Fuels Unit A, consisting of: (1) reaction to remove impurities and add hydrogen; (2) fractionation to separate products; and (3) stabilization to separate gases from the light liquids (naphtha). The feedstock and operation of the new Renewable Fuels Unit B would be the same as the Renewable Fuels Unit A. In the first step, the feed is sent through two reactors, where oxygen, nitrogen, and trace metals are removed in the presence of hydrogen and then two additional reactors where the feed from the first step undergoes isomerization/hydrocracking in the presence of hydrogen to convert it to renewable fuel products produced by the refinery. The fractionator section would separate the reactor products into renewable diesel, jet fuel, mixed naphtha, and fuel gas. Two new heaters would be added for Unit B.

Naphtha Stabilizer/Propane Recovery Unit: The Naphtha Stabilization Unit would be modified to add a Propane Recovery Unit that would be shared between the Renewable Fuels Units A and B. The lightest products produced in the Renewable Fuels Units are naphtha and gases. The Naphtha Stabilizer separates the lighter gas components from the renewable naphtha, so that stabilized (less volatile)

renewable naphtha can be blended into renewable gasoline. The Naphtha Stabilizer was originally in petroleum service and was repurposed in the Original Renewable Fuels Project, which made it oversized for the existing operation of Unit A. Combining Unit A and B feed will allow the Naphtha Stabilizer Unit to operate more efficiently.

The Original Renewable Fuels Project mainly collected these gases and used them as process fuel gas. Under the Project, a new Propane Recovery Unit would be added to the Naphtha Stabilizer Unit to recover propane and butane from the off-gas streams generated in Renewable Fuels Units A and B. Recovered product can be blended into renewable gasoline products, used as feed to the Hydrogen Generation Unit or as fuel gas for other refinery units, or sold separately as product.

2.5.1.2 Project Support Units

The renewable fuel process would require supporting units that provide hydrogen, manage catalysts, off-gases and waste streams, and provide additional safety systems. The seven supporting units are summarized below, with more detailed descriptions following:

- A new Hydrogen Generation Unit would be installed to eliminate the need to use pipelines to transport hydrogen for normal production use (the pipeline would be used as a backup). An existing pipeline is also available to obtain interim increased hydrogen supply from an off-site source prior to construction of the Hydrogen Generation Unit. A new natural gas supply pipeline would be installed to provide natural gas that would feed and fuel the Hydrogen Generation Unit;
- A new Hydrogen Sulfide Recovery Unit would be installed to recover and allow reuse of hydrogen sulfide, which is needed in the production process. The current operation uses a purchased catalyst sulfiding agent which generates hydrogen sulfide off-gas (following initial treatment in the fuel gas treatment system) which is then treated by incineration and scrubbing. The Hydrogen Sulfide Recovery Unit will recover the hydrogen sulfide and transfer it directly to the Renewable Fuels Units A and B. Because recovery will not be 100 percent, some additional make-up purchased sulfiding agent will continue to be required. Recycling of the hydrogen sulfide would reduce truck trips of new sulfide agent as well as reduce off-gas that must be treated;
- A new Sour Water Stripper Unit would be installed with advanced facilities called the Sour Water Plus Unit to treat an increased amount of sour water generated by the process. Sour Water will go to tanks 12501 and 12502, two floating roof tanks whose restriction is only vapor pressure. Sour water contains ammonia and hydrogen sulfide. Hydrogen sulfide is recovered in the Hydrogen Sulfide Recovery Unit and recycled back to the units for required sulfiding of the hydrotreating catalyst. Ammonia is recovered for on-site use for SCRs and emissions control. The recovered ammonia would be produced and stored in aqueous form in the existing ammonia storage tank or a new off-spec ammonia storage tank for reprocessing. The existing unloading station would be modified to allow for loading should ammonia production exceed on-site use, which is not expected to occur on a regular basis. The existing Sour Water Stripper Unit would continue to be available to support Unit A;
- Existing equipment from the refinery Sulfur Recovery Unit in the vicinity of Unit A would be refurbished to provide a new Hydrogen Sulfide Treatment System for Unit A, including an incinerator and sulfur oxide scrubbing system with a reheater. The back-up caustic scrubber system would be modified for efficiency and continue to be available as needed, also using the reheater (as an

incinerator) in the refurbished Hydrogen Sulfide Treatment System for Unit A. The Hydrogen Sulfide Treatment System and the back-up caustic scrubber would also be used to treat the waste gas from other support systems, for example, portions of the wastewater treatment system, a groundwater/soil remediation system, and the pretreat unit oil recovery system;

- The currently used treatment system (currently permitted as the Asphalt Plant SOx Control Unit). Is in the vicinity of Unit B and would be refurbished during construction of Unit B to become part of the Hydrogen Sulfide Recovery Unit. This incinerator and scrubbing system would provide the treatment for the waste gas from the Hydrogen Sulfide Recovery Unit, the Sour Water Plus Unit, and other support units, (for example, some wastewater treatment, pretreatment oil recovery and product loading waste gas);
- The Project would generate additional light gases that would be used as renewable fuel gas for the heaters and boilers. An additional amine fuel gas treatment system would be installed to remove hydrogen sulfide and carbon dioxide from the fuel gas;
- A new second flare and flare vapor recovery system would be installed and balanced with the existing flare and flare vapor recovery system to service the existing units, the Hydrogen Generation Unit, and the new processing and support units; and
- Additional Wastewater Treatment facilities would be installed for increased wastewater generated by the additional processing equipment. New gravity separation, followed by anaerobic and aerobic treatment would be provided for the Pretreat Unit, which generates a wastewater stream with higher Biological Oxygen Demand (BOD) than the current wastewater streams.

Hydrogen Generation Unit: Hydrogen is used in the process unit to convert renewable feedstocks to renewable products. As originally proposed, the Original Renewables Fuels Project relied on trucks to deliver approximately four truckloads per day of liquefied hydrogen needed for the production process. Since that time, due to reliability issues, an existing crude oil pipeline was repurposed under a separate project (see Figure 2-2) and put into service with gaseous hydrogen as an alternate to the liquid hydrogen delivered by truck. With the Project, additional hydrogen would be required. Therefore, a new 75 million standard cubic feet (mmscf) per day Hydrogen Generation Unit would be installed to provide a reliable source of hydrogen to the Renewable Fuels Units.

The Hydrogen Generation Unit would utilize steam/methane reforming (SMR) technology to produce high-purity hydrogen and steam on-site from purchased natural gas and renewable fuel gas. Installation of this unit would include replacement of several older heaters with one new reformer heater equipped with a selective catalytic reduction (SCR) unit, and a new elevated flare.

The existing hydrogen pipeline would continue to be used for hydrogen supply following Unit A upgrade but prior to the construction of Unit B and the Hydrogen Generation Unit (see Figure 2-2). Following construction of the Hydrogen Generation Unit, the hydrogen pipeline may be used as a back-up supply of hydrogen when the Hydrogen Generation Unit is down for maintenance.

Hydrogen Sulfide Recovery Unit: Renewable feedstocks do not contain adequate amount of inherent sulfur to act as a sulfiding agent for the reactors. Therefore, a sulfiding agent is added to the feed prior to entering the reactors to control the chemical reaction taking place in the process reactors. The hydrogen sulfide keeps the first stage catalyst in an active, sulfide form but some of it is displaced from

the catalyst by oxygen in the feedstock. The displaced hydrogen sulfide does not stay in the reactor but is contained in other gases produced by the unit and goes into the fuel gas treatment system.

Under the Original Renewable Fuels Project operation, process gases are treated in the fuel gas treatment system and returned to the process to be used as fuel for the heaters and boilers. Carbon dioxide and hydrogen sulfide are removed from the fuel gas and currently flow to an incinerator that converts the hydrogen sulfide to sulfur oxides and then through a caustic scrubber to remove residual amounts of sulfur oxides components before discharging the remaining treated gas and carbon dioxide to the atmosphere.

The new Renewable Fuels Unit B would include a similar sulfiding system to maintain the controlled reaction. Sour gas from the unit would first be routed to the upgraded fuel gas treatment system, which removes the hydrogen sulfide and recovers the usable fuel gas, (see below) and then the remaining sour gas is routed to a new Hydrogen Sulfide Recovery Unit. The unit would consist of multiple contactors and regenerators using an amine solution that would preferentially absorb hydrogen sulfide while allowing carbon dioxide to pass through. The recovered hydrogen sulfide would be recycled the Renewable Fuels Unit A storage vessel and directly back to the inlet at Unit B, where hydrogen sulfide-rich gas would be returned for use as the catalyst sulfiding agent. This recycling method would ultimately reduce the required amount of purchased sulfiding agent that is commonly used for this purpose and would reduce the truck trips for those deliveries. It also would reduce the amount of waste gas that must be treated and discharged.

Sour Water Stripper: The existing production process currently generates water that contains hydrogen sulfide and ammonia (sour water) that is treated by "stripping" the hydrogen sulfide and ammonia out of the water with steam. With additional production, sour water effluent would also increase. As part of the Project, additional sour water and ammonia recovery facilities would be installed to handle this increased flow. Treated water would be discharged to the wastewater treatment system. Recovered aqueous ammonia would be used in on-site heater SCRs to reduce NOx pollutants, with any potential excess aqueous ammonia being sold.

Fuel Gas Treatment: Under the Original Renewable Fuels Project, the fuel gas treatment system takes gas produced by the units and uses an amine product to absorb hydrogen sulfide and carbon dioxide. The amine is "regenerated" in the Amine Regeneration Unit by heat from steam, which strips the hydrogen sulfide and carbon dioxide out of the amine, so the amine can be reused. With more gas being produced under the Project, an additional amine fuel gas treatment system would be installed. The existing amine fuel gas treatment system, including the existing Amine Regeneration Unit, would continue to be available to serve Unit A, if needed.

Flare System: The existing refinery is served by the existing flare and flare vapor recovery system. Under the Project, a new smokeless elevated flare and flare vapor recovery system would be installed that would balance with the existing flare and flare vapor recovery system to serve the existing units, new process units and the Hydrogen Generation Unit. The new flare would be designed to operate in conjunction with the existing flare and enable the relief loads to be distributed to both simultaneously. The new flare would be located in the center of the plant, replacing an existing crude oil storage tank that would be removed.

Wastewater Treatment: The Original Renewable Fuels Project generated wastewater from the existing Renewable Fuels Unit A. The existing wastewater treatment system was sufficient to treat the wastewater generated by existing Renewable Fuels Unit A and any crude oil processing. Under the Project, the Pretreat Unit for the renewable fuel process would be constructed and would generate a

wastewater stream with a higher biological oxygen demand than the current operation. For this reason, additional wastewater treatment facilities would be installed to augment the current wastewater treatment system.

The additional facilities would consist of solids and oil/aqueous phase separation with a gravity separator, and a dissolved gas flotation unit. Additionally, anaerobic and aerobic treatment would be installed. Both the gas flotation unit and biotreatment systems would be enclosed and blanketed with renewable fuel gas or nitrogen to prevent emissions to the atmosphere or release of odors. Vent gases would be directed to the Hydrogen Sulfide Treatment System in the Unit B area.

Separated solids from this unit would be collected and disposed at approved off-site disposal facilities. Separated renewable oils would be recycled to the processes as much as practical. Incompatible oily wastes would be disposed at approved off-site disposal facilities. Treated wastewater would be discharged to the Los Angeles County Sanitation District industrial sewer. A modification to the existing Industrial Waste Discharge Permit is expected to be required from the Los Angeles County Sanitation District because of the additional treatment facilities and increase in wastewater discharge associated with the Project; however, AltAir is reviewing potential methods of treatment and re-use of process water generated on-site.

Waste Gas Treatment: In addition to the flares, which are for emergency use, there are two existing incinerators in the plant to dispose of routinely generated waste gases. Both are briefly described above in relation to acid gas treatment.

One of them currently serves to convert acid gas from unit A following the amine fuel gas treatment and regeneration systems and sour water treatment system. This incinerator converts hydrogen sulfide in the gas stream into sulfur oxide. The incinerator is followed by a caustic scrubber that removes the sulfur oxide from the gas. The treated gas is wet following the caustic scrubber and so is reheated by a re-heater prior to discharge to atmosphere. This system would be slightly modified to treat the waste gas from the Hydrogen Sulfide Recovery System. It would also treat vapors from other systems, for example, the new pretreat wastewater system, the pretreat oil recovery unit, a portion of the current wastewater system that is in the vicinity of this incinerator and loading rack vapors.

The other incinerator currently treats organic vapors, such as soil remediation and wastewater treatment system vapors, and acid gas following initial treatment by a caustic scrubber (this is the back-up system for the incineration/scrubbing system described above). This incinerator would be modified by the Project as part of the system replacing the acid gas and scrubbing system serving Unit A because the existing system is in the vicinity of Unit B and would serve the new functions as described above. Portions of the crude refinery sulfur recovery system would be replaced to provide an incinerator, caustic scrubber for sulfur oxides, and re-heater to serve Unit A acid gas. This incineration and scrubbing system would continue to treat vapors from the soil remediation, wastewater system, and the back-up caustic scrubber.

Heaters and SCR: To control NOx emissions, the new Unit B heaters, H-350 and H-351 would be jointly connected to an SCR serving both units (either the existing SCR from heaters H-303 through H-306 would be relocated and modified or a new SCR would be installed). The new Hydrogen Generation Unit heater, H-151 would be connected to a new SCR. The three existing boilers would be connected to SCR equipment by (1) repurposing a single existing SCR from Heater H-601, which would be modified to serve all three boilers, (2) be connected to one new SCR serving all boilers, or (3) be connected to three, new, individual SCRs. The incinerator H-401 is anticipated to need a new SCR. The existing heaters, H-501, H-502, H-101 and H-102 and the connected existing SCR would not be modified as part of the

Project, but permit conditions may need modification. Existing heaters H-301 through H-306, H-601, H-602, H-701 through H-705, H-801, H-802, H-805, H-860, H-901, and H-902 would be decommissioned.

Aqueous ammonia (19 percent concentration) is used in the existing SCRs and would continue to be used in the existing, modified and new SCRs. Aqueous ammonia would be stored in the existing ammonia storage tanks and one new ammonia storage tank would be installed to store off-spec ammonia for reprocessing in the Sour Water Stripper Plus Unit. The existing tank loading station would be modified to allow for truck loading in the event ammonia production exceeds ammonia use on-site. Ammonia usage is expected to be maintained in balance with few deliveries or shipments.

2.5.1.3 Project Utilities

Electricity, natural gas, water, steam, cooling towers, and compressed air are considered utilities at the refinery. The refinery has internal systems for each of these utilities that require modification to implement the Project. The modifications to the six utility systems are summarized below, with more detailed descriptions following:

- Electricity demand for the Project is anticipated to increase over previous refinery and renewable fuel production use. The Hydrogen Generation Unit can provide approximately four megawatt per hour (MWh). Additional transformers would be installed to upgrade and enhance the remaining power supplied by SCE;
- Natural gas demand for the Project is expected to increase over previous use, primarily because it would be used as a raw material for the Hydrogen Generation Unit. A new connection to a Southern California Gas Company (SoCalGas) transmission line would be made to supply the additional quantities;
- Water demand for the Project is expected to increase over previous use. Reclaimed water is intended to be used for much of the additional water requirements. In order to use the reclaimed water, a pretreatment system would be installed consisting of an ultrafiltration system followed by a single pass reverse osmosis system sized to meet the refinery's requirements. Additional water softening or anion/cation demineralization resins beds would be required to treat water for the Hydrogen Generation Unit and for boiler feed water;
- Steam production for the refinery would be reconfigured. The new Hydrogen Generation Unit would provide some of the steam for the operation that was previously provided by the Cogeneration Unit. Existing boilers would be also used as needed. In addition to the steam produced by the Hydrogen Generation Unit, at least one boiler is anticipated to be continuously operating with a second in hot standby;
- Two existing cooling tower systems would be refurbished, increased in size, and repurposed to support the renewable fuels processes. The third cooling tower system would remain in service until refurbishment is complete and then be demolished; and
- Air compressors would be refurbished or replaced, and new compressors would be installed.

Electricity Infrastructure: Previously, electricity at the refinery has been provided by SCE and an on-site 7.5 MWh Cogeneration Unit (i.e., a unit that provides both electricity and steam). The Project would remove the Cogeneration Unit from service and the new Hydrogen Generation Unit is expected to

provide approximately four MWh. To make up the electricity shortfall, SCE would supply additional electricity. Additional on-site transformers and power distribution centers would be installed on-site to upgrade and enhance the distribution system for the electricity supplied by SCE.

Natural Gas and Fuel Gas System: Natural gas is supplied by the Southern California Gas Company (SoCalGas) for the existing operations. The existing refinery fuel gas system includes two mix drums that receive fuel gas from the fuel gas system with natural gas from SoCalGas supplementing as needed. Similarly, under the Project, all renewable fuel gas remaining after propane recovery would be consumed by the process units, with natural gas supplementing the fuel gas mix drums as needed. The amount of natural gas needed varies as the processing varies, but is expected to be supplemented continuously.

The existing SoCalGas natural gas pipeline would be used to supply natural gas to the fuel gas system for the process units, boilers, flares, and incinerators. The new Hydrogen Generation Unit would require a separate, new 16-inch supply pipeline to be constructed to provide the necessary methane feedstock for hydrogen generation.

Water Supply and Treatment: The Project intends to use reclaimed water from the Central Basin Water District. See pipeline section below. A reclaimed water distribution system is located along the southwest perimeter of the refinery (near Downey and Somerset) so installation of a new tie-in would require minimal construction. To meet the process quality requirements for the refinery and to protect the equipment utilizing water (e.g., the Hydrogen Generation Unit, boilers, and cooling towers), the reclaimed water must be pretreated.

As such, a new water treatment system consisting of either water softening or anion/cation demineralization resin beds would be installed. Condensate from the process units would be collected for reuse. The new water treatment system would be designed to provide boiler feed water as well as softened make-up water and cooling tower make-up.

The proposed multi-skid design includes an ultrafiltration (UF) system followed by a single pass reverse osmosis (RO) system. The UF system has an automatic backflush and clean in place (CIP) process to regenerate the filters. The RO system also has a CIP process. Both stages of the system use a small amount of chemicals to keep the equipment in good operating condition. The RO system, backflush, CIP, and concentrate flows are unusable and must be sent to the refinery wastewater system. In total, this is typically an additional 20 percent of reclaimed water over the required process requirements.

Steam: Steam for the crude oil refining and renewable fuels processing was provided by three existing boilers and the Cogeneration Unit. Once the Project is completed, the new Hydrogen Generation Unit would supply some of the steam requirements for process units and tankage. The three existing boilers would continue to be used to provide additional steam, as necessary.

The three existing boilers to be used under the Project would be connected to SCR equipment that would reduce nitrogen oxides (NOx) emissions below the emission levels from the previous operation. Three options for the SCR equipment include: (1) repurposing a single existing SCR, which would be modified to serve all three boilers, (2) be connected to one new SCR serving all boilers, or (3) be connected to three, new, individual SCRs.

Cooling Tower: The existing refinery and renewable fuels processes include three cooling tower systems consisting of one or more tower cells and water circulation pumps. The existing Renewable Fuels Unit

process operates one of the systems. The second cooling tower supports the intermittent operation of the natural gas compressor. The third cooling tower system supported the crude oil processing.

Under the Project, the two cooling tower systems servicing the Renewable Fuels Unit and the natural gas compressor would be refurbished, increased in size, and repurposed to support the renewable fuels processes. The third cooling tower system would in service until refurbishment is complete and then would be demolished.

Plant and Instrument Air: Two existing air compressors would be upgraded or replaced, and additional air compressors would be purchased. A new nitrogen generating system (i.e., a separator that concentrates nitrogen from air) would be installed to provide nitrogen to the refinery that was previously delivered by truck.

2.5.1.4 Project Products and Logistics

Under the Project, petroleum products would no longer be produced from crude oil at the refinery. Petroleum products have and would continue to be delivered to and stored at the refinery for blending purposes. The product and logistics changes are summarized below, with more detailed descriptions following:

- The products produced by the Project would be the same naphtha, jet fuel, diesel, and fuel gas with the exception the additional separation of propanes, butanes and pentanes from the fuel gas. Existing pressurized storage (three 56,000 gallon and two 30,0000 gallon) would be used to store the separated propanes, butanes, and pentanes;
- Existing product storage tanks permits would be modified as needed for the Project operations. No new hydrocarbon product storage tanks would be constructed. One storage tank would be enlarged to replace the storage capacity of one tank that is being demolished. Many of the existing asphalt oil tanks would be demolished to make room for the new process units. Existing storage and pipeline facilities at the company's off-site Lakewood Tank Farm were previously used to store gas oil. For the Project, the Lakewood Tank Farm would be storing and blending jet fuel;
- Existing truck loading and unloading facilities (mainly racks previously used for asphalt) would be modified and relocated for the Project operation. Truck loading and unloading would occur 24 hours per day;
- Existing railcar loading and unloading facilities would be modified for the variety of raw materials and products that are needed for and produced by the Project operation. Rail car loading and unloading would occur between the hours of 10:00 a.m. and 8:00 p.m.; and
- As a commitment to cleaner energy use, an electric railcar mover would be purchased as part of the Project for on-site movement of railcars. The railcar mover would replace the diesel-powered mover that moves the tank cars from the storage spurs to the loading/unloading locations and back again when they are emptied.

Products: The products produced by the Project would be the same as the current Original Renewable Fuels Project process, including naphtha, jet fuel, diesel fuel, and fuel gas, with the exception of the separation of propanes, butanes and pentanes out of the fuel gas system. The separated propanes, butanes and pentanes would be used as gasoline blend components, hydrogen generation plant feed or

fuel gas, whereas in the existing Renewable Fuels Units, the propanes, butanes, and pentanes mainly go to the fuel gas system.

Product Storage: The existing refinery has sufficient storage capacity and therefore no new product tanks are required for the Project. Tanks would be re-purposed as needed for modified service. One storage tank would be enlarged to hold more feedstock, one storage tank would be removed to allow sufficient space for the new flare and another tank would be removed to allow truck access to the truck loading and unloading racks. Several other asphalt oil tanks would be removed to allow space for the new units. Existing tankage would be repurposed for the Project by revising permits to allow for pretreat unit feed storage (e.g., animal fat and vegetable oil derivatives); pretreated Renewable Fuels Units feed storage; produced renewable naphtha, jet fuel, diesel, and blendstocks including biodiesel, diesel, jet fuel, ethanol, iso-octane, intermediate and final products, and utilities, i.e., firewater, stormwater and wastewater. New pumps and associated piping would be installed as needed. Each tank in raw and pretreated Renewable Fuels Units feed service would be heated using exchangers and/or heating coils. The tanks would have an inert blanketing system and would vent to carbon filters to minimize any potential odors.

The existing liquid propane, butane, pentane, and light naphtha storage currently consists of five horizontal, pressurized storage tanks. No new pressurized storage tanks would be required in the Project. Piping modifications at the existing bullets would be completed as part of the Project to permit the independent storage of individual products.

An existing off-site tank farm in the City of Lakewood would be used for additional jet fuel storage and blending. Renewable jet fuel would be transferred from the Paramount Refinery via an existing pipeline. Conventional jet fuel would be transferred from other suppliers via existing pipelines to the Lakewood Tank Farm, where the products would be blended together. The final blended product would be transferred via pipeline to tankage in Carson, California, where it would be delivered via other pipelines to Los Angeles International Airport.

Barge Unloading: Approximately 25 percent of the feed material is anticipated to be received via barge into LA Harbor. The barged material will be piped from the barge to tankage at a nearby storage facility. Trucks will pick up the feed material from the storage facility and deliver it to an existing unloading rack at the refinery. This was not included as part of the Original Renewable Fuels Project.

Truck Loading and Unloading: Existing truck loading and unloading racks would be modified and relocated as part of the Project to accommodate the renewable fuels operation. In general, existing asphalt truck racks would be relocated and converted to feed, blendstock and product receipts and sales. Vapor recovery for loading racks would be modified as needed. No additional truck racks would be required at the refinery. Anticipated truck trips would increase compared to activity levels evaluated for the Original Renewable Fuels Project.

Railcar Loading and Unloading: As part of the Original Renewable Fuels Project, modifications were made to the rail unloading rack to add an off-loading manifold, pump, and piping to receive up to 25 railcars per delivery of tallow and vegetable oil (with up to two deliveries per day). Under the Project, rail logistics would be required to receive and ship up to 50 railcars per day of feedstock, blend materials, and products. Existing railcar loading and unloading facilities serving the crude oil refining units would be converted and additional loading and unloading arms would be installed to support the Project. Because there is more of a variety of incoming products, the rail cars would have to be pre-sorted at an off-site rail storage area prior to delivery to the refinery. In the past, railcars were delivered on an on-call basis and were occasionally parked at Paramount Pass (see Figure 2-4). Based on

preliminary discussions with Union Pacific, the sorting and organizing of the railcars are expected to occur at one of the existing regional rail facilities (e.g., Commerce or Wilmington). Therefore, no additional use of Paramount Pass is expected.

New rail track internal to the refinery is planned both for the operation and due to the Metropolitan Transportation Authority's (LA Metro) proposed light-rail line. The West Santa Ana Branch Transit Corridor (WSAB) project between Artesia and Union Station using the West Santa Ana Branch right-of-way with stations planned for Paramount/Rosecrans, and Bellflower south of Alondra would displace the refinery's outer-most railcar storage track. The track displaced is one of spurs leased adjacent to the refinery. These track modifications require approval by the rail providers, Union Pacific, and LA Metro.

Secondary containment would be installed for the internal railcar unloading and loading activities. Fire protection would also be installed as required by the fire department. Vapor recovery would be installed for loading facilities as required. The current diesel-powered railcar mover would be replaced with an electric railcar mover for on-site movement of railcars.

As part of CUP 751 and 757, mitigation measures were imposed to minimize train and vehicle conflicts and delays at the Downey Avenue rail crossing. Mitigation Measure T-1 was imposed as follows:

- T-1: Rail car deliveries and pick-ups will be limited to the non-peak hour traffic periods, after 10:00 a.m. and before 6:00 p.m. The refinery operators and management will continue to work with the railroad so that train traffic to and from the refinery does not coincide with the morning and evening commute times or when students are going to or leaving school. No deliveries during the evening, night, and early morning periods will be permitted unless prior notification to the City is provided.

As part of the Project, AltAir is requesting an extension of time to the rail delivery period from 10:00 a.m. to 6:00 p.m. to 10:00 a.m. to 8:00 p.m. to allow for timely delivery of railcars which would coincide with the previous 25 railcars being emptied and ready for their return trip. This measure would better alleviate the disruption to foot traffic from the schools and rush hour traffic in the later afternoon, while still being early enough in the day to avoid disturbance to residents during the more sensitive nighttime hours.

2.5.2 Project Pipelines

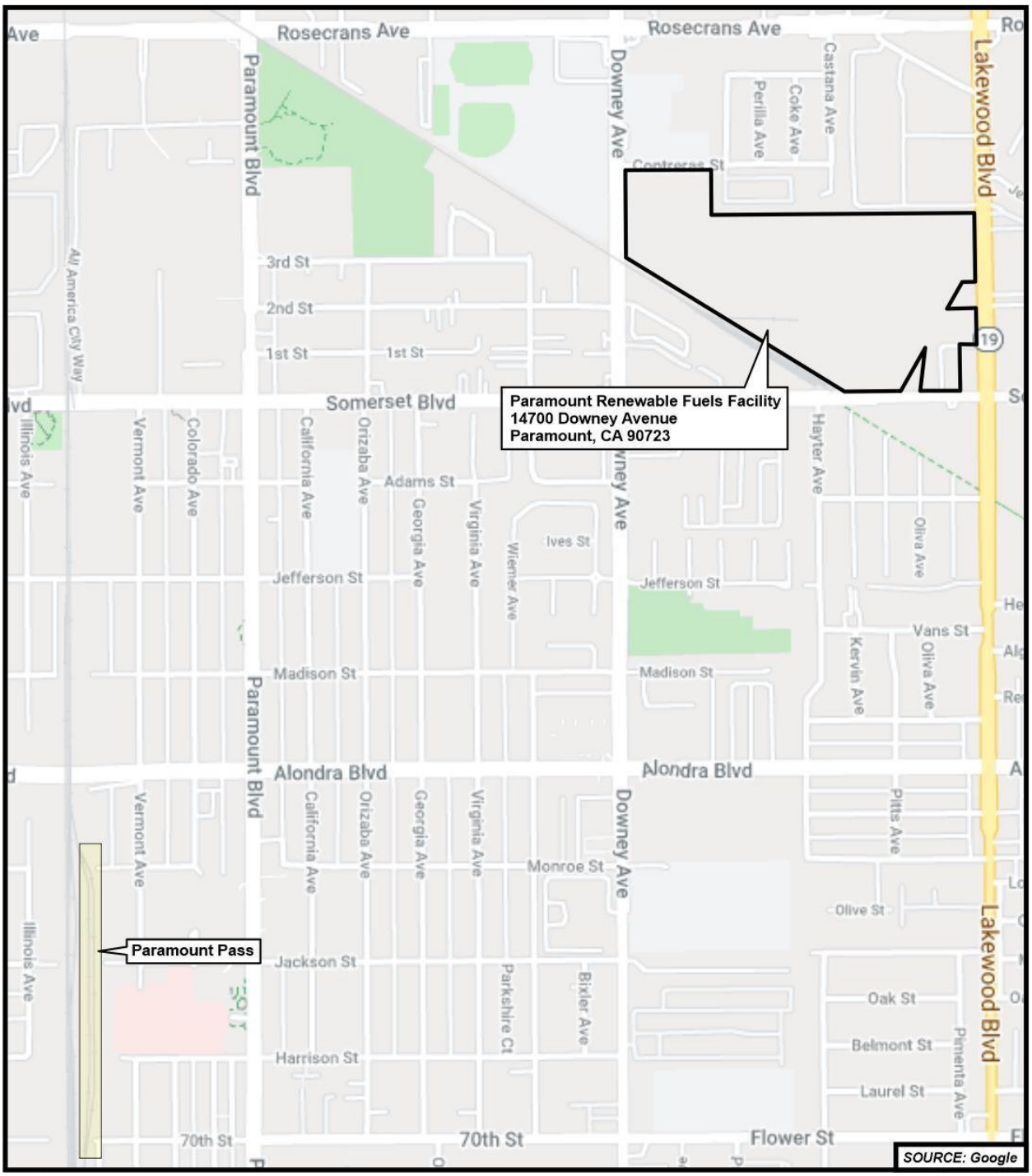
The Project would add one natural gas supply pipeline, continue the use of the hydrogen supply pipeline until the Hydrogen Generation unit is completed (then only during maintenance periods as needed), include maintenance on existing product pipelines, and add a tie-in connection to an existing reclaimed water system.

The potential route for the new natural gas pipeline provided by SoCalGas to the refinery would be approximately 3.7 miles of new pipeline that would extend north along Lakewood Boulevard from Del Amo Boulevard to Somerset Boulevard and enter the refinery from east on Somerset Boulevard (see Figure 2-5). The new pipeline would pass through the Cities of Bellflower, Lakewood and near to Long Beach. The new pipeline would require the installation of safety blowdown equipment at one location along the designated route. The exact location has not yet been established.

The new natural gas pipeline and all of its appurtenances would be designed and installed in compliance with 49 C.F.R. § Part 192, California Public Utilities Commission General Order 112-F regulations, and SoCalGas standards. The proposed pipeline would be designed with a mainline valve (MLV) and bridle

assembly at the connection to the existing natural gas transmission system, located at the intersection of Del Amo Boulevard and Lakewood Boulevard.

Figure 2-4 Paramount Pass Map



Source: Applicant 2021.

The MLV would be installed to shut down the flow of gas during maintenance activities or emergency situations while allowing gas to flow into the proposed pipeline through the bridle assembly. The bridle

assembly would also allow for the shutdown of gas flow into the proposed pipeline. A blowdown valve would be included in the design of the MLV and bridle assembly. The blowdown valve would be used to evacuate the new pipeline of gas for maintenance activities and emergency situations. The blowdown valve would be installed below grade and would consist of a valve, piping, and would terminate with a blind flange and a ¾ inch valve for manual pressure-relief of the blowdown valve assembly when it comes time to use the blowdown. The design of the blowdown valve assembly allows for its safe operation. For planned maintenance activities requiring the evacuation of gas from the new pipeline, methane emissions reduction measures would be used, as practicable. These measures include drawing the volume of gas in the pipeline down through customer usage and/or using a methane capture process at the blowdown valve location. The methane capture system utilizes a mobile compressor to compress pipeline gas into a CNG trailer. The gas is then re-introduced into the pipeline system at a re-injection location, which may be on the upstream or downstream side of the MLV. This methane capture process reduces the amount of gas vented to atmosphere as well as eliminates the noise and odors associated with venting gas. In emergency situations requiring the evacuation of gas from the new pipeline as rapidly as practicable, the gas would be vented to atmosphere using the blowdown valve.

Following the construction of the Hydrogen Generation Unit, the hydrogen pipeline that currently supplies hydrogen for Unit A would be used only as a backup in the event that the Hydrogen Generation Unit is not operational.

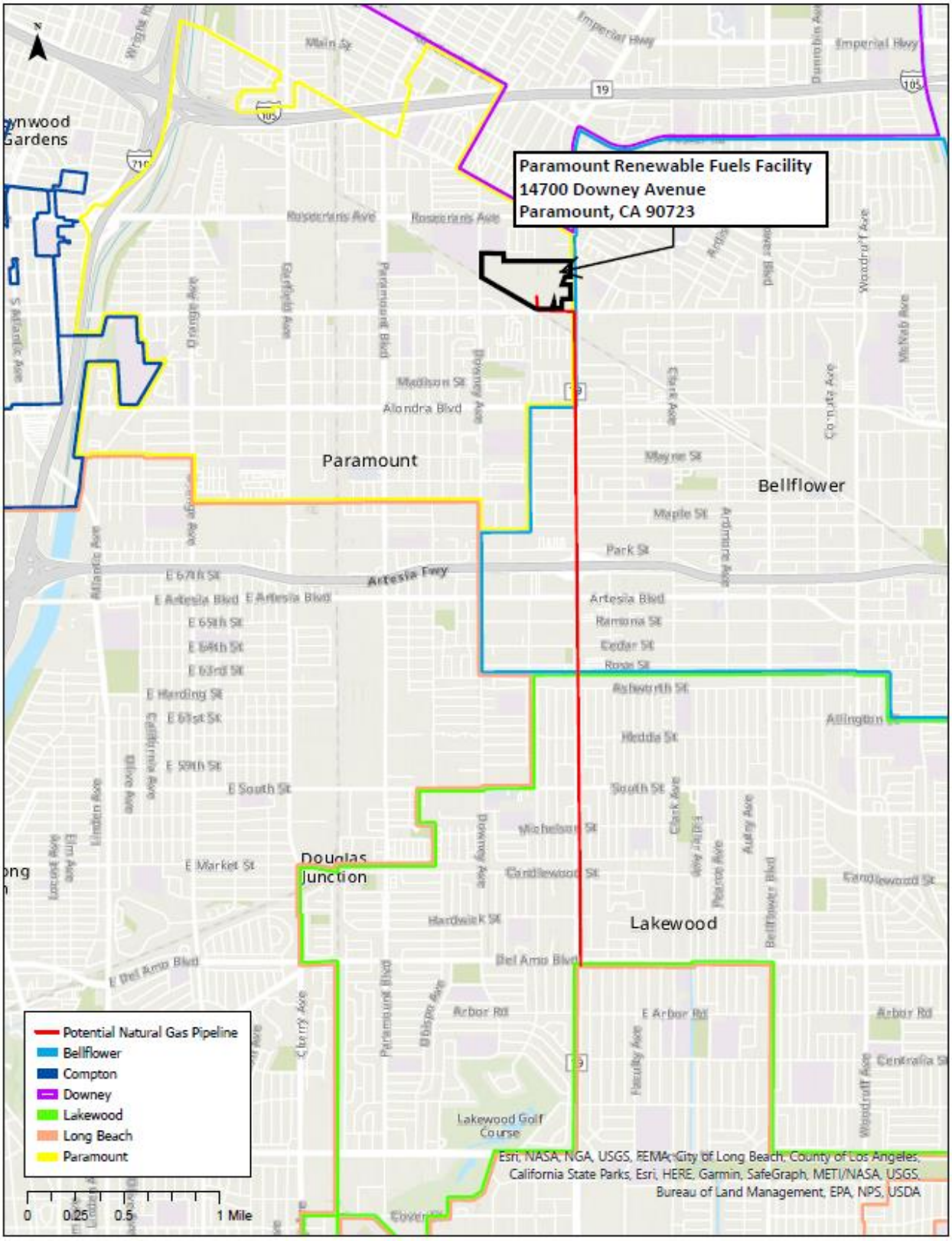
The existing active product distribution pipelines shown in Figure 2-6 would require maintenance activities to comply with California State Fire Marshall requirements. Maintenance activities are expected to include replacement of manual valves with motor-operated valves, installation of leak detection pressure sensors, and minor maintenance of pipeline segments as identified during routine inspections.

The existing reclaimed water system that services the median at the Downey Avenue and Contreras Street intersection near the refinery for landscaping irrigation would be modified to add an additional connection to allow the Project to utilize reclaimed water for process water needs. The new tie-in is shown in Figure 2-7.

2.5.3 Project Building Modifications and Relocations

Existing on-site buildings would be relocated to make room for new equipment as well as to be removed from the operating areas. The Central Control Room and Laboratory would be relocated from the central and southern portions of the refinery, respectively, to the northwest section of the refinery. The Operations/Maintenance offices, maintenance shops, i.e., electrical, welding, rotating equipment and instrumentation and warehouse located throughout the refinery would be moved to the eastern boundary of the refinery. Smaller satellite control rooms would be installed near or inside the units for the field operators. Additionally, temporary offices, i.e., trailers, small modular workspaces, lunch tents, changing facilities, etc., would be brought for the Project for the contractors performing the work.

Figure 2-5 Proposed Natural Gas Pipeline Route



Source: Google Maps 2022.

Figure 2-6 Existing Product Pipelines

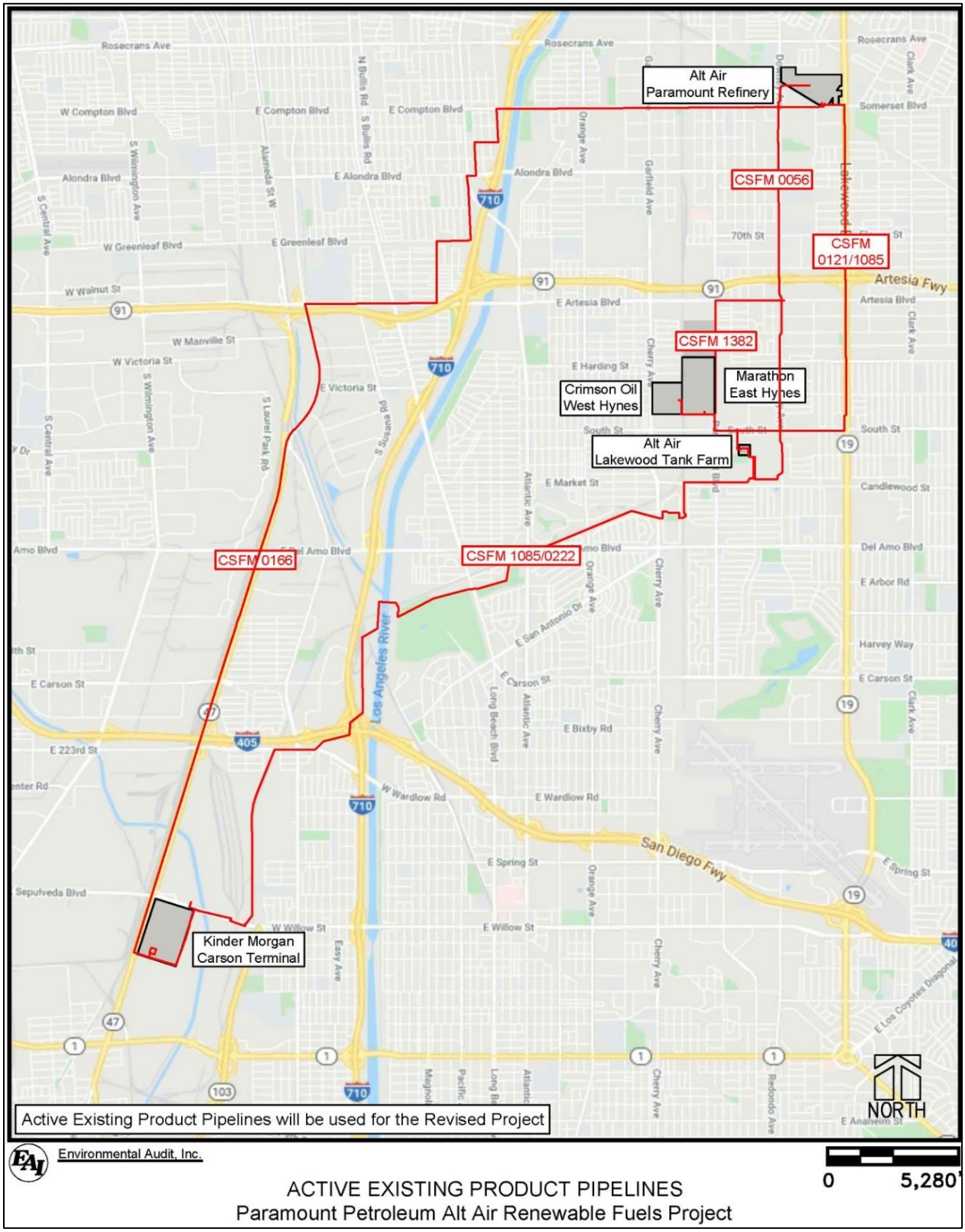
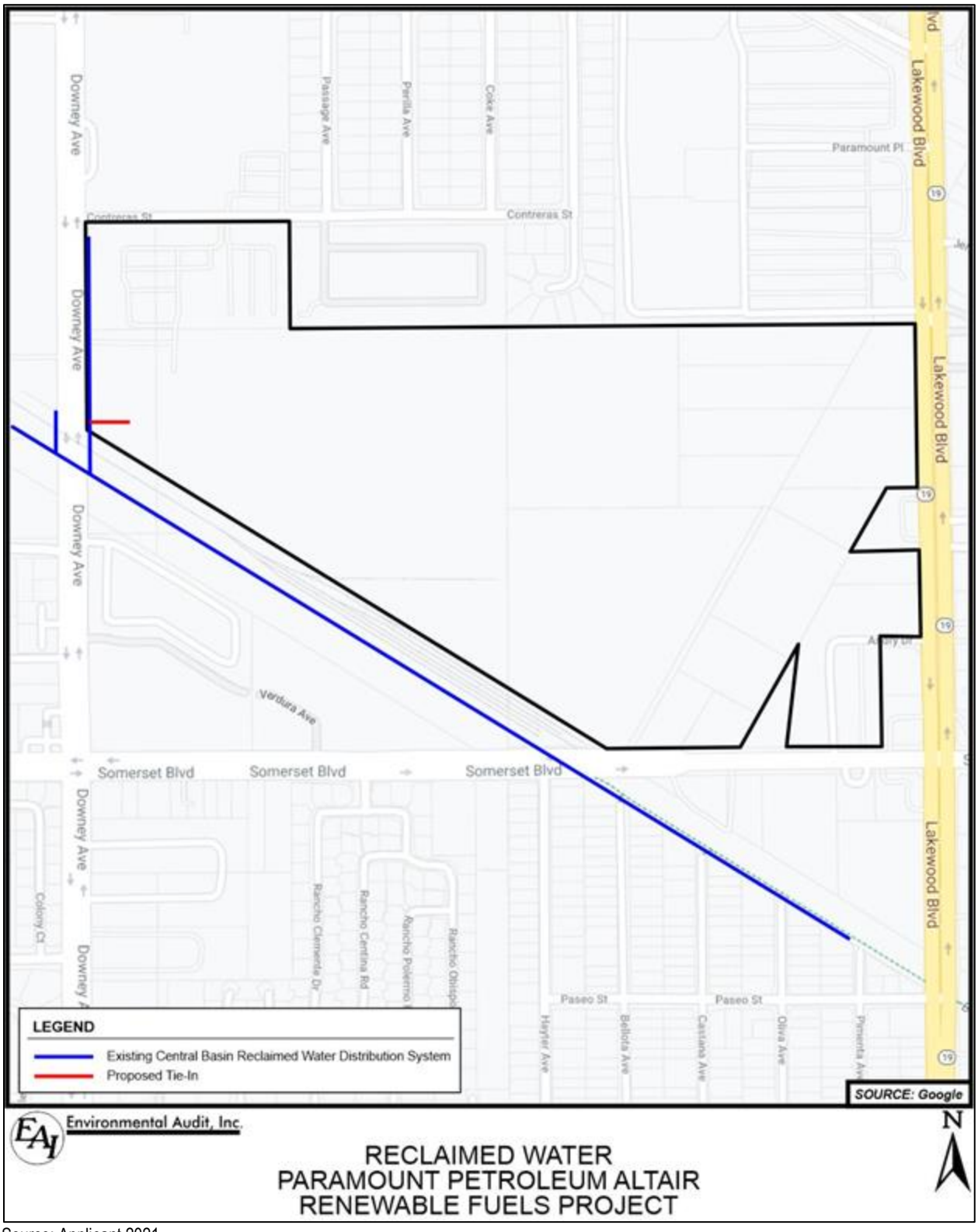


Figure 2-7 Proposed Tie-ins to Reclaimed Water for Project



Source: Applicant 2021.

2.6 Project Construction

Construction of the Project would involve the addition of new units, the modifications to existing units and the demolition of some units not proposed for use under the Project. Table 2.3 shows the changes to the different units at the refinery. Figure 2-2 shows the location of the units (plot plan).

Table 2.3 Units Added, Modified and Demolished

Units Being Added/New	Units Being Modified	Units Being Demolished
Amine and Amine Regeneration Unit by Unit B	Amine Unit for Unit A	Asphalt Facilities
Boiler Feedwater Treatment	Amine Regeneration Unit for Unit A	Asphalt Storage Tanks
Heater, Incinerator and Boiler SCR units	Aqueous Ammonia transfer and storage	Asphalt Melting
Electric Railcar Mover	Boilers with SCR Unit	Buildings Relocation
Flare and Flare Gas Recovery System	H_2S Treatment and SOx Control (2)	Cooling Tower System (1)
Heaters (3)	Caustic Scrubber System	Loading/ Unloading Racks Relocation
Hydrogen Generation Unit	Cooling Tower Systems (2)	Petroleum Processing Units
Hydrogen Sulfide Recovery	Electrical Infrastructure	TK-80002 Crude Tank
Natural Gas Pipeline	Flare and Flare Gas Recovery System	Tank 50007 Distillate Tank
Nitrogen Generating System	Fuel Gas System	
Pretreatment Unit	Gasoline Blending	
Pretreat Unit Oil Recovery	Naphtha Stabilization	
Pretreatment Unit Wastewater Treatment	Rail Loading/Unloading	
Propane Recovery Unit	Sour Water Stripper	
Reclaimed Water Pre-Treatment and Tie-in	Storage Tanks	
SCR for Incinerator H-401	Three Potential Tank Enlargements	
Sour Water Plus Unit	Truck Loading/ Unloading Racks	
Unit B	Unit A – Phase 1	
Unloading Racks	Unit A – Phase 2	
Warehouse and Storage		
Wastewater Treatment		

2.6.1 Project Construction Activities

The Project would consist of construction of new units, modifications to existing units, and demolition of some units and areas. Demolition activities include relocation of loading and unloading racks and buildings, and removal of asphalt production facilities to make room for new equipment installation, including the Hydrogen Generation Unit and new equipment required for Unit B and the support units and utilities.

All of the demolition would be subject to South Coast AQMD Rule 1403. Notifications would be made prior to the demolition work. When wrapped piping is removed, it would be tested for asbestos. If found to contain asbestos, it would be managed per the rule, but there would be no on-site treatment. For removal of metal tanks, vaults or piping, the City of Paramount requires recycling of a minimum of 65 percent, so a scrap metal recovery company would be used to recover the metal.

Almost all of the tanks to be removed and scrapped are asphalt tanks, and cold asphalt is either a hard solid or a tarlike material with no volatile organic compound (VOC) emissions. As such, no degassing is required but cleaning is necessary. Before cleaning can begin, an accessway needs to be cut in the side of the tank large enough to allow a backhoe to enter and remove the remaining asphalt. After the asphalt has been removed, the tank walls and floor area are hydroblasted to finish the cleaning. Once

cleaned, many of the asphalt tanks are small enough to be lifted intact via crane and placed on flatbed trucks for delivery to a regional metal recycling facility. For tanks too large to be transported intact, the same equipment used for excavating would be equipped with a metal cutting tool to cut the tanks into smaller, manageable pieces. As with the smaller intact tanks, the metal pieces would then be loaded on a flatbed truck and transported to a regional metal recycling facility. The hydroblast water would be collected and processed though the on-site wastewater treatment system.

In addition, one floating roof tank, which is subject to South Coast AQMD Rules 463, 1178 and 1149, would be removed. Emissions from this floating roof tank are subject to South Coast AQMD Rules 463 and 1178 while the roof is floating, and subject to South Coast AQMD Rule 1149 when the roof is landed on its legs, and the tank is taken out of service. Once the roof is landed, the vapor space is vented to a vapor control device until the tank is degassed per the requirements of South Coast Rule 1149 and then opened to atmosphere to allow entry to complete the cleaning. Either way, the vapors are controlled.

Excavation and grading activities are expected to occur in areas where footings are necessary for new foundations. Excavated soil would be tested to properly determine its hazardous characteristics for proper disposal. Soil suitable for landfill cover would be sent to a local Class III landfill while soil contaminated with petroleum would be sent to a facility for thermal treatment prior to disposal.

On-site soil movement activities would include grading, trenching, storage piles, and truck filling/dumping at the site to construct necessary foundations. Vehicles would also travel on paved and unpaved roads. Grading of some areas would occur related to foundation work for new installations, as well as some stockpiling of material and dumping of materials. Foundation work would occur in the areas of new equipment installations (see Figure 2-2).

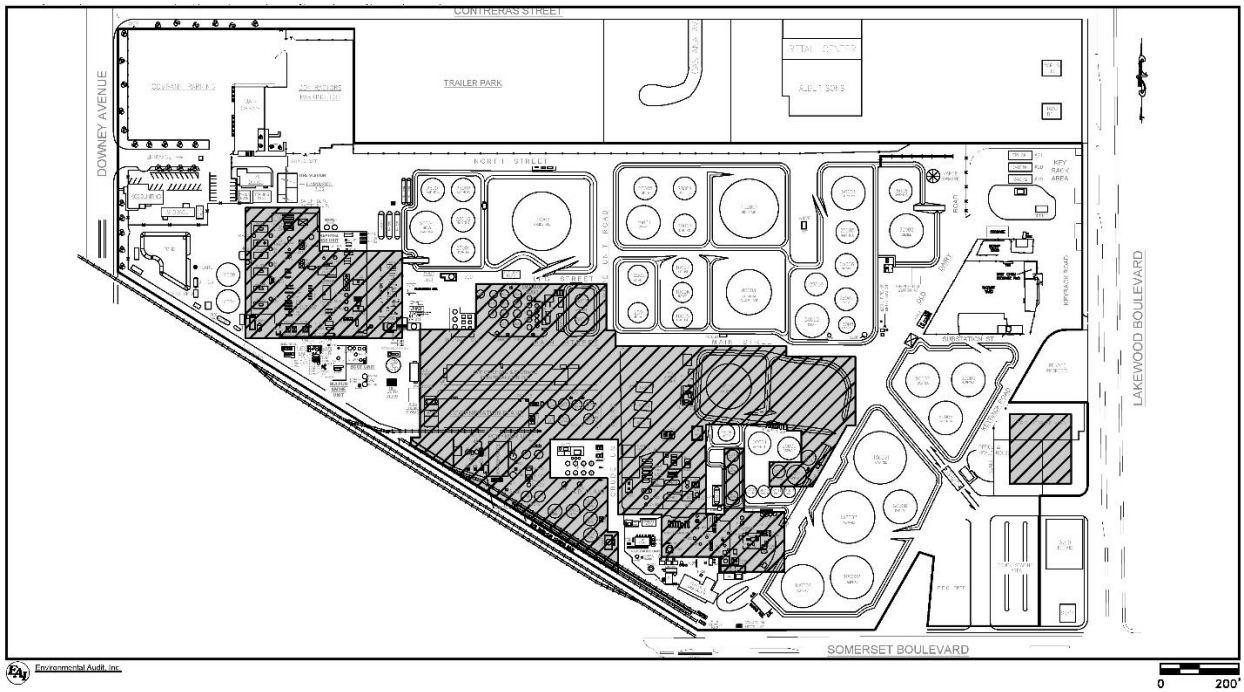
Soil movement would be required in order to install foundations for additional equipment. Up to an estimated 2,000 yds^3 per day of soil would be moved, with a total excavated estimated volume of up to 200,000 yds^3 and a total fill volume of approximately 110,000 yds^3. It is assumed all of the excavated soil is contaminated and would be taken off site for disposal. None of the soil would be treated on-site. The destination for contaminated soils is anticipated to be the landfill in the San Joaquin Valley, CA. For excavation of soil, a South Coast AQMD Rule 1166 plan is required, and has been submitted for approval prior to the demo/construction for the soil excavation. Figure 2-8 shows the areas where soil would be excavated and moved.

During construction activities, water would be applied as a dust suppressant to the construction areas during grading, trenching, and earth-moving activities to control or reduce fugitive dust emissions pursuant to South Coast AQMD Rule 403. Application of water would be performed three times per day and would reduce PM emissions by a factor of up to 61 percent (South Coast AQMD, 2007).

Equipment would be staged on-site in laydown areas prior to installation. Some of the equipment would require painting. Upon complete installation, new equipment would be commissioned and tuned for optimal operation. Commissioning for combustion devices may include slow heating to dry out refractory. Emissions from commissioning are evaluated for compliance with South Coast AQMD and federal requirements in Chapter 4.

Construction workers are expected to park off-site and be shuttled to the refinery. The off-site parking location is within the City of Paramount at the corner of Somerset Blvd. and All America City Way (the Paramount Swap Meet location). Up to 33 daily round-trip bus trips would be used to shuttle workers to and from the site.

Figure 2-8 Soil Movement Areas



Source: Applicant 2021

The construction schedule and equipment requirements are discussed below.

2.6.2 Project Construction Schedule

Construction would be phased over a three-year period. Modifications to Unit A would commence immediately following receipt of all Project approvals. Modifications to Unit A would take approximately 16 months, where the first eight months (Phase 1) would occur at the beginning of the Project and the remainder of the modifications to Unit A (Phase 2) would occur over the last eight months of the total construction period. Unit A would continue to operate while demolition activities are being completed to allow space for new construction.

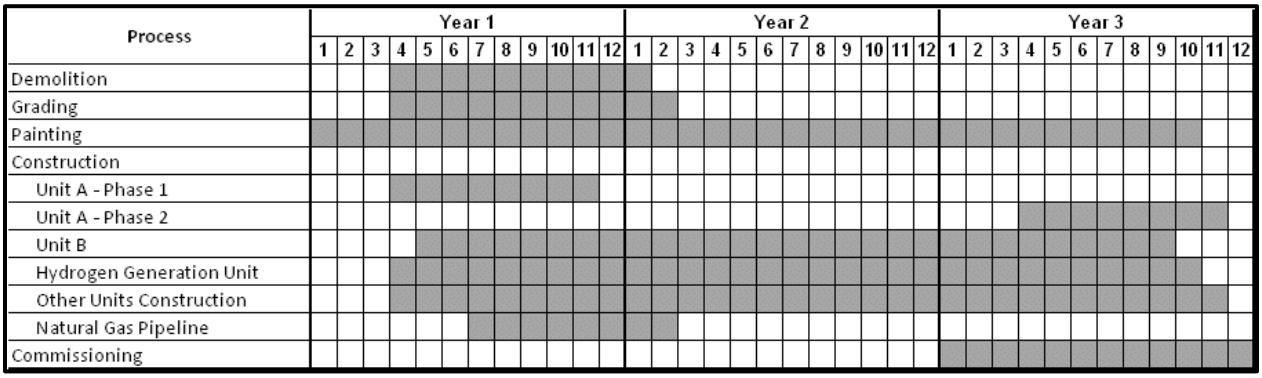
Construction activities would overlap some of the demolition activities and then continue through completion.

The Hydrogen Generation Unit would take approximately 31 months to complete. Unit B, which includes the Pretreatment Unit, would take approximately 29 months to complete. Therefore, full construction and commissioning activities would take place over an approximately three-year timeframe. AltAir would modify existing equipment, demolish unused equipment that is located where new equipment would be placed, idle-in-place unused equipment, and install new equipment.

Construction of the natural gas pipeline is also expected to occur during the time that the Hydrogen Generation Unit is being constructed. SoCalGas is responsible for the installation, commissioning, and operation of the new natural gas pipeline.

On-site utilities (e.g., electrical lines, natural gas connection lines, steam lines) are included in the unit construction schedules. Construction would be phased, as shown in Figure 2-9 below.

Figure 2-9 Estimated Project Schedule



Note: Project schedule is an estimate. Actual schedule may vary.

Construction workers are expected to be at the site for longer than eight hours per shift, including time for meals and breaks, organization meetings, etc.; therefore, construction activities may occur up to 10 hours per shift. For a period of approximately 13 months, construction is expected to occur in two ten-hour shifts per day to accommodate the installation of large equipment. Earth moving (e.g., grading and excavation) would not be conducted during the second evening/nighttime shift). The second shift is anticipated to have approximately one-fourth of the peak number of construction workers (approximately 350), which provides a safer workplace to maneuver large equipment into place. The second shift activities are expected to require up to one-fourth of the number of pieces of construction equipment with only the necessary equipment operating.

2.6.3 Project Construction Equipment

Construction equipment requirements vary over the length of the construction project. On-site construction equipment would include backhoes, compressors, cranes, generators, tractors, water trucks and welding machines (see Section 4.2 and Appendix B part 1 for complete list). Individual equipment is assumed to be operational from four to 16 hours per day, with no more than ten hours per shift during a normal construction day. The number of pieces of equipment that would operate would vary from day-to-day. The peak day of emissions is calculated from the projected monthly peak day of equipment. Likewise, the number of construction workers is expected to fluctuate over the construction period, with the maximum number expected to be 1,312.

Off-site construction equipment for the natural gas pipeline is similar or less intense than on-site equipment. As pipeline construction is not expected to overlap peak construction periods, pipeline construction equipment needs are assumed to be included in the on-site equipment construction efforts described for the refinery.

Vehicles used during construction include construction worker vehicles, pick-up trucks, flatbed trucks, dump trucks, water trucks, semi tractors, concrete trucks, and delivery trucks. Vehicle activity would occur both on-site and off-site.

Construction worker commute vehicle trips are assumed to travel a one-way distance of 14.7 miles (CAPCOA, 2021) to and from work each day, making two one-way trips per day with the average vehicle ridership assumed to be one person per vehicle.

All cars and pickup trucks used for short trips within and near the refinery and traveling between equipment storage and the refinery units are assumed to travel a total of five miles or less per day on-site.

Medium- and heavy-duty diesel trucks include dump trucks, water trucks, and delivery trucks. Heavy heavy-duty semi-trucks and concrete trucks were also included in the Project construction analysis. Table 2.4 shows the estimated peak vehicle trips and miles traveled during the construction period for all vehicle types.

Table 2.4 Construction Vehicle Trips

Vehicle	Off-site Peak Trips, per day			On-site Peak Trips, per day		
	Year 1	Year 2	Year 3	Year 1	Year 2	Year 3
Commute vehicles	585	1,312	735	0	0	0
Pickup Trucks	9	12	7	9	13	13
Total Light Vehicle Miles	17,464	32,663	21,815	18	26	26
Water Truck	2	2	2	2	2	2
Delivery Truck	108	65	14	137	65	14
Fuel/Lube Truck	5	9	7	5	9	7
Misc. MD Truck	2	2	2	2	2	2
Total Medium Truck Miles	4,680	3,120	1,000	298	162	56
Dump Truck	129	144	0	129	144	0
Semi-Tractor, Diesel 20 Ton	2	2	0	1	2	0
Bus	26	30	36	30	30	36
Misc. HD Truck	2	10	3	1	10	3
Total Heavy Truck Miles	38,990	43,830	300	322	372	78

Note: Mis. HD trucks include concrete trucks. Peak vehicles and miles traveled. As the peak day for individual equipment types may occur at different periods, the peak day would not be a combination of these peak levels. See Section 4.2, Air Quality and Appendix B part 1.

2.7 Regulatory Oversight

The Project may require approvals from a variety of federal, state, and local agencies. The expected discretionary permits and approvals are listed in Table 2.5. Permits and approvals that are ministerial (i.e., do not require discretion) are summarized in the following subsections and are discussed in the appropriate environmental topic in Section 4.0.

2.7.1 Federal Approvals

The U.S. Environmental Protection Agency (EPA) has review and oversight authority under Title V of the Clean Air Act for refinery air permits and approvals. The U.S. EPA also has authority over the Prevention of Significant Deterioration (PSD) Program and an applicability analysis to determine if PSD program permitting is required for the proposed modifications. The Project is not expected to require permitting under the PSD Program. No other discretionary federal agency approvals for the Project are expected to be required. Many of the U.S. EPA regulations and requirements are implemented by state or local agencies. For example, New Source Performance Standards, National Emission Standards for Hazardous Air Pollutants and PSD are implemented by the South Coast AQMD, and hazardous waste regulations are enforced by the California Department of Toxic Substances Control (DTSC) and the Certified Unified Program Agency (CUPA). The Spill Prevention Control and Countermeasure (SPCC) Plan would require

modifications to assure that all tank changes and new and modified refinery units are included in the Plan.

The Occupational Safety and Health Administration (OSHA) regulates workplace hazards and enforces regulations that protect workers' health and safety. Under federal OSHA, regulations have been promulgated that require the preparation and implementation of a Process Safety Management (PSM) Program (40 CFR Part 1910, Section 119, and Title 8 of the California Code of Regulations, Section 5189). The refinery would be required to complete a PSM program to evaluate and minimize hazards associated with the Project. Finally, the U.S. Department of Transportation regulates the transportation of hazardous materials.

2.7.2 State Approvals

No discretionary state agency approvals for the Project are expected to be required. Non-discretionary (i.e., ministerial) construction-related permits may be required from the California Occupational Safety and Health Administration (CalOSHA) for demolition, construction, excavation, and tower and crane erection. Any transport of heavy construction equipment, which requires the use of oversized transport vehicles on state highways, would require a Caltrans transportation permit. The Project would require a Notice of Intent and preparation of a Stormwater Pollution Prevention Plan (Construction) under the statewide general stormwater NPDES permit from the State Regional Water Quality Control Board. A portion of the groundwater monitoring and recovery wells will be properly abandoned due to construction activities. They will be replaced upon construction completion. AltAir will continue its remediation program with the remaining wells during construction. DTSC regulates the generation, transport, treatment, and disposal of hazardous wastes. Hazardous wastes generated by the Project activities and related to renewable fuels processing activities would be governed by rules and regulations enforced by DTSC and CUPA. The existing PSM program and hazard communication program may require updating with CalOSHA due to the Project.

2.7.3 Local Approvals

The City of Paramount has responsibility as lead agency for the CEQA process and for certification of the SEIR because it has primary approval authority over the Project (CEQA Guidelines §15051(b)). The Project would require a Conditional Use Permit and a Zone Variance for equipment that exceeds 55 feet.

The South Coast AQMD has discretion for issuing air Permits to Construct/Operate for new equipment installations and modifications to existing units and is identified as a responsible agency for the CEQA process. Certain components of the Project are subject to existing South Coast AQMD rules and regulations. Permits or plan approvals also may be required by South Coast AQMD rules (e.g., South Coast AQMD Rule 1166 for soil remediation activities, Rule 1403 for demolition activities) and other registrations and compliance plans as required for the process equipment.

The Los Angeles County Sanitation District (LACSD) and the County of Los Angeles Department of Public Works (LADPW) have responsibility for issuance of industrial wastewater discharge permits which are required for discharges into public sewers. The refinery's existing industrial wastewater discharge permit is expected to be modified for the Project.

The County of Los Angeles, Petro/Chemical Division, Fire Planning and Prevention Division is responsible for issuing ministerial permits for storage tanks and for review and approval of Risk Management Plans which would be required as part of the Project. The Fire Department also is responsible for assuring that the City fire codes are implemented. Ministerial building and grading permits for the Project would be

required from the City of Paramount and cities through which the new natural gas pipeline would be installed to assure that the Project complies with the California Building Code.

Right-of-way permits by SoCalGas are also expected to be required from local jurisdictions for the construction of the natural gas pipeline which may include Caltrans and the Cities of Paramount, Bellflower, Lakewood, and Long Beach.

Table 2.5 Federal, State and Local Agency Discretionary Actions and Permit Actions Needed for the Project

Agency Permit or Approval	Requirement	Applicability to Project
Federal		
U.S. EPA	Title V of the 1990 Clean Air Act	Modifications to the refinery's Title V permit are required.
State		
Caltrans	Caltrans Transportation Permit	Required for the transport of oversized equipment on California highways
	Right-of-Way	SoCalGas will obtain permits for natural gas pipeline.
Regional Water Quality Control Board	Stormwater Pollution Prevention Permit Construction and Future Operation	Construction activities will require a Notice of Intent and preparation of a Stormwater Pollution Prevention Plan under the statewide general stormwater NPDES permit. Project is removing and replacing existing Stormwater drains. The site specific NPDES permit will need to be updated and a new SWPPP prepared.
	Above Ground Petroleum Storage Tanks	New Spill Prevention Control & Countermeasures (SPCC) plan will be required following tankage changes.
	Groundwater Remediation	A portion of the remediation wells will need to be relocated due to the construction activities. Approval of a work plan will be required.
CalOSHA	Construction Permits	CalOSHA Sections 341: Permit Requirements. To conduct the demolition or dismantling of any building or structure more than 36 feet in height, the Project Administrator shall hold a Project Permit and all other employers directly engaging in demolition or dismantling activity shall hold an Annual Permit.
Local		
South Coast Air Quality Management District (South Coast AQMD)	RECLAIM Permit	Regulation XX: RECLAIM. Applications are required to modify air emission sources.
	Title V of the 1990 Clean Air Act.	Regulation XXX: Title V Permits. Applications are required to modify air emission sources.
	Permits to Construct	South Coast AQMD Rule 201: Permit to Construct. Applications are required to construct,
	Permits to Operate	South Coast AQMD Rule 203: Permit to Operate. Applications are required to operate air emissions sources.
	Filing Requirements for Specific Emissions Sources	South Coast AQMD Rule 222: Filing Requirements for Specific Sources Not Requiring a Written Permit Pursuant to Regulation II: Filing

Table 2.5 Federal, State and Local Agency Discretionary Actions and Permit Actions Needed for the Project

Agency Permit or Approval	Requirement	Applicability to Project
		for certain equipment is required. South Coast AQMD Rule 1118: Control of Emissions from Refinery Flares. Requires revision to the Flare Monitoring and Recording Plan.
	Soil Contamination	South Coast AQMD Rule 1166: VOC Emissions from Decontamination of Soil. Requires the control of VOC emissions from soil remediation activities.
City of Paramount	California Environmental Quality Act (CEQA) Review	The City is the lead agency for preparation of the environmental document (Public Resources Code § 21067).
	Conditional Use Permit	Required for modifications to the refinery.
	Water Supply Assessment (Water Code Sections 10910 through 10915)	Required because the Project is a water demand project as identified under (CEQA) Section 15155.
	Zone Variance	Project components would exceed height limit of 55 feet in heavy industrial zones.
	Building Permits	Required for foundations for new equipment, new construction and electrical work
	Right-of-Way	Required for new pipelines. SoCalGas will obtain permits for natural gas pipeline.
Los Angeles County Sanitation District	Industrial wastewater discharge permit, joint with Los Angeles County Public Works	Industrial wastewater permit requires modification due to increased wastewater discharge.
Los Angeles County Department of Public Works	Industrial wastewater discharge permit, joint with Los Angeles County Sanitation District	Industrial wastewater permit requires modification due to increased wastewater discharge.
	Underground storage tanks	Permits will be modified for some wastewater sumps that will be removed. Permits are required for any UST that is installed.
Los Angeles County Fire/Hazmat Division	CUPA permit for hazardous materials inventory, aboveground storage tanks, underground storage tanks, risk management, contingency planning	To be updated for Project modifications
Metropolitan Transportation Authority and Union Pacific Railroad	Modified railroad tracks.	Approval required to modify the rail within and adjacent to the refinery.
Local Jurisdictions (potentially Caltrans and cities of Bellflower, Lakewood, and Long Beach)	Right-of-Way	Required for new pipelines. SoCalGas will obtain permits for natural gas pipeline.

Source: Applicant 2021.

2.8 References

AltAir Paramount (Applicant). 2021. Paramount Petroleum AltAir Renewable Fuels Project. Project Description. May 2021.

CAPCOA. 2021. CalEEMod Manual, http://www.caleemod.com/

CARB. 2020. 2020 Annual Evaluation of Fuel Cell Electric Vehicle Deployment & Hydrogen Fuel Station Network Development (Report Pursuant to AB 8; Perea, Chapter 401, Statutes of 2013)

City of Paramount. 2013. Paramount Petroleum Alt-Air Renewable Fuels Project. Mitigated Negative Declaration and Initial Study, Conditional Use Permit (CUP) 757 and Zone Variance (ZV) 401. Adopted December 30, 2013 (PARA 059).

City of Paramount. 2014. Paramount Petroleum Alt Air Project. Addendum to Mitigated Negative Declaration and Initial Study, Conditional Use Permit (CUP) 757 and Zone Variance (ZV). Adopted November 24, 2014 (PARA 066).

South Coast AQMD. 2007. Mitigation Measures and Control Efficiencies, Fugitive Dust, http://www.aqmd.gov/home/rules-compliance/ceqa/air-quality-analysis-handbook/mitigation-measures-and-control-efficiencies

3.0 Cumulative Projects

This section of the Subsequent Environmental Impact Report (SEIR) provides a summary of the methodology used to analyze cumulative impacts and a list of the projects included in the cumulative analysis.

3.1 Cumulative Methodology

Section 15130 of the California Environmental Quality Act (CEQA) Guidelines requires that an Environmental Impact Report (EIR) discuss cumulative impacts of a project when the project's incremental effect is cumulatively considerable. Section 15355 of the CEQA Guidelines defines "cumulative impacts" as two or more individual effects that, when considered together, are either considerable or compound other environmental impacts. Cumulative impacts are further described as follows:

- The individual effects may be changes resulting from a single project or a number of separate projects (CEQA Guidelines, Section 15355[a]); and
- The cumulative impacts from several projects are 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 (CEQA Guidelines, Section 15355[b]).

Furthermore, according to State CEQA Guidelines Section 15130(a)(1):

> As defined in 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 which do not result in part from the project evaluated in the EIR.

In addition, as stated in the State CEQA Guidelines, Section 15064(h)(4):

> The mere existence of significant cumulative impacts caused by other projects alone shall not constitute substantial evidence that the proposed project's incremental effects are cumulatively considerable.

The discussion of cumulative impacts shall reflect the severity of the impacts and their likelihood of occurrence, but the discussion need not provide as great a level of detail as is provided for the effects attributable to the project alone. The discussion should be guided by the standards of practicality and reasonableness and should focus on the cumulative impact to which the identified other projects contribute rather than the attributes of other projects which do not contribute to the cumulative impact (CEQA Guidelines Section 15130(b)).

The goal of the cumulative projects analysis is to identify those reasonably foreseeable projects that could have spatial and temporal overlaps with the Project. Projects with temporal overlaps include those that are planned to occur during the same timeframe as the Project. Projects with spatial overlaps are those that would have impacts in the same area or on the same resources as those of the Project (e.g., traffic that could affect the same roadways).

The area within which a cumulative effect can occur varies by issue area. For example, air quality impacts tend to disperse over a large area, while safety impacts are typically more localized. For this reason, the geographic scope for the analysis of cumulative impacts must be identified for each issue area. The

analysis of cumulative effects considers several variables including geographic (spatial) limits, time (temporal) limits, and the characteristics of the resource being evaluated. In addition, each of the cumulative projects has its own implementation schedule, which may or may not coincide or overlap with the Project's schedule.

One of the main goals of the cumulative analysis is to determine if a significant adverse cumulative condition presently exists to which Project impacts could contribute, and then to determine if the incremental Project-specific impact to the existing adverse cumulative conditions is cumulatively considerable. If the Project would not result in a Project-specific impact, then the Project could not contribute to any existing adverse cumulative impact that might exist. On the other hand, if a Project-specific impact was found to be significant and unavoidable in a specific issue area, then in most cases this would mean that the cumulative impacts would be significant and unavoidable.

This section presents the cumulative projects considered, while the cumulative impact analysis for each individual issue area is included in the respective discussions in Sections 4.1 through 4.11 of this SEIR.

3.2 Cumulative Projects

In most cases, the EIR uses a list-based approach for assessing the potential for significant cumulative impacts. The discussion below provides a description of cumulative impacts within two miles of the Project, and other projects that may have an influence on cumulative impacts as appropriate. The jurisdictions of the cumulative projects are the City of Carson, County of Los Angeles, City of Downey, City of Lakewood, City of Bellflower, and Port of Los Angeles. Table 3.1 provides a list of the cumulative projects, and Figure 3-1 provides a map of the cumulative projects.

3.2.1 City of Carson

The Carson to Paramount Hydrogen Gas Pipeline Project utilizes an existing 11.5-mile series of pipelines plus a constructed new 0.5-mile segment to connect from the Air Products' existing hydrogen facility in the City of Carson to the World Energy Paramount Facility (Paramount Refinery) to support the production of renewable biofuels. The project eliminated the need for five to seven daily tanker trucks that delivered hydrogen to the Paramount Refinery (refinery) to produce approximately 3,500 barrels of diesel and jet fuel per day from beef tallow and vegetable oils. The project route initiates in the City of Carson and terminates in the City of Paramount. The project route traverses small portions of the City of Los Angeles and County of Los Angeles, as well as portions of the cities of Long Beach, Lakewood, and Bellflower. The project is located within an area of industrial, commercial, and residential land uses (City of Carson, 2020). The pipeline underwent a CEQA review process by the City of Carson and is currently operational.

3.2.2 County of Los Angeles

The Los Angeles County Metropolitan Transportation Authority (LA Metro) is evaluating a new 19-mile light rail transit line that will connect southeast Los Angeles County to downtown Los Angeles utilizing a combination of abandoned Pacific Electric Right-of-Way (ROW) and freight ROW. The West Santa Ana Branch Transit Corridor (WSAB) project will serve the cities and communities of downtown Los Angeles, unincorporated Florence-Graham community of Los Angeles County, Vernon, Huntington Park, Bell, Cudahy, South Gate, Downey, Paramount, Bellflower, Cerritos, and Artesia (LA Metro, 2019). In addition, the WSAB project is expected to provide a direct connection to the Metro Green Line, Metro Blue Line, and the Los Angeles County regional transit network. The proposed WSAB line will run adjacent to the

southwest boundary of the refinery. The refinery is located between the proposed Paramount/Rosecrans Station and Bellflower Station but is located outside the half-mile walk shed of each station.

3.2.3 City of Downey

The City of Downey has a number of mixed-use commercial projects, residential projects, and industrial projects that are in the review process. The goal of the Rancho Los Amigos South Campus Specific Plan (Specific Plan) is to encourage and promote economic development and revitalization to enhance the City's attractiveness to the local and regional marketplace. The Specific Plan is anticipated to remove regulatory obstacles to the reuse of existing structures and promote infill development of currently vacant and underutilized properties. The Specific Plan will facilitate and encourage enhanced commercial, retail, and mixed-use opportunities, residential development, public and open spaces, an improved pedestrian environment, and a variety of transportation choices that will enhance the potential for a multi-modal transportation center (City of Downey, 2019).

The City of Downey has approved the request to construct a new 7-11 convenience store at the corner of Downey Avenue and Gardendale Street and sell beer and wine for off-site consumption under a type 20 ABC license. The 8818 Imperial Hwy Project proposes a remodel of an existing 10,473 sq. ft. commercial building. Also approved by the City of Downey Planning Commission is a Chick-fil-A that will involve a new 4,000 sq. ft. restaurant building with drive-thru and outdoor seating, as well as modifications to the convenience store and a CUP revision for Mobil Gas & Krunchy Chicken on Imperial Highway. In addition, a request to construct 62 senior housing units on Woodruff Avenue has been submitted for Planning Commission Review. The Verizon Wireless Cell Tower Project proposes to install a new wireless telecommunication facility, disguised as a pine tree within the City of Downey Public Works Maintenance Yard (City of Downey, 2021).

3.2.4 City of Bellflower

The Downtown Bellflower Transit Oriented Development (TOD) Mixed Use Project proposes to construct a mixed-use (theater, residential and service commercial) project on the 1.56-acre (68,000-sq. ft.) site. The project site is located south of Mayne Street, west of Bellflower Boulevard and north of Oak Street. Existing project site addresses are: 1) 9742 Mayne Street, 2) 16411 Bellflower Boulevard and 3) 9735 Oak Street. The project is proposed in two parts with Parcel A redeveloping the existing and vacant "Cosmopolitan Grocers" building for a new four screen theater and retail commercial/restaurant uses, and Parcel B constructing a five story, mixed-use, 91-unit condominium with associated parking. Both Parcels A and B will be constructed concurrently. The existing commercial uses/structures located south of the proposed Downtown Bellflower TOD building and north of Oak Street are not part of this project and will remain as is. (City of Bellflower, 2020).

The West Artesia Boulevard Commercial Highway Planning Area Specific Plan is a 20-acre specific plan generally bounded by the Artesia Freeway (SR-91) to the north, Lakewood Boulevard to the east, Artesia Boulevard along the south, and Downey Avenue to the west (City of Bellflower, 2019). There is ongoing development from the plan to provide a land use mechanism to guide the redevelopment of commercial uses and related public improvements.

3.2.5 City of Lakewood

The Lakewood Tank Farm is located approximately three miles south from the refinery. Cumulative projects may be developed in the area of the Lakewood Tank Farm. However, as the Lakewood Tank Farm is existing, no construction will take place at the tank farm, and the operations of the tank farm will not

change under this project except for a change in the products transferred. No cumulative effects are expected due to cumulative projects in the area of the tank farm.

3.2.6 Port of Los Angeles

Barge vessels would be received at the Port of Los Angeles to supply feedstock to the refinery at an existing liquid bulk terminal. These materials would be offloaded from barges/vessels into marine terminal tanks and then loaded on to trucks and transported to the refinery.

The Port of Los Angeles has developed a Port Master Plan Update (PMPU) that underwent CEQA (a programmatic EIR [PEIR]) review and was prepared by the Los Angeles Harbor Department (LAHD). The PMPU serves as a long-range plan to establish policies and guidelines for future development at the Port of Los Angeles. Activities in the program would be examined in light of the PEIR to determine whether an additional environmental document must be prepared. If a later activity would have impacts that were not examined in the PEIR, a new Initial Study would need to be prepared leading to either an EIR or a Negative Declaration. If the agency finds that no new impacts would occur or no new mitigation measures would be required, the agency can approve the activity as being within the scope of the project covered by the PEIR, and no new environmental document would be required.

The Port of Los Angeles activities and air emissions are managed by the San Pedro Bay Ports Clean Air Action Plan (CAAP), an air quality plan that establishes the strategy for reducing port-related air pollution and related health risks and is applicable to all activities at the ports.

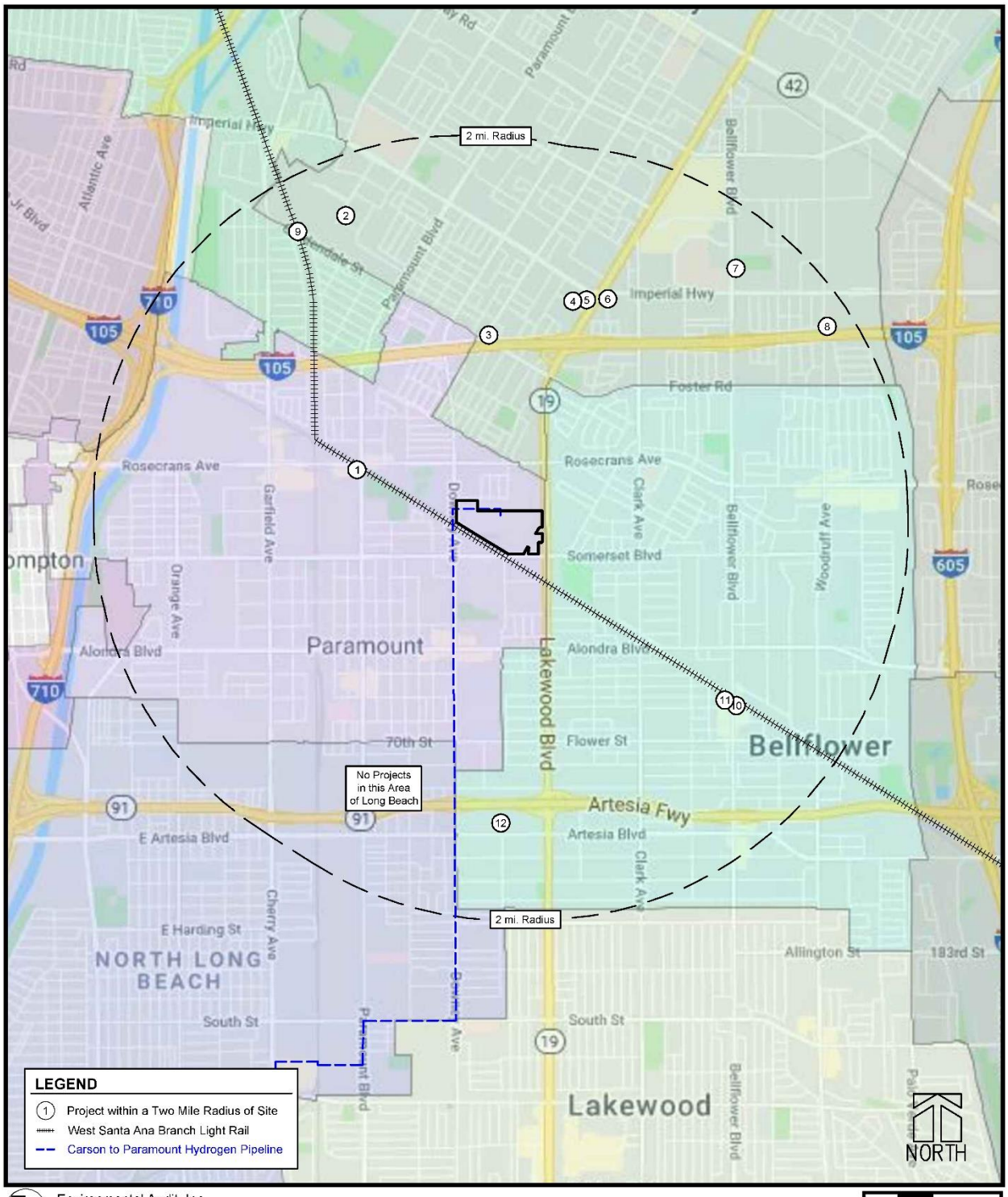
The PMPU PEIR examined potential impacts of projects related to a number of issues areas, including air quality, hazardous materials and vessel transportation, and included projected increases in vessel use of the port.

Cumulative project activities projected to occur at the port under the PMPU include projects such as changes to land use designations, increasing public access, tankage changes and fill projects. The Project use of the marine terminal would be similar to existing operations, and no construction or modifications to equipment would occur.

Table 3.1 List of Cumulative Impacts Within Two Miles of Project

Number	Project Name	Project Description	Project Status
City of Carson			
-	Carson to Paramount Hydrogen Gas Pipeline	The project involved the construction of 0.5 miles of new pipeline within the City of Carson that connected with 11.5 miles of existing Paramount Pipeline LLC pipeline, enabling Air Products to provide hydrogen gas distribution from its existing hydrogen production facilities located in Wilmington and Carson to the Paramount Refinery.	Approved and Built
City of Paramount			
1	West Santa Ana Branch (WSAB) Transit Corridor	The West Santa Ana Branch Transit Corridor (WSAB) project is a 19-mile corridor for light rail transit which aims to connect downtown Los Angeles to Orange County.	Under Review
City of Downey			
2	Rancho Los Amigos – South Campus Specific Plan	Funded by a grant from the Los Angeles Metropolitan Transportation Authority, the City of Downey is creating a Specific Plan for Transit Oriented Development in this area to enhance the area surrounding the future Gardendale light-rail station.	Submitted for Planning Commission Review
3	7-11	Request to construct a new convenience store and sell beer and wine for off-site consumption under a type 20 ABC license.	Approved
4	8818 Imperial Hwy	A remodel of an existing 10,473 sq. ft. commercial building.	Approved
5	Chick-fil-A	A new 4,000 sq. ft. restaurant building with drive-thru and outdoor seating.	Approved
6	Mobil Gas & Krispy Krunchy Chicken	A revision to an existing CUP to operate with a Type 20 ABC license and a request to make modifications to the convenience store.	Approved
7	Verizon Wireless Cell Tower	A request to erect a wireless telecommunication facility, disguised as a pine tree within the City of Downey Public Works Maintenance Yard.	Approved
8	Senior Housing	A request to construct 62 senior housing units.	Submitted for Planning Commission Review
9	West Santa Ana Branch (WSAB) Transit Corridor – Gardendale	The West Santa Ana Branch Transit Corridor (WSAB) project is a 19-mile corridor for light rail transit which aims to connect downtown Los Angeles to Orange County.	Under Review
City of Bellflower			
10	West Santa Ana Branch (WSAB) Transit Corridor – Bellflower	The West Santa Ana Branch Transit Corridor (WSAB) project is a 19-mile corridor for light rail transit which aims to connect downtown Los Angeles to Orange County.	Under Review
11	Downtown Bellflower Transit Oriented Development Mixed Use Project	Redevelopment of the existing and vacant "Cosmopolitan Grocers" building for new theater and retail commercial/restaurant uses, and construction of a five story, mixed-use, 91-unit condominium development and associated parking.	Approved
12	West Artesia Boulevard Commercial Highway Planning Area Specific Plan	Ongoing development from the plan to provide a land use mechanism to guide the redevelopment of commercial uses and related public improvements.	Ongoing

Figure 3-1 Refinery Area Cumulative Projects Map



Environmental Audit, Inc.

CUMULATIVE PROJECTS
PARAMOUNT PETROLEUM ALTAIR
RENEWABLE FUELS PROJECT

Source: Environmental Audit 2021.

3.3 References

City of Bellflower. 2019. Resolution No. 19-25. [online]: https://archive.bellflower.org/WebLink/DocView.aspx?dbid=0&id=146272&page=1&cr=1

City of Bellflower. 2020. Downtown Bellflower Transit Oriented Development Mixed Use Project. [online]: https://ceqanet.opr.ca.gov/2020050144/8

City of Carson. 2020. Air Products Hydrogen Pipeline Project. [online]: https://ceqanet.opr.ca.gov/2020059038/4

City of Downey. 2019. Notice of Preparation of a Draft Program Environmental Impact Report, Rancho Los Amigo South Campus Specific Plan; February 2019. [online]: https://files.ceqanet.opr.ca.gov/36493-1/attachment/VtaSGtpGCGCSrntFNv8aOJBYLHCGDgrtbH3YDdRug4950GqA0OyrXWbO6WwMwvf0EGFD4BaLIEfLpK5c0

City of Downey. 2021. Development Activity Log. [online]: https://www.downeyca.org/our-city/departments/community-development/planning/development-activity-log

Environmental Audit. 2020. Cumulative Projects, Paramount Petroleum AltAir Renewable Fuels Project.

LA Metro. 2019. West Santa Ana Branch Transit Corridor. [online]: https://www.metro.net/projects/west-santa-ana/

4.0 Environmental Analysis of The Proposed Project

This section of the Subsequent Environmental Impact Report (SEIR) presents an analysis of the environmental impacts associated with the Project. As described in Section 2.0 of this SEIR, the Project would convert the remainder of the 50,000 barrels per day (BPD) crude oil refinery into a 25,000 BPD renewable fuels production facility. This conversion would: eliminate the refining of crude oil and support use of renewable jet fuel, diesel, gasoline, and propane. Existing refinery equipment would be used to the extent possible and new equipment would be brought in as needed. Some existing refinery equipment would be eliminated in areas where new equipment would be installed.

The Project is analyzed by issue area in this section. Public comments were gathered following issuance of the NOP for the Project's Draft SEIR; the City of Paramount (City) did not hold any public meetings due to the ongoing pandemic. Written comments received in response to the NOP are provided in Appendix D with an indication of specific SEIR sections where topics related to individual comments are addressed.

Public comments were gathered following issuance of the Draft SEIR on December 6, 2021. The City held a public comment meeting on January 5, 2022. Written comments received in response to the Draft SEIR are provided in Appendix H.

As part of the City's scoping process, 11 issue areas were identified where the Project might result in significant impacts, consisting of Aesthetics, Air Quality, Climate Change/GHG Emissions, Hazardous Materials and Risk of Upset, Hydrology and Water Quality, Land Use, Noise and Vibration, Transportation and Circulation, Tribal Cultural Resources, Utilities and Service Systems, and Environmental Justice.

This SEIR analyzes these 11 issue areas where potentially significant impacts could occur. For each of these 11 issue areas, the impact evaluations are presented in the following sections:

- Environmental Setting;
- Regulatory Setting;
- Significance Thresholds (Environmental Significance Criteria);
- Project Impacts and Mitigation Measures;
- Cumulative Effects; and
- References.

Within each issue area, the environmental setting describes the existing or baseline conditions within the study area. Because this is a subsequent EIR, the Original Renewable Fuels Project (and its prior CEQA review) are treated as part of the environmental baseline in this Project. The Project is thus analyzed against those existing conditions that include the prior project, and the changes between the original project and the proposed Project represent the environmental impacts associated with the Project. Discussion of the need for an SEIR is provided in Section 1.0, Introduction. The Project is analyzed against the baseline conditions and the changes represent the environmental impacts associated with the Project. Issue areas that were identified in the NOP to not have the potential for resulting in significant impacts are discussed in Section 4.12 of this SEIR.

Appendix G of the California Environmental Quality Act (CEQA) Guidelines provides the basis for significance thresholds used to assist in the City's determination of whether a project may have a significant impact on the environment. The CEQA guidelines are supplemented with additional thresholds, such as those promulgated by the South Coast Air Quality Management District (AQMD), where

applicable. These thresholds are presented for each issue area. The criteria define the threshold or limit against which a potential environmental impact is considered. The term "significance" is used throughout this SEIR to characterize the magnitude of the projected impact. For the purposes of this SEIR, a significant impact is a substantial or potentially substantial change to resources in the local Project area or the area adjacent to the Project in comparison to the conditions and activities of the baseline (which include the prior project and existing entitlements), utilizing the thresholds of significance established for the resource or issue area. Within each issue area an analysis of potential impacts compared to the appropriate significance criteria is presented.

Issue area sections also include detailed mitigation measures that have been developed specifically for the Project to reduce the severity of any identified significant impacts. Based on the application of available mitigation measure(s) to an identified impact, the residual impact is then described. All residual impacts identified in this SEIR have been classified according to the following criteria:

- **Class I –** Significant unavoidable adverse impacts for which the decisionmaker must adopt a statement of Overriding Consideration: these are significant adverse impacts that cannot be effectively avoided or mitigated. No measures could be feasibly taken to avoid or reduce these adverse effects to insignificant or negligible levels. Even after application of feasible mitigation measures, the residual impact would be significant;
- **Class II –** Significant environmental impacts that can be feasibly mitigated or avoided for which the decisionmaker must adopt Findings and recommended mitigation measures: these impacts are potentially similar in significance to those of Class I but can be reduced or avoided by the implementation of feasible mitigation measures. After application of feasible mitigation measures, the residual impact would not be significant;
- **Class III –** Adverse impacts found not to be significant for which the decisionmaker does not have to adopt Findings under CEQA: these impacts do not meet or exceed the identified thresholds for significance. Mitigation measures are not required for such impacts for purposes of compliance with CEQA; and
- **Class IV –** Impacts beneficial to the environment.

Mitigation measures developed for each issue area are collectively presented in Section 7.0 of the SEIR, Mitigation Monitoring and Reporting Program. This tabular presentation of each mitigation measure includes the mitigation measure number, monitoring/reporting action, method and timing of verification, agency or City responsibilities, and applicant responsibilities. The impact analysis for the alternatives is presented in Section 5.0, Environmental Analysis and Comparison of Alternatives.

Establishment of Baseline Conditions

The purpose of an EIR is to identify the project's significant effects on the environment and indicate the manner in which those significant effects can be mitigated or avoided (California PRC § 21002.l(a)).

> "*To decide whether a given project's environmental effects are likely to be significant, the Lead Agency must use some measure of the environment's state absent the project, a measure sometimes referred to as the 'baseline' for environmental analysis*" (Communities for a Better Environment, supra, 48 Cal.4th at p. 315.).

An EIR typically evaluates the potential physical changes to the environment by comparing existing physical conditions (i.e., the baseline) with the physical conditions that are projected to exist with the implementation of the proposed project. The difference between these two sets of physical conditions is

the relevant physical change to the environment. After the project's predicted environmental effects have been quantified, one can then determine whether those environmental effects are "significant" for purposes of CEQA utilizing the adopted significance thresholds. Thus, the baseline is a fundamental component of the analysis used to determine whether a project may cause environmental effects and, if so, whether those effects are significant.

CEQA Guidelines § 15125 states the following:

> *"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."*

The 2013 MND Original Renewable Fuels Project evaluated the impacts of the Original Renewable Fuels Project compared to the baseline of the operating crude oil refinery in 2011. The refinery has been operating in the City of Paramount since the 1930s. As shown in Figure 1-2, recent operations of the refinery indicate that the 2011 crude oil throughput was somewhat below the historical average throughput in the last 10 years (about 65 percent of the average throughput from 2003 through 2012). Refinery throughput roughly correlates to impacts, since increased throughput would generate more air emissions, more noise, more traffic, etc. By utilizing a year when the throughput is somewhat lower, but still representative of recent operations, the impacts of changes to the operations would be conservative. In addition, the air emissions historically indicate that the year 2011 air emissions are slightly below the average historical NOx emissions (years 2000–2012, the years available in the South Coast AQMD databases) and slightly above the historical volatile organic compound (VOC) emissions. Therefore, the 2013 MND selection of the 2011 as the baseline refinery operating year was conservative and representative of the historical refinery operations.

The starting point for this analysis, which may be referred as the baseline for this SEIR, is the 2013 MND baseline, which comprises the 2011 crude oil refinery operations, plus the changes identified in the Original Renewable Fuels Project 2013 MND with the Original Renewable Fuels Project operating at the maximum capacity analyzed. In some issue areas, such as traffic and noise, there were effectively no impacts associated with the Original Renewable Fuels Project 2013 MND, as the Original Renewable Fuels Project operations were determined to be less than the 2011 refinery operations. For these issue areas, therefore, the baseline for this Project SEIR is effectively the 2011 refinery operations. Other issues areas, such as air quality, identified additional emissions from the Original Renewable Fuels Project in the 2013 MND, but since the refinery never operated as a crude oil refinery in combination with the Original Renewable Fuels Project, these allowed incremental increases in air emissions were never fully realized (as emissions from the 2011 crude oil refinery plus the Original Renewable Fuels Project). Therefore, in order to be conservative for the air quality analysis, this SEIR analyzes the incremental increase in air emissions over the 2011 refinery operations only.

The Paramount Refinery (refinery) resides on a 66-acre complex at 14700 Downey Avenue and includes refinery processing units, renewable fuel processing units, over 1.7 million barrels of product storage; truck loading and unloading facilities; and railcar loading and unloading facilities. Permits for the crude oil refinery remain valid and those types of activities could restart at any time without additional discretionary approvals.

Table 1.2 provides a list of the historical CEQA review documents prepared for the refinery since 2001. AltAir has been in partnership with Paramount Petroleum since 2013 when the refinery began the process of converting portions of their oil refinery into renewable fuels production under the Original Renewable Fuels Project. The initial CEQA and permitting efforts for the Original Renewable Fuels Project were approved by the City under Conditional Use Permit (CUP) 757 and Zone Variance (ZV) 401, and new and modified air permits were issued by the South Coast AQMD. The CEQA review for the Original Renewable Fuels Project included a Mitigated Negative Declaration (MND) for the Paramount Petroleum AltAir Project adopted December 30, 2013 and revised per Addendum May 14, 2014. Construction of the initial modifications to the refinery to produce renewable fuels occurred between 2014 and 2015, and the refinery began producing renewable fuels in 2016. The current renewable fuels operation has been in continuous production since January of 2016.

The Original Renewable Fuels Project allowed the refinery to convert up to 3,500 BPD of non-edible vegetable oils and beef tallow into renewable fuels, including aviation (jet), diesel, naphtha (gasoline), and fuel gas. The Original Renewable Fuels Project involved the modification of certain existing refinery equipment, including the addition of new vessels and reactors, while continuing to operate as a crude oil refinery. The Original Renewable Fuels Project required the approval of a Zone Variance for the increased height of a new fractionation tower that was planned to exceed the Heavy Industrial Zone height limit of 85 feet. However, the fractionation tower was not installed.

There was also an addendum to the 2013 MND and Initial Study adopted November 24, 2014. The November 2014 Addendum approved modifications to use the existing Naphtha Splitter and existing equipment in the Isomerization Unit Stabilizer Section during initial implementation of the project, allowing a delay in the installation of the fractionation tower. The modifications included minor fugitive component changes and piping changes.

Additional CUP and South Coast AQMD permit modifications were made as the Original Renewable Fuels Project continued to evolve. The June 3, 2015 Addendum to CUP 757 approved the rerouting of sour gas to the refinery's existing asphalt incinerator and sulfur oxide (SOx) scrubber as an alternative to the caustic scrubber for the treatment of the sour gas from the process units. The modifications required minor piping changes and the addition of one exchanger. The most recent modification approval occurred in November 2015. The November 2015 Addendum included new language to clarify the potential future use of the existing storage tank #80003 or the conversion of another existing tank to maintain the refinery's overall crude oil storage capacity. More information on the Original Renewable Fuels Project is provided in Section 2.3.

The current Project will have new environmental impacts associated with construction activities needed to fully convert the refinery to a renewable fuels production facility and due to the operation of modified and additional units that were not contemplated in the 2013 Final MND, (e.g., a new hydrogen plant, new renewable fuels unit, a pretreatment unit, and additional rail modifications).

Since the Project is a continuation of the conversion of the refinery to produce from 3,500 BPD of renewable fuels to 25,000 BPD of renewable fuels, while removing the 49,000 BPD crude oil processing capability, and the City has determined that this change to the original project may have new significant impacts not previously analyzed in the 2013 MND, this CEQA analysis is developed as a subsequent EIR. A subsequent EIR is prepared when:

> *Substantial changes are proposed in the project which will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;* (CEQA 15162):

Once a project has been approved, the lead agency's role in project approval is completed, unless further discretionary approval on that project is required (CEQA 15162).

As the Project could introduce additional significant and unavoidable impacts, this document is prepared as an EIR subsequent (SEIR) to the 2013 MND.

The specific discussions on baseline are included in each issue area as appropriate in the following sections.

4.1 Aesthetics and Visual Resources

This section considers the effects on the visual character of the Project site and surroundings that may result from construction and operation of the Project. The Project modifications would include new vessels, towers, reactors, and a flare that would be visible to the surrounding community. The Project modifications would require a Zone Variance from the current height limit in Heavy Industrial Zones of 55 feet.

Changes from Draft SEIR

Since the Draft SEIR was released in December 2021, this section has the following changes incorporated into the Final SEIR:

- Addition of a view location from the City of Bellflower.

4.1.1 Environmental Setting

The Project site is located within the existing Paramount Refinery (refinery) which is located in the northeastern portion of the City of Paramount (City). The City is bounded by South Gate and Downey on the north; the Los Angeles River, Lynwood, Compton, and the unincorporated community of Rancho Dominguez on the west; Long Beach and Bellflower on the south; and Bellflower and Downey on the east. The refinery property consists of approximately 66 acres bounded on the north by Contreras Street, on the south by Somerset Boulevard and the Los Angeles Metropolitan Transportation Authority (LA Metro) right-of-way, on the west by Downey Avenue, and on the east by Lakewood Boulevard (see Figure 2-1). Land uses surrounding the Project site include schools, residential areas, mobile home park, apartments, commercial buildings, and transportation corridors. The Lakewood Tank Farm is located at 2920 East 56th Street in the City of Lakewood, west of Downey Avenue. Land uses surrounding the Lakewood Tank Farm include commercial and residential land uses, as well as Davenport Park.

The refinery is located in a portion of the City of Paramount zoned for heavy industrial use. The existing improvements within the refinery are varied and include more than 100 above-ground storage tanks of various sizes, concrete and block buildings that house control rooms, maintenance shops, and warehouses. Existing structural elements at the refinery include heavy industrial equipment such as white cylindrical tanks, several which are nearly 40 feet tall, and grey-toned industrial equipment including vessels, reactors, and stacks which are approximately 60 feet tall.

The dominant scenic views from Paramount include the views of the San Gabriel Mountains located approximately 22 miles to the north of the City. The Paramount General Plan does not include any designated scenic corridors, and there are no designated scenic highways located near the refinery. No scenic resources or natural scenic features exist within the Project site boundaries or its surroundings. The topography of the Project site is relatively flat because the entire site has been previously graded and developed. Sources of light at the Project site currently consist of permanent night lighting associated with the existing refinery operations. On-site vegetation is limited to smaller trees, ruderal vegetation, and parkway landscaping along the major roadway frontage.

4.1.1.1 Previous Environmental Review

The December 2013 MND determined that the Original Renewable Fuels Project would alter the views of the refinery. The Original Project was expected to install ten new process vessels including a 168-foot-tall fractionation tower. The tower was not installed, and in lieu of its installation, the existing Naphtha Splitter

and equipment in the Isomerization Unit Stabilizer Section were used to perform the same function. The change was analyzed in the 2014 Addendum to the 2013 MND. The 2013 MND concluded that the installation of the 168-foot-tall fractionation tower would be the only visible change to the views from the surrounding community, but the impact was considered less than significant. Nonetheless, consistent with the previous project at the refinery, mitigation to paint the tower in lighter colors (light blue or white) was imposed. However, since the fractionation tower was not installed, the view of the refinery was not altered, and the mitigation was not necessary.

The December 2013 MND for the Original Renewable Fuels Project evaluated the addition of ten new process vessels (drums, vessels, towers, and reactors). The new vessels had varied heights, and all were shorter than the existing equipment.

All new equipment for the Original Renewable Fuels Project would be located within the existing refinery. The Paramount General Plan does not include any designated scenic corridors and no designated State or County scenic highways are located within the City or near the refinery. The closest officially designated scenic highway to the refinery is Route 2, Angeles Crest Scenic Byway, approximately 22 miles north from the refinery. In addition, there are no historically significant buildings within the refinery that would be affected by the Original Project.

Construction activities were not anticipated to require additional lighting because they were scheduled to take place during daylight hours. Since the Original Project would be located within the boundaries of an existing refinery, additional temporary lighting, if needed, was not expected to be discernible from the existing permanent night lighting already associated with refinery operations. In addition, the Original Renewable Fuels Project components were located within existing industrial facilities, which are already illuminated for nighttime operations. Therefore, a significant increase in lighting was not expected.

The 2013 MND included two mitigation measures:

- Mitigation Measure #1 (Aesthetics). The new tower must be painted in lighter colors that will blend into the background. In previous projects the colors used have been light blue or white; and
- Mitigation Measure #2 (Aesthetics). The Applicant must ensure that appropriate light shielding is provided for any new lighting equipment as a means to limit glare and light trespass. The plan for the lighting must be submitted to the Chief Building Official for review and approval prior to the issuance of any building permits.

4.1.2 Regulatory Setting

Various plans and policy documents set forth regulations and guidelines for aesthetics, visual resources, vistas, light, and glare that relate to the development of the Project. Objectives, goals, and policies from these documents that are applicable to the Project are listed below.

4.1.2.1 Local Regulations

City of Paramount General Plan

The City of Paramount General Plan and Zoning Ordinance define the permitted land uses and the corresponding development standards within the City. The Somerset Ranch Area of Paramount is designated as “Mixed Use” and includes a mix of industrial, commercial, residential, and public uses. The

Paramount Refinery is zoned M-2, Heavy Manufacturing. The Lakewood Tank Farm is zoned M-1, Light Manufacturing.

Land Use Element

The Paramount Land Use Element serves as a guide for land use and development within the City. This Land Use Element specifically focuses on the physical development of the City and considers urban design in addition to land use.

- *Land Use Element Policy 18*. The City of Paramount will continue to promote the maintenance of existing properties; and
- *Land Use Element Policy 22*. The City of Paramount will continue to promote quality design in the review of residential, commercial, and industrial development.

Implementation Element – Land Use Programs

- Code Enforcement. Code enforcement is an integral part of the City's efforts to improve the appearance of substandard structures, properties, and signage. Community code enforcement efforts (funding and staffing) will continue to be the primary means to ensure that properties are well-maintained; and
- Design Guidelines and Review Program. The purpose of the design review process is to ensure that building design, architecture, and site layouts are compatible with surrounding development.

4.1.3 Significance Thresholds

Visual impacts are considered significant under CEQA if implementation of the Project would result in one or a combination of the following:

a. A substantial adverse effect on a designated scenic vista;

b. Substantial damage to scenic resources, including but not limited to trees, rock outcroppings, and historic buildings within a State Scenic Highway;

c. Substantial degradation of the existing visual character or quality of the site and its surroundings; or

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

4.1.4 Project Impacts and Mitigation Measures

The Project includes modifications in multiple areas within the existing Paramount Refinery to complete the conversion of the refinery to a renewable fuels production facility. The modifications include a new Pretreat Unit, upgrading the existing Renewable Fuels Unit A, a new Renewable Fuels Unit B, adding Propane Recovery facilities to the Naphtha Stabilization Unit, a new Hydrogen Generation Unit, a new flare and flare vapor recovery system, a new Hydrogen Sulfide Recovery Unit, replacing the existing Sour Water Stripper Unit with a new advanced Sour Water Plus Unit, adding wastewater treatment facilities, adding water treatment facilities, refurbishing existing cooling towers, relocating truck loading facilities, enlarging an existing storage tank, modifying rail loading/unloading facilities, and demolishing tanks and equipment to accommodate the new process units. Many existing columns visible from the neighborhood would remain and some would be removed, particularly in the southeast portion of the refinery. Many process vessels would be added with the majority being less than 30 feet tall and not visible from off-site with approximately 35 new process vessels 55 feet tall and a new 135-foot-tall flare being installed. The new Hydrogen Generation Unit and the associated heater stack are expected to be approximately 100

feet tall, and the new Pretreat Unit is expected to be 76 to 84 feet tall. Two relocated SCR stacks are expected to remain at approximately the same height at 100 feet but will be relocated to different areas of the refinery. The new vessels will be located in the areas where existing units will be removed and near existing equipment (see Figure 2-2). Some existing units are as tall as 150 feet in height. The removal of existing equipment and the installation of new equipment will alter the skyline of the refinery, but would not change the visual character, which is an industrial facility surrounded by landscaping and a six-foot wall with crook finials. Landscape vegetation obscures large portions of the refinery.

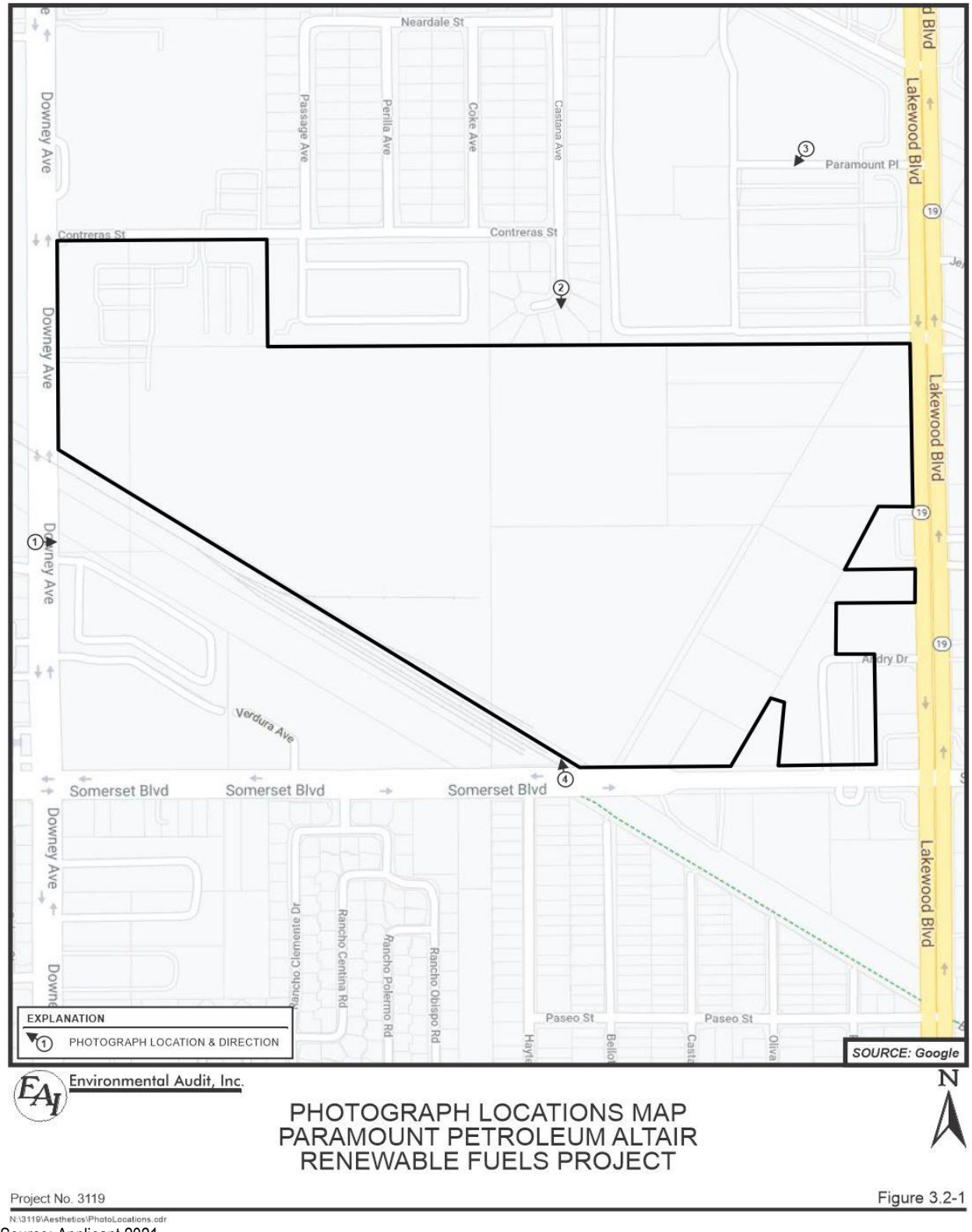
Photographs of the existing refinery were taken from various locations. Artistic renderings were prepared that depict what the refinery is expected to look like after the completion of the Project. The locations where the photographs were taken are shown on Figure 4.1-1. The photographs and artistic renderings from each location are shown in photographs 1 through 4 on Figure 4.1-2.

- Photograph 1 is from Downey Avenue looking east and shows a number of existing process unit columns and stacks that are visible from a brief opening in the vegetation that is around the refinery. From this view, in addition to the existing process unit columns and stacks, the proposed new Hydrogen Generation Unit is expected to be visible. The Hydrogen Generation Unit is expected to be similar in character to the existing industrial equipment visible from this vantage point and is not expected to substantially change the view of the refinery;
- Photograph 2 is from Castana Avenue looking south and shows a few existing storage tanks that are visible from the adjacent residential community. From this view, one storage tank is expected to get slightly taller. The increase in height of the storage tank is not expected to substantially change the view of the refinery;
- Photograph 3 is from the Walmart parking lot on Lakewood Boulevard and shows a few process unit columns visible. From this view, in addition to the existing process unit columns, the storage tank that is being made taller will become visible. The change in the view from this vantage point is not expected to substantially change the view of the refinery; and
- Photograph 4 is from Somerset Avenue looking north and shows the existing process units located near the southern boundary of the refinery. From this view, the majority of taller columns and stacks are expected to be removed and replaced with new columns and stacks and a flare. There are expected to be slightly fewer columns and stacks visible than the current view. Therefore, the change in the view is expected to have slightly less equipment visible but remain an industrial view of the refinery.

As shown in the different artistic renderings of the photographs, the existing refinery and the expected post-Project refinery, including the new vessels, flare, Hydrogen Generation Unit, Pretreat Unit, and relocated heater stacks are and would be visible to the surrounding community. The views of the refinery from adjacent properties are not expected to change substantially. The Project additions would be of the same industrial nature as the surrounding industrial environment. The new taller vessels would have similar structures (e.g., a vessel with manway ladders and landings) as the existing equipment and would look similar to existing structures, so that a significant change in the visual characteristics of the refinery is not expected. As described above, the new units and modifications to existing equipment are expected to be partially visible to the surrounding community from some vantage points and not visible from others. Overall, the visual character of the refinery is expected to remain the same (i.e., an industrial facility surrounded by landscaping with a perimeter wall).

Modifications to the Lakewood Tank Farm are operational and will not change the views of the refinery. No new equipment will be installed at the Lakewood Tank Farm as part of the Project. Two small tanks may be removed from the site, but no other visual changes will occur to the Lakewood Tank Farm.

Figure 4.1-1 Photograph Locations Map



Source: Applicant 2021.

Figure 4.1-2 Current and Post-Project Views of the Refinery

Current View Facing East from Downey Avenue

Post Project View Facing East from Downey Avenue

Photograph 2
Date: 04/02/19

Current View Facing Southerly from Castana Avenue

Rendering 2
Date: 04/02/19

Post Project View Facing Southerly from Castana Avenue

Photograph 3
Date: 04/02/19

Current View Facing Southwesterly From the Walmart Parking Lot

Rendering 3
Date: 04/02/19

Post Project View Facing Southwesterly From the Walmart Parking Lot

Photograph 4
Date: 04/02/19

Current View Facing Northerly From Somerset Avenue

Rendering 4
Date: 04/02/19

Post Project View Facing Northerly From Somerset Avenue

Photograph 1
Date: 02/04/22

Current View Facing Northwest from Lakewood Boulevard and Somerset Boulevard

Rendering 1
Date: 02/04/22

Post Project View Facing Northwest from Lakewood Boulevard and Somerset Boulevard

Photograph 1
Date: 02/04/22

Current View Facing Northwest from Lakewood Boulevard and Paseo Street

Rendering 1
Date: 02/04/22

Post Project View Facing Northwest from Lakewood Boulevard and Paseo Street

Source: All Pictures taken by Marcia Baverman with Environmental Audit, Inc. for the Applicant, 2019 and 2022.

Impact #	Impact Description	Phase	Impact Classification
A.1	The Project would not have a substantial adverse effect on a scenic vista.	Construction or Operation	Class III

The proposed modifications include a number of tall structures in addition to those evaluated in the 2013 MND. The Project would include new and modified Renewable Fuels Units, a new Hydrogen Generation Unit, an upgraded wastewater treatment system, a new Hydrogen Sulfide Recovery Unit, a second Sour Water Stripper, and a new flare. The Project includes new vessels, towers, and reactors ranging in size from 35 feet to 100 feet. In addition, a new flare and heater stack are proposed that could exceed 100 feet. All of the proposed modifications would be located within the boundaries of the existing refinery and interspersed with existing equipment. Although the Project modifications would require a Zone Variance for height limits, the new structures are consistent with existing equipment at the refinery, some of which are 150 feet tall; therefore, the new structures would not make a significant change to the existing industrial view of the Project site.

The Project would not result in the construction of any new equipment at the Lakewood Tank Farm as the tank farm modifications would be limited to maintenance of existing equipment. As a result, no new structures would be visible to the surrounding environment at that location. Therefore, because the Project would not make a significant change to the existing industrial viewshed, there would be a **less than significant (Class III)** impact on a scenic vista in the Project area.

Impact #	Impact Description	Phase	Impact Classification
A.2	The Project would not substantially damage scenic resources including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway.	Construction or Operation	Class III

As determined for the Original Renewable Fuels Project, there are no designated scenic highways near the refinery or within the City of Paramount. There are no historically significant buildings at the refinery that would be affected by the Project. Further, no trees or rock outcroppings are located within the operating portions of the refinery, nor are there trees or rock outcroppings that would be impacted by the Project modifications. Therefore, no impacts associated with State scenic highways or scenic resources would occur as a result of the Project.

The Project would not result in the construction of any new equipment at the Lakewood Tank Farm, so no new structures would be visible to the surrounding environment. The modifications would be operational and limited to maintenance of existing equipment within the existing tank farm which is not located in a scenic area and does not have any historically significant buildings on-site. Therefore, no impacts to scenic resources are expected to result from the Project. Potential impacts for A.2 would be **less than significant (Class III).**

Impact #	Impact Description	Phase	Impact Classification
A.3	The Project would not substantially degrade the existing visual character or quality of public views of the site and its surroundings. (Public views are those that are experienced from publicly accessible vantage points).	Construction or Operation	Class III

The Project modifications include several tall structures in addition to those evaluated in the December 2013 MND. The Project would include new and modified Renewable Fuels Units, a new Hydrogen Generation Unit, an upgraded wastewater treatment system, a new Hydrogen Sulfide Recovery Unit, a

second Sour Water Stripper, and a new flare. The Project would include new vessels, towers, and reactors ranging in size from 35 feet to 100 feet. In addition, a new flare and heater stack are proposed that could exceed 100 feet. These modifications would be located within the boundaries of the existing refinery. The new vessels, towers, reactors, and flare are expected to be visible to the surrounding community, however, because the new structures would be installed near or adjacent to existing equipment, some of which are 150 feet tall, no significant change to the existing industrial view is expected.

The Project modifications would not result in the construction of any new equipment at the Lakewood Tank Farm as the modifications would be limited to maintenance of existing equipment, thus there would be no change in public view at that location. Therefore, and as illustrated by the photographs in Figure 4.1-2, there would not be a significant change to the existing industrial view of Project site and its surroundings, and potential impacts for A.3 would be **less than significant (Class III).**

Impact #	Impact Description	Phase	Impact Classification
A.4	The Project would not create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.	Construction or Operation	Class II

Unlike the Original Renewable Fuels Project, construction activities for the Project would require additional lighting after sundown to facilitate second shift work during a period of approximately 13 months when new equipment is being installed. In addition, during periods when daylight hours are limited (i.e., winter months), temporary lighting may be required. Since the Project would be located within the boundaries of the existing refinery, additional temporary lighting, when needed, is not expected to be dramatically different from the existing permanent night lighting already associated with the refinery because much of the existing lighting on equipment would be removed during demolition and replaced following construction. Temporary lighting would be aimed down and towards the work area and include shielding to direct the light in the direction of the work area. Lighting would face into the refinery. Therefore, glare onto adjacent properties is not expected from the Project.

During construction, large process equipment is expected to be lifted by cranes at night and would require the perimeter of the equipment to be illuminated. The typical lighting for this activity is red, light-emitting diode (LED) rope lights. The LED rope light produces less than 75 watts and approximately 825 lumens. Night work areas are expected to be a minimum of 200 feet from a residential dwelling. Using the inverse square law to determine the amount of light that would reach a residential location, the amount of illumination is expected to be 0.002 footcandles (fc), which is less than the illumination from a full moon (approximately 0.1 fc).

The Project components would be located within existing industrial facilities, which are already lighted at night for nighttime operations. Therefore, no overall increase in lighting associated with the Project is expected at the refinery. The Project is subject to the same mitigation as the Original Renewable Fuels Project, which required light shielding for any new lighting.

The Project modifications would not result in the construction of any new equipment at the Lakewood Tank Farm.

Mitigation Measures

A-4a ***Light Shielding.*** *The Applicant must ensure that appropriate light shielding is provided for any new lighting equipment as a means to limit glare and light trespass. The plan for the lighting*

must be submitted to the Chief Building Official for review and approval prior to the issuance of any building permits.

Impacts Remaining After Mitigation

With implementation of the recommended mitigation measure from the Original Renewable Fuels Project, potential impacts for A.4 would be **less than significant with mitigation (Class II).**

4.1.5 Cumulative Effects

Cumulative aesthetic impacts related to views, aesthetics, and light and glare are limited to the immediate vicinity of the refinery. A cumulative project identified to be in the vicinity of the Project is the LA Metro light-rail line between Artesia and Union station using the West Santa Ana Branch right-of-way with stations planned for Paramount/Rosecrans and Bellflower south of Alondra, a project known as the West Santa Ana Branch Transit Corridor (WSAB) project (refer to Section 3.2). The new light-rail line would be located on the current freight right-of-way immediately adjacent to the refinery's southwest border. The EIR for the WSAB project has not yet been released. However, information available on the LA Metro website indicates that the light rail line will be elevated over Downey Avenue and transition down to street grade before Lakewood Boulevard. This transition is expected to occur adjacent to the refinery's southwest border. It is anticipated that the view of the refinery will be partially obscured by the LA Metro's WSAB project. However, the effect on the view of the refinery by the WSAB project is unknown at this time. Without specific details of the WSAB project, it is speculative to assess the cumulative impacts of the WSAB project. Nonetheless, the overall visual character of the refinery will remain the same and would not contribute differently than the existing refinery to the cumulative visual effects of the WSAB project. Therefore, cumulative impacts to aesthetics are expected to be less than significant from the Project.

4.1.6 References

City of Paramount. 2007. Final Paramount General Plan. Adopted August 7, 2007. Available at: http://www.paramountcity.com/home/showdocument?id=2538

City of Paramount. 2013. Paramount Petroleum Alt-Air Renewable Fuels Project. Mitigated Negative Declaration and Initial Study, Conditional Use Permit (CUP) 757 and Zone Variance (ZV) 401. Adopted December 30, 2013 (PARA 059).

Environmental Audit, Inc. 2019. Photographs of Current and Post-Project Views of the Refinery; 2019.

4.2 Air Quality

This section describes historical air emissions from the existing Paramount Refinery (refinery) and the potential impacts of the Project on air quality.

The Project completes the conversion of the refinery to manufacturing only renewable fuels. The Project will convert the remainder of the 50,000 barrels per day (BPD) crude oil refinery into a 25,000 BPD renewable fuels production facility.

Project construction will be phased over a three-year schedule. Initially, the existing Renewable Fuels Unit (Unit A) will be upgraded. Unit A will then be in operation while other demolition and construction activities take place for the rest of the planned equipment installations and upgrades.

As this is an SEIR, the December 2013 MND for the Original Renewable Fuels Project evaluated the addition of equipment and operations to the refinery in addition to the 2011 refinery operations. However, as emissions after 2011 were substantially reduced as operations at the refinery were curtailed, this section uses the 2011 refinery operations as the baseline operations (see Section 4.0).

Changes from Draft SEIR

Since the Draft SEIR was released in December 2021, this section has the following changes incorporated into the Final SEIR: The DSEIR was based on preliminary engineering designs. Therefore, there have been several updates to the preliminary engineering, incorporating revisions to calculations based on South Coast AQMD rule revisions as well as revisions to some calculations and corrections of errors. These have been incorporated into the air quality analysis as detailed below.

- Updates to the Operational Emissions Estimates including:
    - Updated H-401/402 and H-907/908 incinerator system vent stream flow rates and composition. Updated NOx concentrations from 20 to 30 ppmv @ 3 percent O_2 to be consistent with South Coast AQMD Rule 1109.1;
    - Updated/increased anticipated Project wastewater treatment system flow;
    - Adjusted the service of storage tanks T-5501 (pretreatment oil decant), T-10003 (raw feed), and T-10004 (pretreatment water);
    - Removed Tank T-10003 from the Project;
    - Updated the design of the spent clay treating system material from petroleum naphtha to renewable naphtha;
    - Included additional ammonia storage; and
    - Updated the stack volumetric flow rate of heater H-151. Updated the stack diameter of the new flare;
- Revisions to Calculations including:
    - Corrected typographical errors of the diameters listed in the HRA for AERACIRC sources (storage tanks);
    - Revised the number of annual average trucks to include limits on the average trucks visiting the refinery to 300 per day over a 60-day rolling average;

- Revisions to the Health Risk Assessment based on changes to emissions estimates discussed above; and
- Revisions to the localized modeling for operations based on changes to emissions estimates discussed above.

4.2.1 Environmental Setting

The Project is located within the South Coast Air Quality Management District's (South Coast AQMD) jurisdiction, which includes the four-county South Coast Air Basin (all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino counties), and the Riverside County portion of the Salton Sea Air Basin and the non-Palo Verde, Riverside County portion of the Mojave Desert Air Basin.

The Project site is located within the Basin. The Basin, a subarea of South Coast AQMD jurisdiction, is bound by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east. The 6,745-square-mile Basin includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino counties.

4.2.1.1 Meteorological Conditions

The climate in the Basin generally is characterized by sparse winter rainfall and hot summers tempered by cool ocean breezes. A temperature inversion, a warm layer of air that traps the cool marine air layer underneath it and prevents vertical mixing, is the prime factor that allows contaminants to accumulate in the Basin. The mild climatological pattern is interrupted infrequently by periods of extremely hot weather, winter storms, and Santa Ana winds. The climate of the area is not unique, but the high concentration of mobile and stationary sources of air contaminants in the western portion of the Basin, in addition to the mountains, which surround the perimeter of the Basin, contribute to poor air quality in the region.

4.2.1.2 Temperature and Rainfall

Temperature affects the air quality of the region in several ways. Local winds are the result of temperature differences between the relatively stable ocean air and the uneven heating and cooling that takes place in the Basin due to a wide variation in topography. Temperature also has a major effect on vertical mixing height and affects chemical and photochemical reaction times. The annual average temperatures vary little throughout the Basin, averaging 75 °F. The coastal areas show little variation in temperature on a year-round basis due to the moderating effect of the marine influence. On average, August is the warmest month while January is the coolest month. Most of the annual rainfall in the Basin falls between November and April. Annual average rainfall varies from nine inches in Riverside to 14 inches in downtown Los Angeles. From December 2011 through March 2019, the State of California had a period of extended drought. In 2011, downtown Los Angeles received 20.19 inches of rainfall. Since then, annual rainfall totals for downtown Los Angeles varied from a low of 5.93 inches in 2013 to a high of 19.07 inches in 2017. Since the end of the drought, downtown Los Angeles has recorded rainfall totals of 18.85 inches (2019) and 14.82 inches (2020), with the water year ending September 30 each year (NWS, 2021).

4.2.1.3 Wind Flow Patterns

Wind flow patterns play an important role in the transport of air pollutants in the Basin. The winds flow from offshore and blow eastward during the daytime hours. In summer, the sea breeze starts in mid-morning, peaks at 10–15 miles per hour, and subsides after sundown. There is a calm period until about midnight. At that time, the land breeze begins from the northwest, typically becoming calm again around sunrise. In winter, the same general wind flow patterns exist except that summer wind speeds average

slightly higher than winter wind speeds. This pattern of low wind speeds is a major factor that allows pollutants to accumulate in the Basin.

The normal wind patterns in the Basin are interrupted by the unstable air accompanying the passing storms during the winter and infrequent strong northeasterly Santa Ana wind flows from the mountains and deserts north of the Basin.

Figures 4.2-1 and 4.2-2 show wind rose data for Long Beach Airport, located approximately five miles south of the City of Paramount, and for the City of Pico Rivera, approximately six miles north-east of the City of Paramount. A wind rose is a graphic representation of wind conditions (speed and direction) at a specific location.

Long Beach Airport meteorological data indicates that predominant winds come from the north-west and the south. Pico Rivera meteorological data indicates that predominant winds come from primarily the south-west.

4.2.1.4 Air Quality Monitoring

Local air quality in the Basin is monitored by the South Coast AQMD, which operates a network of monitoring stations throughout the Basin. The California Air Resources Board (CARB) operates additional monitoring stations.

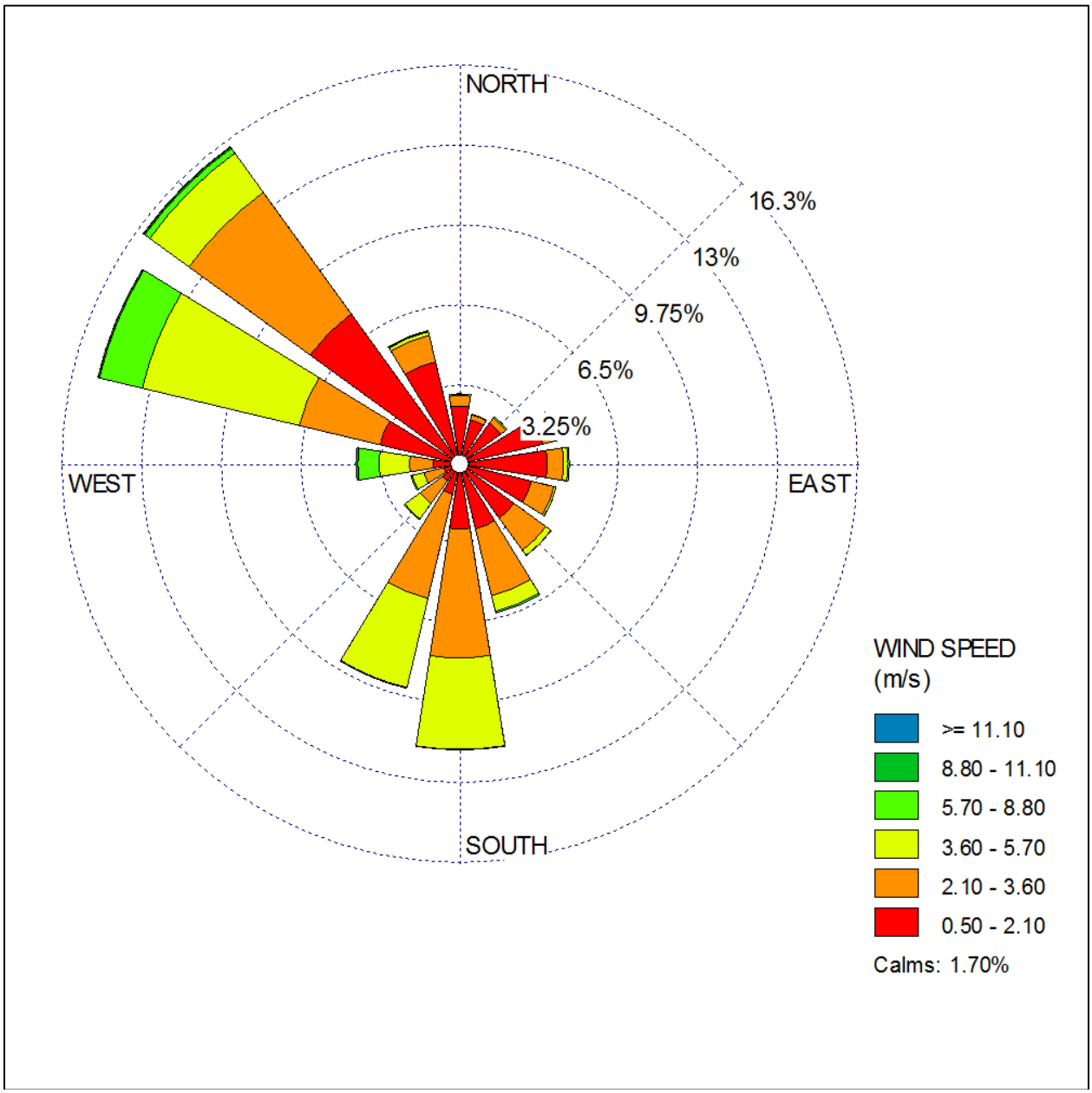
Criteria Pollutants

The sources of air contaminants in the Basin vary by pollutant but generally include on-road mobile sources (e.g., automobiles, trucks and buses), off-road mobile sources (e.g., airplanes, ships, trains, construction equipment, etc.), residential/commercial sources, and industrial/manufacturing sources. Mobile sources are responsible for a large portion of the total Basin emissions of several pollutants.

Mobile sources represent 58 percent of Volatile Organic Compounds (VOC) emissions, 88 percent of NOx emissions, and 44 percent of SOx emissions. For directly emitted particulate matter ($PM_{2.5}$), mobile sources represent 34 percent of the emissions including entrained road dust (South Coast AQMD, 2017).

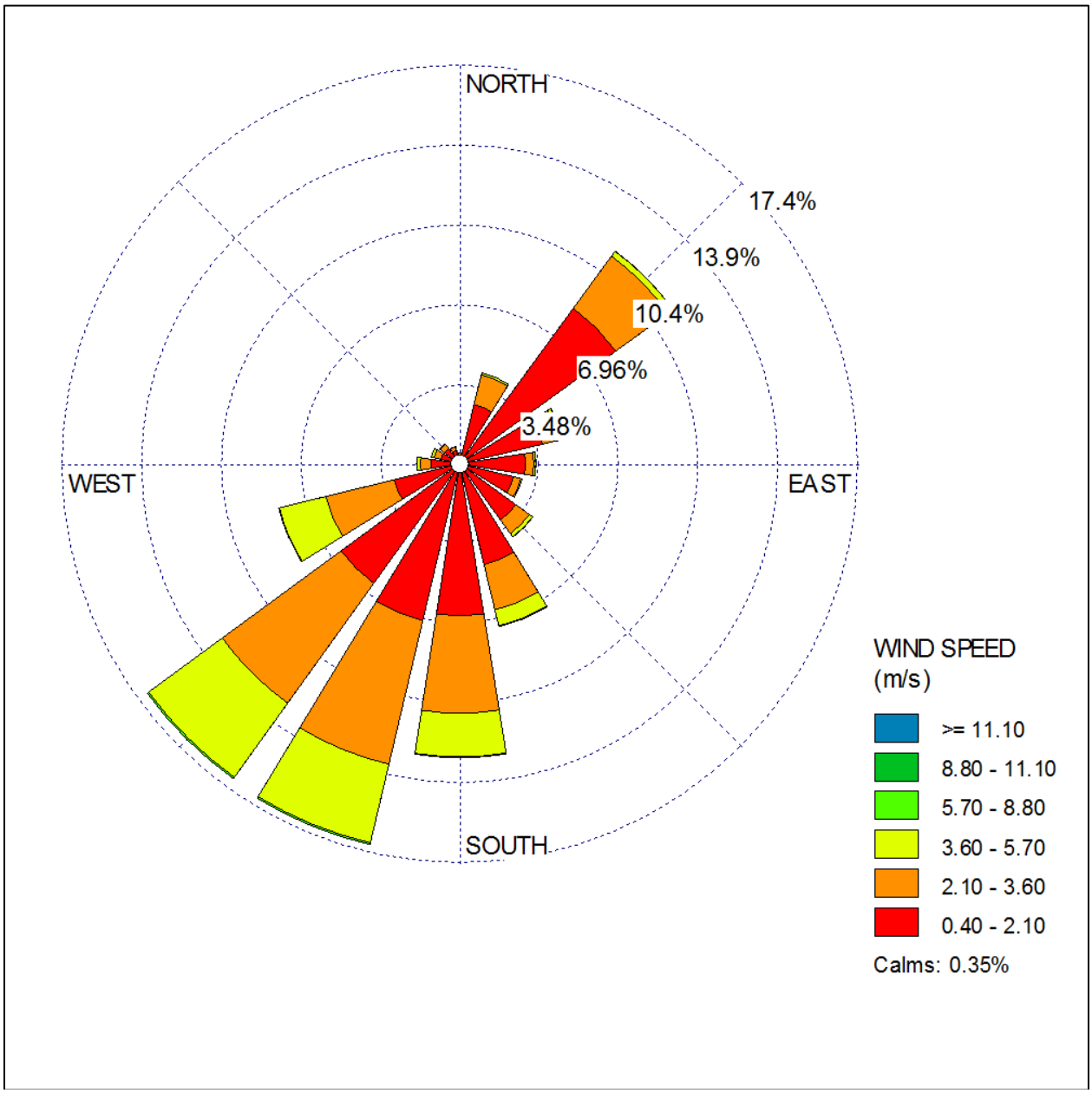
Criteria air pollutants are those pollutants for which the federal and state governments have established ambient air quality standards (AAQS) or criteria for outdoor concentrations in order to protect public health with a margin of safety (see Table 4.2.1). National Ambient Air Quality Standards (NAAQS) were first authorized by the federal Clean Air Act (CAA) of 1970 and have been set by the United States Environmental Protection Agency (U.S. EPA). California Ambient Air Quality Standards (CAAQS) were authorized by the state legislature in 1967 and have been established by CARB. Air quality of a region is considered to be in attainment of the standards if the measured concentrations of air pollutants are maintained at equal to or less than the standards. Both the NAAQS and the CAAQS are periodically revisited and revised based on the most recent scientific information on health effects.

Figure 4.2-1 Wind Rose for Long Beach Airport Meteorological Station



Source: South Coast AQMD, 2012 to 2016 data set.

Figure 4.2-2 Wind Rose for City of Pico Rivera Meteorological Station



Source: South Coast Air Quality Management District, 2012 to 2016 data set.

Health-based air quality standards have been established by the U.S. EPA and CARB for ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), PM_{10}, $PM_{2.5}$, sulfur dioxide (SO_2), and lead. The California standards are equivalent to or more stringent than the federal air quality standards. California also has established standards for sulfate, visibility, hydrogen sulfide (H_2S), and vinyl chloride. Hydrogen sulfide and vinyl chloride currently are not monitored in the Basin because they are not a regional air quality problem but are generally associated with localized emission sources.

As shown in Table 4.2.2, the Basin is designated as non-attainment for $PM_{2.5}$ and ozone for both state and federal standards. The Basin, including the Project area, is classified as attainment for both the state and federal standards for NO_2 (except the federal one-hour standard is unclassifiable/attainment), SO_2, CO,

sulfates, and lead (except in Los Angeles County) and is classified as attainment for the federal PM_{10} standards but non-attainment for the state PM_{10} standards and lead in Los Angeles County.

Regional Air Quality

The South Coast AQMD monitors levels of various criteria pollutants at 39 monitoring stations located throughout the South Coast AQMD's entire area of jurisdiction. Based on the most recent monitoring data published for 2019, the Basin exceeded the federal and state standards for ozone at most monitoring locations on one or more days. The federal one-hour ozone standard was revoked and replaced by the eight-hour average ozone standard effective in 2005, which was revised in 2015. The state one-hour ozone standard was exceeded in the Basin 82 days in 2019. The Central San Bernardino Mountains and the East San Bernardino Valley exceeded standards most frequently. Other areas that exceeded the state ozone standards included the San Gabriel Valley, San Fernando Valley, Santa Clarita Valley, North Orange County and Saddleback Valley in Orange County, and Riverside County including the Coachella Valley. The federal and state eight-hour ozone standards were both exceeded on 126 days in the Basin in 2019 (South Coast AQMD, 2020d).

In 2019, the state and federal maximum concentrations of CO were not exceeded in the Basin. Because of improving CO air quality, in 2005 the South Coast AQMD adopted and submitted to U.S. EPA a CO attainment re-designation request and CO maintenance plan. U.S. EPA declared the Basin as a maintenance area for CO in 2007 (South Coast AQMD, 2020d).

Table 4.2.1 Ambient Air Quality Standards

Air Pollutant	State Standard Concentration/ Averaging Time	Federal Primary Standard Concentration/ Averaging Time	Most Relevant Health Effects
Ozone (O_3)	0.09 ppm, 1-hr. avg. 0.070 ppm, 8-hr.	0.070 ppm, 8-hr. avg.	(a) Short-term exposures: (1) Pulmonary function decrements and localized lung edema (2) Risk to public health implied by alterations in pulmonary morphology and host defense in animals; (b) Long-term exposures: Risk to public health implied by altered connective tissue metabolism and pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (c) Vegetation damage; (d) Property damage
Carbon Monoxide (CO)	20 ppm, 1-hr. avg. 9.0 ppm, 8-hr. avg.	35 ppm, 1-hr. avg. 9 ppm, 8-hr. avg.	(a) Aggravation of angina pectoris and other coronary heart disease; (b) Decreased exercise tolerance in persons with vascular disease and lung disease; (c) Impairment of central nervous system functions; (d) Possible increased risk to fetuses
Nitrogen Dioxide (NO_2)	0.18 ppm, 1-hr. avg. 0.03 ppm, ann. avg.	0.100 ppm, 1-hr. avg. (1) 0.053 ppm, ann. avg.	(a) Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups; (b) Risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and

Table 4.2.1 Ambient Air Quality Standards

Air Pollutant	State Standard Concentration/ Averaging Time	Federal Primary Standard Concentration/ Averaging Time	Most Relevant Health Effects
			pulmonary structural changes; (c) Contribution to atmospheric discoloration
Sulfur Dioxide (SO_2)	0.25 ppm, 1-hr. avg. 0.04 ppm, 24-hr. avg.	75 ppb, 1-hr. avg. (2) 0.140 ppm, 24-hr. avg. 0.030 ppm, ann. avg.	Bronchoconstriction accompanied by symptoms which may include wheezing, shortness of breath and chest tightness, during exercise or physical activity in persons with asthma
Suspended Particulate Matter (PM_{10})	50 µg/m^3, 24-hr. avg. 20 µg/m^3, ann. arithmetic mean	150 µg/m^3, 24-hr. avg.	(a) Excess deaths from short-term exposures and exacerbation of symptoms in sensitive patients with respiratory disease; (b) Excess seasonal declines in pulmonary function in children
Suspended Particulate Matter ($PM_{2.5}$)	12 µg/m^3, ann. arithmetic mean	35 µg/m^3, 24-hr. avg. 12.0 µg/ m^3, ann. arithmetic mean	Decreased lung function from exposures and exacerbation of symptoms in sensitive patients with respiratory disease; elderly; children.
Sulfates	25 µg/m^3, 24-hr. avg.	Not applicable	(a) Decrease in ventilatory function; (b) Aggravation of asthmatic symptoms; (c) Aggravation of cardio-pulmonary disease; (d) Vegetation damage; (e) Degradation of visibility; (f) Property damage
Lead	1.5 µg/m^3, 30-day avg.	0.15 µg/m^3, rolling 3-month avg.	(a) Increased body burden; (b) Impairment of blood formation and nerve conduction
Visibility-Reducing Particles	In sufficient amount to give an extinction coefficient >0.23 inverse kilometers (visual range to less than 10 miles) with relative humidity less than 70%, 8-hour average (10 a.m. – 6 p.m. PST)	Not applicable	Nephelometry and AISI Tape Sampler; instrumental measurement on days when relative humidity is less than 70 percent
Hydrogen Sulfide (H_2S)	0.03 ppm, 1-hr. avg.	Not applicable	The health effects of H_2S depend on how much H_2S a person breathes and for how long. However, many effects are seen even at low concentrations. Effects range from odors and mild headaches or eye irritation, to very serious, unconsciousness and death.
Vinyl Chloride	0.01 ppm, 24-hr. avg.	Not applicable	Short-term exposure to high levels of vinyl chloride in air causes central nervous system effects, such as dizziness, drowsiness, and headaches. Long-term exposure to vinyl chloride through inhalation and oral exposure causes liver damage. Cancer is a major concern from exposure to vinyl chloride via inhalation.

Table 4.2.1 Ambient Air Quality Standards

Air Pollutant	State Standard Concentration/ Averaging Time	Federal Primary Standard Concentration/ Averaging Time	Most Relevant Health Effects
			Vinyl chloride exposure has been shown to increase the risk of angiosarcoma, a rare form of liver cancer in humans.

Footnotes:
(1) To attain this standard, the three-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 0.100 ppm.
(2) Based on the three-year average of the 99th percentile of the 1-hour daily maximum concentrations.

The federal PM_{10} standards were not exceeded in the Basin in 2019. Because of improving PM_{10} air quality over the last many years, in 2010 the South Coast AQMD adopted and submitted to the U.S. EPA a PM_{10} attainment re-designation request and PM_{10} maintenance plan. U.S. EPA declared the Basin as a maintenance area for PM_{10} on June 26, 2013. The state PM_{10} standards were exceeded at many of the monitoring locations in the Basin including central and coastal Los Angeles County, Santa Clarita Valley, San Gabriel Valley, Orange County, Riverside County, the Coachella Valley, and San Bernardino County. The state PM_{10} standard was exceeded 137 times in the Basin in 2019. The federal $PM_{2.5}$ standard was exceeded ten times in 2019.

In 2019, neither federal nor state standards for NOx, SOx, CO, lead, or sulfates were exceeded. Currently, the district is in attainment with the AAQS for NOx, SOx, CO, and lead (South Coast AQMD, 2020d).

Local Air Quality

The Project site is located closest to the South Coast AQMD's South Central Los Angeles County monitoring station (Station #112). Not all data is reported for Station #112; therefore, sulfur dioxide, sulfate, and PM_{10} levels were obtained from data for the South Coastal Los Angeles County monitoring stations (Stations #33 and #72). Background air quality data for representative years for the Project area are presented in Table 4.2.3 (i.e., the original CEQA review (2011), the year Unit A was constructed (2015), and the most recent published data (2019)).

Table 4.2.2 NAAQS and CAAQS Attainment Status for South Coast Air Basin

Criteria Pollutant	Standard	Averaging time	Designation [a]
1979 1-Hour O_3[b]	Federal	1-Hour (0.12 ppm)	Nonattainment (Extreme)
1-Hour O_3	State	1-Hour (0.09 ppm)	Nonattainment
1997 8-Hour O_3[c]	Federal	8-Hour (0.08 ppm)	Nonattainment (Extreme)
2008 8-Hour O_3	Federal	8-Hour (0.075 ppm)	Nonattainment (Extreme)
2015 8-Hour O_3	Federal	8-Hour (0.070 ppm)	Nonattainment (Extreme)
8-Hour O_3	State	8-Hour (0.070 ppm)	Nonattainment
CO	Federal	1-Hour (35 ppm) 8-Hour (9 ppm)	Attainment (Maintenance)
	State	1-Hour (20 ppm) 8-Hour (9 ppm)	Attainment
NO_2[d]	Federal	1-Hour (0.10 ppm)	Unclassifiable/Attainment
	Federal	Annual (0.053 ppm)	Attainment (Maintenance)
	State	1-Hour (0.18 ppm) Annual (0.030 ppm)	Attainment

Table 4.2.2 NAAQS and CAAQS Attainment Status for South Coast Air Basin

Criteria Pollutant	Standard	Averaging time	Designation [a]
PM_{10}	Federal	1987 24-hour (150 µg/m^3)	Attainment (Maintenance) [f]
	State	24-hour (50 µg/m^3) Annual (20 µg/m^3)	Nonattainment
$PM_{2.5}$ [g]	Federal	2006 24-Hour (35 µg/m^3)	Nonattainment (Serious)
	Federal	1997 Annual (15.0 µg/m^3)	Attainment
	Federal	2012 Annual (12.0 µg/m^3)	Nonattainment (Serious)
	State	Annual (12.0 µg/m^3)	Nonattainment
SO_2[e]	Federal	1-Hour (75 ppb)	Designations Pending (Expect Uncl./Attainment)
	Federal	24-Hour (0.14 ppm) Annual (0.03 ppm)	Unclassifiable/Attainment
Lead	Federal	3-Months Rolling (0.15 µg/m^3)	Nonattainment (Partial) [h]
H_2S	State	1-Hour (0.03 ppm/ 42 µg/m^3)	Attainment
Sulfates	State	24-Hour (25 µg/m^3)	Attainment
Vinyl Chloride	State	24-Hour (0.01 ppm/ 26 µg/m^3)	Attainment

a) U.S. EPA often only declares Nonattainment areas; everywhere else is listed as Unclassifiable/Attainment or Unclassifiable.
b) 1-hour O_3 standard (0.12 ppm) was revoked, effective June 15, 2005; however, the Basin has not attained this standard based on 2008-2010 data and is still subject to the anti-backsliding requirements.
c) 1997 8-hour O_3 standard (0.08 ppm) was reduced (0.075 ppm), effective May 27, 2008; the 1997 O_3 standard is still subject to the anti-backsliding requirements.
d) NO_2 1-hour standard, effective August 2, 2010; attainment designations January 20, 2012; annual NO_2 standard retained.
e) The 1971 annual and 24-hour SO_2 standards were revoked, effective August 23, 2010; however, these 1971 standards will remain in effect until one year after U.S. EPA promulgates area designations for the 2010 SO_2 1-hour standard. Area designations are still pending, with Basin expected to be designated Unclassifiable /Attainment.
f) Annual PM_{10} standard was revoked, effective December 18, 2006; 24-hour PM_{10} NAAQS deadline was 12/31/2006; South Coast AQMD request for redesignation and PM_{10} maintenance plan was approved by U.S. EPA on June 26, 2013, effective July 26, 2013.
g) Attainment deadline for the 2006 24-Hour $PM_{2.5}$ NAAQS (designation effective December 14, 2009) is December 31, 2019 (end of the 10th calendar year after effective date of designations for Serious nonattainment areas). Annual $PM_{2.5}$ standard was revised on January 15, 2013, effective March 18, 2013, from 15 to 12 µg/m^3. Designations effective April 15, 2015, so Serious area attainment deadline is December 31, 2025.
h) Partial Nonattainment designation – Los Angeles County portion of Basin only for near-source monitors. Expect redesignation to attainment based on current monitoring data.

The area has shown consistent concentrations of most pollutants. Air quality in the South Central Los Angeles County and South Coastal Los Angeles County Monitoring Stations #112, #33, and #72 monitoring area complies with the state and federal AAQS for CO, NOx, SOx, lead, and sulfate. The air quality in the area is also in compliance with the federal eight-hour and state one-hour ozone standards, with the exception of one exceedance in 2019 of the state one-hour, state eight-hour, and federal eight-hour standards for South Central Los Angeles County. The air quality in the South Coastal Los Angeles County Monitoring Station #33, #72, and #77 area is not in compliance with the state annual PM_{10} standard. The air quality in the South Coastal Los Angeles County Monitoring Station #33, and #72 is not in compliance with the federal $PM_{2.5}$ standards and state standards in 2011.

Table 4.2.3 South Central and Coastal Los Angeles County 1 Monitoring Stations No. 112, 33, and 77 Maximum Observed Concentrations for Years 2011, 2015, and 2019

Constituent		2011(a)	2015(a)	2019(a)
O_3	1-Hour (ppm)	0.082	0.91	0.100
	Days Exceeding Federal Standard	(0)	(0)	(0)
	Days Exceeding State Standard	(0)	(0)	(1)
	8-Hour (ppm)	0.065	0.066	0.079
	Days Exceeding Federal Standard Days Exceeding State Standard	(0) (0)	(0) (0)	(1) (1)
CO (b)	1-Hour (ppm)	(--)	3.3	3.8
	8-Hour (ppm)	4.7	3.3	3.2
NO_2 (c)	1-Hour (ppm)	0.0754	0.0736	0.0700
	Annual (ppm)	0.0186	0.0169*	0.0141
PM_{10} (d, e)	24-Hour ($\mu g/m^3$)	50	62	72
	Percent of Samples Exceeding Federal Standard	(0)	(0)	(0)
	Percent of Samples Exceeding State Standard	(0%)	(3%)	(3%)
	Annual (f) ($\mu g/m^3$) (arithmetic mean)	28.7	26.5	21.0
$PM_{2.5}$ (e, g)	24-Hour ($\mu g/m^3$)	35.3	41.3	52.2
	Percent of Samples Exceeding Federal Standard	(0%)	(2.7%)	(0.6%)
	Annual Arithmetic Mean ($\mu g/m^3$)	13.0	11.78	10.72
SO_2 (h)	1-Hour (ppm)	0.0433	0.0375*	0.0089
	24-Hour (ppm)	(--)	(--)	(--)
	Annual Arithmetic Mean (ppm)	(--)	(--)	(--)
Lead (i)	30-Day ($\mu g/m^3$)	0.014	0.014	0.009
	Quarter ($\mu g/m^3$)	0.010	0.010	0.007
Sulfate(j)	24-Hour ($\mu g/m^3$)	5.9	6.9	5.8
	State Standard	(--)	(--)	(--)

Source: South Coast AQMD Air Quality Data Annual Summaries 2011, 2015, and 2019. South Coast AQMD 2020b.

Notes: (%) = Percent of samples exceeding the federal or state standard, (--) = Pollutant not monitored, ppm = parts per million of air by volume, AAA = Annual Arithmetic Mean, μg/m3 = micrograms per cubic meter. -- = Pollutant not monitored, * = Less than 12 months of data

a) For years 2011, 2015, and 2019, all data are from Station #112 for O_3, CO, NO_2, $PM_{2.5}$, and Lead. In 2011, for SO_2 from Station #33; for Sulfate, from Stations #77 in 2011 and Station #33 in 2015 and 2019; and, for PM_{10} from Station #77. Not all data reported at all Stations, so representative stations chosen for pollutants not reported at Station #112.

b) The federal 8-hour standard (8-hour average CO > 9 ppm) and state 8-hour standard (8-hour average CO > 9.0 ppm) were not exceeded. The federal and state 1-hour standards (35 ppm and 20 ppm) were not exceeded either.

c) The NO_2 federal 1-hour standard is 100 ppb, and the annual standard is annual arithmetic mean NO_2 > 0.0534 ppm (53.4 ppb). The state 1-hour and annual standards are 0.18 ppm (180 ppb) and 0.030 ppm (30 ppb). Values shown in the table are based on the form of the Federal 1-hour standard (i.e., the 98th percentile averaged over three years).

d) PM_{10} statistics are for the Federal Reference Method (FRM) data only, which were samples collected every 6 days.

e) High PM_{10} and $PM_{2.5}$ data samples excluded in accordance with the U.S. EPA Exceptional Event Regulation.

f) Federal annual PM_{10} standard (AAM > 50 $\mu g/m^3$) was revoked in 2006. State standard is annual average (AAM) > 20 $\mu g/m^3$

g) $PM_{2.5}$ samples were collected every 3 days at sites except for station #77, where samples were taken daily. $PM_{2.5}$ statistics listed are for the FRM data only. U.S. EPA has revised the annual $PM_{2.5}$ standard from annual average (AAM) 15.0 $\mu g/m^3$ to 12.0 $\mu g/m^3$, effective March 18, 2013. State standard is annual average (AAM) > 12.0 $\mu g/m^3$.

h) The federal SO_2 1-hour standard is 75 ppb (0.075 ppm). The state standards are 1-hour average SO_2 > 0.25 ppm (250 ppb) and 24-hour average SO_2 > 0.04 ppm (40 ppb).

i) Federal lead standard is 3-months rolling average > 0.15 $\mu g/m^3$; state standard is monthly average $\geq$1.5 $\mu g/m^3$. Lead statistics listed are for population-oriented sites only; standards were not exceeded at any of these sites.

j) Data reported for Station #77 for 2011 and Station #33 for 2015 and 2019. State sulfate standard is 24-hour $\geq$25 $\mu g/m^3$. There is no federal standard for sulfate.

Toxic Air Contaminants

The California Health and Safety Code (§39655) defines a toxic air contaminant (TAC) as an air pollutant which may cause or contribute to an increase in mortality, an increase in serious illness, or which may pose a present or potential hazard to human health. Under California's toxic air contaminant program (Assembly Bill (AB) 1807, Health and Safety Code §39650 et seq.), CARB, with the participation of the local air pollution control districts, evaluates and develops any needed control measures for air toxics. The general goal of regulatory agencies is to limit exposure to TACs to the maximum extent feasible.

Monitoring for TACs is limited compared to monitoring for criteria pollutants because toxic pollutant impacts are typically more localized than criteria pollutant impacts. CARB conducts air monitoring for a number of TACs every 12 days at approximately 20 sites throughout California. The Compton station is the TAC monitoring station closest to the Project site (which also monitors for CO, NO_2, Pb, O_3, and $PM_{2.5}$). A summary of the data from the Compton station for various TACs is considered to be an appropriate estimate of the TAC concentration in the vicinity of the Project site (see Table 4.2.4).

The South Coast AQMD measures TAC concentrations as part of its ongoing Multiple Air Toxics Exposure Study (MATES). The purpose of the studies is to provide an estimate of exposure to TACs by individuals within the Basin. The South Coast AQMD concluded the fourth MATES, referred to as MATES IV, that includes monitoring for 37 TACs at 10 fixed monitoring sites within the Basin in neighborhoods near known toxic emission sources or in areas where environmental justice concerns have been raised. In addition to the 10 fixed sites, two mobile monitoring platforms were deployed that focused on local scale studies at locations for short time periods. These mobile monitoring platforms were specifically designed for fast response deployment in communities of the Basin. Also included in the study is computer modeling to estimate air toxic levels throughout the Basin.

The 2012–2013 Basin average population-weighted risk summed for all the toxic components yielded a cancer risk of 367 in one million, as compared to the MATES III Basin average risk of 853 per million when using the same risk assessment methodology from the Office of Environmental Health Hazard Assessment (OEHHA). This means that 367 people out of one million are susceptible to contracting cancer from exposure to the known TACs in the Basin over a 70-year period. Thus, the modeled risk decreased by 57 percent, primarily attributed to the changes in diesel emissions between 2005 and 2012. OEHHA updated its risk assessment methodology since the MATES IV, primarily to take into account recent scientific findings regarding children's increased susceptibility to contracting cancer from environmental exposures. This methodology change causes a roughly two to threefold increase in risk given the same level of exposure. For the MATES IV study, the population-weighted risk increases to 897 in one million using this new methodology on data collected in 2012–2013. Diesel particulate matter (DPM) continues to be responsible for the largest contribution to cancer risk from air toxics. The next three highest contributors include benzene, hexavalent chromium, and 1,3-butadiene (South Coast AQMD, 2015). The best available ambient monitoring TAC data is for 24-hour concentrations, because South Coast AQMD does not take one-hour TAC measurements. The best approximation of the acute hazard index (HI) for the Compton station is 0.312 (see Table 4.2.4), for illustrative purposes.

In 2016, the South Coast AQMD identified high levels of hexavalent chromium in air samples in Paramount. The South Coast AQMD had been monitoring certain metal-related businesses in Paramount for odors and other complaints since 2013. Two air sampler machines identified the pollutant at 350 times the normal level on three separate days (as high as 12 ng/m^3); the measurements eventually fell well below those numbers but were still often above common readings for the region. Once potential sources were identified, the sampling strategy was adjusted to focus on specific facilities and pollutant levels in

the adjacent communities. As a result, several facilities made a range of improvements, some voluntary and some through rule changes and enforcement actions. These changes have substantially reduced ambient levels in the Paramount area. As per recent reports, levels in the City of Paramount have been declining steadily and are now within the typical levels. (South Coast AQMD, 2021)

Table 4.2.4 Toxic Air Contaminants – Compton Peak 24-Hour Concentration 2012–2013

Pollutant	Peak 24-hour Concentration	Acute REL	Acute HI	Pollutant	Peak 24-hour Concentration	Acute REL	Acute HI
VOCs	**ppbv (μg/m³)**	**(μg/m³)**		**VOCs**	**ppbv (μg/m³)**	**(μg/m³)**	
Acetaldehyde	2.94 (5.3)	470	0.011	Formaldehyde	4.18 (5.13)	550	0.009
Acetone	12.54 (29.79)	--	--	MEK	0.55 (1.62)	13000	0.001
Benzene	1.77 (5.65)	27	0.210	Methylene Chloride	044 (1.53)	14000	0.000
1,3-Butadiene	0.58 (1.28)	660	0.002	Perchloroethylene	0.26 (1.76)	20000	0.000
Carbon Tetrachloride	0.11 (0.69)	1900	0.000	Styrene	0.49 (2.09)	21000	0.000
Chloroform	0.07 (0.34)	150	0.002	Toluene	6.15 (23.17)	37000	0.001
1,4-Dichlorobenzene	0.04 (0.24)	--	--	Trichloroethylene	0.03 (0.70)	--	--
1,2-Dichloroethane	0.05 (0.20)	--	--	Meta/para-Xylene	3.06 (13.29	22000	0.001
Ethyl Benzene	0.81 (3.52)	--	--	ortho-Xylene	1.01 (4.39)	22000	0.000
Inorganic compounds	**ng/m³ (μg/m³)**			**Inorganic Compounds**	**ng/m³ (μg/m³)**		
Antimony	13.90 (0.01)	--	--	Manganese	77.50 (0.08)	--	--
Arsenic	2.08 (0.00)	0.2	0.007	Molybdenum	6.62 (0.01)	--	--
Barium	139.00 (0.14)	--	--	Nickel	13.70 (0.01)	0.2	0.065
Beryllium	0.09 (0.00)	--	--	Potassium	1,240 (1.24)	--	--
Cadmium	0.20 (0.00)	--	--	Rubidium	2.77 (0.00)	--	--
Calcium	3090 (3.09)	--	--	Selenium	5.21 (0.01)	--	--
Cesium	0.20 (0.00)	--	--	Strontium	33.00 (0.03)	--	--
Chromium	13.10 (0.01)	--	--	Tin	8.93 (0.01)	--	--
Cobalt	1.04 (0.00)	--	--	Titanium	145.00 (0.15)	--	--
Copper	87.40 (0.09)	100	0.003	Uranium	0.24 (0.00)	--	--
Hexavalent Chromium	0.85 (0.00)	--	--	Vanadium	8.5 (0.00)	30	0.000
Iron	3,000 (3.00)	--	--	Zinc	138.00 (0.14)	--	--
Lead	20.10 (0.02)	--	--	Total Acute HI			0.312

Notes: ppbv = parts per billion by volume; ng/m³ = nanograms per cubic meter, MEK = methyl ethyl ketone
-- = no acute reference exposure level (REL) established, Acute HI = Acute Hazard Index

Source: South Coast AQMD, 2015. MATES-IV Final Report, May 2015 Tables IV-2 and IV-3 https://www.aqmd.gov/docs/default-source/air-quality/air-toxic-studies/mates-iv/d-appendix.pdf?sfvrsn=7

4.2.1.5 Baseline Operational Emissions

Historical operation of the existing refinery resulted in the emissions of criteria pollutants and toxic pollutants. The reported emissions of criteria air pollutants are shown in Table 4.2.5. Emissions data in Table 4.2.5 represent annual emissions and are based on the Annual Emissions Report (AER) submitted to the South Coast AQMD as well as off-site vehicle travel estimates. Because refinery operations fluctuate based on market demand for products, operating conditions of individual equipment, equipment shutdowns, etc., operational emissions may fluctuate on a daily and annual basis. As discussed in Section 4.0, 2011 was selected as the baseline operating year due to that being the most recent year when the refinery was operating as historically refining crude oil.

Similar to the refinery, the Lakewood Tank Farm operations result in the emissions of criteria pollutants, primarily VOC emissions from fugitive tank sources. Because the Lakewood Tank Farm operations fluctuate based on market demand for products, operating conditions of individual equipment, equipment shutdowns, etc., operational emissions may fluctuate on a daily and annual basis. The annual emissions from the Lakewood Tank Farm were below the South Coast AQMD reporting limit of four tons per year. Therefore, no data has been published by the South Coast AQMD.

In order to examine the potential for emissions of toxic pollutants to produce health effects in the community, a Health Risk Assessment (HRA) was conducted for both the pre-Project and the post-Project scenarios. A HRA is a tool used to estimate the adverse health effects caused by exposure to environmental pollutants in a variety of media such as air, water, and soil. In the Air Toxics Program, CARB uses HRAs to help inform communities of potential health impacts; prioritize toxic air pollutants that are the most significant; and to help weigh the benefits and costs of reducing exposure to toxic air pollutants through various emissions reduction actions.

The risk results from an HRA are typically presented as cancer and non-cancer risks. For cancer risks, the results are presented as the probability of developing cancer if a person was exposed continuously to a toxic air pollutant over a lifetime. Cancer risk is a probability and is expressed in chances per million people. For example, a cancer risk of one in one million means that in a population of one million people, not more than one additional person would be expected to develop cancer as the result of the exposure to the toxic air pollutant.

Non-cancer risks include acute and chronic risks, which are an indicator of potential health effects such as eye or lung irritation. The results are presented by comparing the actual level of exposure to a toxic air pollutant to the level of exposure that is not expected to cause any adverse effects. Levels of exposure at which no adverse health effects are expected are called “reference exposure levels.” The numeric value of this comparison is called a “hazard index.”

Toxic emissions from the historical operations for the refinery are assessed in the HRA conducted based on the historical emissions levels. Details of the HRA are included in Appendix B, Part 2, Attachment D. The HRA examined the modeled concentrations of pollutants at a number of receptors in the community as well as a set of gridded receptors and estimated the potential cancer, chronic and acute impacts based on these concentrations. The approach is codified in the CARB computer model HARP2, and the analysis utilized recommended parameters as established by the South Coast AQMD. The analysis examined the impacts at the maximum exposed individual resident (MEIR), the maximum exposed individual worker (MEIW), the highest sensitive receptor (at schools, etc.) and at the point of maximum impact (PMI) located off-site or along the refinery boundary line.

The results for the baseline refinery operations are presented in this section. The results of the Project refinery operation, and the incremental change, are presented in Section 4.2.4.3.

Table 4.2.6 shows the results of the HRA modeling and the risk levels for cancer, acute and chronic health risks. Figure 4.2-3 shows the cancer risk contours. As per Appendix B, Part 2 Attachment D, the pre-Project cancer risks are driven by benzene (36.9 percent at the MEIR), DPM (29.7 percent at the MEIR), Polycyclic Aromatic Hydrocarbons (PAHs) (21.1 percent at the MEIR) and chromium (9.0 percent at the MEIR). Sources that contribute to the cancer risk are the on-site railcar mover (27.4 percent) and the heaters 303/304/305/306 at 13.6 percent.

Acute and chronic risks are driven by benzene (97.2 percent and 97.1 percent, respectively). Source contributions are primarily fugitive emissions.

Table 4.2.5 Historical Baseline 2011 Refinery Operational Emissions, peak daily emissions

Emission Source	Emissions (lbs./day)					
	VOC	NOx	SOx	CO	PM_{10}	$PM_{2.5}$
Combustion Sources	55.6	241.5	62.0	270.8	142.3	139.3
Cooling Towers	9.6	0.0	0.0	0.0	42.7	25.6
Load Racks	28.4	0.0	0.0	0.0	0.0	0.0
Storage Tanks	66.4	0.0	0.0	0.0	0.0	0.0
Fugitive Components	166.4	0.0	0.0	0.0	0.0	0.0
Wastewater Treatment	37.3	0.0	0.0	0.0	0.0	0.0
On-site Mobile Sources (Truck & Rail)	0.2	5.0	0.0	6.0	0.4	0.2
Off-site Mobile Sources (Truck, Rail and Ship)	11.6	779.7	1.8	149.0	65.8	10.5
Subtotal Stationary Sources	**363.6**	**241.5**	**62.0**	**270.8**	**185.0**	**164.9**
Subtotal Mobile Sources	**11.8**	**784.7**	**1.8**	**155.1**	**66.2**	**10.7**
Total Combined Emissions	**375.4**	**1,026.3**	**63.9**	**425.9**	**251.2**	**175.6**

Source: Applicant Analysis

Table 4.2.6 Historical Baseline 2011 Refinery Health Risk Summary

Criteria	Cancer Risk Level, per million	Acute Risk HI	Chronic Risk HI	Chronic 8 hr. Risk HI
MEIR (peak risk at a residential receptor)	49.4	0.06/0.04*	0.015	0.014
MEIW (peak risk at an off-site worker receptor)	19.7	0.03	0.062	0.014
Peak risk at a sensitive receptor (schools)	8.3	0.02	0.007	0.007

Source: Applicant HRA Analysis, see Appendix B, Part 2 Attachment D. Peak residential cancer risk located at receptor 777. See Appendix B, Part 2 Attachment D for other results. Off-site worker receptor based on non-refinery related workers at businesses located near the refinery.
* Acute risk is for the PMI location along the refinery boundary line and the residential receptor (PMI/MEIR). As cancer and chronic risks are long term averages and no person would be located along the refinery boundary line on a long term basis, only the acute values are shown for the refinery boundary line PMI.

Odors could emanate from refinery operations due to the fugitive emissions of hydrocarbons containing H_2S or other odor causing materials. Fugitive emissions of hydrocarbons are produced from crude oil storage tanks, other process vessels, and from components such as valves and flanges. Upset conditions could occur, such as spills or tank releases of vapors, which could cause odors at nearby receptors. See compliance history section below.

Figure 4.2-3 Baseline Refinery Operations Cancer Risk Contours

Source: Applicant HRA Analysis.

4.2.1.6 Refinery Compliance History

Data from the South Coast AQMD since 2001 indicate that there have been four nuisance odor violations (Rule 402) issued by the South Coast AQMD for the refinery, with a total of 91 Notice of Violations (NOVs), 25 NOVs related to leaks, and 32 complaints by the public over the 20-year period. Figure 4.2-4 shows the number of NOVs, NOVs associated with leaks (Rule 1173 violations), complaints by the public and investigation by the South Coast AQMD that were attributable to the refinery, nuisance odor violations (Rule 402) and the trend lines for NOVs and complaints. Note that many NOVs are related to administrative issues; therefore, those related to actual leaks of materials to the environment are also shown in the figure.

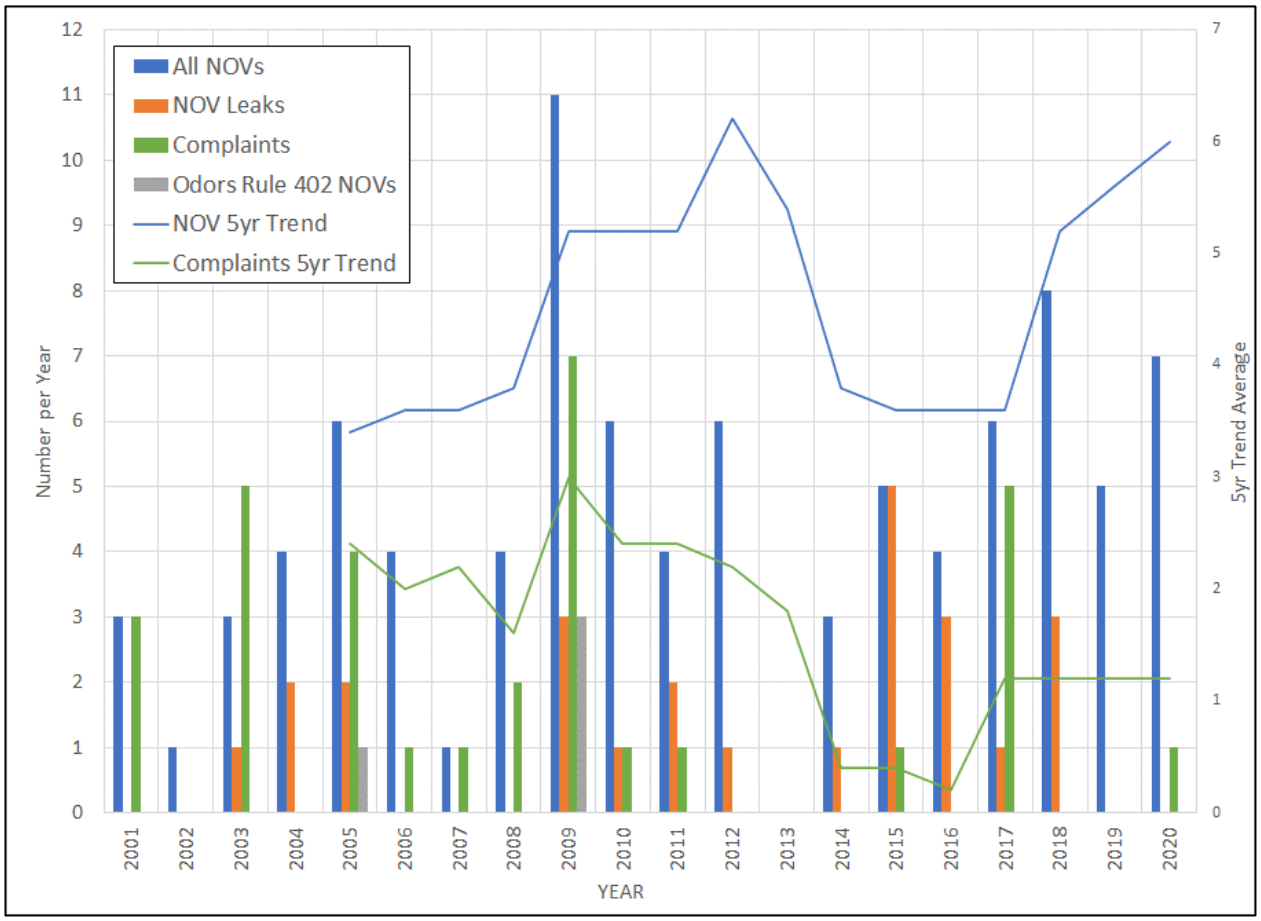
The South Coast AQMD inspectors also issue Notices to Comply (NTC) in addition to NOVs. The NTCs and NOVs are required to be resolved and the facility restored to compliance before any permits can be issued.

4.2.1.7 Previous Environmental Review

The December 2013 MND for the Original Renewable Fuels Project evaluated the addition of equipment and operations to the refinery. However, emissions after 2011 were substantially reduced as operations at the refinery were curtailed up until the 2015 full Original Renewable Fuel Project completion and operations. Operations of the refinery after 2015 produced substantially less emissions than the 2011 baseline operations with emissions being reduced 78 percent on average over the 2011 refinery

operations (years 2015 through 2020, as per South Coast AQMD annual emissions reports). Construction and operational air impacts in the 2013 MND were determined to be less than significant.

Figure 4.2-4 Refinery South Coast AQMD NOVs and Complaints, 2001–2020



Source: South Coast AQMD Public Request 2021. Note that the refinery was not processing crude oil in 2013.

4.2.2 Regulatory Setting

Ambient air quality standards in California are the responsibility of, and have been established by, both the U.S. EPA and CARB. These standards have been set at concentrations which provide margins of safety for the protection of public health and welfare. Federal and state air quality standards are presented in Table 4.2.1. The South Coast AQMD has established levels of episode criteria and has indicated measures that must be initiated to immediately reduce criteria pollutant and air toxics emissions when these levels are reached or exceeded. The federal, state, and local air quality regulations are described in the following sections.

4.2.2.1 Federal Regulations

The U.S. EPA is responsible for setting and enforcing the NAAQS for oxidants (ozone), CO, NOx, SOx, PM_{10}, $PM_{2.5}$, and lead. 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 (Outer

Continental Shelf). 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 CARB.

In 1990, the amendments to the federal CAA conditionally required states to implement programs in federal CO non-attainment areas to require gasoline to contain a minimum oxygen content in the winter beginning in November 1992. In response to the federal CAA requirements to reduce CO emissions, California established a wintertime oxygenate gasoline program requiring between 1.8 and 2.2 weight percent oxygen content in gasoline.

In 2005, the U.S. EPA established the Renewable Fuel Standard, which required 7.5 billion gallons of renewable fuel to be blended into gasoline by 2012. The program was expanded in 2007 and currently requires that 36 billion gallons of renewable fuel be blended into gasoline by 2022. The primary renewable blending component at the time was ethanol.

In May 2010, U.S. EPA and the National Highway Transportation Safety Administration (NHTSA) developed a program designed to reduce fuel consumption (and GHG emissions by association) from model year 2012 through 2016 light-duty vehicles. In October 2012, U.S. EPA and NHTSA expanded the program to model years 2017 through 2025 for light-duty vehicles, such as worker vehicles.

In September 2011, U.S. EPA and NHTSA developed a program designed to reduce fuel consumption from medium- and heavy-duty vehicles. The program applies to model year 2014 to 2018 vehicles.

Other federal regulations applicable to the Project include Title III of the CAA, which regulates toxic air contaminants. Title V of the CAA establishes a federal permit program for large stationary emission sources. The refinery has a Title V permit, and the Project will require modifications to the Title V application and/or operating permit. The Title V program is implemented by the South Coast AQMD in the Southern California area. The U.S. EPA also has authority over the Prevention of Significant Deterioration (PSD) program; however, the Project is not expected to require a PSD permit.

4.2.2.2 State Regulations

CARB, which became part of the California Environmental Protection Agency (CalEPA) in 1991, is responsible for ensuring implementation of the California CAA and federal CAA, and for regulating emissions from consumer products and motor vehicles. CARB has established CAAQS for all pollutants for which the federal government has established NAAQS and also has standards for sulfates, visibility, hydrogen sulfide and vinyl chloride. Hydrogen sulfide and vinyl chloride are not measured at any monitoring stations in the Basin because they are not considered to be a regional air quality problem. Federal and state air quality standards are presented in Table 4.2.2. California standards are generally more stringent than the NAAQS. CARB has established emission standards for vehicles sold in California and for various types of combustion equipment. CARB also sets fuel specifications to reduce vehicular emissions. However, CARB does not have direct regulatory approval authority over the Project.

California gasoline specifications are governed by both state and federal agencies. During the past two decades, federal and state agencies have imposed numerous requirements on the production and sale of gasoline in California. CARB adopted the Reformulated Gasoline Phase III regulations in 1999, which required, among other things, that California phase out the use of methyl tert-butyl ether (MTBE) in gasoline. The CARB Reformulated Gasoline Phase III regulations have been amended several times (the most recent amendments were adopted in 2013) since the original adoption by CARB.

The California CAA (AB 2595) mandates achievement of the maximum degree of emission reductions possible from vehicular and other mobile sources in order to attain the state AAQS by the earliest practical date.

California also has established a state air toxics program (AB 1807, Tanner) which was revised by the new Tanner Bill (AB 2728). This program sets forth provisions to the federal National Emissions Standards for Hazardous Air Pollutants (NESHAP) program for control of hazardous air pollutants.

The Air Toxic "Hot Spots" Information and Assessment Act (AB 2588), as amended by Senate Bill (SB) 1731, requires operators of certain stationary sources to inventory air toxic emissions from their operations and, if directed to do so by the local air district, prepare an HRA to determine the potential health impacts of such emissions. If the health impacts are determined to be "significant" (greater than 10 per million exposures or non-cancer chronic or acute hazard index greater than 1.0), each facility must, upon approval of the health risk assessment, provide public notification to affected individuals. AB 2588 requires meeting this significance level for the entire facility operations, not just the incremental increase as is examined under CEQA. Therefore, a facility could exceed AB 2588 levels for the entire facility and not exceed the CEQA thresholds, which are based on the incremental increase from the baseline operations. The existing refinery is subject to AB 2588 and the renewable fuels production facility will continue to be subject to AB 2588. Note that AB 2588 does not include mobile sources, whereas the CEQA analysis does include mobile sources.

The California Health and Safety Code mandates that CalEPA establish safe exposure limits for toxic, non-criteria air pollutants and identify the best available methods for their control (Sections 39650 et seq.). These laws also require that the rules for new emission sources for each air district include regulations establishing procedures to control the emission of these pollutants. CalEPA has developed specific cancer potency estimates for assessing their related cancer risks at specific exposure levels. For non-cancer-causing toxic air pollutants, CalEPA established specific no-effects levels (known as reference exposure levels) for assessing the likelihood of producing health effects at specific exposure levels. Such health effects would be considered significant only when exposure exceeds these reference levels.

Renewable diesel is processed and produced in the refinery similar to petroleum diesel (diesel fuel from crude oil), which makes it chemically similar to petroleum diesel, but burns more completely. CalEPA found that renewable diesel has about 30 percent less PM and 10 percent less NOx emissions than ultra-low-sulfur diesel (CalEPA, 2015). In addition, renewable diesel does not contain benzene, which becomes an airborne carcinogen when burned or evaporated from petroleum diesel. GHG emissions are discussed in Section 4.3 of this SEIR. The Project is designed to support the state GHG emission reduction goals.

4.2.2.3 Local Regulations

The Basin is under the jurisdiction of the South Coast AQMD, which has regulatory authority over stationary sources, air pollution control equipment, and limited authority over mobile sources. The South Coast AQMD is responsible for air quality planning and development of the Air Quality Management Plan (AQMP). The AQMP establishes the strategies that will be used to achieve compliance with CAAQS in all areas within the South Coast AQMD's jurisdiction. The South Coast AQMD generally regulates stationary sources of air pollutants. There are a number of South Coast AQMD regulations that may apply to the Project including Regulation II – Permits, Regulation III – Fees, Regulation IV – Prohibitions, Regulation IX – New Source Performance Standards, Regulation X – NESHAP, Regulation XI – Source Specific Standards, Regulation XIII – New Source Review, Regulation XIV – New Source Review of Carcinogenic Air Contaminants (including Rule 1401 – New Source Review of Toxic Air Contaminants, Rule 1403 – Asbestos Emissions from Demolition/Renovation Activities, and Rule 1466 – Control of Particulate Emissions from

Soils with Toxic Air Contaminants), Regulation XVII – PSD, Regulation XX – RECLAIM Program, and Regulation XXX – Title V Permits.

The South Coast AQMD operates monitoring stations in the Basin, develops and enforces rules and regulations for stationary sources and equipment, prepares emissions inventory and air quality management planning documents, and conducts source testing and inspections. The South Coast AQMD AQMP includes control measures and strategies to be implemented to attain state and federal AAQS in the Basin. The South Coast AQMD then implements these control measures as regulations to control or reduce criteria pollutant emissions from stationary sources or equipment. In addition, the South Coast AQMD receives and investigates odor complaints from residents.

4.2.3 Significance Thresholds

A threshold of significance is an identifiable quantitative, qualitative, or performance level of a particular environmental effect. Projects that do not exceed the significance threshold for the effect under evaluation normally will be determined to be less than significant. Exceeding the significance thresholds means the effect will normally be determined to be significant by the lead agency (CEQA Guidelines Section 15064(a)).

The Project will complete the transition of the refinery to a renewable fuels production facility. To determine whether or not air quality impacts from the Project are significant, impacts will be evaluated and compared to the air quality significance criteria established by the South Coast AQMD, which are presented in Table 4.2.7. If impacts equal or exceed any of the criteria, they will be considered significant.

The South Coast AQMD makes significance determinations for construction impacts based on the maximum or peak daily emissions during the construction period, which provides a "worst-case" analysis of the construction emissions (South Coast AQMD, 2020c). Similarly, significance determinations for operational emissions are based on the maximum or peak daily emissions during the operational phase. If any construction activities overlap with operational activities, then the South Coast AQMD air quality significance thresholds for operation will be applied. For equipment subject to South Coast AQMD permit requirements, peak daily emissions are the maximum potential emissions allowed by permit conditions (during startup and shutdown, only durations are limited in permits).

Appendix G of the CEQA Guidelines provides the following questions to guide evaluation of impacts related to air quality. Would the Project:

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

b. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard;

c. Expose sensitive receptors to substantial pollutant concentrations; or

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

In addition, South Coast AQMD applies the following question when evaluating air quality impacts for a project.

e. Would the project diminish an existing air quality rule or future compliance requirement resulting in a significant increase in air pollutant(s)?

The South Coast AQMD, in its role as the agency responsible for regulating air emissions locally, has developed the criteria to address air quality issues relevant to the regional air basin and localized impacts and which establish quantitative thresholds which address the CEQA Appendix G questions detailed in Table 4.2.7. This SEIR applies both the CEQA Guidelines, and the significance thresholds established by the South Coast AQMD to determine whether an impact is significant. (South Coast AQMD, 2020c).

The South Coast AQMD has also developed a localized significance threshold methodology to evaluate the potential localized impacts of criteria pollutants from construction and operational activities. The localized significance threshold methodology requires an analysis regarding whether emissions of specified criteria pollutants exceed AAQS at the closest sensitive receptor (those listed in Table 4.2.7). South Coast AQMD defines sensitive receptors as off-site locations where persons may be exposed to the emissions from project activities. Receptor locations include residential, commercial, and industrial land use areas and any other areas where persons could be situated for an hour or more at a time. These other areas include parks, bus stops, and sidewalks but would not include building tops, roadways, or permanent bodies of water such as oceans or lakes.

Table 4.2.7 South Coast AQMD Air Quality Significance Thresholds

Mass Daily Thresholds[a]		
Pollutant	**Construction[b]**	**Operation[c]**
NO_x	100 lbs./day	55 lbs./day
VOC	75 lbs./day	55 lbs./day
PM_{10}	150 lbs./day	150 lbs./day
$PM_{2.5}$	55 lbs./day	55 lbs./day
SOx	150 lbs./day	150 lbs./day
CO	550 lbs./day	550 lbs./day
Lead	3 lbs./day	3 lbs./day
Toxic Air Contaminants, Odor, and GHG Thresholds		
TACs (including carcinogens and non-carcinogens)	Maximum Incremental Cancer Risk $\geq$ 10 in 1 million Chronic and Acute Hazard Index $\geq$ 1.0 (project increment) Cancer Burden $\geq$ 0.5 excess cancer cases (in areas $\geq$ 1 in 1 million)	
Odor	Project creates an odor nuisance pursuant to South Coast AQMD Rule 402	
GHG	10,000MT/yr CO_2eq for industrial facilities	
Ambient Air Quality for Criteria Pollutants[d]		
NO_2 1-hour average annual arithmetic mean	South Coast AQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 0.18 ppm (state) 0.03 ppm (state) and 0.0534 ppm (federal)	
PM_{10} 24-hour annual average	10.4 $\mu g/m^3$ (construction)[e] and 2.5 $\mu g/m^3$ (operation) 1.0 $\mu g/m^3$	
$PM_{2.5}$ 24-hour average	10.4 $\mu g/m^3$ (construction)[e] and 2.5 $\mu g/m^3$ (operation)	
SO_2 1-hour average 24-hour average	0.25 ppm (state) and 0.075 ppm (federal – 99th percentile) 0.04 ppm (state)	
Sulfate 24-hour average	25 $\mu g/m^3$ (state)	
CO 1-hour average 8-hour average	In attainment; significant if project causes or contributes to an exceedance of any standard: 20 ppm (state) and 35 ppm (federal) 9.0 ppm (state/federal)	

Table 4.2.7 South Coast AQMD Air Quality Significance Thresholds

Lead 30-day average Rolling 3-month average	1.5 μg/m³ (state) 0.15μg/m³ (federal)

(a) Source: South Coast AQMD CEQA Handbook (South Coast AQMD, 1993) and South Coast AQMD 2020c.
(b) Construction thresholds apply to both the South Coast Air Basin and Coachella Valley (Salton Sea and Mojave Desert Air Basin)
(c) For Coachella Valley, the mass daily thresholds for operation are the same as the construction thresholds.
(d) Ambient air quality thresholds for criteria pollutants based on South Coast AQMD Rule 403, Table A-2 unless otherwise stated.
(e) Ambient air quality threshold based on South Coast AQMD Rule 403
KEY: ppm = parts per million; μg/m³ = microgram per cubic meter; lbs./day = pounds per day; MT/yr. CO_2eq = metric tons per year of CO_2 equivalents, ≥ greater than or equal to, > = greater than

Odors are considered significant if they produce a "nuisance". Odor significance for the South Coast AQMD is based on creating a nuisance as per Rule 402. Rule 402 states:

"*A person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property*." The South Coast AQMD has an established Public Nuisance Investigation Policies and Procedures to guide the South Coast AQMD inspectors in determining whether to issue an NOV for a nuisance. The procedures direct South Coast AQMD investigators to interview complainants and observe, identify, or otherwise establish evidence of the complained of emissions. An NOV is issued if a "multiple complaint condition" is documented, defined as six or more complainants.

4.2.4 Project Impacts and Mitigation Measures

The Project will complete the transition of the refinery from the Original Renewable Fuels Project to a renewable fuels production facility. The Project will use beef tallow and vegetable oils as feedstocks instead of petroleum-based feedstock (i.e., crude oil). There are a wide range of potential emissions sources associated with both construction and operations. Each of these are discussed below.

The Applicant has proposed a number of measures to reduce the impacts. These are listed below.

1. Use of lower leak rates for Leak Detection and Repair (LDAR) limits than required: 300 ppm for gas and light liquid valves and flanges (light liquid and gaseous components except pumps, compressors and drains). Heavy liquids to remain at South Coast AQMD Rule 1173 threshold levels;
2. Use of 0.0005 percent cooling tower drift eliminators to reduce PM emissions;
3. An electric railcar mover to reduce diesel particulates; and
4. Dust control pursuant to South Coast Rule 1166 and Rule 403 with the preparation of a dust control plan and associated measures.

4.2.4.1 Construction Emissions

The Project would convert the remainder of the refinery into a renewable fuels production facility. Equipment will either be removed to accommodate new process units, be repurposed, or idled in place. Construction of the original conversion was completed in 2015, so the construction of the Project will not

overlap with the Original Renewable Fuels Project. No construction of new equipment is expected at the Lakewood Tank Farm, so no construction impacts are expected at the Lakewood Tank Farm.

Impact #	Impact Description	Phase	Impact Classification
AQ.1	The Project would generate emissions during construction that could exceed the South Coast AQMD thresholds.	Construction	Class I

Impacts may occur on both a regional and localized basis. Emissions for construction only are discussed below. Emissions for operations and operations/construction combined are discussed in the following "operations" impact (AQ.2).

Construction Regional Impacts

Construction equipment for the Project would include cranes, welders, generators, pumps, forklifts, loader/backhoes, compressors, and manlifts. The construction equipment is assumed to operate up to 10 hours per day during most of the construction period. Emission factors for construction equipment were taken from the Construction Equipment Emissions tables in CARB's OFFROAD 2017 Inventory Model. Vehicle emissions and include construction worker vehicles, pick-up trucks, flatbed trucks, dump trucks, water trucks, semi-tractors, concrete trucks, and delivery trucks. Primary emissions generated would include combustion emissions from engines during idling and while operating. Construction emissions include emissions from construction worker vehicles traveling to and from the work site. On-road vehicle emissions were calculated using EMFAC2017 emission factors. Emissions are also estimated from soil movement and on-road and off-road vehicle travel as well as painting of equipment.

Construction emissions are expected from the following equipment and processes:

- On-site and off-site construction equipment (loaders, backhoes, forklifts, etc.);
- On-site and off-site vehicle emissions, including delivery trucks and worker vehicles;
- On-site fugitive dust associated with site construction activities;
- On-site and off-site fugitive dust associated with travel on unpaved and paved roads; and
- Painting.

Construction emissions were calculated for peak day construction activities in each month construction is expected to occur. Peak day emissions are the sum of the highest potential daily emissions from all construction sources, which include employee vehicles, fugitive dust sources, construction equipment, and transport activities for the construction period. Total peak construction emissions for VOC/SOx/PM occurs during Year 2, Month 3 (no pipeline activities) when painting activities are expected to occur, while peak daily construction emissions for NOx are expected to occur in Year 1 Month 11 when peak off-site transportation is expected to occur, and peak daily construction emissions for CO are expected to occur in Year 3 Month 4 when pipeline activities would be occurring.

Estimated air emissions from construction activities are included in Table 4.2.8, with more detailed calculations in Appendix B, Part 1.

Table 4.2.8 Project Construction Emissions, daily emissions

Emission Source	Construction Emissions (lbs./day)(1)					
	VOC	NOx	SOx	CO	PM_{10}	$PM_{2.5}$
Emissions from Equipment	29.1	77.6	0.2	172.9	2.1	2.0
Emission from Vehicle Trips - Paved	7.6	324.4	1.4	30.8	121.5	32.6
Off-road Vehicles Fugitive PM Unpaved - Peak	0	0	0	0	15.0	3.4
Paint	16.6	0	0	0.0	0	0
Pipeline Construction (1)	0.0	0.0	0.0	57.6	0.0	0.0
Total Construction Emissions(2)	53.3	402.0	1.6	261.3	138.6	38.1
South Coast AQMD Significance Thresholds for construction	75	100	150	550	150	55
Significant?	No	**Yes**	No	No	No	No

(1) Peak emissions for VOC/SOx/PM/NOx are expected to occur in Year 2 Month 3 (no pipeline installation emissions) and peak CO emissions are expected to occur in Year 3, Month 4.
(2) Totals may differ from Appendix B, Part 1 due to rounding.
Emissions include emissions from equipment used for remediation of soil contamination, if applicable.
Source: Appendix B, Part 1, Attachment A – Construction Emissions Analysis, Table A-1.

Emissions of criteria pollutants would exceed the regional South Coast AQMD thresholds and therefore would be significant.

Construction Localized Impacts

The South Coast AQMD has developed the Localized Significance Threshold (LST) Methodology to evaluate the potential localized impacts of criteria pollutants from construction activities (South Coast AQMD, 2008). The LST Methodology requires that the emissions of CO, NO_2, PM_{10}, and $PM_{2.5}$ associated with a project be evaluated for impacts on AAQS at local receptors. Impacts from other criteria pollutants are regional in nature or in attainment and, therefore, are not included as part of the localized air quality analysis. Furthermore, only on-site construction emissions sources are required to be included in the LST analysis as the emissions are concentrated at the site of construction activities. In typical construction projects involving multiple areas, heavy equipment such as cranes are shared and moved from area to area, as necessary. However, the LST construction emissions analysis assumes that no Project component would be sharing equipment, thus, providing a conservative estimate of the localized impacts of each Project component during the peak months. The peak on-site construction emissions were used for analyzing the localized impacts.

In order to determine the ground-level pollutant concentrations, the U.S. EPA AERMOD air dispersion model was used to model the peak day construction emissions (see Table 4.2.9) and calculate the annual average and maximum 1-hour, 8-hour, and 24-hour concentrations, as specified, for each pollutant. All active construction areas during the peak construction months were modeled as individual area sources geographically located at each unit.

Table 4.2.9 Localized Construction Air Quality Impact Analysis Results

Criteria Pollutant	Averaging Period	Max Modeled GLC (µg/m³)	Background GLC (µg/m³) [(a)]	Total GLC (µg/m³)	Most Stringent Air Quality Standard (µg/m³)	Significant?
CO	1-hour	519.7	6984.50	7504.2	23000	No
	8-hour	188.0	5267.00	5455.0	10000	No
NO_2	1-hour	269.2	186.3	455.5	339	**Yes**
	1-hour (Federal)	248.3	125.6	373.9	188	**Yes**
	Annual	14.0	30.3	44.3	57	No
PM_{10}	24-hour	6.9*	--	--	10.4	No
	Annual	0.7*	--	--	1	No
$PM_{2.5}$	24-hour	2.8*	--	--	10.4	No
	Annual	0.5*	--	--	1	No

GLC = ground-level concentration
Data from South Coastal LA County Station #33 and South Central LA County Station #112.
South Coast AQMD CEQA thresholds. For PM_{10} and $PM_{2.5}$, Project comparison to incremental change.
Impacts from air dispersion model are reported as using ambient ratio method.
* These values are from the double shift. All others are from the single shift. Worst case between single and double shifts was used.

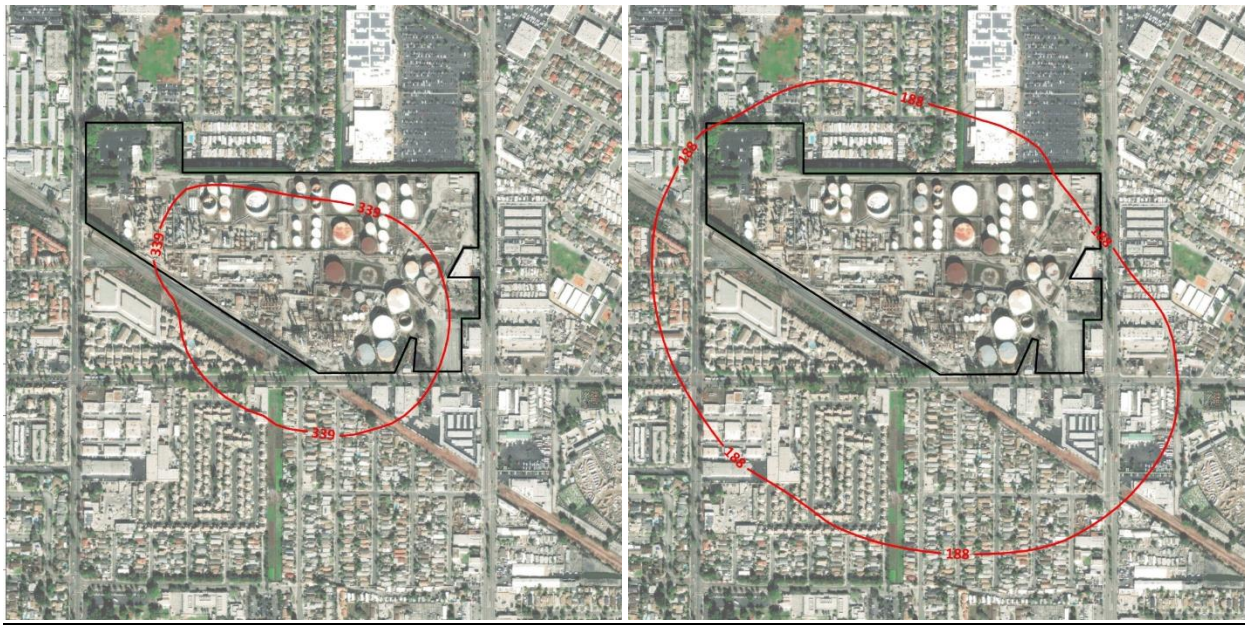
CO is in attainment; however, CO was included in the analysis for completeness. NO_2 emissions were estimated using a full conversion of NOx to NO_2. The details of the assumptions used in the modeling are provided in Appendix B, Part 1.

The CO and NO_2 concentrations were combined with the ambient background concentrations and compared to the Most Stringent Air Quality Standard. The PM_{10} and $PM_{2.5}$ 24-hour, and PM_{10} and $PM_{2.5}$ annual average concentrations were compared to the Significant Change in Air Quality Concentration thresholds. Impacts from other criteria pollutants are regional in nature or in attainment and, therefore, were not included as part of the localized air quality analysis.

The maximum NO_2 impact concentration for 1-hour is estimated to be greater than the Most Stringent Air Quality Standards. All other pollutant concentrations are estimated to be less than the localized significance thresholds.

Therefore, the Project modeling results exceed state and federal criteria pollutant significance thresholds for 1-hour NO_2. See Figure 4.2-5 for the contours of the areas that could experience an exceedance of the NO_2 State or Federal threshold.

Figure 4.2-5 Areas Potentially Above NO_2 Threshold - Construction



State Threshold Federal Threshold

Source: Applicant Modeling, see Appendix B, Part 1, Attachment D.

The LST analysis results indicate that NO_2 emissions at residential receptors are expected to exceed the significance thresholds from construction activities associated with the Project. The maximum GLCs for a residential receptor are expected to occur southwest of the refinery. Therefore, the localized air quality impacts from the Project would be considered significant during construction.

The Applicant would prepare plans pursuant to the South Coast AQMD Rule 1166 and Rule 403, requiring the preparation and implementation of a dust control plan and associated measures including soil stabilization, water application and pre-activity water application and track-out prevention systems.

Construction Odors

The Project site has been identified as having soil containing VOC materials, and excavation at this site would potentially be subject to the requirements of South Coast AQMD Rule 1166 and 1466. Excavation at the site must be conducted in compliance with a South Coast AQMD-approved Rule 1166 Mitigation Plan and Rule 1466 monitoring to assure the control of fugitive emissions. Rule 1166 includes requirements for South Coast AQMD notification at least 24 hours prior to the start of excavation, monitoring (at least once every 15 minutes, within three inches of the excavated soil surface), as well as implementation of a mitigation plan when VOC-contaminated soil is detected. Rule 1166 defines VOC contaminated soil as soil which registers a concentration of 50 ppmv or greater of VOC. An approved mitigation plan generally includes covering contaminated soil piles with heavy plastic sheeting and watering activities to assure the soil remains moist. In addition, VOC-contaminated soils shall be treated or removed within 30 days from the time of excavation. Soil remediation activities are also under the jurisdiction of the RWQCB. Adherence to the requirements of the Rule 1166 Mitigation Plan will minimize the generation of VOC emissions, as well as odors, during excavation. Rule 1466 applies to the generation of fugitive dust from earthmoving activities where the soils contain toxic chemicals and requires monitoring of ambient air and dust-prevention measures. Due to the required measures, and relatively

low levels of soil contamination at the refinery site (see Section 4.4.1.8), soil VOC emissions are assumed to be minimal and not addressed in the emissions estimates.

Odors can also be produced from the operation of construction equipment, particularly diesel equipment and DPM. However, as equipment would be required to have emissions controls as required by CARB to reduce DPM, DPM emissions are not anticipated to produce substantial off-site odors from equipment.

Odor impacts associated with construction are not anticipated to produce odor impacts and would be less than significant.

As impacts would exceed the thresholds for criteria pollutants, mitigation measures are applied.

Mitigation Measures

AQ-1a ***Construction Management Program.*** *Develop and maintain a Construction Management Program for the Project that shall, at a minimum, incorporate the following mitigation measures and Best Management Practices (BMPs).*

<u>On Road Mobile Sources</u>

1. *During construction, require the use of zero-emissions (ZE) or near-zero emissions (NZE) trucks (e.g., material delivery trucks and soil import/export), such as trucks with natural gas engines that meet the CARB's adopted optional NOx emission standard of 0.02 grams per brake horsepower-hour (g/bhp-hr). At a minimum, require that truck operator(s)/construction contractor(s) commit to using 2010 model year or newer engines that meet CARB's 2010 engine emission standards of 0.01 g/bhp-hr for particulate matter (PM) and 0.20 g/bhp-hr of NOx emissions or newer, cleaner trucks;*

2. *Prohibit vehicles and construction equipment from idling longer than five minutes at the construction site by including these restrictions in the construction company contract(s) and by posting signs on-site, unless the exceptions in the CARB regulations which pertain to idling requirements are applicable;*

<u>Off-Road Mobile Sources</u>

3. *Prohibit vehicles and construction equipment from idling longer than five minutes at the construction site by including these restrictions in the construction company contract(s) and by posting signs on-site, unless the exceptions in the CARB regulations which pertain to idling requirements are applicable;*

4. *All off road diesel-powered construction equipment greater than 50 hp shall meet U.S. EPA Tier 4 Final off-road emission standards, where available. In addition, all construction equipment shall be outfitted with BACT devices certified by CARB. Any emissions control device used by the contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 3 diesel emissions control strategy for a similarly sized engine as defined by CARB regulations. This requirement shall be included in applicable bid documents, purchase orders, and contracts;*

5. *A copy of each unit's certified tier specification, BACT documentation, and CARB or South Coast AQMD operating permit shall be provided at the time of mobilization of each applicable unit of equipment;*

6. *All construction equipment must be tuned and maintained in compliance with the manufacturer's recommended maintenance schedule and specifications that optimize emissions without nullifying engine warranties. All maintenance records for each equipment and their construction contractor(s) should be made available for inspection and remain on-site for a period of at least two years from completion of construction;*

7. *Require construction equipment such as concrete/industrial saws, pumps, aerial lifts, material hoist, air compressors, forklifts, excavator, wheel loader, and soil compactors be electric or alternative-fueled (i.e., non-diesel). The Applicant shall survey and document the Project's construction areas and identify all construction areas that are served by electricity. This documentation shall be provided as part of the Construction Management Program;*

8. *Survey and document the Project's construction areas and identify all construction areas that are served by electricity. On-site electricity, rather than temporary power generators, shall be used in all construction areas that are demonstrated to be served by electricity;*

9. *Suspend use of all construction activities that generate air pollutant emissions during first stage smog alerts as defined by the AQMD;*

10. *Best Management Practices: In addition to equipment requirements, the following BMPs shall be included in the Construction Management Program and imposed on all construction projects associated with the Project. BMPs shall include, at a minimum: 1) Maintain equipment according to manufacturers' specifications; 2) Maintain a buffer zone that is a minimum of 1,000 feet between on-road truck traffic and sensitive receptors, where feasible; 3) Prohibit parking on public streets; 4) Prepare haul routes that conform to local requirements; 5) Schedule construction activities that affect traffic flow on the arterial system to off-peak hours to the extent practicable; 6) Use electric power in lieu of diesel power where available; and 7) Traffic speeds on all unpaved roads to be 15 mph or less; and*

11. *Encourage construction contractors to apply for South Coast AQMD "SOON" funds. The "SOON" program provides funds to applicable fleets for the purchase of commercially available low-emission heavy-duty engines to achieve near-term reduction of NOx emissions from in-use off-road diesel vehicles. More information on this program can be found at South Coast AQMD's website: http://www.aqmd.gov/home/programs/business/business-detail?title=off-road-diesel-engines.*

Air Monitoring

12. *Monitoring for NO_2 at the schools. The Applicant shall coordinate with the School District for the installation of an air monitoring system at the Elementary School south side (area most affected by potential exceedances of the Federal NO_2 standard), overseen and directed by the City of Paramount and the School District. The air monitoring shall monitor for NO_2 and be similar to the specifications for the Aeroqual AQS 1 Construction Air Quality Monitor, allowing for datalogging and communication of monitored levels, with access of data from anywhere and alerts via wireless device. The air monitoring shall be only during the construction period.*

Exceptions

Mitigation measures for off-road construction equipment and generator requirements shall apply unless any of the following circumstances exist and AltAir and its contractor maintain a written finding consistent with Project contract requirements that:

1. The Applicant and its contractor intend to meet the requirements of these mitigation measures as to a particular vehicle or piece of equipment by leasing or short-term rental, and the Applicant and its contractor have attempted in good faith and due diligence to lease the vehicle or equipment that would comply with this policy, but that vehicle or equipment is not available for lease or short-term rental within 200 miles of the Project site, and the contractor has submitted documentation to the refinery showing that the requirements of this Exception provision apply; or
2. The contractor has been awarded funding by South Coast AQMD or another agency that would provide some or all of the cost to retrofit, repower, or purchase a piece of equipment or vehicle, but the funding has not yet been provided due to circumstances beyond the contractor's control, and the contractor has attempted in good faith and due diligence to lease or short-term rent the equipment or vehicle that would comply with this policy, but that equipment or vehicle is not available for lease or short-term rental within 200 miles of the Project site, and the contractor has submitted documentation to the refinery showing that the requirements of this Exception provision apply; or
3. The contractor has ordered for purchase, a piece of equipment or vehicle to be used on the construction project in compliance with this policy at least 60 days before that equipment or vehicle is needed at the Project site, but that equipment or vehicle has not yet arrived due to circumstances beyond the contractor's control, and the contractor has attempted in good faith and due diligence to lease or short-term rent a piece of equipment or vehicle to meet the requirements of this policy, but that equipment or vehicle is not available for lease or short-term rental within 200 miles of the Project, and the contractor has submitted documentation to the refinery showing that the requirements of this Exception provision apply; or
4. Construction-related diesel equipment or vehicles will be used for fewer than ten calendar days per calendar year. The contractor shall not consecutively use different equipment or vehicles that perform the same or a substantially similar function in an attempt to use this Exception to circumvent the intent of this policy.

For any of the aforementioned Mitigation Measures and Exceptions, the contractor shall provide the next cleanest piece of equipment or vehicle as provided by the step down schedules in Table A for Off-Road Equipment and Table B for On-Road Equipment.

Table A. Off-Road Compliance Step Down Schedule*

Compliance Options Priority Order	Engine Standard	CARB-Verified DECS (VDECS)
1	Tier 4 final	N/A
2	Tier 3	Level 3
3	Tier 2	Level 3
4	Tier 1	Level 3
5	Tier 2	Level 2
6	Tier 2	Level 1
7	Tier 2	Uncontrolled
8	Tier 1	Level 2
Equipment less than Tier 1, Level 2 shall not be permitted.		

Note: DECS=diesel emissions control system. The compliance alternatives are based on the increasing PM emissions associated with Tiers and the DECS control levels.

Table B. On-Road Compliance Step Down Schedule*

Compliance Options Priority Order	Engine Model Year	CARB-Verified DECS (VDECS)
1	2010	N/A
2	2007	N/A
3	2004	Level 3
4	1998	Level 3
Equipment with a model year earlier than Model Year 1998 shall not be permitted.		

*How to use Table A and Table B: For example, if Compliance Alternative #3 is required by this policy but a Contractor cannot obtain an off-road vehicle that meets the Tier 2 engine standard that is equipped with a Level 3 DECS (Compliance Alternative #3 in Table A) and meets one of the above exceptions, then the Contractor shall use a vehicle that meets the next compliance alternative (Compliance Alternative #4) which is a Tier 1 engine standard equipped with a Level 3 DECS. Should the Contractor not be able to supply a vehicle with a Tier 1 engine equipped with a Level 3 DECS in accordance with Compliance Alternative #4 and has satisfied the requirements of one of the above exceptions as to the Contractor's ability to obtain a vehicle meeting Compliance Alternative #4, the Contractor shall then supply a vehicle meeting the next compliance alternative (Compliance Alternative #5), and so on. If the Contractor is proposing an exemption for on-road equipment, the step down schedule in Table B should be used. A Contractor must demonstrate that it has satisfied one of the exceptions listed in the selected Compliance Alternative # before it can use a subsequent Compliance Alternative. The goal is to ensure that the Contractor has exercised due diligence in supplying the cleanest fleet available.

Impacts Remaining After Mitigation

Mitigated emission estimates were adjusted to account for the use of Tier 4 engines (detailed calculations are presented in Appendix B, Part 1). The availability of Tier 4 equipment, which would reduce emissions, is uncertain at this time. However, as shown in Table 4.2.10, even if all Tier 4 construction equipment were available, NOx emissions would remain significant.

Mitigation measure AQ-1a would require the electrification of some equipment, as possible. For example, the generators “1 - 24 KW Generator” and the “Portable Light Plant - Moon Glo's” are used extensively in the construction estimates, with multiple units of 1 - 24 KW Generator of Portable Light Plant - Moon Glo's being utilized. Because these generators are small, less than 75 hp, they do not necessarily have Tier 4 emissions level units available, and emissions can be high. By eliminating their emissions, emissions levels could be reduced. Since the availability and coordination of these measures are speculative at this time,

these measures have not been included in estimating the significance, only to demonstrate that coordination of the largest emitting devices and electrification to the extent feasible, could reduce emissions.

Therefore, the level of significance after mitigation is expected to remain greater than the significance threshold for regional and localized impacts, and impacts would be **significant and unavoidable (Class I).**

Table 4.2.10 Mitigated Project Construction Emissions, daily emissions

Emission Source	Construction Emissions (lbs./day)(1)					
	VOC	NOx	SOx	CO	PM_{10}	$PM_{2.5}$
Emissions from Construction Equipment	28.1	70.0	0.2	151.4	1.5	1.5
Off-road Vehicles + Earthmoving Fugitive PM	7.6	324.4	1.4	30.8	121.5	32.6
Off-road Vehicles Fugitive PM Unpaved - Peak	0.0	0.0	0.0	0.0	15.0	3.4
Paint	16.6	0.0	0.0	0.0	0.0	0.0
Pipeline Construction (1)	0.0	0.0	0.0	57.6	0.0	0.0
Total Construction Emissions(2)	52.3	394.4	1.6	239.9	138.0	37.5
South Coast AQMD Significance Thresholds Construction	75	100	150	550	150	55
Significant?	No	**Yes**	No	No	No	No

(1) Peak emissions for VOC/SOx/PM are expected to occur in Year 2 Month 3 (no pipeline installation emissions). Peak NOx emissions are expected to occur in Year 1 Month 11(no pipeline installation emissions) and peak CO emissions are expected to occur in Year 3, Month 4.
(2) Totals may differ from Appendix B, Part 1 due to rounding.
Source: Appendix B, Part 1 – Construction Emissions Analysis

4.2.4.2 Operational Criteria Pollutant Emissions

The Project would convert the remainder of the refinery into a renewable fuels production facility. The Project's operational air quality impacts are evaluated in this section. Direct daily operational emissions include stationary and mobile source emissions that are expected from the Project. Stationary sources include combustion sources, storage tanks, and fugitive sources. Mobile sources include trucks, trains, and marine barges. The number of refinery workers are expected to be slightly less than peak employment in 2011 (see Section 2.0, Project Description) but have been assumed to be the same such that no additional commuter vehicles have been included.

Impact #	Impact Description	Phase	Impact Classification
AQ.2	Operational emissions could exceed the South Coast AQMD thresholds.	Operation	Class I

The Project will affect most operating units at the refinery including Unit A installed in the Original Renewable Fuels Project, with the exception of a few units which are not anticipated to change as a result of this Project. The following summarizes the proposed modifications to the refinery:

- Shutdown of equipment serving crude oil processing and asphalt manufacturing (process units, heaters, loading racks and storage tanks), eliminating emissions from this equipment;
- A new Hydrogen Generation Unit, resulting in increased emissions from heaters, as well as fugitive components;

- Installation of new process units, including Renewable Fuels Unit B, Pre-Treatment Unit, Wastewater Treatment and other supporting facilities; resulting in additions of fugitive component VOC emissions;
- Installation of a new flare and flare gas recovery to support existing, new, and modified process units;
- Installation of new heaters to support new Renewable Fuels Unit B and the new Hydrogen Generation Unit, resulting in an increase in combustion emissions;
- Installation of Selective Catalytic Reduction (SCR) to several existing fired sources to reduce NOx emissions;
- Repurposing (modifications and adjustments to throughput and commodities) of existing fixed and floating roof storage tanks. No new hydrocarbon tanks will be installed as part of this Project;
- Repurposing (modifications and adjustments to throughput and commodities) of existing load racks, installation of one new load rack and installation of a new vapor recovery system;
- Modifications to existing process units, supporting units and equipment; resulting in changes to fugitive component VOC emissions; and
- Modifications to existing cooling towers to reduce drift.

The air quality analysis does not include emissions from the following operations, which are not anticipated to change (actual or potential emissions) as a result of this Project:

- Remediation operations (soil vapor extraction units);
- Emergency internal combustion engines; and
- Existing flare pilot and purge gas emissions.

The following discussion describes the stationary and mobile emissions sources associated with the Project.

Operational Stationary Sources: Criteria Pollutants

The Project reconfigures the stationary sources at the refinery. The following sections describe the changes in the various types of stationary sources. The detailed methodology for calculating the associated emissions is provided in Appendix B, Part 2.

Combustion Sources

The overall number of combustion sources (i.e., heaters, boilers, incinerators, flares) will be reduced with the Project. Specifics on the equipment, sizing and heat throughput are included in Appendix B, Part 2. The reconfiguration results in approximately the same fired-duty from fewer sources. New and modified heaters are expected to comply with the most current emission requirements. The post-Project maximum emissions are based on the potential to emit. To meet NOx emission limits, SCR units are expected to be repurposed or new units installed.

A new flare and flare gas recovery system will be installed to work in coordination with the existing flare and flare gas recovery system. The flare system is designed to release to atmosphere only during emergency situations (with the exception of pilot and purge gases). Details on gas specifics and other details are included in Appendix B, Part 2.

Storage Tanks

The overall number of storage tanks at the refinery will be reduced with the Project, with associated changes to throughput and tank details affecting emissions calculations included in Appendix B, Part 2. One tank will be modified to increase the capacity. Modifications such as adding internal floating roofs will be made to tanks storing commodities that require such equipment. Carbon adsorption emission control will be added to storage tanks that require odor control (see Appendix B, Part 2, Attachment B).

Note that the vegetable oils and tallow used as feedstock do not produce VOC emissions from tanks, or other equipment, such as components or unloading/loading racks at the refinery or the port.

No modifications are proposed for the existing five tanks at the Lakewood Tank Farm.

Loading/Unloading Racks

The overall number of loading/unloading truck and rail racks at the refinery will be reduced as part of the Project (associated with CARB diesel, renewable diesel, renewable jet fuel, gasoline, spent caustic, LPG, naphtha, feedstock, DMDS, citric acid, fresh caustic). Details on the loading racks (number, throughputs, etc.) are included in Appendix B, Part 2, Attachment A, Table A-7. Existing asphalt truck loading racks will be relocated and repurposed. Additional truck racks will be relocated and repurposed for product and material loading and unloading. See Appendix B, Part 2, Attachment A, Table A-7 for details.

Existing asphalt loading and unloading rail facilities will be converted to receive raw materials. Additional rail loading and unloading facilities will also be installed. See Appendix B, Part 2, Attachment A, Table A-7 for details.

New rail track internal to the refinery will be installed.

There are no loading/unloading racks at the Lakewood Tank Farm.

Cooling Towers

The overall number of cooling tower systems will be reduced from three to two. Two of the cooling tower systems will be refurbished and relocated. One will be demolished.

Process Vents

New/modified process units are primarily a closed system with no vents to atmosphere (PRVs route to flare, with associated flare vapor recovery system), with the exception of process vent(s) at the new Hydrogen Plant, which vent to atmosphere.

Several process units may have small process vent emissions. These vent emissions are estimated based on engineering estimates and connected to control devices where possible (except for process vent(s) at the new Hydrogen plant in order to minimize emissions to the maximum extent feasible.

Fugitive Components

Fugitive emissions are emissions into the atmosphere that are not directly emitted from permitted equipment through a stack, chimney, vent, or other functionally equivalent opening. Fugitive emission sources that are part of the Project include flanges on pipes and equipment, pumps, valves, compressors, and gauges, which are referred to as fugitive components. Emissions from fugitive components are calculated using emission factors that account for component type and service type (i.e., the material being handled is a vapor, light liquid, or heavy liquid) based on Method 2 of the South Coast AQMD Guide

for Fugitive Emissions Calculations (South Coast AQMD, 2003a). To calculate a maximum potential to emit, the fugitive components are conservatively estimated by assuming that all fugitive components would be leaking concurrently. Fugitive emissions sources are subject to monitoring and maintenance requirements pursuant to South Coast AQMD Rule 1173. Also, Rule 1176 provides requirements related to VOC emissions from wastewater systems.

Operational Mobile Sources: Criteria Pollutants

The Project will transport feed and blend stocks and distribute products by trucks, rail, and marine barges. The detailed emission calculation methodology for these on-site and off-site mobile sources is provided in Appendix B, Part 2, Attachment A.

Trucks

The operation of the Project will involve the following changes to on-road vehicle traffic associated with the refinery, within and outside the South Coast AQMD's jurisdiction:

- Trip lengths for on-site truck traffic are not expected to change, but the number of trucks on a peak day is expected to increase from 156 to 540. Therefore, an increase of on-road mobile source emissions is expected to occur;
- Trip lengths for off-site truck activity is expected to change from asphalt deliveries which supplied asphalt throughout of California to more local deliveries within the South Coast AQMD's jurisdiction;
- Peak truck miles are expected to be reduced from approximately 160 miles per truck trip to approximately 72 miles; and
- The peak number of daily trucks are expected to increase from 156 trucks to 540 trucks resulting in an increase of approximately 13,860 miles per day.

Based on manifest receipts, approximately 50 percent of the miles traveled in the pre-Project activity were inside the South Coast AQMD's jurisdiction. Based on the projected activity under the Project, the Applicant estimates that the Project mileage is expected to have approximately 92 percent remain within the South Coast AQMD's jurisdiction. Therefore, emissions within the South Coast AQMD jurisdiction would increase.

Rail

Materials would be transported by rail using trains. Trains are comprised of locomotives and railcars. Railcars themselves are not sources of emissions when traveling along the railway. The emissions from railcars occur during unloading and loading at the rail loading/unloading rack. Emissions from trains traveling on railroads are from the locomotives. On-site locomotive/railcar activities are expected to increase from approximately two hours per day to eight hours per day. However, the on-site railcar mover, a diesel-powered Trackmobile, will be replaced with an electric railcar mover. Therefore, on-site locomotive emissions from railcar maneuvering are expected to be eliminated.

Railcar deliveries to the refinery will increase from a peak day of 33 railcars to 50 railcars (two trains per day maximum), with train visits to the refinery increasing from 95 trains per year to 312. A maximum of 4 locomotives per train are anticipated. The additional railcars are expected to be delivered to an existing railyard as part of existing trains where they will be sorted by the railroad company. Rail yard areas could vary depending on where the railroad decides to break up the trains and could occur at numerous locations, although the main rail yard in Southern California is located at Colton. The routing of the trains

entering the state can come from four main routes: Oregon, Reno, Las Vegas, and Arizona. The analysis includes the worst-case emissions route for the peak day. Details on rail movements are included in Appendix B, Part 2, Attachment A, Table A-20.

Marine Barges

The refinery historically did not receive feedstocks from marine barge deliveries. The Project is expected to receive up to 25 percent of the feedstock by way of barge shipments into the Port of Los Angeles and transferred to trucks (which are included in the previously discussed peak day truck analysis). Three barges per month will offload a portion of the cargo intended for delivery to the refinery, while the remainder of the cargo will be delivered to other customers. However, the analysis of the peak day emissions assume that the entire volume of cargo offloaded will be delivered to the refinery, which provides the greatest emissions attributed to the Project. Note that the vegetable oils and tallow used as feedstock handled at the port do not produce VOC emissions from unloading/loading operations.

Details on marine barge movements are included in Appendix B, Part 2, Attachment A, Table A-23.

Regional Criteria Emissions Impacts

Detailed descriptions of the methodology used to calculate the operational emission and the calculations are provided in Appendix B, Part 2. Table 4.2.11 summarizes the expected daily operational emissions for the Project.

Table 4.2.11 Project Refinery Operational Emissions, daily emissions

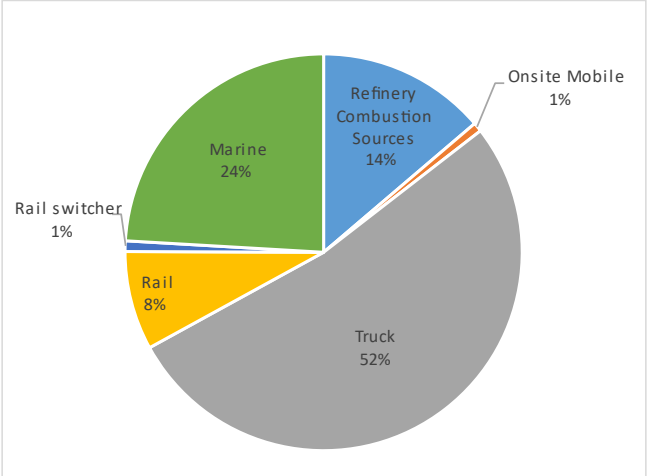
Emission Source	Emissions (lbs./day)					
	VOC	NOx	SOx	CO	PM_{10}	$PM_{2.5}$
Combustion Sources	154.6	293.5	200.2	509.8	187.0	183.5
Hydrogen Unit Process Vents	12.3	0.0	0.0	0.0	0.0	0.0
Pre-Treat Unit	0.0	0.0	0.0	0.0	0.3	0.3
Cooling Towers	45.4	0.0	0.0	0.0	9.5	5.7
Loading/Unloading Racks (Truck and Rail)	132.1	0.0	0.0	0.0	0.0	0.0
Storage Tanks	196.4	0.0	0.0	0.0	0.0	0.0
Fugitive Components	828.8	0.0	0.0	0.0	0.0	0.0
Wastewater Treatment	230.0	0.0	0.0	0.0	0.0	0.0
Process Vents	100.5	0.0	0.0	0.0	0.0	0.0
On-site Mobile Sources (Truck & Rail)	0.8	15.9	0.0	11.7	0.7	0.1
Off-site Mobile Sources (Truck, Rail and Barge)	43.1	1824.3	17.6	328.4	113.0	26.5
Subtotal Stationary Sources	1700.0	293.5	200.2	509.8	196.7	189.4
Subtotal Mobile Sources	43.9	1840.2	17.6	340.0	113.7	26.6
Total Combined Emissions	1,743.9	2,133.7	217.8	849.8	310.4	216.0
Stationary Source Emission Increase over Baseline	1,336.4	52.0	138.2	239.0	11.7	24.5
Mobile Source Emission Increase over Baseline	32.1	1,055.4	15.8	185.0	47.5	15.8
Total Increase over Baseline	1,368.5	1,107.4	154.0	424.0	59.2	40.4
Required Compliance (compliance with Reg XIII and XX)	1,336.4	52.0	138.2	0.0	11.7	24.5

Table 4.2.11 Project Refinery Operational Emissions, daily emissions

Emission Source	Emissions (lbs./day)					
	VOC	NOx	SOx	CO	PM_{10}	$PM_{2.5}$
Total Project Emissions Increase from 2011 After Compliance	32.1	1,055.4	15.8	424.0	47.5	15.8
South Coast AQMD Significance Threshold for Operation	55	55	150	550	150	55
Significant?	No	**Yes**	No	No	No	No

Source: See Appendix B, Part 2. Although the 2013 MND allowed for an increase in emissions, as there was never an actual increase in emissions above the 2011 emissions levels subsequent to the 2013 MND, the 2011 refinery emissions have been utilized.
VOC, NOx, Sox, PM10 and PM2.5 have increases over baseline emissions for stationary sources and are therefore required to be offset. CO is not required to be offset as it is not subject to Reg XIII and XX. Offset ratios in this analysis assume a 1:1 offset ratio. Ratios associated with permitting by the South Coast AQMD may be different.

South Coast AQMD regulations require emission offsets or concurrent emission reductions as part of the permitting process for stationary sources. Emission offsets are required pursuant to South Coast AQMD Regulation XIII – New Source Review, and Regulation XX -RECLAIM. As shown in Table 4.2.11, emissions of VOC, SOx, CO, PM_{10}, and $PM_{2.5}$ are expected to be less than the South Coast AQMD air quality significance thresholds for operation. Therefore, the VOC, SOx, CO, PM_{10}, and $PM_{2.5}$ air quality impacts during operation are less than significant. NOx emissions are expected to exceed the South Coast AQMD air quality significance threshold during operation, due to increases in emissions from mobile sources and stationary sources. Therefore, NOx emission impacts are considered **significant** during operations.



NOx Emissions

Localized Criteria Emissions Impacts

Dispersion modeling was used to calculate ambient air concentrations of the criteria pollutants from the Project on-site stationary sources and on-site mobile sources, which emit CO, NOx, SOx, PM_{10}, and $PM_{2.5}$ emissions and to determine the localized air quality impacts. In order to determine offsite concentrations of pollutants, the U.S. EPA AERMOD air dispersion model was used to predict the ambient concentrations for CO, NOx, SOx, and PM_{10} (AAQS have not been established for VOC and therefore is not required to be modeled). Since $PM_{2.5}$ emissions are a fraction of PM_{10} emissions, and the significance thresholds are the same for PM_{10} and $PM_{2.5}$, $PM_{2.5}$ emissions were conservatively assumed to be equivalent to PM_{10} and based on the modeling results for PM_{10}.

Emissions of CO, NOx, SOx, and PM_{10} were modeled using the appropriate averaging times for each pollutant. Averaging times modeled include one, eight, and 24 hours and annual, which are based on the averaging times used to derive the applicable AAQS. The emission rates, locations, and GLCs are included in Appendix B, Part 2, Attachment C. The results of the modeled Project criteria pollutant emissions on AAQS are presented in Table 4.2.12.

Table 4.2.12 Results of Local Impacts Operational Air Quality Modeling

Pollutant	Averaging Period	Concentrations (µg/m³)		Significant?
		Modeled Impact Plus Background	AAQS	
NO_2	1-Hour – State	209.1	339	No
	1-Hour – Federal	148.4	188	No
	Annual	35.3	57	No
SO_2	1-Hour – State	72.3	655	No
	1-Hour – Federal	56.9	196	No
	24-Hour	25.1	105	No
CO	1-Hour	7,003.4	23,000	No
	8-Hour	5,281.7	10,000	No
Pollutant	**Averaging Period**	**Modeled Impact (µg/m³)**	**Significance Impact Level[(a)] (µg/m³)**	**Significant?**
PM_{10}	24-Hour.	1.49	2.5	No
	Annual	0.41	1	No
$PM_{2.5}$	24-Hour.	1.43	2.5	No

(a) South Coast AQMD Significant Increase in Concentration per Rule 1303 Table A-2 and South Coast AQMD Air Quality Significance Thresholds (see http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf).

Based on the AERMOD air dispersion model results, the GLCs of the criteria pollutants of concern will be less than the South Coast AQMD air quality significance thresholds at all off-site receptor locations. Since the localized air quality impacts do not exceed the significance thresholds, localized impacts during operations are **less than significant**.

CO Hot Spots

The potential for high concentration of CO emissions associated with truck/vehicle traffic was considered and evaluated per the requirements of the South Coast AQMD CEQA Air Quality Handbook (South Coast AQMD, 1993). The Handbook indicates that any project that could negatively impact levels of service at local intersections may create a CO hot spot and should be evaluated. As evaluated in Section 4.8, Transportation and Circulation, no changes in level of service are expected from the Project. Therefore, no significant adverse impacts to ambient CO air quality due to the traffic impacts at intersections in the vicinity of the Project are expected, and impacts would be **less than significant.**

Concurrent Construction and Operations

The operation of Unit A will continue during the construction period; however, no petroleum refining will occur. Emissions of concurrent operation of equipment at the refinery and the construction activities is provided in order to assess potential impacts of operational plus construction emissions levels compared to the operational significance thresholds. The emissions estimate includes emissions from combustion sources for Unit A and support activities including rail and truck loading and unloading, storage tanks, wastewater treatment, fugitive components, on-site mobile sources, and off-site mobile sources, in addition to the construction activities discussed above. To conservatively estimate operational emissions once Unit A has been upgraded, combustion sources for Unit A and support activities (e.g., boilers, flares, incinerators), truck emissions (i.e., fewer trucks due to reduced production), rail and marine barge emissions, and fugitive emissions are expected at different levels than during full Project operations. The

combination of the interim operational emissions and the peak construction emissions are presented in Table 4.2.13.

Table 4.2.13 Concurrent Project Refinery Operational + Construction Emissions, daily emissions

Emission Source	Emissions (lbs./day)					
	VOC	NOx	SOx	CO	PM_{10}	$PM_{2.5}$
Total Construction Emissions Mitigated	52.3	394.4	1.6	239.9	138.0	37.5
Combustion Sources	24.7	138.6	151.9	216.1	41.7	41.3
Hydrogen Unit Process Vents	0.0	0.0	0.0	0.0	0.0	0.0
Pre-Treat Unit	0.0	0.0	0.0	0.0	0.0	0.0
Cooling Towers	45.4	0.0	0.0	0.0	9.5	5.7
Loading/Unloading Racks (Truck and Rail)	26.4	0.0	0.0	0.0	0.0	0.0
Storage Tanks	175.1	0.0	0.0	0.0	0.0	0.0
Fugitive Components	165.8	0.0	0.0	0.0	0.0	0.0
Wastewater Treatment	211.3	0.0	0.0	0.0	0.0	0.0
Process Vents	100.5	0.0	0.0	0.0	0.0	0.0
On-site Mobile Sources (Truck & Rail)	0.2	3.2	0.0	2.3	0.1	0.0
Off-site Mobile Sources (Truck, Rail and Barge)	31.5	927.9	15.3	150.6	33.5	15.5
Subtotal Stationary Sources	749.2	138.6	151.9	216.1	51.2	47.0
Subtotal Mobile Sources (including offroad)	84.0	1325.5	17.0	392.8	171.6	53.0
Total Combined Emissions	833.2	1,464.1	168.8	608.9	222.8	100.0
Stationary Source Emission Increase over Baseline	385.6	-102.9	89.8	-54.7	-133.8	-117.9
Mobile Source Emission Increase over Baseline	72.2	540.7	15.1	237.8	105.4	42.3
Total Increase over Baseline	457.8	437.8	105.0	183.1	-28.4	-75.6
Required Compliance (compliance with Regulations XIII and XX)	385.6	0.0	89.8	0.0	0.0	0.0
Total Project Emissions Increase over 2011 After Compliance	72.2	437.8	15.1	183.1	-28.4	-75.6
South Coast AQMD Significance Threshold for Operation	55	55	150	550	150	55
Significant?	**Yes**	**Yes**	No	No	No	No

Source: See Appendix B, Part 2 and Part 4. Although the 2013 MND allowed for an increase in emissions, as there was never an actual increase in emissions above the 2011 emissions levels subsequent to the 2013 MND, the 2011 refinery emissions have been utilized. Total construction emissions mitigated see Table 4.2.10. VOC, NOx, Sox, PM10 and PM2.5 have increases over baseline emissions for stationary sources and are therefore required to be offset. CO is not required to be offset as it is not subject to Reg XIII and XX. Offset ratios in this analysis assume a 1:1 offset ratio. Ratios associated with permitting by the South Coast AQMD may be different.

Based on the preceding analysis, the Project would be significant for VOC and NOx during the period when construction and operational activities overlap. Impacts would be **significant and unavoidable (Class I).**

Mitigation Measures

AQ-2a ***Newer Trucks.*** *The Applicant shall require that all contracts with trucking companies for the use of heavy-duty trucks (as per DOT gross vehicle weight rating greater than 26,000 lbs) specify the required use of 2017 model year trucks or newer in order to reduce NOx emissions.*

AQ-2b ***NOx Reduction Program****. The Applicant shall fund a program to address the potential health effects of localized and regional NOx and VOC emissions in coordination and approval by the City of Paramount and the City of Bellflower. This effort shall include the following performance measures:*

1) development of an assessment identifying potential areas that funding could assist in the reduction of NOx/VOC emissions. Areas for potential funding should include areas, in order of preference, such as:

a) Funding increased efficiency of City-owned facilities to reduce emissions from vehicles and infrastructure including vehicle replacement, installation of electric charging infrastructure, replacement of building heating with higher efficiency, zero emission alternatives (heat pumps to eliminate natural gas combustion);

b) increased transit options to reduce regional emissions from vehicles, including private and public mobility services and pedestrian and bicycle infrastructure such as ride hailing, ride sharing, bike sharing, bike paths, pedestrian areas, subsidizing monthly transit passes;

c) coordination with AQMD for Regulation XVI – mobile source offset programs or Regulation XXII – on-road motor vehicle mitigation options, funding and participation, such as funding for old-vehicle scrapping;

d) funding of a vessel speed reduction program coordinated and contracted with a shipping company to reduce NOx emissions from vessels transiting the AQMD area through lower transit speeds;

2) The Program shall also develop and quantify emissions reductions for various measures and include accounting and recordkeeping of emission reductions from the various programs.

3) The Applicant shall make available to residences within the Construction Federal Localized Contour (approximately defined by 250 feet west of Downey North of Somerset and south of the railroad tracks; north of Rancho Vista Street and 1,000 feet south of the refinery; 250 feet east of the refinery; extending 550 feet north of the refinery), portable indoor air filters, or equivalent, which are equipped with HEPA and activated carbon filters and a minimum flow rate of 400 cfm, with a maximum number of filters per household of 2. Filter shall be made available during the construction phase duration of the Project. For affected school facilities defined as those facilities within 200 feet of the refinery fence line, filter supplies and other maintenance requirements (as the School District already has filters in place) shall be provided to the School District for those affected facilities for the construction phase duration.

Impacts Remaining After Mitigation

The Project operational emissions are expected to exceed the thresholds for NOx (and VOC and NOx during construction + operations combined). Emissions from most stationary sources are required to be offset per South Coast AQMD regulations. The remaining emissions are from mobile sources (i.e., truck, trains, and marine barges). Many of the mobile sources that would supply the refinery with feedstocks

are not under the direct control of the refinery and therefore mitigation measure AQ-2a would not be able to be applied. However, the refinery may be able have some influence over the type of trucks utilized for the Project via negotiating terms in the contracts with the trucking companies. By requiring the use of 2017 model year trucks, for example, NOx emission could be reduced by 60 percent based on EMFAC2017 emission factors for a T7 tractor driving at 55 mph (off-site highway speeds). Trucks comprise about 62 percent of the off-site NOx emissions, so a reduction in NOx from this category of mobile source by leveraging Applicant contracts may allow for some level of NOx emission reductions, although a specific level at this time is speculative.

Trains traveling to the refinery will be operated by the Union Pacific Railroad and powered by locomotives operated by Union Pacific employees. Under the Interstate Commerce Commission Termination Act (ICCTA) of 1995 [Public Law 104-88, 109 Stat. 803], the U.S. Surface Transportation Board (STB) has jurisdiction over transportation by rail carriers. The U.S. STB also has jurisdiction over operation of spur, industrial, team, switching, or sidetracks, or facilities – even if the tracks are located within one state (49 USC 10501[b]). The U.S. STB's jurisdiction with respect to rail transportation is exclusive and preempts remedies provided under state law. Therefore, train movements within California are expressly preempted from local and state environmental and land use regulations under the ICCTA and mitigation measures would not be applicable by the City of Paramount or the South Coast AQMD. Mitigation measures to reduce train emissions, such as the use of Tier 4 locomotives, are available and technically feasible; the requirement that these mitigation measures be utilized is not feasible and has therefore not been accounted for in determining significance.

Regarding marine barges, local agencies do not have the authority to impose any specific emissions reduction technology on ocean-going barges since they are internationally flagged vessels subject only to International Maritime Organization regulations. Mitigation measures applicable to ships, such as speed-reduction or technological upgrading of ships beyond current applicable requirements, is also preempted and is therefore not feasible and has not been accounted for in this analysis.

In this SEIR, the emissions from locomotives and marine barges in California have been estimated and evaluated to meet the disclosure requirements of CEQA. However, mitigation measures associated with trains and barges are preempted from local and state permitting and land use requirements because of federal and international requirements.

CARB regulations are currently being developed and implemented to reduce emissions from trucks, which would further reduce NO_x emissions. CARB is also revising the at-berth regulations to reduce further marine vessel emissions while at berth. CARB is also in the process of developing locomotive regulations. Ship emissions and rail emissions are regulated at the federal level. The on-going regulation development is expected to reduce mobile source emissions. No feasible mitigation has been identified that would reduce emissions from all mobile source aside from requiring trucking contracts to utilize cleaner, newer trucks.

As the emissions regionally (and locally for construction) would exceed the thresholds by a substantial margin, an additional mitigation measure (AQ-2b) has been included to develop a program to reduce regional and local impacts of emissions through the funding of programs to reduce City-wide (City of Paramount and the City of Bellflower) and regional impacts of NO_x/VOC emissions. This type of program could involve the replacement of NO_x-generating equipment in the community, such as City-owned vehicles or natural -gas burning equipment, as well as participation in existing programs through the South Coast AQMD. These measures could produce varying degrees of NO_x reductions. For example, a vehicle scrappage program that pays owners of older cars to scrap them could reduce NOx emissions by one ton

annually for every 40 vehicles scrapped (depending on vehicle year and type, using EMFAC emission factors). A vehicle replacement program could eliminate one ton of NO_x for every 10 light-heavy duty vehicles replaced with clean power (such as electric, using EMFAC emission factors). A vessel speed reduction program (www.bluewhalesblueskies.org) to pay marine shipping companies to slow their vessels down reduced about 8 pounds of NO_x per mile of ship travel, or about 1.5 tons NOx per vessel-year, within the regional area in 2020. Other programs, such as replacement of natural gas burning building HVAC systems with higher efficiency systems, could also potentially reduce emissions. The extent of reductions with these types of programs is somewhat speculative at this time but is feasible and could allow for a reduction of some of the Project NO_x emission impacts, both regional and local. The implementation of the program would be in coordination with the refinery tracking system discussed below under mitigation measure AQ-5a, which would quantify the refinery emissions annually, and then recordkeeping associated with the program as described in mitigation measure AQ-2b to estimate the residual emissions levels, if any.

The Project would cause exceedances of health criteria for NO_2 at homes located near the refinery during construction (localized impacts). The use of indoor air filters is shown (Indoor Air, 2014) to reduce the levels of NO_2 and could therefore be an effective means of reducing the impacts of the Project construction air emission impacts and improve the air quality for nearby residences. Residences and school facilities located within the federal thresholds are used as the basis for the filter distribution.

Although these measures could reduce the potential impacts, impacts would still most likely be above the thresholds and therefore, the operational emissions from the Project are expected to remain **significant and unavoidable (Class I).**

Bio Based Fuels

The introduction of bio-based fuels into the available fuel mix in the Los Angeles area could affect the emissions characteristics of different fuel end-users, from trucks, to trains and airplanes. There are a number of studies that indicate a range of potential emissions from bio-based fuels (ICCT, 2021; ACS, 2021; DieselNet, 2021; GNA, 2017; CalEPA 2015) yet the conclusions about whether the use of bio-based fuels would benefit or exacerbate the ozone formation characteristics of the area or reduce DPM are speculative, particularly for engines equipped with DPFs and newer vehicles. Yet it is concluded that its use "*does not worsen air quality compared to conventional diesel*". Therefore, any credits or impacts of the end use of bio-based fuels is considered speculative and not included in the analysis in this study.

Health Impacts of Significant and Unavoidable Emissions

The health impacts related to air quality emissions from the Project have been evaluated in several ways. These include regional impacts, localized impacts, health risk and odors. Because the regional and localized impacts thresholds are exceeded, this section discusses the potential health impacts associated with those significant and unavoidable impacts.

The regional air quality impacts related to construction emissions were evaluated by comparing the peak day construction emissions to the South Coast AQMD mass daily significance thresholds. In the short-term, the air quality impacts related to regional construction emissions would exceed the South Coast AQMD significance thresholds for CO and NOx and are considered to have a significant adverse air quality impact. The results of the LST analysis indicated that the short-term construction emissions would exceed the applicable LST NO_2, PM_{10}, and $PM_{2.5}$ significance thresholds.

The regional air quality impacts related to operational emissions were evaluated by comparing the peak day operational emissions to the South Coast AQMD mass daily significance thresholds. The emissions from operations were determined to exceed the regional thresholds for NOx, primarily due to mobile source, such that operational peak day NOx emissions were concluded to be significant after mitigation. In accordance with the LST analysis for operations, the potential increase in truck trips, railcars, and marine barges is not expected to produce a localized increase in NOx because these emissions will be dispersed along their respective routes.

Since the quantity of emissions would remain greater than the South Coast AQMD air quality threshold even after mitigation for long-term operations, the following analysis is presented to clarify the potential health impacts of these emissions. NOx is a criteria pollutant that reacts in the atmosphere, along with Reactive Organic Gases (ROG), to produce ozone. Ozone can contribute to a number of adverse health impacts including loss of pulmonary function. Increases in NOx and ROG emissions associated with the Project could cause incremental increases in the ozone concentrations which could cause an increase in the ambient air concentrations and the number of days per year exceeding the AAQS. Ozone formation is a complex and complicated phenomenon where emissions from one area could contribute to increased ozone levels at different locations depending on meteorology and atmospheric chemistry.

In order to estimate the potential health effects of the Project's emissions on the population, the Project's emissions were compared to the regional emissions within the South Coast AQMD jurisdiction and are assumed to generate an equivalent amount of ozone on a tons/year basis (a linear relationship in ozone generation to emissions). Regional emissions of NOx and VOC/ROG are shown in Appendix B, Part 2. The Project total NOx + ROG emissions would total a small percentage of the total daily emissions within the district. This level would cause an increase in the ozone concentration of up to 0.06 ppb and would most likely not produce a change in the number of days of exceedance annually in the air quality standards (0.08 percent of the standard). See Appendix B, Part 3 for detailed calculations.

CARB evaluated potential health impacts associated with incremental differences in ozone concentrations (CARB, 2005). Most of the epidemiologic studies used a log-linear model to represent the relationship between ozone exposure and the health endpoint. In this case, the relationship between ozone levels and the natural logarithm of the corresponding health effect is estimated by a linear regression. This regression model generates a beta coefficient that relates the percent change in the health outcome to a unit increase in ozone. Existing studies have reported either a beta coefficient for a unit change in exposure or a relative risk (RR) for a specified change in ozone concentrations, such as 10 ppb 1-hour maximum. The RR is defined as the ratio of the predicted health effect from the higher exposure relative to the baseline exposure. Estimates for health effects in a given study as RR for a specified change in ozone, ΔO_3, were converted into an estimated beta using the following equation:

$$\beta = \ln (RR) / \Delta O_3$$

The daily change in ozone at each monitoring site i.e., the difference between current ozone and the standard (= ΔO_3) was used to calculate RR:

$$RR = \exp(\beta \Delta O_3)$$

Then, the RR estimates were used to determine the population attributable risk (PAR), which represents the proportion of the health effects in the whole population that may be prevented if the cause (in our case, ozone pollution) is reduced by a given amount. Specifically,

$$PAR = (RR - 1) / RR$$

Ultimately, the estimated impact on the health outcome is calculated as follows:

$$\Delta y = PAR \times y0 \times pop$$

where:

Δy = changes in the effects of a health endpoint corresponding to a particular change in ozone,

$y0$ = baseline incidence rate/person within a defined at-risk subgroup, and

pop = population size of the group exposed.

The parameters in the functions differ depending on the study. In order to establish potential changes in mortality (fatality) rates, data from the World Health Organization (WHO), as presented in CARB (2005), was used to establish the beta coefficient for a unit change in exposure or a relative risk for a specified change in ozone concentrations, such as 10 ppb 1-hour maximum. The WHO focused on 15 European time-series studies using all ages and their meta-estimates indicate a relative risk of 1.003 (95% CI = 1.001–1.004) for a 10 $\mu g/m^3$ change in 8-hour ozone. The WHO meta-estimates also indicate a 0.44 percent change in daily mortality (95% CI = 0.15 – 0.59%) per 10 ppb change in 1-hour maximum ozone. Similarly, the WHO meta-estimates indicate a 1.13 percent change (95% CI = 0.38–1.51) in daily mortality per 10 ppb change in 24-hour ozone. The WHO also provided an estimate correcting for possible publication bias using a trim and fill technique. Under an assumption that bias was present, the adjusted estimate is 0.75 percent (95% CI = 0.19–1.32) per 10-ppb change in 24-hour ozone.

Potential changes in morbidity (disease) rates were based on the CARB (2005) study where Anderson et al. (1997) reported a relative risk of 1.04 (95% CI= 1.02–1.07) for hospital admissions for Chronic Obstructive Pulmonary Disease for all ages for a 50 μ/m^3 change in ozone. This converts to 2.05 percent per 10 ppb change in 1-hour maximum ozone.

By following the methodology described by the CARB (2005), Project-related stationary operational ozone increases are estimated to be up to 0.213 additional cases in mortality per 1,000 individuals and 0.283 increased cases of morbidity per 1,000 individuals. Adverse human health impacts that are likely to result from the Project's air quality impacts include an increase in ozone and associated morbidity, and mortality. Construction emissions increases are estimated to increase mortality by 0.071 cases per 1,000 individuals and morbidity by 0.094 cases per 1,000 individuals. Note that vehicle/rail emissions do not all occur within the basin and are therefore calculated separately. See Appendix B Part 3.

4.2.4.3 Toxic Emissions

An HRA was performed to determine if emissions of TACs generated by the Project would exceed the South Coast AQMD air quality significance thresholds for cancer risk and hazard indices (for non-cancer health impacts). HRAs were performed for the TAC emissions at the refinery and the Lakewood Tank Farm, which is located approximately three miles south of the refinery. The HRA methodology is presented in detail in Appendix B, Part 2, Attachment D.

The HRAs were performed following the Office of Environmental Health Hazard Assessment, Air Toxics Hot Spots Program Risk Assessment Guidelines (OEHHA, 2015) and South Coast AQMD risk assessment guidelines (South Coast AQMD, 2020a). AMS/EPA Regulatory Model (AERMOD) was used as the air dispersion model for this analysis. HARP2 (Hotspots Analysis and Reporting Program) Air Dispersion Modeling & Risk Tool, was used for acute, cancer and chronic risk analysis. AERMOD was run outside of the HARP2 program, and modeling results were imported into HARP2 to complete the risk analysis. The HRA was reviewed by the South Coast AQMD and the CEQA consultant to the City of Paramount.

Impact #	Impact Description	Phase	Impact Classification
AQ.3	Operational toxic emissions would not exceed the South Coast AQMD thresholds.	Operation	Class III

The Project will affect most operating units at the refinery, with the exception of a few units which are not anticipated to change as a result of this Project.

Project emission sources relative to toxic air contaminant emissions evaluated for the Project included:

- New, modified and existing combustion sources;
- Hydrogen Generation Unit vent emissions;
- Load racks;
- Storage tanks;
- Process units and supporting operations;
- Fugitive component emissions;
- Cooling towers;
- On-site mobile sources (trucks and locomotives delivering railcars from off-site. Note on-site railcar maneuvering is conducted by an electric railcar mover producing no emissions); and
- Off-site locomotives near the refinery.

Emissions for the Project-related sources were estimated using South Coast AQMD-approved methodologies. Source parameters used in the modeling are detailed in the HRAs in Appendix B, Part 2, Attachment D & E. Carcinogenic risk is considered significant if the incremental increase is 10 in one million or greater for the maximally exposed individual or a cancer burden greater than 0.5. Non-carcinogenic risk is considered significant if the incremental hazard index is 1.0 or greater for the maximally exposed individual.

Refinery Carcinogenic Health Impacts

A summary of the results of the HRA for operation of the Project (not the incremental, only the refinery operating as under the Project) is shown in Table 4.2.14 and in Table 4.2.15 for the Lakewood Tank Farm. Figure 4.2-6 shows the cancer risk contours. As per Appendix B, Part 2, Attachment E, the cancer risks are driven by Benzene (61 percent at the MEIR in Table G-2), naphthalene (19 percent at the MEIR), DPM (10 percent at the MEIR) and Ethyl Benzene (6 percent at the MEIR). Source contributions are fugitives tank farm piping components (22 percent in Table H-2), fugitive Components – truck loading racks (10 percent), and diesel trucks (10 percent).

Table 4.2.14 Project Operational Refinery Health Risk Summary

Criteria	Project Cancer Risk Level, per million	Acute Risk HI	Chronic Risk HI	Chronic 8 hr. Risk HI
MEIR (peak risk at a residential receptor)	16.1	0.93/0.26*	0.176	0.043
MEIW (peak risk at an off-site worker receptor)	6.9	0.34	0.277	0.061
Peak risk at a sensitive receptor	5.7	0.08	0.058	0.017

Source: Applicant HRA Analysis, see Appendix B, Part 2, Attachment D. Peak residential cancer risk located at receptor 418. See Appendix B, Part 2, Attachment D for other results. These are the total refinery HRA results, not the incremental results over the baseline operations, which are presented below.

* Acute risk is for the PMI location along the refinery boundary line and the residential receptor (PMI/MEIR). As cancer and chronic risks are long term averages and no person would be located along the refinery boundary line on a long term basis, only the acute values are shown for the refinery boundary line PMI.

Table 4.2.15 Project Operational Lakewood Tank Farm Health Risk – Summary

Location	Risk Level	Receptor Number	UTM Coordinates (NAD83)		Significant?
			Easting (m)	Northing (m)	
Cancer Risk (Per Million)					
Maximum exposed individual resident (MEIR)	0.23	28	393019	3747083	No
Maximum exposed individual worker (MEIW)[(a)]	0.006	393	393100	3747150	No
Highest sensitive receptor (schools)	0.11	5	393036	3746943	No
Chronic Hazard Index					
Maximum exposed individual	0.00044	251	393200	3746850	No
Acute Hazard Index					
Maximum exposed individual	0.0030	14	393019	3746955	No

(a) On-site workers were not considered in this analysis; MEIW refers to the maximum exposed *off-site* worker.
The risk numbers presented here are the risk numbers from the project operations and not the incremental increase as the baseline operations had minimal toxic emissions.

As shown from Table 4.2.6 to Table 4.2.10 (see Figure 4.2-3), the peak risk levels for cancer reduce substantially over the baseline refinery operations. This is primarily due to the electrification of the railyard switcher locomotive.

Note that the refinery actual operations under the Project may exceed the limits allowed by AB 2588 for cancer risk and would be required to notify residences and implement a risk reduction plan if so, as per South Coast AQMD requirements as part of the AB 2588 program. This is because the risk levels may exceed 10 in one million for the refinery after the Project based on actual reported emissions, whereas the CEQA threshold is based on the incremental increase over the baseline and includes additional sources. Note that AB 2588 does not include mobile sources, whereas the CEQA analysis does include mobile sources. AB2588 assessments are also conducted based on actual emissions as opposed to potential maximum emissions.

Figure 4.2-6 Project Operation Refinery Cancer Contours

Source: Applicant HRA Analysis; see Appendix B, Part 2, Attachment D for data, contours generated by SEIR consultant.

Refinery Carcinogenic Health Risk Comparison to Thresholds (Incremental Change)

The HRA evaluated the emissions and associated health risks associated with the operation of the pre-Project and the post-Project refinery. Due to the extensive revisions to the refinery, the HRA evaluated the pre-Project TAC emissions and the projected post-Project TAC emissions separately. The Project impacts and threshold comparison were calculated by subtracting the pre-Project results from the post-Project results at each receptor location (the incremental change). The determination of significance is based on this incremental increase in cancer risk. The incremental analysis is done for each receptor; therefore, it is not a simple difference between the peak receptor pre-Project and the peak receptor post-Project. It is the largest incremental difference at a single receptor. This approach is based on the South Coast AQMD approach to determining significance. The analysis determined the carcinogenic impacts for all off-site receptors are expected to be less than the applicable significance thresholds, with increments in cancer risk less than the 10 in one million significance threshold. The incremental increase in risk levels for the refinery are shown in Table 4.2.16.

At the Lakewood Tank Farm, pre-Project (baseline) activities involved the storage of gas oil, which had minimal emissions. To conservatively assess the health risks for the Lakewood Tank Farm, the HRA only estimated the post-Project impacts, without deducting the pre-Project (baseline) impacts.

Table 4.2.16 Project Operational Refinery Health Risk – Incremental Increase Summary

Location	Incremental Increase in Risk Level at a Single Receptor	Receptor Number	UTM Coordinates (NAD83)		Significant?
			Easting (m)	Northing (m)	
Cancer Risk (Per Million)					
Maximum exposed individual resident (MEIR)	6.8	17	394355	3751500	No
Maximum exposed individual worker (MEIW)[(a)]	1.3	849	394258.7	3751469	No
Highest sensitive receptor (schools)	2.8	3	394491.8	3751457	No
Chronic Hazard Index					
Maximum exposed individual (resident)	0.16	769	393800	3751700	No
Acute Hazard Index[(b)]					
Maximum exposed individual (peak value)	0.93	866	393838	3751392	No

(a) On-site workers were not considered in this analysis; MEIW refers to the maximum exposed *off-site* worker.
(b) Acute Hazard Index is the post-Project result only, not a net increase calculation.

For residences, at the refinery, the maximum incremental cancer risk from the Project for an exposed individual resident (MEIR) is located east of the boundary of the refinery (see Figure 4.2-6). The incremental cancer risk is less than the South Coast AQMD's 10 in one million significance threshold. For the Lakewood Tank Farm, the maximum cancer risk from the Project for the MEIR is located immediately north of the boundary of the tank farm with the cancer risk less than the South Coast AQMD's 10 in one million significance threshold. Therefore, the cancer risk at the MEIR is less than significant. Detailed cancer risk calculations are presented in Appendix B, Part 2, Attachment D.

For workers, the maximum incremental cancer risk from the Project at the refinery for the MEIW is located east of the eastern boundary of the refinery. The incremental cancer risk is less than the South Coast AQMD's 10 in one million significance threshold. For the Lakewood Tank Farm, the maximum cancer risk from the Project for the MEIW is located approximately 250 feet northeast of the boundary of the Lakewood Tank Farm with the risk less than the South Coast AQMD's 10 in one million significance threshold. Therefore, the cancer risk at the MEIW is not significant. Detailed cancer risk calculations are presented in Appendix B, Part 2, Attachment D & E.

Refinery Cancer Burden

Cancer burden is calculated using the one per one million cancer risk isopleth; if the cancer risk is greater than one in one million, cancer burden needs to be calculated, but if less than one in one million, the cancer burden calculation is not required. Cancer burden was calculated to estimate the increase in cancer cases in the population. Cancer burden was calculated for the pre-Project emissions and for the post-Project emissions, and the incremental difference indicated a decrease in cancer burden for the refinery because the overall cancer risk for the refinery is projected to decrease, which is less than the South Coast AQMD CEQA significance threshold of 0.5. Cancer burden was calculated based on the total population being exposed to a 70-year cancer risk greater than one in one million. The population of each census tract was multiplied by the 70-year cancer risk calculated at the representative receptor. These products

were summed, and the calculation indicated that the pre-Project (baseline) cancer burden was 0.099 for the pre-Project case, and the post-Project cancer burden was 0.041 resulting in a net reduction in cancer burden.

For the Lakewood Tank Farm, the calculations resulted in a cancer risk less than one case per one million; therefore, no cancer burden was calculated.

Refinery Non-Carcinogenic Health Impacts (Acute and Chronic)

The analysis of non-cancer health impacts is performed using a different methodology than a cancer risk analysis. Non-cancer health risk estimates are shown in terms of a hazard index (HI), either maximum chronic HI for long-term exposures or maximum acute HI for short-term exposures (one hour) to non-carcinogenic TAC emissions.

The maximum chronic hazard index (MCHI) is located approximately 150 feet south of the refinery. Both the incremental MCHI for the Project and the absolute MCHI (the Project only) are less than the South Coast AQMD's chronic hazard index significance threshold of 1.0. Therefore, the peak chronic non-cancer health hazards generated by the Project are less than significant.

The MCHI is located approximately 650 feet southeast of the Lakewood Tank Farm and is less than the South Coast AQMD's chronic hazard index significance threshold of 1.0. Therefore, the peak chronic non-cancer health hazards generated by the Project are less than significant.

The maximum acute hazard index (MAHI) is located immediately southwest of the refinery along the railroad tracks. The absolute MCHI for the Project (for the Project only) is less than the South Coast AQMD's acute hazard index significance threshold of 1.0. Therefore, the peak acute non-cancer health hazards generated by the Project are less than significant. For the Lakewood Tank Farm, the MAHI is located immediately south of the tank farm and is also less than the South Coast AQMD's acute hazard index significance threshold of 1.0. Therefore, the peak acute non-cancer health hazards generated by the Project are less than significant. Detailed calculations for the acute and chronic hazard indexes for the maximum receptor location are presented in Appendix B, Part 2, Attachment D.

Acute risks at the refinery are driven by hydrogen sulfide (99.8 percent) with sources being primarily fugitive components.

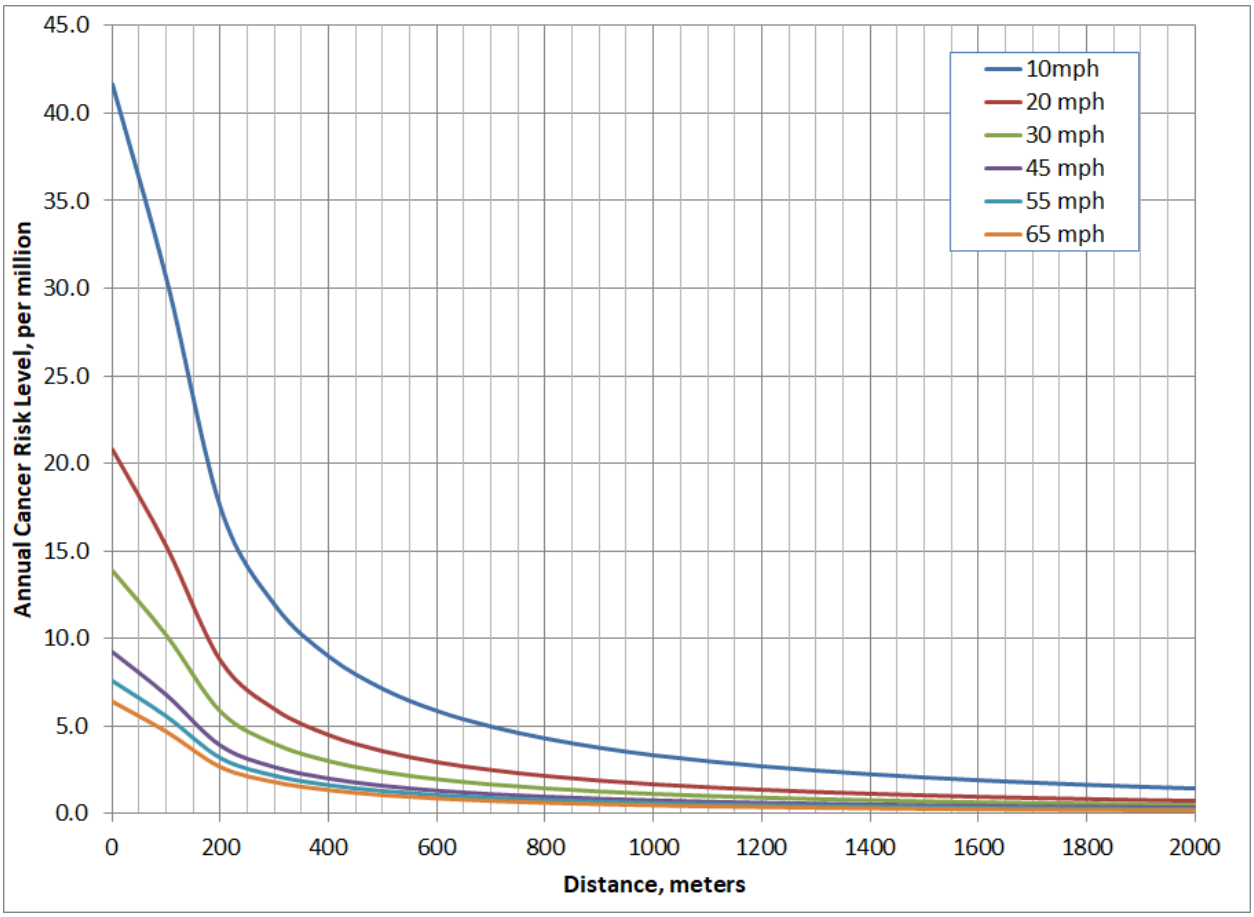
Chronic risks at the refinery are driven by hydrogen sulfide (45.1 percent) and sulfuric acid (44.2 percent) with sources being heaters 907/908 (32.2 percent) and fugitive emissions unit B (22.5 percent) and other fugitive emissions.

Cancer, Chronic and Acute impacts at the refinery and at the Lakewood Tank Farm were all determined to be less than the applicable South Coast AQMD significance thresholds. Therefore, impacts would be **less than significant (Class III).**

Rail Mainline Carcinogenic Health Impacts

Movement of the locomotives used to transport the railcars on the mainline (the main rail lines outside of the refinery) to and from the refinery would also contribute to health risks along the mainline due to the emissions of DPM. Modeling of rail emissions was conducted for a hypothetical rail mainline for a range of locomotive speeds and distances from the mainline to a receptor for one train comprised of three locomotives and the Project level number of trains annually. The results as presented in Figure 4.2-7 indicate that for trains traveling about 40 mph or greater, the cancer risk would be less than the threshold of 10 in one million for areas outside of the railroad right-of-way (ROW).

Figure 4.2-7 Rail Mainline Cancer Risk Levels



Source: Based on three locomotives per train, 312 round train trips per year, Nipomo meteorological dataset (1994–1996) and 30-year average locomotive emission factor (as per EPA). Includes OEHHA 2015 methodology. Nipomo used as a central area for train routes from the refinery to Oregon as an example.

For slower speeds (when more emissions occur per length of rail due to the slower speeds), cancer risks exceeding the significance thresholds may occur beyond the railroad ROW. There are areas along the mainline rail route that have reduced speed limits for trains that pass in proximity of sensitive receptors. For example, in some cities, trains are limited to a speed of 25 miles per hour. In these areas where the permanent speed limits for trains are less than 30–40 mph and they are located in proximity to sensitive receptors, the health risk impacts could be significant.

For most of the mainline rail route, trains would be traveling on Class 4 or higher tracks (which have 60–80 mph speed limits) and would be expected to have average speeds greater than 40 mph, and in these areas the health risk impact would be less than significant. Rail transportation is complicated, and the transportation of the refinery feedstock would be in combination with other commodity movements. While additional trains may visit the refinery each year due to the Project, this does not necessarily correlate with increased number of train locomotives, and therefore emissions, along mainlines throughout the region or state due to the ability of a train to carry additional railcars without necessarily adding locomotives. Trains are not solely comprised of railcars destined only for the refinery. Often trains are built with railcars destined for the refinery as well as other railcars transporting other commodities intended for other customers, most likely with more than 15–25 railcar limits placed on the refinery spurs. Therefore, the incremental number of trains that might be generated by the Project on the mainline would

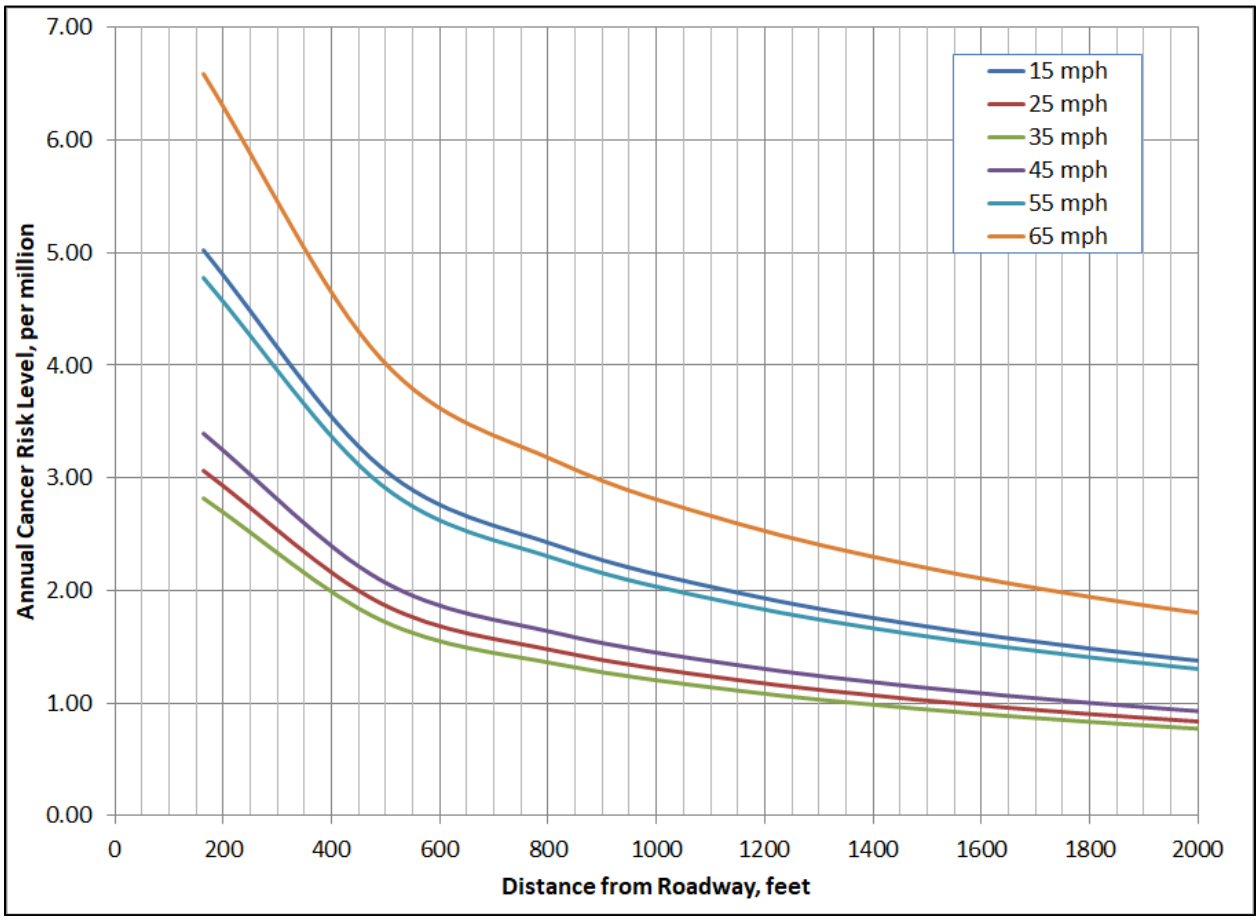
most likely be less than the number of visits to the refinery, and the risks would be well below those shown in Figure 4.2-7 along those segments of railroad track with limited speeds. The health risks at speeds of 25 mph are above the thresholds only about 150 feet from the mainline tracks, assuming that there is no "comingling" of railcars and no associated utilization of existing trains and locomotives. Most likely, existing trains would be utilized to a high extent due to efficiency and economy, and emissions would be substantially lower.

Cancer risks along the rail connection would be lower than the mainline as the locomotives would be operating at a much lower load level. Risks would be under the thresholds along the rail connection. With only a partial reduction use along the mainline due to a utilization of existing trains, mainline health risks would be **less than significant (Class III).**

Truck Off-site Carcinogenic Health Impacts

The operation of diesel trucks along area roadways would generate emissions of DPM that could increase cancer risks at areas near roadways. In order to examine this potential impact, modeling was conducted associated with the operation of the Project trucks and the use of aggregated model years (using EMFAC2017 aggregate year 2022) diesel-powered trucks. Using U.S. EPA guidance on modeling of emissions from roadways (U.S. EPA, 2015), the air dispersion model AERMOD was run to simulate emissions from on-road vehicles at different speeds. The EMFAC model which assesses emissions from on-road vehicles was used to quantify emissions rates of the trucks at different speeds. Figure 4.2-8 depicts the cancer risk associated with DPM generated from the diesel trucks at various speeds and distances from the roadway. Cancer risks from DPM are less than the significance thresholds of 10 in one million at all speeds due to diesel trucks becoming cleaner over time as required by CARB and current legislation. Therefore, the potential increase in air toxic emissions associated with the use of diesel trucks off-site and the Project operations would not expose sensitive receptors to pollutant concentrations exceeding the health risk thresholds; therefore, the health risk impacts of off-site trucks would **be less than significant (Class III).**

Figure 4.2-8 Truck Off-site Cancer Risk Levels



Notes: Using EMFAC2017 year 2022 aggregate values, Statewide, AERMOD flat terrain, Santa Maria met data as California mid-point.

4.2.4.4 Odors

Odors could emanate from refinery operations due to the fugitive emissions of hydrocarbons containing H_2S or other materials, such as hydrocarbons or could be related to the change in feedstock into the refinery, i.e., tallow and animal products.

Impact #	Impact Description	Phase	Impact Classification
AQ.4	Operational emissions would not generate odors in exceedance of South Coast AQMD nuisance thresholds.	Operation	Class III

The Project involves the completion of the conversion of the refinery to be able to store and process commercial tallow (rendered animal fats) and vegetable oils as feedstocks. Some of the feedstock for the Project would be sourced from the rendering industry. Render plants are notorious for odors, but the refinery would be receiving materials that have already been processed and therefore produce fewer odors. Most of the organic compounds that are odorous occur during the rendering process and result from the breakdown of proteins and fats during the cooking process or during decay of raw material prior to cooking. All of the odor producing steps would be completed before receipt of the finished/rendered material at the refinery as part of the Project and would not be a part of the Project processes.

Once rendered, fats are converted to mostly triglycerides and some free fatty acids. Rendered fats as received as feedstock at the refinery would have already been converted so that they are much less likely to become rancid and emit a strong odor. Fats become rancid during the oxidation of triglycerides or hydrolytic rancidity (off flavors and aromas caused by release of short chain fatty acids from acylglycerols. Hydrolytic rancidity is commonly caused by lipase enzymes of bacterial origin).

For the Project, the rendered fat feedstock will be stored in tanks equipped with a nitrogen blanket and connected to carbon canisters which will minimize or eliminate any rancid odors that may be generated. The nitrogen would not allow the contents to oxidize in storage. Prior to unloading the railcars of feedstock, animal products are solid at ambient temperature, so are hindered from oxidation. Railcars are heated to allow the fats to flow.

Liquid vegetable oils are shipped in sealed railcars and pumped directly to nitrogen blanketed tanks upon receipt at the refinery, eliminating the potential for oxidation. The Project unloading and storage techniques would eliminate the potential of odors from hydrolytic rancidity as any purge nitrogen from the storage tanks is contacted with activated carbon on the outlet of the feed tank.

Raw material needs to be filtered after receipt. This size reduction occurs in the Pre-Treat Unit. The feed would then be water washed and centrifuged before neutralizing the mixture with caustic (sodium hydroxide) and drying any captured solids and gums. These solids and gums would be sent to an anaerobic/aerobic microbial digester where the material will be converted to biogas before being treated/sweetened to fuel gas specifications and burned in the refinery's process equipment. All of these steps will occur in enclosed equipment to avoid generating odors. VOCs are generated from the digesters which are subject to LDAR monitoring and repair requirements under Rule 1173.

The wastewater treatment at the refinery is done with biological treatment processes in enclosed equipment until the oxygen demands are reduced or eliminated, thereby reducing the potential for odors.

The pre-treated feedstock is stored in tanks with a nitrogen purge gas attached to carbon canisters to avoid any odors. The pre-treated feedstock is then routed to the EcoFining unit where all the materials that would potentially generate or have an odor would be hydrogenated to form straight chain paraffins before being hydrocracked and isomerized to the desired product quality. The EcoFining process uses a combination of catalysts to clean and remove oxygenates and other contaminants from the feedstock, and then isomerize the feed to improve its cold-flow properties. The designs can process feedstocks, including used cooking oils and animal fats, and produce diesel and renewable jet fuel.

Part of the EcoFining process requires addition of DMDS (di-methyl-di-sulfide). DMDS, when heated, releases H_2S. The EcoFining unit is equipped with air pollution control equipment that utilizes a catalyst designed to capture the H_2S for odor control. H_2S will be recovered in an amine treating unit wherein the H_2S is absorbed by an amine to reduce the H_2S of the off-gasses, then the amine is sent to a steam stripping regenerator to recover the H_2S. The recovered H_2S will be recycled (routed back) to the reactor system to reduce the amount of DMDS that is added during the EcoFining process. All H_2S processing will be in enclosed vessels and piping. After the EcoFining process is completed, the resulting products are free of sulfur, nitrogen, oxygen and odors.

Another potential for the release of odors is during turnarounds when the equipment is shut down and opened for maintenance. If odorous material is not properly captured prior to opening equipment, such as sweeping the equipment with nitrogen prior to opening, there is a potential to generate odors in the vicinity of the opened equipment. There are appropriate chemical pretreatments and washings that are

done in preparation for turnarounds that if done properly and sufficiently, will eliminate odors from opening the equipment to atmosphere.

Operationally, storage tanks that will store feedstocks will be equipped with odor control using nitrogen blanketing and/or carbon adsorption, which are proven technologies to control odors. Carbon adsorption is performed through the use of passing the vapors through purified, granulated activated carbon. The carbon has been treated physically or chemically to generate micro fissures that vastly increase its adsorptive surface area. The large surface area and electrical charge effectively adsorb a wide range of polar compounds, notably phenols and their derivatives. Activated carbon is electrically non-polar and consequently capable of preferential adsorption of organic material expected from this Project (Bergen, 1958). In general, organic compounds with molecular weights greater than 45 and boiling points over zero degrees Celsius will be readily adsorbed. Adsorption of organic compounds is relatively nonselective; that is, it is not strongly affected by solubility or chemical class of the compounds. Under normal conditions, adsorptive capacity of activated carbon can reach five to 40 percent of the weight of the activated carbon (U.S. EPA, 1985).

The smaller, renewable fuels facility, utilizing similar equipment and processes as the Project equipment arrangement at the refinery, has been operating since 2015, and according to South Coast AQMD records, has not had an NOV related to nuisance or odors in that time. The last NOV related to nuisance (South Coast AQMD Rule 402 violation) was in 2009. Since that time, maintenance activities and operational activities have been occurring related to similar feedstock operations. Therefore, odors from the conversion of the refinery are not expected to be significant and would be **less than significant (Class III)**.

4.2.4.5 Rules and Policy Consistency

Impact #	Impact Description	Phase	Impact Classification
AQ.5	The Project would not diminish an existing air quality rule or future compliance requirement resulting in a significant increase in air pollutant(s).	Operation	Class II

The Basin is under the jurisdiction of the South Coast AQMD which has regulatory authority over stationary source air pollution control and limited authority over mobile sources. The South Coast AQMD is responsible for air quality planning in the Basin and development of the AQMP. The AQMP establishes the strategies that will be used to achieve compliance with NAAQS and CAAQS. South Coast AQMD's Rules include a number of regulations that would be applicable to the Project, including the following:

- Regulation II – Permits;
- Regulation III – Fees;
- Regulation IV – Prohibitions;
- Regulation IX – New Source Performance Standards (NSPS);
- Regulation X - National Emissions Standards for Hazardous Air Pollutants (NESHAPS) Regulations;
- Regulation XI – Source Specific Standards;
- Regulation XIII – New Source Review;

- Regulation XIV – New Source Review of Carcinogenic Air Contaminants (including Rule 1401, New Source Review of Toxic Air Contaminants and Rule 1403, Asbestos Emissions from Demolition/Renovation Activities);
- Regulation XVII – Prevention of Significant Deterioration;
- Regulation XX – Regional Clean Air Incentives Market (RECLAIM) Program; and
- Regulation XXX – Title V Permits.

The South Coast AQMD regulates stationary sources of air pollutants. South Coast AQMD permits are required for the construction and operation of the Project.

Consistency with rules, plans and policies promulgated by the South Coast AQMD are specifically determined through the application of the threshold, which define if a project has the potential to exacerbate an air quality standard. These indicate that the Project could exceed both the construction and operational thresholds and produce a significant and unavoidable impact, which implies these impacts are not consistent with plans and policies. These impacts are addressed above.

Impacts related to health risk and odors are determined to be less than the thresholds, and therefore are considered consistent with plans and policies.

The analysis in this SEIR is based on the assumptions made regarding equipment, fuel use and a range of other criteria. If any of these were to vary substantially without the monitoring or compliance of the South Coast AQMD, impacts could be different and potentially more severe, diminishing the ability of the South Coast AQMD to comply with rules, plans and policies.

Mitigation Measures

AQ-5a ***Recordkeeping.*** *The refinery operator shall monitor and maintain records on 1) the fuel usage (standard cubic feet of gas) and the Higher Heating Values (Btu/scf), on an annual basis, for each of the equipment utilizing gaseous fuels; 2) the truck trips, type of trucks (Tier level) and associated destinations/sources of trucks; 3) train deliveries and number of railcars; 4) any other metrics required to estimate emissions associated with this SEIR. Using the fuel usage, heating values and trips/type data for the above activities, the refinery operator shall calculate the annual emissions. The operator shall compare associated emissions with those calculated in this SEIR for a period defined by the South Coast AQMD, but not less than three years. The operator shall, for not less than three years, keep records of the fuel usage and Higher Heating Values, vehicle trips and other metrics used to prepare the reports, and shall make the records available to South Coast AQMD or City personnel upon request.*

Impacts Remaining After Mitigation

Maintaining information on the activities and emissions in parallel with the SEIR calculations and ensuring that they agree will help to ensure that South Coast AQMD rules and regulations are followed and complied with. Impacts would be **less than significant with mitigation (Class II)**.

4.2.5 Cumulative Effects

CEQA Guidelines Section 15130 requires a reasonable analysis of the significant cumulative impacts of a proposed project. Cumulative impacts are defined by CEQA as “two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts” (CEQA Guidelines Section 15355). There are a number of projects proposed for development in

the vicinity of the refinery, which may contribute cumulative impacts to those generated by the Project. Section 3.0 lists projects which are reasonably expected to proceed in the foreseeable future, i.e., project information has been submitted to a public agency and is publicly available. Identified impacts from cumulative projects listed in Section 3.0 were combined with the Project's construction and operational impacts to assess cumulative impacts associated with the Project.

The region of analysis for cumulative effects on air quality is the South Coast Air Basin, but the analysis is focused on the communities adjacent to the Project (i.e., City of Long Beach, etc.) because they are the areas of maximum potential effect. The significance thresholds for cumulative air quality impacts are the same as the significance thresholds for project-specific impacts; if a project complies with the thresholds, then it is also considered to be less than cumulatively significant. The South Coast AQMD has provided this guidance as an acceptable approach to addressing the cumulative impacts issue for air quality:

"*The South Coast AQMD uses the same significance thresholds for project specific and cumulative impacts for all environmental topics analyzed in an Environmental Assessment (South Coast AQMD's certified regulatory program CEQA document) or EIR. The only case where the significance thresholds for project specific and cumulative impacts differ is the HI significance threshold for non-cancer TAC emissions (South Coast AQMD, 2003b). Projects that exceed the project-specific significance thresholds are considered by the South Coast AQMD to be cumulatively considerable. This is the reason project-specific and cumulative significance thresholds are the same. Conversely, projects that do not exceed the project-specific thresholds are generally not considered to be cumulatively significant*" (South Coast AQMD, 2003b).

To some extent, the ambient air quality of the Basin provides a summary of the cumulative air quality impacts. The total number of days on which the Basin experiences high ozone levels has decreased dramatically over the last two decades. However, the Basin still exceeds the federal 8-hour standard more frequently than any other location in the U.S. (South Coast AQMD, 2013).

As described in Section 4.2.1, air quality within the Basin has generally improved in the last couple of decades. The improvement in air quality can be attributed to emission reductions from industrial sources, introduction of low emission fuels used in on-road motor vehicles and trucks (e.g., low sulfur fuels, reformulated gasoline, Low Carbon Fuel Standard [LCFS], etc.), and implementation of Air Quality Management Plans (AQMPs), which identify strategies for further reducing emissions from all emissions sources regulated by the South Coast AQMD and which are subsequently promulgated as enforceable rules or regulations.

The projects identified in Section 3.0 have the potential for construction activities that could overlap with the construction activities of the Project. Generally, some of the larger projects have the potential for exceeding the South Coast AQMD construction thresholds. It is possible that the Project construction could occur at the same time as other cumulative projects, thereby causing an overlap of regional construction emissions. Since the Project construction NOx and VOC (for combined operations and construction) emissions exceed the South Coast AQMD air quality significance thresholds, construction activities associated with the cumulative projects in combination with the Project would also be expected to exceed South Coast AQMD significance thresholds. Therefore, the Project is expected to result in significant cumulative air quality criteria pollutant impacts during construction.

Because the Project construction emissions also exceed the applicable LST threshold levels, they may be cumulatively considerable and cumulatively significant when considered in combination with related projects that would be located in close proximity to the Project site, such as the West Santa Ana Branch Transit Corridor (WSAB) project.

For operations, the cumulative projects identified in Section 3.0 would have a significant cumulative impact if their combined operational emissions would exceed the South Coast AQMD daily emission thresholds for operations. The cumulative projects identified in Section 3.0 have the potential for operational activities that could overlap with operational activities associated with the Project. As the Project operations exceeds the regional thresholds for NOx, operational activities associated with the cumulative projects would exceed South Coast AQMD significance thresholds and could result in significant cumulative air quality criteria pollutant impacts during operational activities.

The South Coast AQMD measured TAC concentrations as part of its fourth Multiple Air Toxics Exposure Study (MATES IV). The 2012–2013 Basin average population-weighted risk summed for all the toxic components yielded a cancer risk of 897 in one million in MATES IV, using the current OEHHA HRA guidelines. Diesel particulate matter continues to be responsible for the largest contribution (76.2 percent) to cancer risk from air toxics. The next highest contributors include benzene (6.2 percent), hexavalent chromium (5.6 percent), and 1,3-butadiene (3.4 percent) (South Coast AQMD, 2015). The operational impacts of the cumulative projects would be cumulatively significant if their combined emissions would exceed the South Coast AQMD significance thresholds for HRAs at a specific receptor. Impacts associated with TAC emissions are dependent on the location of the receptors so that the results of the TAC emissions are not necessarily additive unless they are emitted from the same or similar location. Most of the projects listed in Section 3.0 are related to mixed-use commercial projects and residential projects which, as they are not large industrial projects with substantial emissions, generally would not individually exceed the applicable cancer and non-cancer chronic or acute health risk thresholds. Of the industrial projects, the City of Carson Air Products Hydrogen Pipeline Project involved construction (it has already been completed), but minimal operational industrial emissions and would therefore not generate significant TAC impacts.

In addition, as none of the projects are located in close proximity to the Project location and associated receptors, exposure to toxic air contaminants at the MEIR associated with the cumulative projects within the Project region is not considered to overlap with the Project MEIR. The Project also would have impacts that are less than the thresholds for TACS. Therefore, TAC impacts are less than cumulatively significant. Acute and chronic non-carcinogenic health risks are expected to be less than cumulatively significant due to the lack of nearby cumulative projects.

Port of Los Angeles

Activities at the Port of Los Angeles as part of the Project would include barge visits, offloading to tankage, and loading of trucks for transport to the refinery. The air emissions associated with barge activities are included in the air emissions estimates for the Project. The Port of Los Angeles PMPU PEIR (see Section 3.0) indicated that the projects expected to occur at the Port would generate the following significant impacts:

> ***PMPU PEIR Impact AQ-3****: Operation of the proposed Program would result in emissions that exceed a South Coast AQMD daily emission threshold and the VOC 10 tons per year threshold. Because residential areas closest to the Port are predominantly minority and have a concentration of low-income populations relative to Los Angeles County, elevated daily emissions would constitute a disproportionately high and adverse effect on minority and low-income populations. In addition, the proposed Program would make cumulatively considerable contribution to a significant cumulative air quality impact from daily emissions during operation, and this cumulative impact would constitute a disproportionately high and adverse effect on minority and low-income populations.*

PMPU PEIR Impact AQ-4*: Operation of the proposed Program would result in ambient air pollutant concentrations that exceed a South Coast AQMD threshold of significance. Because residential areas closest to the Port are predominantly minority and have a concentration of low-income populations relative to Los Angeles County, elevated ambient concentrations of air pollutants would constitute a disproportionately high and adverse effect on minority and low-income populations. In addition, the proposed Program would make a cumulatively considerable contribution to significant cumulative air quality impacts because it would exceed pollutant thresholds of significance during operation, and this cumulative impact would constitute a disproportionately high and adverse effect on minority and low-income populations.*

As potential projects at the Port of Los Angeles could produce significant and unavoidable impacts to air quality, and the Project would produce significant and unavoidable impacts, there could be **significant and unavoidable cumulative impacts (Class I).**

4.2.6 References

ACS Omega (ACS). 2021. 6, 408−415, Combustion and Emission Performance of CO/NOx/SOx for Green Diesel Blends in a Swirl Burner Abdulkareem Ghassan Alsultan

Bergen. 1958. Industrial Odor Control, Journal of the Air Pollution, Control Association, 8:2, 101-111, DOI: 10.1080/00966665.1958.10467834, https://doi.org/10.1080/00966665.1958.10467834

California Environmental Protection Agency (CalEPA). 2015. Multimedia Working Group, Multimedia Evaluation of Renewable Diesel; May 2015. [online]: https://ww2.arb.ca.gov/sites/default/files/2018-08/Renewable_Diesel_Multimedia_Evaluation_5-21-15.pdf.

CARB. 2005. Review of the California Ambient Air Quality Standard for Ozone Volume IV Appendix B; March 11, 2005.

City of Paramount. 2013. Paramount Petroleum Alt-Air Renewable Fuels Project. Mitigated Negative Declaration and Initial Study, Conditional Use Permit (CUP) 757 and Zone Variance (ZV) 401. Adopted December 30, 2013 (PARA 059).

City of Paramount. 2015. Paramount Petroleum Alt Air Project. Addendum to Mitigated Negative Declaration and Initial Study, Conditional Use Permit (CUP) 757; May 27, 2015 (PARA 057).

DieselNET. 2021. Effects of Biodiesel on Emissions, Hannu Jääskeläinen, W. Addy Majewski

GNA. 2017. Renewable Diesel as a Major Heavy-Duty Transportation Fuel in California, Gladstein, Neandross & Associates; August 2017.

ICCT. 2021. Air Quality Impacts Of Biodiesel In The United States, Jane O'Malley, Stephanie Searle

Indoor Air. 2014. Home interventions are effective at decreasing indoor nitrogen dioxide concentrations, L. M. Paulin; August 2014.

National Weather Service (NWS). 2021. Monthly Precipitation Summary Water Year 2011–2020. [online]: https://www.cnrfc.noaa.gov/rainfall_data.php#monthly (accessed January 23, 2021).

Office of Environmental Health Hazard Assessment (OEHHA). 2015. Air Toxics Hot Spots Program Risk Assessment Guidelines, Guidance Manual for Preparation of Health Risk Assessments; February 2015. [online]: https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf.

South Coast AQMD. 1993. CEQA Air Quality Handbook, South Coast AQMD; May 1993. [online]: http://www.aqmd.gov/home/rules-compliance/ceqa/air-quality-analysis-handbook/ceqa-air-quality-handbook-(1993).

South Coast AQMD. 2003a. South Coast AQMD Guide for Fugitive Emissions Calculations; June 2003. [online]: http://www.aqmd.gov/docs/default-source/planning/annual-emission-reporting/guidelines-for-fugitive-emissions-calculations.pdf.

South Coast AQMD. 2003b. Cumulative Impacts Working Group: White Paper on Potential Control Strategies to Address Cumulative Impacts From Air Pollution. South Coast AQMD August 2003.

South Coast AQMD. 2008. Final Localized Significance Threshold Methodology and Appendices. [online]: http://www.aqmd.gov/home/rules-compliance/ceqa/air-quality-analysis-handbook/localized-significance-thresholds.

South Coast AQMD. 2013. Final 2012 Air Quality Management Plan. South Coast Air Quality Management District; February 2013. [online]: http://www.aqmd.gov/home/library/clean-airplans/ air-quality-mgt-plan/final-2012-air-quality-management-plan

South Coast AQMD. 2015. MATES-IV Final Report; May 2015. [online]: https://www.aqmd.gov/home/air-quality/air-quality-studies/health-studies/mates-iv.

South Coast AQMD. 2017. Final 2016 Air Quality Management Plan; March 2017. [online]: https://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2016-air-quality-management-plan/final-2016-aqmp/final2016aqmp.pdf?sfvrsn=15.

South Coast AQMD. 2019. Air Quality Data Tables. [online]: http://www.aqmd.gov/docs/default-source/air-quality/historical-data-by-year/2019-air-quality-data-tables.pdf?sfvrsn=8.

South Coast AQMD. 2020a. AB 2588 and Rule 1402 Supplemental Guidelines (Supplemental Guidelines for Preparing Risk Assessments for the Air Toxics "Hot Spots" Information and Assessment Act); October 2020. [online]: http://www.aqmd.gov/docs/default-source/planning/risk-assessment/ab-2588-supplemental-guidelines.pdf?sfvrsn=19.

South Coast AQMD. 2020b. Air Quality Monitoring Data [online]: http://www.aqmd.gov/home/air-quality/current-air-quality-data.

South Coast AQMD. 2020c. Air Quality Significance Thresholds; April 2016. [online]: http://www.aqmd.gov/home/rules-compliance/ceqa/air-quality-analysis-handbook.

South Coast AQMD. 2020d. Attainment Status; February 2016. [online]: http://www.aqmd.gov/home/air-quality/clean-air-plans.

South Coast AQMD. 2021. Updated Air Monitoring Plan for Paramount, http://www.aqmd.gov/docs/default-source/compliance/Paramount/updated-monitoring-plan.pdf?sfvrsn=8

U.S. EPA. 1985. Odor and Corrosion Control in Sanitary Sewage Systems and Treatment Plants, EPA/625/1-85/018

U.S. EPA. 2015. Transportation Conformity Guidance for Quantitative Hot-spot Analyses in PM2.5 and PM10 Nonattainment and Maintenance Areas, EPA-420-B-15-084; November 2015.

4.3 Climate Change/Greenhouse Gas Emissions

This section describes existing setting relative to greenhouse gas emissions (GHG) from the existing Paramount Refinery (refinery) and the potential GHG impacts of the Project. The regionwide environmental setting and the regulatory setting relative to GHGs are also discussed.

Project construction would be phased over a two- to three-year schedule. Initially, the existing renewable fuels unit (Unit A) would be upgraded. Unit A would then be in operation while other demolition and construction activities take place for the rest of the planned facility unit installations and upgrades.

Changes from Draft SEIR

Since the Draft SEIR was released in December 2021, this section has the following changes incorporated into the Final SEIR:

- Revision of GHG emission estimates based on change to parameters discussed in Section 4.2;
- Addition of the Southern California Association of Governments released the 2020–2045 Regional Transportation Plan/Sustainable Communities Strategy in 2020 and goals; and
- Discussion of the City of Paramount CAP goals.

4.3.1 Environmental Setting

Global climate change is a change in the average weather of the earth, which can be measured by wind patterns, storms, precipitation, and temperature. Historical records have shown that temperature changes have occurred in the past, such as during previous ice ages. Some data indicate that the current temperature record differs from previous climate changes in rate and magnitude.

The United Nations Intergovernmental Panel on Climate Change (IPCC) developed several emission projections which attempted to estimate quantities of global GHGs that, if stayed at or below, would potentially result in stabilization of global temperatures, with the intent of minimizing global climate change impacts from human activities. The IPCC report concluded that a stabilization of GHGs at 400 to 450 ppm carbon dioxide-equivalent concentration is required to keep global mean temperature warming below two degrees Celsius, which is assumed to be necessary to avoid additional climate change.

Potential health effects from global climate change may arise from temperature increases, climate-sensitive diseases, extreme events, and air quality. There may be direct temperature effects through increases in average temperature leading to more extreme heat waves and less extreme cold spells. Those living in warmer climates are likely to experience more stress and heat-related problems (i.e., heat rash and heat stroke). In addition, climate sensitive diseases may increase, such as those spread by mosquitoes and other disease carrying insects. Those diseases include malaria, dengue fever, yellow fever, and encephalitis. Extreme events such as flooding and hurricanes can displace people and agriculture, which would have negative consequences. Drought in some areas may increase, which would decrease water and food availability. Global climate change may also exacerbate air quality problems from increased frequency of exceeding criteria pollutant ambient air quality standards.

GHGs are defined as any gas that absorbs infrared radiation in the atmosphere, including water vapor, carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), sulfur hexafluoride (SF_6) and fluorocarbons. GHGs lead to the trapping and buildup of heat in the atmosphere near the earth's surface, commonly

known as the "greenhouse effect". The accumulation of GHGs in the atmosphere regulates the earth's temperature. Without natural GHGs, the earth's surface would be cooler. Emissions from human activities (anthropogenic emissions), such as vehicles and generation of electricity, has led to elevated concentrations of these gases in the atmosphere (IPCC, 2014).

GHGs have varying global warming potential (GWP). The GWP is the potential of a gas or aerosol to trap heat in the atmosphere. Since GHGs absorb different amounts of heat, a common reference gas (CO_2) is used to relate the amount of heat absorbed to the amount of gas emissions, referred to as the "CO_2 equivalent" (CO_2e). The GWP is used to quantify GHG emissions by multiplying the different GWP of each GHG pollutant by the mass of that pollutant to arrive at a CO_2e mass. The GWP of CO_2 is defined as one, whereas the GWP of CH_4, for example, is 25 (meaning that CH_4 absorbs 25 times as much heat, and therefore has a 25 times greater impact on global warming per pound of emissions, as CO_2), and the GWP of nitrogen dioxide is 298 (as per IPCC, Fourth Assessment Report [AR4], GWP Time Horizon – 100 years).

Water vapor is the most abundant and variable GHG in the atmosphere and maintains a climate necessary for life. The main source of water vapor is evaporation from the oceans (approximately 85 percent). Other sources include evaporation from other water bodies, sublimation (change from solid to gas) from ice and snow, and transpiration from plant leaves (AEP, 2007).

Carbon dioxide is an odorless, colorless GHG. Natural sources of CO_2 include decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungi; evaporation from oceans; and volcanic outgassing. Anthropogenic (human caused) sources of CO_2 include burning of fuels, such as coal, oil, natural gas, and wood. The atmospheric global average CO_2 concentration in 2019 was 409.8 ppm with levels increasing from 401 ppm in 2015 and 369 ppm in 2000 with a growth rate of between two to three ppm per year since 2012 (NOAA, 2020).

Methane (CH_4) gas is the primary component of natural gas used in homes; as discussed above, it has a GWP of approximately 25. Natural sources of CH_4 arise from the decay of organic matter and from geological deposits known as natural gas fields, from which CH_4 is extracted for fuel. Sources of decaying organic material include landfills and manure.

Nitrous oxide (N_2O) is a colorless gas with a GWP of approximately 298 and is produced by microbial processes in soil and water, including reactions which occur in fertilizer containing nitrogen. In addition to agricultural sources, some industrial processes (nylon production, nitric acid production) also emit N_2O. It is used in rocket engines, as an aerosol spray propellant, and in race cars. During combustion, NOx (NOx is a generic term for mono-nitrogen oxides, NO and NO_2) is produced as a criteria pollutant (see above) and is not the same as N_2O. Very small quantities of N_2O may be formed during fuel combustion by reaction of nitrogen and oxygen (API, 2004).

Chlorofluorocarbons (CFCs) are gases formed synthetically by replacing all hydrogen atoms in CH_4 or ethane with either chlorine and/or fluorine atoms. CFCs are nontoxic, nonflammable, insoluble, and chemically nonreactive in the troposphere (the level of air at the earth's surface). CFCs were first synthesized in 1928 for use as refrigerants, aerosol propellants, and cleaning solvents. CFCs destroy stratospheric ozone; therefore, legal production was stopped under the Montreal Protocol. Hydrofluorocarbons (HFCs) are synthetic man-made chemicals that are used as a substitute for CFCs in automobile air conditioners and refrigerants. Perfluorocarbons (PFCs) are used in aluminum production and in the semiconductor manufacturing industry. In general, fluorocarbons have a GWP of between 12 and 14,800.

Sulfur hexafluoride (SF_6) is an inorganic, odorless, colorless, nontoxic, nonflammable gas which has the highest GWP of any gas at 22,800. Sulfur hexafluoride is used for insulation in electric power transmission and distribution equipment, in the magnesium industry, in semiconductor manufacturing, and as a tracer gas for leak detection.

Ozone (O_3) is a greenhouse gas; however, unlike the other greenhouse gases, O_3 in the troposphere is relatively short-lived and therefore is not global in nature. According to the California Air Resources Board (CARB), it is difficult to make an accurate determination of the contribution of ozone precursors (NOx and volatile organic compounds [VOCs]) to global warming (CARB, 2006).

Table 4.3.1 shows a range of gases that contribute to GHG warming with their associated GWP. The table also shows their estimated lifetime in the atmosphere and the range in GWP over 100 years.

Table 4.3.1 Global Warming Potential of Various Gases

Gas	Life in the Atmosphere (years)	100-year GWP (average)
Carbon Dioxide (CO_2)	50-200	1
Methane (CH_4)	12	25
Nitrous Oxide (N_2O)	120	298
HFCs	1.5-264	12-14,800
Sulfur Hexafluoride (SF_6)	3,200	22,800
Others (CFCs, PFCs, HFEs, HCFEs, Other Fully Fluorinated GHGs, Fluorinated Formates, Fluorinated Acetates, Carbonofluoridates, Fluorinated Alcohols, HCFCs, Ethers, Aldehydes, Ketones, Fluorotelomer Alcohols	Varies	0.004 - 17,700

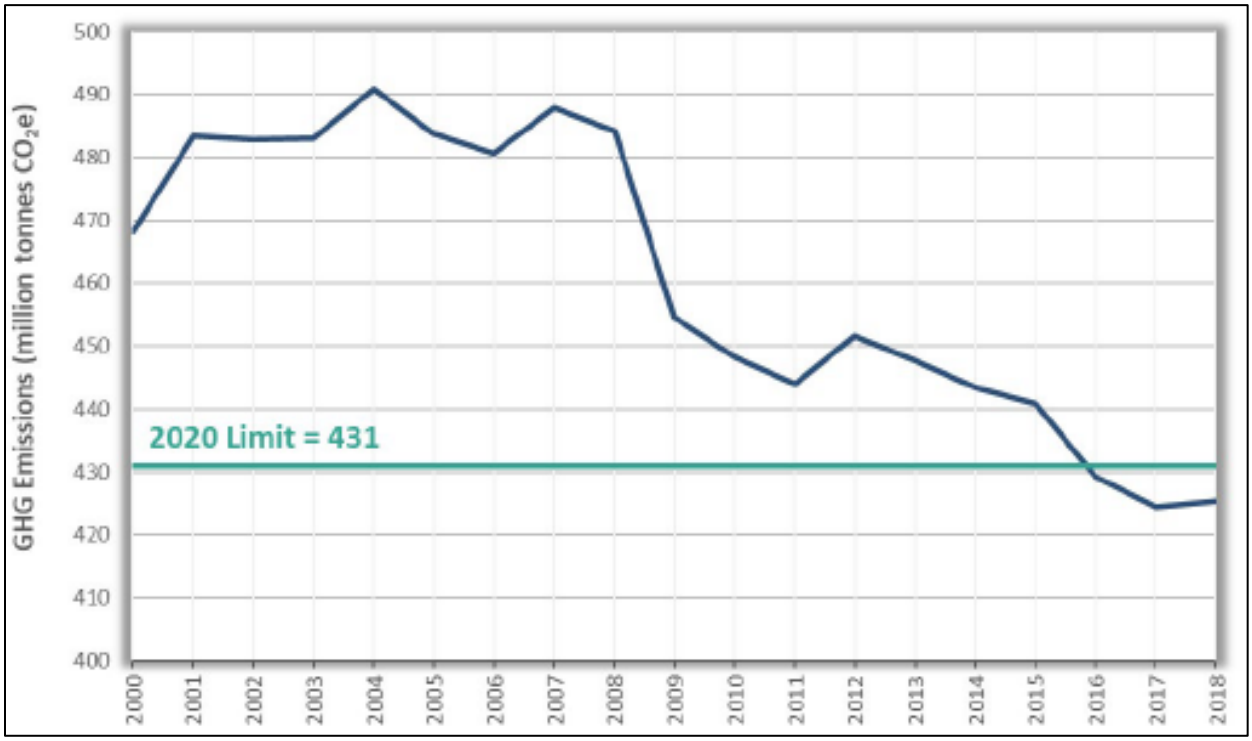
Note: GWP = global warming potential
Source: U.S. EPA 40 CFR Part 98, Subpart A, Table A-1; 2013.

4.3.1.1 Historical California GHG Emissions

Fossil fuel combustion is responsible for most of the United States GHG emissions, and CO_2 is the primary GHG. In 2016, U.S. GHG emissions totaled 6,511 million $MTCO_2e$. This 2016 total represents a 2.4 percent increase since 1990. GHG emissions peaked at 7,351 million $MTCO_2e$ in 2007. In 2016, approximately 28 percent of GHG emissions were associated with transportation, approximately 28 percent were associated with electricity generation, and 22 percent were associated with industrial processes (U.S. EPA, 2018).

Figure 4.3-1 presents the State-wide GHG emissions from 2000–2018. Figure 4.3-2 presents the contribution by sectors and subsectors to the 2018 State-wide GHG emissions. Three major greenhouse gas pollutants have been included: carbon dioxide (CO_2), nitrous oxide (N_2O), and methane (CH_4) and are reported as CO_2e. Using CO_2 as a standard, GHG emissions are reported in million metric tons of CO_2 equivalent ($MMTCO_2e$.) As shown in Figure 4.3-2, mobile sources generate 39.9 percent of the total GHG emissions in the State (28.1 percent from on-road passenger vehicles, 8.2 percent from heavy-duty vehicles, and 3.5 percent from other mobile sources (aircraft, trains, ships, and other sources [construction equipment, airport equipment, oil and gas drilling equipment]). The remaining contributors to the total State-wide emissions are from sources that include stationary sources (i.e., industrial and electrical), area sources (i.e., residential and commercial sources, agricultural sources), and high global warming potential sources (e.g., refrigerants).

Figure 4.3-1 California GHG Emissions: 2000–2018



Source: CARB 2020.

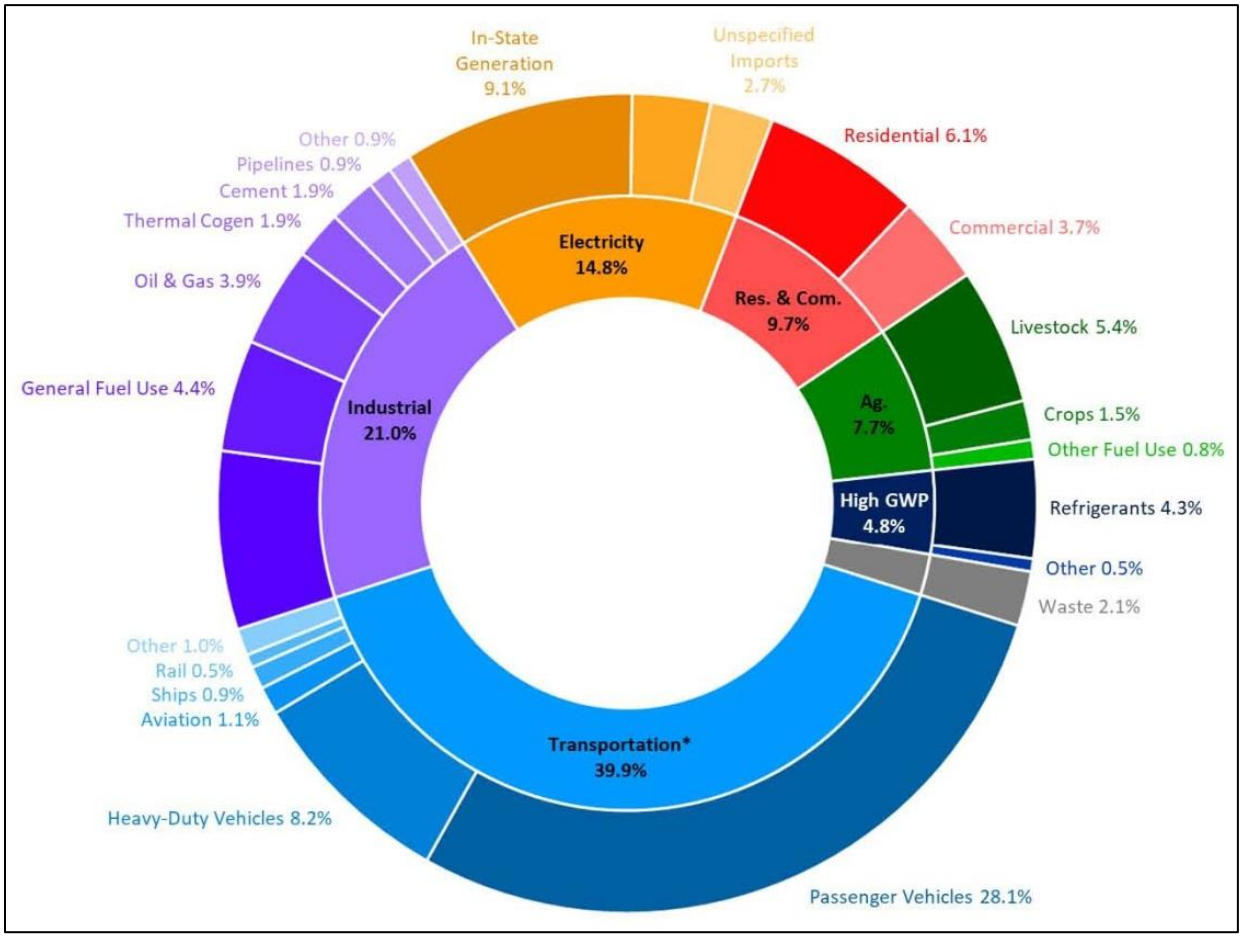
4.3.1.2 Historical Refinery GHG Emissions

Emissions of GHG pollutants during the baseline year, 2011, are attributable to combustion sources and mobile sources. The total GHG emissions for the year 2011 were approximately 147,931 $MTCO_2e$, with 14,116 $MTCO_2e$ from mobile sources and 133,815 $MTCO_2e$ from stationary combustion sources. Electrical use generates an additional 3,891 $MTCO_2e$ per year.

The December 2013 Mitigated Negative Declaration (MND), which was amended in November 2014, determined that the Original Renewable Fuels Project would generate additional operational and construction GHG emissions. The operational phase of the Original Renewable Fuels Project was expected to generate an additional 17,160 $MTCO_2e$ per year of GHG emissions. However, 16,054 $MTCO_2e$ of the increase were offset pursuant to Assembly Bill (AB) 32 GHG emissions, so the remaining 1,106 $MTCO_2e$ of non-regulated AB 32 GHG emissions represent the incremental increase. The 1,106 $MTCO_2e$ was less than the South Coast Air Quality Management District (AQMD) air quality significance threshold of 10,000 metric tons per year. Therefore, the GHG emission impacts were determined to be less than significant in the 2013 MND.

The refinery produced substantially fewer emissions from 2012–2020, after the Original Renewable Fuels Project was operational, than what was produced in 2011 due to reconfiguration of the refinery to a lower throughput in order to develop the Original Renewable Fuels Project (see Section 4.0).

Figure 4.3-2 California GHG Emissions by Category



Source: CARB 2020.

4.3.2 Regulatory Setting

4.3.2.1 International

Kyoto Protocol

The Kyoto Protocol is a treaty made under the United Nations Framework Convention on Climate Change, which was signed on March 21, 1994. The Convention was the first international agreement to regulate GHG emissions. It has been estimated that if the commitments outlined in the Kyoto Protocol are met, global GHG emissions would be reduced by an estimated five percent from 1990 levels during the first commitment period from 2008 until 2012. However, while the U.S. is a signatory to the Kyoto Protocol, Congress has not ratified it; therefore, the U.S. is not bound by the Protocol's commitments.

Paris Agreement

At the 2015 United Nations Conference of the Parties (COP 21) in Paris, France, Parties to the United Nations Framework Convention on Climate Change (UNFCCC) reached an agreement to combat climate change. The Paris Agreement's central aim is to strengthen the global response to the threat of climate change by keeping a global temperature rise this century to below two (2) degrees Celsius above pre-

industrial levels, and to pursue efforts to limit the temperature increase to 1.5 degrees Celsius. The Paris Agreement requires all Parties to put forward their best efforts through "nationally determined contributions". As of the end of 2019, 187 Parties have ratified of the Agreement, out of the 197 Parties who attended to the Convention. The U.S. withdrew from the Paris Agreement in November 2019; however, the U.S. rejoined the Paris Agreement in February 2021.

Climate Change Technology Program

In lieu of the Kyoto Protocol's mandatory framework, the U.S. has opted for a voluntary and incentive-based approach toward emissions reductions, known as the Climate Change Technology Program. This program is a multi-agency research and development coordination effort, led by the Secretaries of Energy and Commerce, who are charged with carrying out the President's National Climate Change Technology Initiative.

4.3.2.2 Federal Regulations

Clean Air Act

In the past, the United States Environmental Protection Agency (U.S. EPA) has not regulated GHG under the Clean Air Act. However, in 2007 the U.S. Supreme Court held that the U.S. EPA can, and should, consider regulating motor-vehicle GHG emissions. In Massachusetts v. Environmental Protection Agency, 12 states and cities, including California, in conjunction with several environmental organizations sued to force the U.S. EPA to regulate GHG as a pollutant pursuant to the Clean Air Act (U.S. Supreme Court No. 05-1120; 127 S.Ct. 1438 [2007]). The Court ruled that GHG fit within the Clean Air Act's definition of a pollutant and that the U.S. EPA's reason for not regulating GHG was insufficiently grounded.

40 CFR Part 98 specifies mandatory reporting requirements for several industries including certain downstream facilities that emit GHG and to certain upstream suppliers of fossil fuels and industrial GHG. For suppliers, the GHG emissions reported are the emissions that would result from combustion or use of the products supplied. The rule also includes provisions to ensure the accuracy of emissions data through monitoring, recordkeeping, and verification requirements. The mandatory reporting requirements generally apply to facilities that produce more than 25,000 $MTCO_2e$ (or 10,000 $MTCO_2e$ for combustion and process source emissions).

U.S. EPA Methane Challenge Program

The U.S. EPA sponsors the Natural Gas STAR Methane Challenge Program, a voluntary program that encourages oil and natural gas companies to commit to and adopt cost-effective technologies and practices to improve operational efficiency and prevent emissions of CH_4. The program defines protocols for CH_4 control by oil and natural gas production companies that may operate many different facilities. Examples of cost-effective controls include recovering all associated gas produced from oil reservoirs for beneficial use and avoiding flaring when gas recovery is feasible.

4.3.2.3 State Regulations

Executive Order S-3-05

The 2005 California Executive Order S-3-05 established the following GHG emission-reduction goals for California:

- By 2010, reduce GHG emissions to 2000 levels;

- By 2020, reduce GHG emissions to 1990 levels; and
- By 2050, reduce GHG emissions to 80 percent below 1990 levels.

The Secretary of the California Environmental Protection Agency (CalEPA) is charged with coordinating oversight of efforts to meet these targets and formed the Climate Action Team to carry out the Executive Order. Emission reduction strategies or programs developed by the Climate Action Team to meet the emission targets. The Climate Action Team also provided strategies and input to the CARB Scoping Plan.

Executive Order B-16-2012

The 2012 California Executive Order B-16-2012 directed that all State entities support and facilitate the rapid commercialization of zero-emission vehicles. The directive ordered State agencies to work with the Plug-in Electric Vehicle Collaborative and the California Fuel Cell Partnership to achieve by 2015 that the State's major metropolitan areas would be able to accommodate zero-emission vehicles, each with infrastructure plans and streamlined permitting, and that by 2020:

- The State's zero-emission vehicle infrastructure would be able to support up to one million vehicles;
- The costs of zero-emission vehicles would be competitive with conventional combustion vehicles;
- Zero-emission vehicles would be accessible to mainstream consumers;
- There would be widespread use of zero-emission vehicles for public transportation and freight transport;
- Transportation sector greenhouse gas emissions would be falling as a result of the switch to zero-emission vehicles;
- Electric vehicle charging would be integrated into the electricity grid; and
- The private sector's role in the supply chain for zero-emission vehicle component development and manufacturing would be expanding.

And that by 2025:

- Over 1.5 million zero-emission vehicles would be on California roads, and their market share would be expanding;
- Californians would have easy access to zero-emission vehicle infrastructure;
- The zero-emission vehicle industry would be a strong and sustainable part of California's economy; and
- California's clean, efficient vehicles would annually displace at least 1.5 billion gallons of petroleum fuels.

The Executive Order directs that California target a reduction of GHG emissions from the transportation sector equaling 80 percent less than 1990 levels by 2050; and that California's state vehicle fleet increase the number of its zero-emission vehicles through the normal course of fleet replacement so that at least 10 percent of fleet purchases of light-duty vehicles be zero-emission by 2015 and at least 25 percent of fleet purchases of light-duty vehicles be zero-emission by 2020.

Executive Order B-30-15

Additionally, on April 29, 2015, Governor Brown issued Executive Order B-30-15 establishing "a new interim statewide greenhouse gas emission reduction target to reduce greenhouse gas emissions to 40

percent below 1990 levels by 2030… in order to ensure California meets its target of reducing greenhouse gas emissions to 80 percent below 1990 levels by 2050."

Assembly Bill 1493

In 2002, the California legislature declared in AB 1493 (the Pavley regulations) that global warming was a matter of increasing concern for public health and the environment in the State. It cited several risks that California faces from climate change, including reduction in the State's water supply; increased air pollution due to higher temperatures; harm to agriculture, and increase in wildfires; damage to the coastline; and economic losses caused by higher food, water, energy, and insurance prices. Furthermore, the legislature stated that technological solutions for reducing GHG emissions would stimulate California's economy and provide jobs. Accordingly, AB 1493 required the CARB to develop and adopt the nation's first GHG emission standards for automobiles. The CARB responded by adopting CO_2-equivalent fleet average emission standards. The standards would be phased in from 2009 to 2016, reducing emissions by 22 percent in the "near term" (2009 to 2012) and 30 percent in the "mid-term" (2013 to 2016), as compared to 2002 fleets.

The legislature passed amendments to AB 1493 in September 2009. Implementation of AB 1493 requires a waiver from the U.S. EPA, which was granted in June 2009.

Additional measures passed by the Legislature, Resolution 18-35 in September 2018, in response to notices of intended rulemaking by the National Highway Transportation Safety Administration (NHTSA) and the U.S. EPA to weaken automobile fuel economy standards, adopted amendments to sections 1961.2 and 1961.3, Title 13 California Code of Regulations to ensure continued implementation of the more stringent automobile standards through the year 2025.

AB 32

AB 32 codifies California's GHG 2020 emissions goal by requiring the State to reduce global warming emissions to year 1990 levels by 2020. It further directs the CARB to enforce the statewide cap that began phasing by 2012. AB 32 was signed and passed into law by Governor Arnold Schwarzenegger on September 27, 2006. Key milestones of AB 32 include:

- June 20, 2007 – Identification of "discrete early action GHG emission-reduction measures";
- January 1, 2008 – Identification of the 1990 baseline GHG emissions levels and approval of a Statewide limit equivalent to that level. Adoption of reporting and verification requirements concerning GHG emissions;
- January 1, 2009 – Adoption of a scoping plan for achieving GHG emission reductions;
- January 1, 2010 – Adoption and enforcement of regulations to implement the actions;
- January 1, 2011 – Regulatory adoption of GHG emission limits and reduction measures; and
- January 1, 2012 – GHG emission limits and reduction measures become enforceable.

Since the passage of AB 32, the CARB published the Proposed Early Actions to Mitigate Climate Change in California. This publication indicated that the issue of GHG emissions in CEQA and General Plans was being deferred for later action, so the publication did not discuss any early action measures generally related to CEQA or to land use decisions.

AB 32 addresses the results of these studies conducted by the IPCC (IPCC; 2007, 2014) that examined a range of scenarios estimating an increase in globally averaged surface temperature and ocean rise by 2100 due to human causes.

Senate Bill 32

Senate Bill (SB) 32 requires that there be a reduction in GHG emissions to 40 percent below the 1990 levels by 2030. The provisions of SB 32 were added to Section 38566 of the Health and Safety Code subsequent to the bill's approval. The bill went into effect January 1, 2017. SB 32 builds onto AB 32 which requires California to reduce GHG emissions to 1990 levels by 2020; SB 32 continues that timeline to reach the targets set in Executive Order B-30-15. SB 32 provides another intermediate target between the 2020 and 2050 targets set in Executive Order S-03-05.

California Air Resources Board: 2008 Scoping Plan

On December 11, 2008, the CARB adopted the Scoping Plan as directed by AB 32 which proposes a set of actions designed to reduce overall GHG emissions in California. Measures identified in the Scoping Plan are being implemented in phases with Early Action Measures that have already been implemented. Measures include a Cap-and-Trade Program, car standards, low carbon fuel standards, landfill gas control methods, energy efficiency, green buildings, renewable electricity standards, and refrigerant management programs.

The 2008 Scoping Plan provides an approach to reduce emissions to achieve the 2020 target and to initiate the transformations required to achieve the 2050 target. The 2008 Scoping Plan indicated that a 29 percent reduction below the estimated "business as usual" levels would be necessary to return to 1990 levels by 2020 (CARB, 2008).

CARB underwent an extensive and rigorous process in developing and approving the Scoping Plan. Among other things, CARB considered several alternatives to achieve the mandated maximum technologically feasible and cost-effective reductions in GHGs and submitted its analyses and recommendations for peer review and public comment on many occasions.

Executive Order S-03-05 sets a goal that California emit 80 percent less GHGs in 2050 than it emitted in 1990. CARB's Scoping Plan, including the October 2013 Discussion Draft, provides additional direction and insight as to how it anticipates California would achieve the 2050 reduction goal in Governor Schwarzenegger's Executive Order S-03-05.

Scoping Plan 2011 Re-Approved Document

In August 2011, the initial Scoping Plan was re-approved by the CARB and includes the Final Supplement to the Scoping Plan Functional Equivalent Document. In the 2011 re-approved Scoping Plan, CARB updated the projected business as usual (BAU) emissions based on current economic forecasts (i.e., as influenced by the economic downturn) and GHG-reduction measures already in place. The BAU projection for 2020 GHG emissions in California was originally, in the 2008 Scoping Plan, estimated to be 596 $MMTCO_2e$. CARB subsequently derived an updated estimate of emissions in a 2013 Draft Discussion Document by considering the influence of the recent recession and reduction measures that are already in place. The revision estimates the 2020 emissions at 507 $MMTCO_2e$ (as the BAU estimate).

The 2011 Re-Approved Scoping Plan concluded that achieving the 1990 levels by 2020 meant cutting approximately 16 percent, compared to the original 2008 Scoping Plan that estimated a 29 percent

reduction (CARB, 2011). The 2011 Scoping Plan sets forth the expected GHG emission reductions from a variety of measures, including the Pavley automobile standards and the Renewables Portfolio Standard, neither of which were assumed in the 2008 Scoping Plan.

Scoping Plan 2014 First Update

AB 32 requires CARB to update the Scoping Plan every five years. CARB approved the first update to the Scoping Plan on May 22, 2014, with recommendations for a mid-term target (between 2020 and 2050) and sector-specific actions. The First Update addresses issues such as a revision to the GWP for gases (to a 20-year instead of the 100-year timeframe), the establishment of a mid-term 2030 goal (of between 33–40 percent reduction over 1990 levels), and the development of post-2020 emissions caps related to cap-and-trade to reflect the establishment of a 2030 midterm target. This first revision also provides an update on climate science and a report on progress toward the 2020 target, including achievements of the 2008 and 2011 Scoping Plans, an update on the inventory of GHG emissions, and an update of the economy and its potential effect on future emissions' forecasting. It also addresses post-2020 goals, including Executive Order S-03-05. The 2014 Scoping Plan Update concluded that achieving the 1990 levels by 2020 meant cutting approximately 15.3 percent, compared to the original 2008 Scoping Plan that estimated a 29 percent reduction.

Scoping Plan 2017 Update

CARB updated the Scoping Plan to address the strategy for achieving the 2030 GHG target in November 2017. The plan discusses economically and technically feasible actions for reduction of a 40 percent from 1990 levels of GHG emissions by 2030. The plan notes the path forward includes the ongoing and statutorily programs and the Cap-and-Trade Program along with AB 398 which clarifies the Cap-and-Trade Program including designating the program as the mechanism for reducing GHG emissions from petroleum refineries and oil and gas production in the Scoping Plan. The document concludes the Scoping Plan approach is to strengthen the major programs that have been successful to date and further integrate the efforts to reduce GHG emissions and improve air quality.

California Senate Bill 1368

In 2006, the California legislature passed SB 1368, which requires the California Public Utilities Commission (CPUC) to develop and adopt a "greenhouse gases emission performance standard" by March 1, 2007, for private electric utilities under its regulation. The CPUC adopted an interim standard on January 25, 2007, requiring that all new long-term commitments for base load generation involve power plants that have emissions no greater than a combined cycle gas turbine plant. That level is established at 1,100 lbs/MWh of CO_2. The California Energy Commission has also adopted similar rules.

SB 97 – CEQA: Greenhouse Gas Emissions

In August 2007, Governor Schwarzenegger signed into law SB 97 - CEQA: Greenhouse Gas Emissions with the purpose of expanding a coordinated policy for reducing greenhouse gas emissions under the CEQA framework by developing guidelines on how state and local agencies should analyze, and when necessary, mitigate greenhouse gas emissions. Specifically, SB 97 required the Office of Planning and Research (OPR), by July 1, 2009, to prepare, develop, and transmit to the Resources Agency guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions, as required by CEQA, including, but not limited to, effects associated with transportation or energy consumption. OPR would be required to periodically update the guidelines to incorporate new information or criteria established by the CARB

pursuant to the California Global Warming Solutions Act of 2006. SB 97 also identifies a limited number of types of projects that would be exempt under CEQA from analyzing GHG emissions.

On January 7, 2009, OPR issued its draft CEQA guidelines revisions pursuant to SB 97. On March 16, 2010, the Office of Administrative Law approved the Amendments, and filed them with the Secretary of State for inclusion in the California Code of Regulations. The Amendments became effective on March 18, 2010.

Office of Planning and Research Technical Advisory and Preliminary Draft CEQA Guidelines Amendments for Greenhouse Gas Emissions

Consistent with SB 97, on March 18, 2010, the CEQA Guidelines were amended to include references to GHG emissions. The amendments offer guidance regarding the steps lead agencies should take to address climate change in their CEQA documents. According to OPR, lead agencies should: (1) determine if GHG may be generated by a proposed project and, if so, quantify or estimate the GHG emissions by type and source; (2) assess if those emissions are cumulatively significant; and (3) consider 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 GHG emissions. When assessing whether a project's effects on climate change are cumulatively considerable or not, even though its GHG contribution may be individually limited, the lead agency must consider the impact of the project when viewed in connection with the effects of past, current, and probable future projects. Lastly, if the lead agency determines that the GHG emissions from a proposed project are potentially significant, it must investigate ways to implement or fund its fair share of a mitigation measure or measures designed to alleviate the cumulative impact.

The Amendments do not identify a threshold of significance for GHG emissions, nor do they prescribe assessment methodologies or specific mitigation measures. The Preliminary Amendments maintain CEQA discretion for lead agencies to establish thresholds of significance based on individual circumstances.

The guidelines developed by OPR provide the lead agency with discretion in determining what methodology is used in assessing the impacts of GHG emissions in the context of a particular project. This guidance is provided because the methodology for assessing GHG emissions is expected to evolve over time. The OPR guidance also states that the lead agency can rely on qualitative or other performance-based standards for estimating the significance of GHG emissions.

California Air Resource Board Cap-and-Trade Regulation

CARB has implemented a cap-and-trade type program, as per the AB 32 directed Scoping Plan, applicable to specific industries that emit more than 25,000 $MTCO_2e$ annually. The AB 32 Scoping Plan identifies a cap-and-trade program as one of the strategies California would employ to reduce GHG emissions that cause climate change. Under the Cap-and-Trade Program, an overall limit on GHG emissions from capped sectors would be established by the Cap-and-Trade Program, and facilities subject to the cap would be able to trade permits (allowances) to emit GHGs. The program started on January 1, 2012, with an enforceable compliance obligation beginning with the 2013 GHG emissions from stationary sources. The petroleum and natural gas systems sector is covered starting in 2013 for stationary and related combustion, process vents, and flare emissions if the total emissions from these sources exceed 25,000 $MTCO_2e$ per year. Suppliers of natural gas and transportation fuels are covered beginning in 2015 for combustion emissions from the total volume of natural gas delivered to a non-covered entity or for transportation fuels.

CARB's rationale for adopting the Cap-and-Trade Program was prominently noted by the Court of Appeals' opinion upholding the ARB Scoping Plan as follows:

The final scoping plan explains the Board's rationale for recommending a Cap-and-Trade Program in combination with the so-called "complementary measures" by citing the rationale outlined by the Market Advisory Committee and quoting from the report of the Economic and Technology Advancement Advisory Committee, in part, as follows: "A declining cap can send the right price signals to shape the behavior of consumers when purchasing products and services. It would also shape business decisions on what products to manufacture and how to manufacture them. Establishing a price for carbon and other GHG emissions can efficiently tilt decision-making toward cleaner alternatives. This cap-and-trade approach (complemented by technology-forcing performance standards) avoids the danger of having government or other centralized decision-makers choose specific technologies, thereby limiting the flexibility to allow other options to emerge on a level playing field... Complementary policies would be needed to spur innovation, overcome traditional market barriers... and address distributional impacts from possible higher prices for goods and services in a carbon-constrained world" (AIR 206 Cal.App.4th at p. 1499).

The Cap-and-Trade Program is designed to reduce the emissions from a substantial percentage of GHG sources (approximately 80 percent of GHG emissions would come under the program) within California through a market trading system. The system would reduce GHG emissions by reducing the available GHG "allowances" over time in the original bill up until the year 2020. In December 2018, the legislature adopted amendments to the Cap-and-Trade Program that set major market rules after 2020 until 2030.

Facilities are required to obtain an "allowance", either through purchasing on auction or through freely allocated "industry assistance" allowances from CARB, for each $MTCO_2e$ of GHG they emit.

CARB issues the "industry assistance" allocations for free for a number of industries. These are based, in part, on a pre-defined "benchmark" of GHG emissions per unit of production. For the crude oil production sector, allowances are provided as a function of the amount of crude oil produced, thereby establishing, in effect, a level of efficiency regarding GHG emissions for that sector. Other sectors are also allocated allowances based on their own respective activities.

If an operation within the sector operates less efficiently than the specified "benchmark", thereby receiving an insufficient number of "free" allowances to cover their emissions, implementation of efficiency improvements or the purchase of additional allowances from the CARB auction would be required. Some availability of "offsets" is also included in the program, which can be obtained from specific, allowable offset programs, such as GHG reduction projects related to forestry, livestock, mine methane capture and ozone depleting chemicals. Offsets outside of these three options are not allowed at this time.

The first group of sectors began trading in allowances in 2012. That group includes the oil and gas sector as well as most stationary sources. A second group began the program in 2015, which included the transportation fuels sector.

For subsequent periods after the initial 2013 period, allowances are planned to be distributed freely through the "industry assistance" program or auctioned off. Industry assistance allowances would decrease each year as per a "cap adjustment factor". The cap adjustment factor would be approximately two to three percent annually through 2020. The total allowances allowed to be allocated each year (either freely allocated or auctioned) are limited by the defined allowance budget, which decreases each year through 2020. Current prices for carbon are about $15 per ton in 2018.

An operator is required to participate in the Cap-and-Trade Program if its facility emits more than 25,000 $MTCO_2e$ annually. Annual reporting of GHG emissions is required under the CARB Mandatory Reporting Rule.

As only a limited number of allowances are issued, based on the original emissions estimates prepared by the CARB, and these allowances are reduced each year by a given percentage to achieve the year 2020 goals, any operator who commences operations after the Cap-and-Trade Program is in effect would be required to obtain allowances from the given limited pool. Any increase in GHG emissions at a facility would therefore be allowed through a reduction in GHG emissions at some other location with the net GHG emissions statewide not increasing. This mechanism would serve to ensure that: the goals of AB 32 are achieved; emissions statewide are reduced, even if local GHG emissions increase; and that, ultimately, emissions of GHG and atmospheric CO_2 concentrations are stabilized, thereby reducing impacts. This produces, in effect, mitigation for this cumulative impact.

Note that GHG emissions produce no immediate, local health effects (such as criteria pollutants or ozone), and therefore GHG emissions reduced in another county, for example, could be used to offset the GHG emissions occurring at a project site.

SB 375 Sustainable Communities and Climate Protection Act of 2008

SB 375 supports the State's climate action goals to reduce GHG emissions through coordinated transportation and land use planning with the goal of more sustainable communities.

Under the Sustainable Communities Act, CARB sets regional targets for GHG emissions reductions from passenger vehicle use. In 2010, CARB established these targets for 2020 and 2035 for each region covered by one of the State's metropolitan planning organizations (MPO). CARB will periodically review and update the targets, as needed.

Each of California's MPOs must prepare a "Sustainable Communities Strategy" (SCS) as a part of its regional transportation plan (RTP). The SCS contains land use, housing, and transportation strategies that, if implemented, would allow the region to meet its GHG emission reduction targets. The Sustainable Communities Act also establishes incentives to encourage local governments and developers to implement the SCS or an alternative planning strategy (APS). Developers can get relief from certain environmental review requirements under CEQA if their new residential and mixed-use projects are consistent with a region's SCS (or APS) that meets the targets (see Cal. Public Resources Code §§ 21155, 21155.1, 21155.2, 21159.28.).

The Southern California Association of Governments released the 2020–2045 Regional Transportation Plan/Sustainable Communities Strategy in 2020. Goals of the RTP/SCS include 1) reduce greenhouse gas emissions and improve air quality; 2) support healthy and equitable communities; 3) adapt to a changing climate and support an integrated regional development pattern and transportation network; and 4) leverage new transportation technologies and data-driven solutions that result in more efficient travel.

California Climate Action Registry General Reporting Protocol

The California Climate Action Registry is a program of the Climate Action Reserve and serves as a voluntary GHG registry. The Climate Action Reserve is a carbon offset registry for North America and establishes standards for carbon offset projects, including protocols and credits for CEQA compliance. The California Climate Action Registry was formed in 2001 when a group of chief executive officers, who were investing in energy efficiency projects that reduced their organizations' GHG emissions, asked the State to create a

place to accurately report their emissions history. The California Climate Action Registry publishes a General Reporting Protocol, which provides the principles, approach, methodology, and procedures to estimate such emissions.

California Air Resource Board Mandatory Reporting Regulation

CARB approved a mandatory reporting regulation in December 2007, which became effective January 2009 (which appears at sections 95100–95133 of Title 17, California Code of Regulations), which requires the mandatory reporting of GHG emissions for specific industries emitting more than 10,000–25,000 $MTCO_2e$ depending on the process source type.

Resolution 18-52

Amendments to the regulation for the mandatory reporting of greenhouse gases were adopted on December 13, 2018. The update provides guidance for reporting for facilities with emissions below applicable reporting requirements and data requirements and calculation methods for certain emission devices.

Status of California GHG Reduction Efforts

The State is required to monitor the effectiveness of the State programs on an annual basis. According to the State report card for 2017, the State achieved reductions of 46 million $MTCO_2e$ (MMT) in 2015, with the primary contributors listed below:

- The Transportation Sector achieved reductions of 14.3 MMT in 2015 with a goal of about 49 MMT of reductions by 2020, primarily through the Pavley regulations, the Low Carbon Fuel Standard (LCFS), tire pressure programs and ship electrification programs;
- Energy efficiency programs have produced reductions of 7.2 MMT in 2015;
- Appliance efficiency standards have achieved reductions of 4.7 MMT in 2015; and
- The Renewable Portfolio Standard program for power generation achieved a reduction of 6.9 MMT in 2015.

The Cap-and-Trade Program was started in 2013 has a goal of post-2020 delivering 236 $MMTCO_2e$ cumulative GHG emissions reductions from 2021 through 2030.

SB 350

With the Clean Energy and Pollution Reduction Act (SB 350), signed into law on October 7, 2015, California expanded the specific set of objectives to be achieved by 2030, with the following:

- To increase the Renewable Portfolio Standard (RPS) from 33 percent to 50 percent for the procurement of California's electricity from renewable sources; and
- To double the energy efficiency savings in electricity and natural gas end uses by retail customers.

AB 398 California Global Warming Solutions Act of 2006

AB 398, approved July 17, 2017, amended The California Global Warming Solutions Act of 2006 and extends the Cap-and-Trade Program from January 1, 2012 to December 31, 2030 and provides for a price ceiling and other measures to improve and provide additional banking allowance rules.

SB 100 California Renewables Portfolio Standard Program

SB 100, introduced in January 2017, would revise the California Renewables Portfolio Standard Program to state that the goal of the program is to achieve that 50 percent renewable resources target by December 31, 2026, and to achieve a 60 percent target by December 31, 2030. The bill states that it is the policy of the state that eligible renewable energy resources and zero-carbon resources supply 100 percent of retail sales of electricity to serve California end-use customers and 100 percent of electricity procured to serve all state agencies by December 31, 2045. The bill was signed by the Governor in September 2018.

Executive Order B-55-18

Governor Jerry Brown signed this Executive Order in September 2018 that sets a new statewide goal to achieve carbon neutrality as soon as possible, and no later than 2045, and achieve and maintain net negative emissions thereafter. This goal supplements the existing statewide targets of reducing greenhouse gas emissions.

Short-Lived Climate Pollutant Reduction Strategy

In March 2017 CARB released the Short-Lived Climate Pollutant Reduction Strategy which identified the need to immediately reduce emissions of short-lived climate pollutants (SLCPs), which include black carbon (soot), methane (CH_4), and fluorinated gases (F-gases, including hydrofluorocarbons, or HFCs). The plan outlines goals for reductions by 2030 for black carbon (50 percent), methane (40 percent), and HFCs (40 percent) and emission reduction actions that provide a wide array of climate, health, and economic benefits throughout the state.

4.3.2.4 Local Regulations

South Coast Air Quality Management District

South Coast AQMD regulation XXVII – Climate Change is comprised of the following rules which address GHG emissions and climate change:

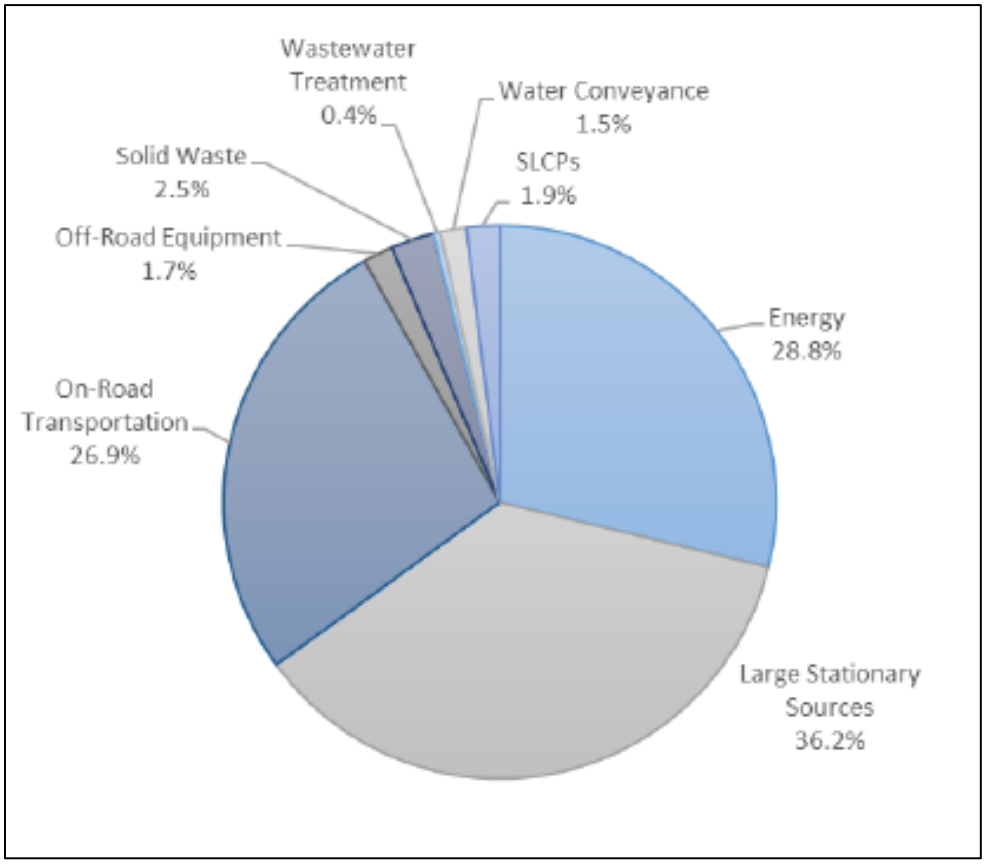
- Rule 2700 – General, contains definitions of terms and the GWPs for various GHGs;
- Rule 2701 – So Cal Climate Solutions Exchange established a voluntary program to encourage, quantify, and certify voluntary, high quality certified GHG emission reductions in the South Coast AQMD jurisdiction; and
- Rule 2702 - Greenhouse Gas Reduction Program established procedures for funding GHG emission reduction projects in the in the South Coast AQMD jurisdiction.

City of Paramount

At the July 6, 2021 City Council meeting, Paramount adopted a Climate Action Plan (CAP). The City's CAP is tailored to address climate needs as a community and ensure that Paramount reduces greenhouse gas (GHG) emissions to 40% below 1990 levels by 2030. The plan addresses issues including energy efficiency, renewable energy, sustainable transportation, land use and community design, water and wastewater systems, waste reduction and recycling, green infrastructure and green business. The emissions inventory indicates City of Paramount GHG emissions totaling 587,675 $MTCO_2e$ (for the year 2010), including residential/commercial/industrial electricity and natural gas, large stationary sources, on-road and off-road transportation and equipment, agriculture, wastewater treatment, etc. (City of Paramount 2021). A

breakdown of GHG emissions is shown in Figure 4.3-3. City is also undertaking an update to the Health and Safety Element to adopt climate adaptation strategies.

Figure 4.3-3 City of Paramount GHG Emissions by Category



Source: City of Paramount 2021. Note: SLCP = short lived climate pollutants. Large stationary sources are Carlton Forge Works (26,075 MTCO2e) and Paramount Refinery (186,803 MTCO2e)

4.3.3 Significance Thresholds

Appendix G of the CEQA Guidelines provides the following questions to guide the evaluation of GHG emission impacts. Would the Project:

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

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

The South Coast AQMD, in its role as the agency responsible for regulating air emissions locally, has developed detailed criteria to address air quality issues relevant to the regional air basin and which establish quantitative thresholds which address the CEQA Appendix G questions listed above. The South Coast AQMD threshold for GHG emissions is 10,000 metric tons per year CO_2e for industrial facilities (South Coast AQMD, 2019). This SEIR evaluates the Project relative to these two questions and applies the South Coast AQMD air quality significance thresholds for GHGs to determine whether the GHG impacts are significant.

4.3.4 Project Impacts and Mitigation Measures

The Project GHG emissions would be generated by both construction emissions and by operational emissions. As part of the South Coast AQMD thresholds for GHG emissions, construction emissions associated with a project are combined with the project's operational emissions by amortizing the construction emissions over 30 years. The impacts are discussed below.

Impact #	Impact Description	Phase	Impact Classification
GHG.1	The Project would generate an increase in GHG emissions.	Construction and Operation	Class III

Construction equipment may include cranes, welders, generators, pumps, forklifts, loader/backhoes, compressors, and manlifts. Emission factors for construction equipment were taken from the Construction Equipment Emissions tables in CARB's OFFROAD 2017 Inventory Model. Vehicle emissions include construction worker vehicles, pick-up trucks, flatbed trucks, dump trucks, water trucks, semi tractors, concrete trucks, and delivery trucks. Primary emissions generated would include combustion emissions from engines during idling and while operating. Construction emissions include emissions from construction worker vehicles traveling to and from the work site. On-road vehicle emissions were calculated using EMFAC2017 emission factors.

The Project operations would generate GHG emissions from stationary equipment, such as heaters and the hydrogen plant reformer, process vents and mobile sources (including trucks, trains, and ocean-going vessels). Some of the fuel combusted in the stationary equipment would be sourced from the renewable materials, and therefore would be biogenic. The refinery process generates renewable fuel gas that will be used in the process heaters and boilers and supplemented with purchased natural gas. The emission calculations presented in Table 4.3.2 show the Project refinery operations.

The GHG emissions from the Project are required to comply with Mandatory Report Rule and, if emissions exceed the inclusion threshold, the AB 32 Cap-and-Trade regulations. It is anticipated that the Project would exceed the threshold. As such, an allowance (offset) in an amount equal to the emissions from non-biogenic sources are required to be provided, except for specific exempted sources (i.e., rail and ships). Because rail and ships can obtain their fuels from sources outside of the AB 32 Cap-and-Trade compliance areas, the emissions associated with ships and rail are not covered by AB 32 Cap-and-Trade regulations. Biogenic sources comply with AB 32 requirements because they are considered carbon neutral emissions and, therefore, do not require allowances (offsets) under AB 32 Cap-and-Trade. In addition, any electrical use by the refinery under the Project would be covered by the AB 32 Cap-and-Trade Program because the utility which provides the electricity to the refinery as needed by the Project also participates in the AB 32 Cap-and-Trade Program.

Table 4.3.2 Project GHG Emissions Summary

Process	Annual $MTCO_2e$
Combustion Sources	229,936
Hydrogen Generation Unit	577,344
Process Vents	97,297
Mobile Sources	37,781
Total Operational Project	942,359
Electrical Generation (off-site)	80,594

Table 4.3.2 Project GHG Emissions Summary

Process	Annual $MTCO_2e$
Amortized Construction	941
Total Project (Operations and Construction)	1,023,894
Baseline Emissions for year 2011	151,822
Net Increase	872,072
AB 32 Covered and Biogenic Emissions[1]	-867,705
Net GHG Increase	4,367
South Coast AQMD Air Quality Significance Threshold for GHGs	10,000
Significant?	No

Notes: 1) AB 32 applies to all GHG emissions from stationary sources and on-road vehicles (all sources that obtain their fuels from cap-and-trade areas). Does not include GHG emissions from ships and rail sources which might obtain their fuels from outside California. Electrical use assumes CalEEMod factors for CO_2e emissions.
The 2013 MND incremental emissions have not been included as they were never generated above the 2011 emissions levels as a worst-case analysis.
Source: Applicant 2021.

The facility's operational GHG emissions at the refinery (GHG ID 101056) has not historically (year 2020) exceeded the Cap-and-Trade inclusion threshold and therefore it has not been subject to the Cap-and-Trade program. However, the refinery has been a fuel supplier and has a fuel supplier account (GHG ID 104759) according to Subpart MM reporting. AltAir Paramount's fuel supplier GHG emissions exceeded the Cap-and-Trade inclusion threshold in 2019 and therefore the fuel supplier account has been under the Cap-and-Trade Program. The fuel supplier account is anticipated to remain under the Cap-and-Trade Program under the Project as well.

The 2013 MND evaluated the GHG emission impacts for the Original Renewable Fuels Project GHG emissions and concluded that an increase of 17,160 $MTCO_2e$ would occur. However, since 16,054 $MTCO_2e$ were offset pursuant to the AB 32 Cap-and-Trade Program, an incremental, and less than significant increase of 1,106 $MTCO_2e$ would occur. Since 2014 a number of regulatory and calculation methodology changes have occurred that would alter and reduce the published amount. To address the regulatory and calculation methodology changes, the Project emissions were evaluated against the same pre-project operations as the Original Renewable Fuels Project pre-project operations. As such, a quantitative analysis of the Project and a qualitative comparison of the Project to the Original Renewable Fuels Project are necessary to conform to CEQA Guidelines Section 15162 for a SEIR.

Regulatory compliance with the AB 32 Cap-and-Trade Program requires that the facility provide allowances (the Cap-and-Trade term for offsets) for all non-biogenic GHG emissions. Mobile source emissions generated from transportation fuels purchased within California are required to have allowances provided by the fuel distributor for the combustion of the fuels sold. Fuels utilized by rail locomotives and marine barges purchased outside California are would not be subject to the allowance requirements. As summarized in Table 4.3.2, the incremental change in GHG emissions for the Project, including the Project operational emissions (both stationary and mobile sources) and amortized GHG emissions from construction activities would be less than the South Coast AQMD significance threshold; therefore, the Project GHG impact would be **less than significant (Class III).**

Impact #	Impact Description	Phase	Impact Classification
GHG.2	The Project would provide benefits in compliance with applicable plans, policies or regulations adopted for the purpose of reducing the emissions of greenhouse gases.	Construction or Operation	Class IV

California's regulatory setting for GHG emissions ensures that most of the existing and foreseeable GHG sources are subject to one or more programs aimed at reducing GHG emission levels. Similarly, electricity in California is subject to the Renewable Portfolio Standard (as the RPS is codified pursuant to SB 350 and SB 100). The AB 32 Cap-and-Trade Program incorporates emissions associated with all transportation fuels and the combustion of natural gas. California's GHG reduction strategies are working to achieve GHG reductions, and CARB has adopted the plan to maintain and continue reductions from all sectors of the economy.

Given the oversight of Project-related sources and progress of California's ongoing efforts to implement policies and a regulatory setting for reducing GHG emissions, the Project use of fossil fuels would not conflict with any applicable plan, policy or regulation adopted for the purpose of reducing GHG emissions and would comply with the policies by utilizing construction-related diesel fuel and gasoline, and operational emissions associated with natural gas combustion, that are covered by the existing programs such as the LCFS and Cap-and-Trade.

The Project would be consistent with the regional and South Coast AQMD thresholds and plans for the reduction of GHG emissions by emitting less than the GHG threshold of 10,000 $MTCO_2e$ per year (see impact GHG.1 above). The Project would also be consistent with the City of Paramount CAP in the following manner:

- Local Measure RE1: Increase Local Renewable Energy Generation - Renewable energy resources reduce GHG emissions by replacing fossil fuels. The Project would produce green renewable gasoline, diesel and jet fuels to be used within the local and regional communities, thereby supporting the Cap goal RE1.

- Local Measure TR1: Support Fuel Efficient and Alternative Fuel Vehicles – as per the CAP, "the cars we drive must transition away from petroleum-based fuels". The Project would produce green renewable gasoline, diesel and jet fuels and therefore would support the CAP measure TR1 by making green renewable fuels available, particularly in areas where other measures, such as electric vehicles, may not be practical or affordable.

- Local Measure GB2: Grow Green Economy/Increase Green Jobs – By producing green renewable fuels, the Project would be part of the "Cleantech" promoted by the CAP and the Project would promote the use of clean energy, thereby promoting the measures in the CAP. The Project would also provide opportunities for incorporating green technology education and job training into local schools' curriculum and course offerings.

In addition, the renewable products provide a cleaner source of energy by reducing full life-cycle greenhouse gas emissions by over 60 percent relative to fossil fuels. The current Renewable Fuels process produces up to 50 million gallons per year of renewable fuels, equating to a reduction of approximately 365,000 metric tons (MT) carbon dioxide (CO2). AltAir also supplies jet fuel to United Airlines, which contributes to a reduction in airlines emissions as well. AltAir's fuels meet all regulatory and commercial specifications without requiring engine modification, while securing a renewable alternative energy source. The Project modifications would continue the Project started in 2013 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 10 percent by 2020. This contribution to the goals established by California to reduce GHG emissions would be a beneficial impact. Therefore, impacts for GHG.2 would be **beneficial (Class IV).**

4.3.5 Cumulative Effects

Emissions of GHG are a global issue and therefore all GHG emissions are cumulative and would contribute to global GHG emissions impacts. The thresholds as developed by the South Coast AQMD address cumulative impacts of GHG emissions by determining a threshold whereby a project below the thresholds would, by definition, not have a cumulative impact. Since the Project GHG emissions are less than significant, cumulative GHG emissions would be less than significant.

Activities at the Port of Los Angeles as part of the Project would include vessel/barge visits, offloading to tankage, and loading of trucks for transport to the Paramount Refinery. The GHG emissions associated with vessel/barge activities are included in the air emissions estimates for the Project. The Port of Los Angeles PMPU PEIR (see Section 3.0, Cumulative Projects) indicated that the projects projected to occur at the Port would generate the following significant impacts:

> ***PMPU PEIR Impact GHG-1****: The proposed Program would be associated with operational activities that would produce GHG emissions that would exceed a CEQA threshold. Unlike criteria pollutants, GHG emissions do not cause direct adverse human health effects. The direct environmental effect of GHG emissions is an increase in global temperatures, which in turn has indirect effects on humans. The effect is not specific to the area surrounding the Port; it has global ramifications on a cumulative scale. Because the proposed Program's direct GHG emissions would not adversely affect the communities surrounding the Port to a greater degree than elsewhere, significant GHG impact would not represent a disproportionately high and adverse effect on minority and low-income populations.*

Potential projects at the Port of Los Angeles could produce significant and unavoidable impacts from GHG emissions. However, as the Project would produce less than significant impacts from GHG emissions, and GHG impacts are inherently cumulative, cumulative impacts from Port of Los Angeles operations would be less than significant.

4.3.6 References

AEP. 2007. Recommendations by the Association of Environmental Professionals (AEP) on How to Analyze Greenhouse Gas Emissions and Global Climate Change in CEQA Documents. Comment Draft. White Paper. March 2007.

American Petroleum Institute (API). 2004. Compendium of Greenhouse Gas Emissions Methodologies for The Oil and Gas Industry; February 2004.

CARB. 2006. Public Workshop to Discuss Establishing the 1990 Emissions Level and the California 2020 Limit and Developing Regulations to Require Reporting of Greenhouse Gas Emissions. Sacramento, CA; December 1, 2006.

CARB. 2008. Climate Change Proposed Scoping Plan; December 2008.

CARB. 2011. Final Supplement to the AB 32 Scoping Plan, Functional Equivalent Document; August 2011. [online]: https://ww2.arb.ca.gov/sites/default/files/classic//cc/scopingplan/document/final_supplement_to_sp_fed.pdf

CARB. 2020. California Greenhouse Gas Emissions – Trends of Emissions and Other Indicators, 2020 Edition. https://ww3.arb.ca.gov/cc/inventory/pubs/reports/2000_2018/ghg_inventory_trends_00-18.pdf

City of Paramount. 2013. Paramount Petroleum Alt-Air Renewable Fuels Project. Mitigated Negative Declaration and Initial Study, Conditional Use Permit (CUP) 757 and Zone Variance (ZV) 401. Adopted December 30, 2013 (PARA 059).

City of Paramount. 2021. Climate Action Plan; May 2021, https://1v1ft52dt8bm3k1qad3lgjxm-wpengine.netdna-ssl.com/wp-content/uploads/2021/08/2021-Paramount-CAP-document.pdf

IPCC. 2007. Intergovernmental Panel on Climate Change. "Fourth Assessment Report"; 2007.

IPCC. 2014. Intergovernmental Panel on Climate Change. "Fifth Assessment Report"; 2014.

NOAA. 2020. Global Monitoring Laboratory, Earth System Research Laboratories, Trends in Atmospheric Carbon Dioxide. [Online]: https://www.esrl.noaa.gov/gmd/ccgg/trends/

SCAG. 2020. Connect SoCal 2020, The 2020–2045 Regional Transportation Plan/ Sustainable Communities Strategy Of The Southern California Association Of Governments, Final Plan, https://scag.ca.gov/sites/main/files/file-attachments/0903fconnectsocal-plan_0.pdf?1606001176

South Coast AQMD. 2019. Air Quality Significance Thresholds; April 2019. [online]: http://www.aqmd.gov/home/rules-compliance/ceqa/air-quality-analysis-handbook

U.S. EPA. 2013. 40 CFR Part 98, Subpart A, Table A-1, Global Warming Potentials; November 29, 2013.

U.S. EPA. 2018. Inventory of U.S. Greenhouse Gas Emissions and Sinks, 1990–2016, U.S. EPA 430-R-18-003; April 12, 2018.

4.4 Hazardous Materials and Risk of Upset

This section describes hazards and potential hazardous materials impacts from the Paramount Refinery (refinery) baseline operations and the Project. It also discusses the environmental setting, significance criteria and proposes mitigation measures, as necessary. Cumulative impacts are also discussed. Impacts related to operational air emissions, producing acute, chronic, or cancerous impacts, from the refinery are discussed in Section 4.2, Air Quality.

Changes from Draft SEIR

Since the Draft SEIR was released in December 2021, this section has the following changes incorporated into the Final SEIR:

- Addition of EMF discussion; and
- Addition of information on national gas pipeline accidents.

4.4.1 Environmental Setting

Hazards at a facility can occur if the facility stores or utilizes hazardous materials. Impacts to the area can be realized through a release of these hazardous materials to the environment, which can be a result of natural events, such as earthquake, and non-natural events, such as mechanical failure of the equipment or human error. A hazard analysis considers toxic or physical effects, such as overpressure or thermal effects, that could impact areas off-site and result in immediate health effects to individuals outside of the facility.

The Applicant prepared an analysis of the impacts associated with releases of hazardous materials, which was peer reviewed by the SEIR preparer and is included in Appendix C.

The approach taken in this analysis is to examine the hazards associated with the baseline operations and compare these hazards to the hazards that the Project would present to the community. The transportation hazards from transporting hazardous materials by pipeline, truck and rail are also addressed.

4.4.1.1 Hazards Analysis Methodology

A hazard analysis considers the toxic or physical effects that can migrate off-site and result in immediate health effects to individuals outside of the facility boundaries. Hazards also exist to workers on-site. However, the scope of this CEQA analysis is on impacts to the public, not the refinery workers or contractors, which are addressed by various OSHA and worker safety regulations.

Hazards can be defined in terms of the distance that a release may travel given a release to the environment, with the largest distance defined as "worst-case" scenarios. “Worst-case” scenarios represent the maximum extent of potential hazards that could occur within a process area, based on "worst-case" assumptions including meteorological conditions and assuming a complete release of materials. This analysis defines the worst-case distances as those within which serious injuries could occur.

The potential hazards associated with industrial activities are a function of the materials being processed, processing systems, and procedures used to operate and maintain the refinery. The hazards that are likely to exist are identified by the physical and chemical properties of the materials being handled and their process conditions, and can include the following events:

- ***Exposure to Toxic Gas Clouds***: Toxic materials, if released, (gases, e.g., hydrogen sulfide), could form a dense cloud and migrate off-site, thus, exposing individuals to toxic materials. "Worst-case" conditions tend to arise when very low wind speeds coincide with an accidental release, which can allow the chemicals to accumulate as a dense cloud rather than disperse. The extent of the toxic effects is based on concentrations of the toxic materials determined by Emergency Response Planning Guidelines;
- ***Exposure to Flame Radiation***: If flammable materials are released and ignited, they can produce fires. The fire (thermal) radiation is the heat generated by a fire and the potential impacts associated with exposure to it. Exposure to thermal radiation could result in burns, the severity of which would depend on the intensity of the fire, the duration of exposure, and the distance of an individual to the fire. Thermal radiation can be caused by pool fire (fire of spilled material), torch fire (rupture of pressurized vessel or pipe followed by ignition) or a boiling liquid-expanding vapor explosion (BLEVE) of a pressurized storage vessel (overheating of a vessel until it ruptures). Effects levels are based on studies of skin exposure;
- ***Exposure to Flammable Vapor Clouds***: If flammable materials are released and do not ignite immediately, a vapor cloud forms which can subsequently ignite (flash fire) and cause impacts to persons located within the burning cloud. Flash fire hazard zones are defined by the maximum extent of the lower flammability limit (LFL) portion of the vapor cloud; and
- ***Exposure to Explosion Overpressure***: Explosions may occur if the flammable/explosive vapors are released and come into contact with an ignition source. The greatest potential threat to off-site receptors could occur from a vapor cloud explosion (release, dispersion, and explosion of a flammable vapor cloud), or a confined explosion (ignition and explosion of flammable vapors within a building or confined area). An explosion could cause impacts to individuals and structures in the area due to overpressure above 1 psi (building damage).

Secondary effects, such as ash fallout from a fire, may occur as a result of a potential accident scenario, that could produce acute or chronic effects. These effects would vary depending on the type of hazard, chemicals involved, and ambient conditions at the time of the incident. Secondary effects are not addressed in this analysis. Section 4.2, Air Quality, addresses chronic and acute effects from refinery operations.

Exposure to contaminated water could also result from an upset condition and spill if the spill has the potential to adversely affect ground water and water quality. In the event of a spill, materials could migrate off-site, if secondary containment and appropriate spill control measures are not in place.

The methodology involves assessing the size of worst-case hazard zones for the Project as compared to the baseline hazard zones as well as temporal effects related to transportation.

For the refinery, the hazards are generally fixed and unchanging. Although there may be some variation in inventory or operating conditions, the hazards at the refinery are generally always present and could affect nearby receptors if an accident occurs. For transportation, however, the hazards have a temporal component, where hazardous materials in a truck or rail car only present a hazard when the truck or rail car is located in close proximity to the receptor. After the truck or railcar has passed by, there is no longer a hazard present. For transportation (truck and rail) impacts, the size of the hazard zones would be the same, as the same materials are being moved in the same size containers for both the Project and the baseline conditions. Therefore, to address the varying nature of a transportation hazard, the number of truck trips or rail trips is also used to determine the extent of the impact in order to address the temporal component of the hazard.

To describe the hazards at any facility handling or storing hazardous materials, release scenarios are developed to simulate the potential releases. This requires calculation of material release rates and the properties of the material following a release. Following these calculations, computer models are applied to describe how far a toxic or flammable vapor cloud (flash fire), torch fire radiation, pool fire radiation, BLEVE or overpressure from a vapor cloud explosion could cause injuries to off-site receptors.

In order to complete the hazard consequence analysis, the CANARY© model was used, which is a computer model that contains a set of complex models that calculate release conditions, initial dilution of the vapor, and the subsequent dispersion of vapor introduced into the atmosphere. The models contain algorithms that account for thermodynamics, mixture behavior, transient release rates, gas cloud density relative to ambient air, initial velocity of released gas, and heat transfer effects from the surrounding atmosphere and the substrate. CANARY© also has the ability to predict the potential distance to the injury threshold due to pool fire, torch fire, and BLEVE radiation and can account for impoundment configuration, material composition, target height relative to the flame, target distance from the flame, atmospheric attenuation, wind speed, and atmospheric temperature.

The level at which an exposure could cause injuries is defined as the level of concern (LOC). The values used in the worst-case consequence analysis corresponds to a hazard level which might cause an injury. Table 4.4.1 presents the level of concern used in this hazard analysis.

Table 4.4.1 Summary of Levels of Concern

Hazard Type	Injury Threshold		
	Exposure Duration	Hazard Level	Reference
Radiant Heat Exposure	40 seconds[1]	1,600 Btu/(hr · ft^2)	40 CFR 68 (EPA, 1996)
BLEVE Exposure	Varies	7,400 (Btu/hr · ft^2) · sec $^{4/3}$	40 CFR 68 (EPA, 1996)
Toxic Gas Exposure	Up to 60 mins	30 ppm (H_2S)	ERPG-2 (AIHA, 2011)
Explosion Overpressure	Instantaneous	1.0 psig[(2)]	40 CFR 68 (EPA, 1996)
Flash Fire (flammable vapor clouds	Instantaneous	Lower Flammable Limit (LFL)	40 CFR 68 (EPA, 1996)

Source: Quest 2021.
Notes: 1) Corresponds to second-degree skin burns. 2) An overpressure of 1 psi may cause partial demolition of houses, which can result in serious injuries to people, and shattering of glass windows, which may cause skin laceration from flying glass.

The refinery and transportation hazards are discussed below along with the results of computer modeling estimating the distance of worst-case hazard zones.

4.4.1.2 Refinery Material Inventories

The refinery has historically utilized and stored a wide range of materials. Information from the Hazardous Materials Business Plan (HMBP) (as per 2013) indicate over 150 different materials and inventories. These are listed in Table 4.4.2 below grouped by gallons, cubic feet and pounds, as per the HMBP submission requirements. The largest inventory of materials for the crude oil refinery was asphalt and crude oil.

Sodium Hydroxide caustic was used to scrub acid gases and to treat kerosene to jet fuel standards. Spent or reacted caustic would be sodium sulfide, from scrubbing the gases or sodium naphthenate from treating the kerosine. Sodium hydroxide was and will be brought in by truck. Sodium sulfide was shipped out by truck, and sodium naphthenate was shipped out by rail.

Anhydrous ammonia was removed from the refinery in approximately 2006. It has not been used since and will not be used in the future.

Table 4.4.2 Summary of HMBP Materials

Material, Gallons	Gallons	Material, Ft^3	Cubic Feet	Material, Pounds	Pounds
Asphalt	24,557,400	Liquid nitrogen	860,000	Reformate	17,359,000
Crude oil	17,220,000	Naphtha	20,569	Naphtha 25002 reformate 25001	12,600,000
Gas oil	8,400,000	Oxygen	11,500	Naphtha	9,407,856
Diesel	5,250,000	Reconstituted air, compressed air, synthetic air	9,020	Alkylate	4,662,000
Stormwater - heavy oil	3,360,000	Compressed hydrogen gas	8,100	Asphalt	840,000
Jet Fuel	1,890,055	Nitrogen	7,650	Lpg	592,257
Oily water	1,890,000	Argon	6,912	Pb-511, pb-5301 polymer	500,000
Kerosene	1,050,000	Compressed nitrogen gas	6,750	Mixed pentanes	226,930
Emulsion	386,400	Compressed helium gas	4,200	Sulfuric acid	108,303
Asphaltos slop oil	230,000	Compressed air	4,000	Amine formulation	93,800
Fuel oil	210,000	Reconstituted breathing air	3,100	Aqueous ammonia, 19%	83,400
Caustic	153,974	Reconstituted air, synthetic air with impurities	3,000	Naphtha unit 5	70,800
Light slop	126,000	Compressed gases: various hydrogen/nitrogen mixtures	2,400	Naphtha unit 26	58,300
Diesel fuel no. 2	62,600	Air	2,000	Uop r 86 reformer catalyst	38,400
Sodium hydroxide caustic	51,480	Natural gas	1,200	Sasobit-04-6505	29,040

Source: 2013 HMBP (2011 HMBP not available from Applicant. 2013 considered similar). Top inventory of materials only.

4.4.1.3 Refinery Hazards

For any one of the hazards that are inherent to the baseline or Project at the refinery to adversely affect an area, a release of the materials to the environment must occur. If the hazardous materials normally contained within the piping or equipment at the site are released, the resulting flash fire, vapor cloud explosion (i.e., BLEVE), torch fire, pool fire, or toxic vapor cloud has specific consequences that are estimated using computer models.

Shipping, handling, storing, and disposing of hazardous materials inherently poses a hazard associated with a release to the environment. The refinery historically handles crude oil as well as petroleum products including produced gas, natural gas, propane, butane, isobutane, gasoline, fuel oils, diesel, and other products. Incident scenarios for the existing refinery evaluated herein include accidental releases of these substances.

Many of the substances handled and transported by the refinery, and associated with the Project, are flammable and combustible liquids that present hazards associated with releases along transportation routes due to the releases producing flammable vapor clouds, or fires from the burning of a spilled material if ignited. The hazards of a material are associated with how readily the material produces a vapor cloud and how readily the material will ignite and burn. The flash point is a characteristic that helps

to define how hazardous a material will be. If a material, such as gasoline, will readily produce a flammable vapor cloud that can ignite when spilled, then it is generally more hazardous than a material which does not produce a flammable vapor cloud and is therefore more difficult to ignite. A characteristic called the flash point temperature is the minimum temperature at which a liquid gives off vapor within a test vessel in sufficient concentration to form an ignitable mixture with air near the surface of the liquid. Materials with higher flashpoint temperatures are thus less likely to ignite than materials with lower flash point temperatures. In general, a flammable liquid is defined as a material with a flash point temperature under 100 °F and a combustible liquid has a flash point temperature over 100 °F. Because of their higher flash points, combustible liquids do not pose as great a risk in transportation as flammable liquids. Therefore, the regulatory requirements applicable to their transportation are less stringent than those for flammable liquids.

NFPA 30 classification is as follows:

- Class IA - Flash Point less than 73 °F; Boiling Point less than 100 °F;
- Class IB - Flash Point less than 73 °F; Boiling Point equal to or greater than 100 °F;
- Class IC - Flash Point equal to or greater than 73 °F, but less than 100 °F;
- Class II - Flash Point equal to or greater than 100 °F, but less than 140 °F;
- Class IIIA - Flash Point equal to or greater than 140 °F, but less than 200 °F; and
- Class IIIB - Flash Point equal to or greater than 200 °F.

A combustible liquid that does not sustain combustion is not subject to the requirements of the hazardous material regulations as a combustible liquid. Sustaining combustion is defined by whether the material will combust when heated under test conditions and exposed to an external source of flame.

A flammable gas is a material, such as propane, which is a gas at 68 °F and readily produces a flammable vapor cloud when released. Flammable gases are substantially more hazardous than liquids due to the rapid rate at which they produce a flammable vapor cloud and can ignite and explode and burn.

Below are listed some materials and their respective classifications and flash point temperatures.

Table 4.4.3 Material Characteristics

Material	Materials Classification	Flash Point Temperature, °F
Hydrogen	Flammable Gas	-423**
Methane	Flammable Gas	-306
Propane	Flammable Gas	-155
Gasoline	Class IB Flammable Liquid	70
Jet Fuel	Class IC Flammable Liquid	100
Diesel Fuel	Class II Combustible Liquid	126
Crude Oil Light*	Class IA Flammable Liquid	-30
Crude Oil Medium*	Class IA Flammable Liquid	-10
Crude Oil Heavy*	Class IA Flammable Liquid	-3
Crude Bitumen	Class II Combustible Liquid	>100
Cooking Oil	Class IIIB	>460
Tallow Grade 1	Class IIIB	356 - 509

Source: NAS 2016, NFPA 30, MSDS hydrogenated tallow fatty acid, MSDS corn oil. Notes: *unweathered, ** melting point

Existing Refinery Safety Systems

The refinery operates numerous safety systems to minimize the potential for and provide emergency services in the event of an accident or release from the refinery operations. Existing safety systems are described below.

Existing Fire-Fighting Capabilities

Deluge and Foam Systems

Liquefied petroleum gas (LPG) pressurized tanks are protected with deluge water spray systems. These systems are either automatically or manually deluged. Lines supplied from fire hydrants located around each tank can supplement the spray system and may provide cooling for piping and structural supports involved in a fire.

Fixed roof storage tanks are generally protected with fixed firefighting foam chambers or subsurface foam capabilities. Covered floating roof tanks are generally equipped with fixed foam systems and foam dams for the seal area of the tank.

Fire Fighting Support Vehicles and Equipment

The refinery currently maintains personnel and equipment on-site for fire suppression efforts and posts fire emergency procedures. There are fire hydrants within the refinery, as well as along Lakewood and Somerset Boulevards, and Downey Avenue which provide additional fire water flow in the event of an emergency.

Spill Response

The refinery is equipped with secondary containment as required in the Spill Prevention, Control, and Countermeasure (SPCC) Plan (2018). Additional spill response equipment is available through commercial contracts with suppliers that specialize in spill cleanup. Commercial contractors that specialize in oil cleanup are employed to place any additional booms or other spill capture equipment, if necessary, and to remove oil from the water, if the oil is released into waterways.

Fire Department Inspections

The Fire Department inspects the refinery annually and joins in emergency response drills along with refinery personnel.

Historical Refinery Hazard Zone Modeling Results

Modeling was conducted for numerous release scenarios from the historical refinery operations. The hazard zones from releases originating inside the refinery are dominated by vapor clouds from the light naphtha stabilizer, the naphtha splitter overhead accumulator and the reformate stabilizer overhead accumulator, as well as thermal radiation from a BLEVE at the gas liquids/propane storage vessels (TK-1201). The largest worst-case hazard zone is the hazard zone for the TK-1201 BLEVE.

The results of the modeling are summarized in Table 4.4.4. Modeled hazard zone distances are shown in Figure 4.4-1 for vapor clouds (LFL), toxics and thermal radiation impacts.

For explosion hazard zones, an explosion could occur in several different places within the refinery. The size of an explosion hazard zone is a function of the reactivity of the flammable gas involved, the presence (or absence) of structures such as walls or ceilings that partially confine the vapor cloud, the spatial density of obstructions within the flammable cloud, the average size of those obstacles, the overall size of the

confined or congested space. Explosion modeling was conducted for 38 different locations within the refinery and produced a range of hazard zones distances from 100 to 510 feet, averaging 304 feet. Explosion overpressure hazard zones are generally contained within the LFL zones depicted in Figure 4.4-1.

Table 4.4.4 Historical Refinery Release Scenarios Modeling Results

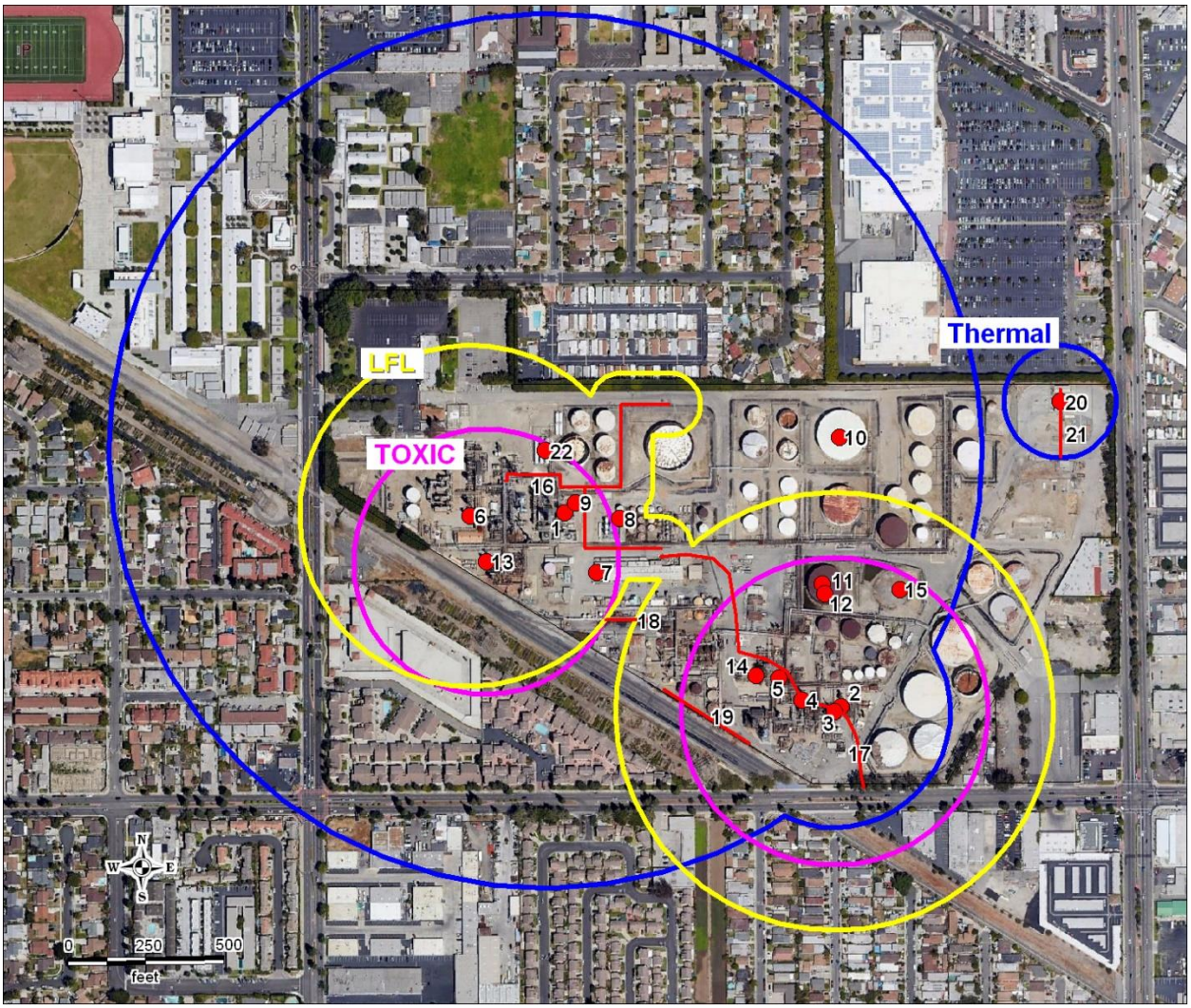
Area	Release Location Number	Fence Line Distance, ft	Vapor Cloud LFL, ft	Toxic, 30 ppm ft	Torch Fire	Pool Fire	Off-site Hazard?
					Distance to 1600 Btu/hr-ft² in feet		
Fractionator to Jet Reboiler	1	327	260	na	180	50	N
Fractionator Overheads	1	318	215	na	140	na	N
Light Naphtha Stabilizer	2	220	523	295	282	na	Y
Naphtha Splitter Ovhd. Accumulator	3	190	699	471	371	na	Y
Reformat Stabilizer Ovhd Accumulator	6	310	545	na	292	na	Y
Hydrogen Storage and Transfer	9	350	196	na	90	na	Y
TK-80002	11	541	na	na	na	192	N
TK-125001 (before mod.)	10	170	na	na	na	232	Y
SCOT amine regen gas to H-401	13	95	na	424	na	na	Y
Rail Loading/Unloading Rack	19	8	na	na	na	127	Y
Truck Loading/Unloading	20	29	na	na	na	180	Y
Hydrogen Line - interior - import	16	129	100	na	74	na	N
Hydrogen Pipeline – exterior -import	Off-site	0	95	na	75	na	Y
TK-1201	22	215	304	na	126	1,397*	Y
Maximum Distance	-	-	700	491	371	1,397	
Estimated Area Impacted Off-site, Acres	-	-	21	10	97		

Source: Quest 2021
Note: "na" indicates that the scenario does not produce the impact listed (for example, the fractionator to jet reboiler does not contain toxic materials) or does not produce impacts for the scenario type that are greater than impacts for another scenario of a similar type (thermal, for example).
* BLEVE scenario is included in the pool fire column.

4.4.1.4 Truck Transportation Hazards

The transportation of hazardous substances poses a potential for hazardous materials releases and subsequent fires or explosions. In general, the greater the vehicle miles traveled, the greater the potential for an accident. Statistical accident frequency varies depending relative accident potential for the travel route. The size of a potential release is related to the maximum volume of a hazardous substance that can be released in a single accident, should an accident occur, and the type of failure of the containment structure, e.g., rupture or leak. The potential consequences of the accident are related to the size of the release, the population density at the location of the accident, the physical and chemical properties of the hazardous material, and the local meteorological conditions at the time of the accident.

Figure 4.4-1 Modeling Locations and Hazard Impact Zones: Baseline Refinery



Notes: Red dots and lines indicate release locations. See Table 4.4.4 above.
Source: Google Earth 2021

The factors that enter into accident statistics include distance traveled and type of vehicle or transportation system. Factors affecting truck transportation accidents include the type of roadway; presence of road hazards; vehicle type; maintenance and physical condition; and driver training. Accident rates are defined in terms of accidents per million miles traveled.

Every time hazardous materials are moved from the site of generation, there are opportunities for accidental releases. The U.S. Department of Transportation (U.S. DOT) conducted a study on hazardous materials and non-hazardous materials truck shipment accidents and incidents. The Federal Motor Carrier Safety Administration (FMCSA) compared hazardous materials truck shipment accidents and incidents to non-hazardous materials truck shipment accidents and incidents (FMCSA, 2001). The estimated accident rate for trucks (shipping non-hazardous materials) was 0.73 accidents per million miles traveled. The average accident rate for trucks transporting hazardous materials (all hazard classes) was estimated to be 0.32 accidents per million miles traveled (FMCSA, 2001). The specific hazardous material trucking

regulations and additional care provided by carriers and shippers of hazardous materials appear to be factors reducing the accident rate for hazardous material shipments (FMCSA, 2001).

The hazardous materials historically transported to and from the refinery by truck include:

- Aqueous ammonia;
- Asphalt;
- Caustic (Sodium Hydroxide);
- Crude Oil;
- Diesel;
- Distillates;
- DMDS;
- E85 (Naphtha + 85 percent ethanol);
- Emulsion;
- Fuel Oil;
- Gas Oil;
- Gasoline;
- Gasoline Blending Stocks;
- Jet Fuel;
- Kerosene;
- Light Products;
- LPG (including propane, butane, and pentane);
- Naphtha;
- Renewable Feedstocks; and
- Slop Oil.

Baseline movement of materials by trucks totaled over 28,000 trucks in 2011 associated with metered (measuring volume loaded) and scale (measuring weight) trucks loading product and scale trucks unloading refinery feed and materials. Hazard zones vary with the type of material, and include impacts due to a pool fire, or vapor clouds and vapor cloud explosions. Truck impacts, as per modeling using the CANARY© software, for the materials most commonly transported and with the highest potential impacts are shown in Table 4.4.5.

4.4.1.5 Rail Transportation Hazards

Transportation of hazardous substances poses a potential for fires, explosions, and toxic exposure to areas located near rail routes if a hazardous material release occurs. In general, the greater the miles traveled the greater the potential for an accident. The size of a potential release is related to the maximum volume of a hazardous substance that can be released in a single accident, should an accident occur, and the type of failure of the containment structure, e.g., rupture or leak. The potential consequences of the accident are related to the size of the release, the population density at the location of the accident, the specific

release scenario, the physical and chemical properties of the hazardous material, and the local meteorological conditions.

Table 4.4.5 Truck Release Scenarios Modeling Results

Material	Fire, Distance to 1,600 Btu/hr-ft² feet	Vapor Cloud, Distance to LFL Feet	Vapor Cloud Explosion Distance to 1 psi Feet
Crude Oil	80	18	98
Diesel	85	5	45
Gasoline	129	152	64
Jet Fuel	102	23	40
LPG (propane, butane)	306	176	147

Notes: Assumes 10,000-gallon tanker truck, 80% full, complete release of contents over 10 minutes using the levels of concern listed in the Table 4.4.1.

Train accident reports reported to the Federal Railroad Administration (FRA) identify the causes and contributing factors causing the accident. Rail accidents can stem from human errors (e.g., switching, coupling, transloading, speeding); equipment failures (e.g., crossing guard failures, leaking valve, coupling failure, broken rails, brake failure, corrosion, etc.); system or procedural failures (e.g., interim storage on holding track, routing, emergency response, maintenance, circuitous routing); and external events (vandalism, at-grade crossing, flood, earthquake, fire, bridge failure) (CCPS, 1995).

The FRA regulations on reporting railroad accidents/incidents are found primarily in 49 CFR Part 225. The purpose of the regulations is to provide the FRA with accurate information concerning the hazards that exist on the nation's railroads. The FRA uses this information for regulatory and enforcement purposes, and for determining comparative trends of railroad safety. These regulations preempt states from prescribing accident/incident reporting requirements. The FRA compiles data on railroad-related accidents, injuries and fatalities to depict the nature and cause of rail-related accidents and improve safety.

Train accident data reported in the United States, and California between 2011 and 2020 are summarized in Table 4.4.6. Based on the train accident data for the United States, the train accident rate varied from 2.4 accidents per million miles traveled to 2.9 accidents per million miles traveled over the 10-year period from January 2011 to December 2020. Of the hazmat releases in California, only three accidents involving releases of hazardous materials occurred between 2011 and 2020.

The hazardous materials historically transported to and from the refinery by rail include:

- Asphalt;
- Distillates;
- Fuel Oil;
- Gas Oil;
- Renewable Feedstocks; and
- Spent Caustic.

Baseline movement of materials by rail totaled 1,356 rail cars in 2011 associated with loading product and gas oil (1,175 rail cars of product and gas oil) and rail cars unloading crude and refinery materials (181 rail

cars of crude and refinery materials). Hazard zones vary with the type of material, and include impacts due to a pool fire, or vapor clouds and vapor cloud explosions. Rail car impacts for the most commonly transported materials and with the highest potential impacts, as per modeling using the CANARY© software, are shown in Table 4.4.7.

Table 4.4.6 Summary of National and California Train Accident Data

Category	United States 2011–2020 Total	California 2011–2020 Total
Total Accidents/ Incidents: All Types(1)	113,958	8,582
Accident Rate per million miles	16.2	(5)
Train Accidents: Train Only	18,455	971
Train Accident Rate per million miles	2.6	(5)
Train Accidents on Main Line	4,778	259
Accident Rate on Main Line per million miles(2)	0.68	(5)
Incidents that had a Hazmat Releases	172	3
Cars Carrying Hazmat(3)	70,338	2734
Total cars releasing Hazmat	422	4
Probability of Hazmat cars involved in incident releasing contents	0.60%	0.15%
Total Train Miles, million(4)	7,056	(5)

Source: FRA 2021.
(1) Total accident/incidents include train accidents, crossing incidents, and other accidents/incidents.
(2) Rate of accidents on mainline divided by total train miles – yard switching miles.
(3) Number of rail cars that carried hazardous materials and were involved in an incident.
(4) involves both mainline and switching
(5) FRA does not make miles available for individual states, therefore, rates cannot be calculated.

Table 4.4.7 Rail Car Release Scenarios Modeling Results

Material	Pool Fire, Distance to 1,600 Btu/hr-ft^2 feet	Vapor Cloud, Distance to LFL Feet	Vapor Cloud Explosion Distance to 1 psi Feet
Crude Oil	86	18	98
Diesel	91	5	45
Gasoline	138	152	64

Notes: Assumes 30,000-gallon rail car tanker, 80% full, complete release of contents over 10 minutes.

4.4.1.6 Liquid Pipeline Hazards

The historical operations of the refinery include the delivery of crude oil to the refinery by pipeline and the transportation of jet fuel from the refinery by pipeline. Historically, about 96 percent of the crude oil delivered to the refinery has been delivered by pipeline. As a liquid pipeline operates continuously and a pipeline would always be full of material, the hazards from pipelines are more similar to a fixed facility, such as the refinery, than transportation methods such as trucks and rail, which has a temporal component to the hazard exposure at any single receptor.

The U.S. DOT Pipeline and Hazardous Material Safety Administration (PHMSA), keeps detailed pipeline incident and mileage reports to chart fatalities, injuries, property damage, and loss of product resulting from pipeline incidents.

Pipeline accident events, referred to as "significant incidents" by the PHMSA, include all incidents reported by a pipeline operator when any of the following conditions are met: (1) fatality or injury requiring in-patient hospitalization (also referred to as a "serious incident"); (2) $50,000 or more in total costs; (3) highly volatile liquid releases of five barrels or more or other liquid releases of 50 barrels or more; and/or (4) liquid releases resulting in an unintentional fire or explosion.

Table 4.4.8 shows the total number of incidents each year between 2010 and 2019 for onshore hazardous liquid pipelines, including crude oil and petroleum products, in California. The PHMSA data show that over a 10-year period (2010–2019), a total of 231 incidents were reported, none of which resulted in fatalities or serious injuries. Approximately 80 percent of the hazardous materials that were spilled was crude oil, with 83 percent of the barrels lost being crude oil. According to the U.S. DOT Incident and Mileage Reports, California contains 6,525 miles of hazardous liquid pipelines, transporting primarily crude oil and petroleum products.

Table 4.4.8 California Hazardous Liquid Onshore Pipeline Incidents (2010 – 2019)

Year	Number	Fatalities	Injuries	Gross Barrels Spilled	Net Barrels Lost	Barrels Spilled Crude Oil	Barrels Lost of Crude Oil
2010	15	0	0	982	163	793	36
2011	24	0	0	272	128	212	112
2012	22	0	0	777	23	691	2
2013	17	0	0	813	35	547	15
2014	28	0	0	2,648	299	1,534	3
2015	25	0	0	4,709	2,163	4,560	2,160
2016	23	0	0	2,207	165	1,874	164
2017	29	0	0	533	8	267	5
2018	27	0	0	468	0	306	0
2019	21	0	0	212	9	164	3
Totals	231	0	0	13,621	2,993	10,948	2,500
3 Year Average (2017–2019)	19	0	0	404	6	245	3
5 Year Average (2015–2019)	21	0	0	1,626	469	1,343	466
10 Year Average (2010–2019)	21	0	0	1,362	309	1,095	250

Source: PHMSA, 2020a.

Hazard impact zones from a liquid pipeline release would vary depending on the amount of material spilled. The amount of material spilled is primarily a function of the pipeline size and the terrain affecting the pipeline elevation profile and would therefore vary substantially, with a pipeline rupture at the top of a hill having a small release size and a small impact zone and a pipeline release in a valley from a large pipeline have a relatively large release size and large hazard impact zones. As can be seen in the table above, there is a substantial range in the size of spills historically.

Hazard zones vary with the type of material, and include impacts due to a pool fire, or vapor clouds and vapor cloud explosions. Pipeline spill impacts, as per modeling using the CANARY© software, are shown in Table 4.4.9.

Table 4.4.9 Pipeline Release Scenarios Modeling Results

Area	Pool or Torch Fire, Distance to 1,600 Btu/hr-ft^2 feet	Vapor Cloud, Distance to LFL Feet	Vapor Cloud Explosion Distance to 1 psi Feet
Crude Oil	52	24	95
Gasoline	98	200	93
Jet Fuel	102	29	44
Natural Gas	129	90	46

Notes: Assumes 2,000-foot pipeline, 8" diameter at 500 psig. Modeling results using the CANARY© software.

4.4.1.7 Gas Pipeline Hazards

The refinery is supplied by an existing natural gas pipeline. As with liquid pipelines, gas pipelines operate continuously and the pipeline would always be full of material and the hazards are more associated with a fixed facility, such as the refinery, than transportation methods such as trucks and rail, which has a temporal component to the hazard exposure at any single receptor.

The PHMSA of the U.S. DOT has been collecting data from pipeline incidents since 1970. Incidents are reported to the U.S. DOT that meet the minimum reporting threshold. Data reporting requirements were changed in 1984 and 2002, so only consistent data from the years 2002 to 2016 were selected for analysis.

The U.S. DOT collects data about pipeline infrastructure from operator annual reports. This includes information on the total length, diameter, installation date, population class, and commodities transported by pipeline. This data has been used to calculate incident rates by mile and diameter of pipe.

The U.S. natural gas transmission pipeline network consists of 293,000 miles of pipelines. Exposure for the 15 years analyzed from 2002 to 2016 is approximately 4.4 million mile-years.

PHMSA incident data has been analyzed and sorted to extract only pipe incidents that meet the following criteria:

- Natural gas transmission pipelines;
- Onshore pipelines; and
- Below ground pipelines.

Incidents associated with ancillary equipment such as compressors, valves, metering and storage were excluded from the pipeline analysis. Incidents associated with line pipe have been extracted for the years 2002 to 2016, and release sizes assigned. Transmission line inventory for these 15 years have been totaled to calculate the average failure rate by release size in Table 4.4.10.

The distance of hazard impact zones is a function of the gas pipeline size and operating pressure. Distances of the existing gas pipeline are estimated using the CANARY© software and are listed in the table above.

Gas transmission pipeline incidents have led to an average of two fatalities and eight injuries per year over the last 20 years throughout the U.S. Within California, there have been a total of 11 fatalities and 69 injuries in the last 20 years (https://www.phmsa.dot.gov/data-and-statistics/pipeline/pipeline-incident-20-year-trends).

Table 4.4.10 U.S. DOT Gas Pipeline Failure Rates

Release Size	U.S. DOT Data for Years 2002 to 2016		
	Number of Pipe Releases	%	Failure Rate per 1,000 mile-years
Pinhole /Crack	209	29%	0.047
Hole	251	35%	0.057
Rupture	252	35%	0.057
Total	712	-	0.161

Source: U.S. DOT

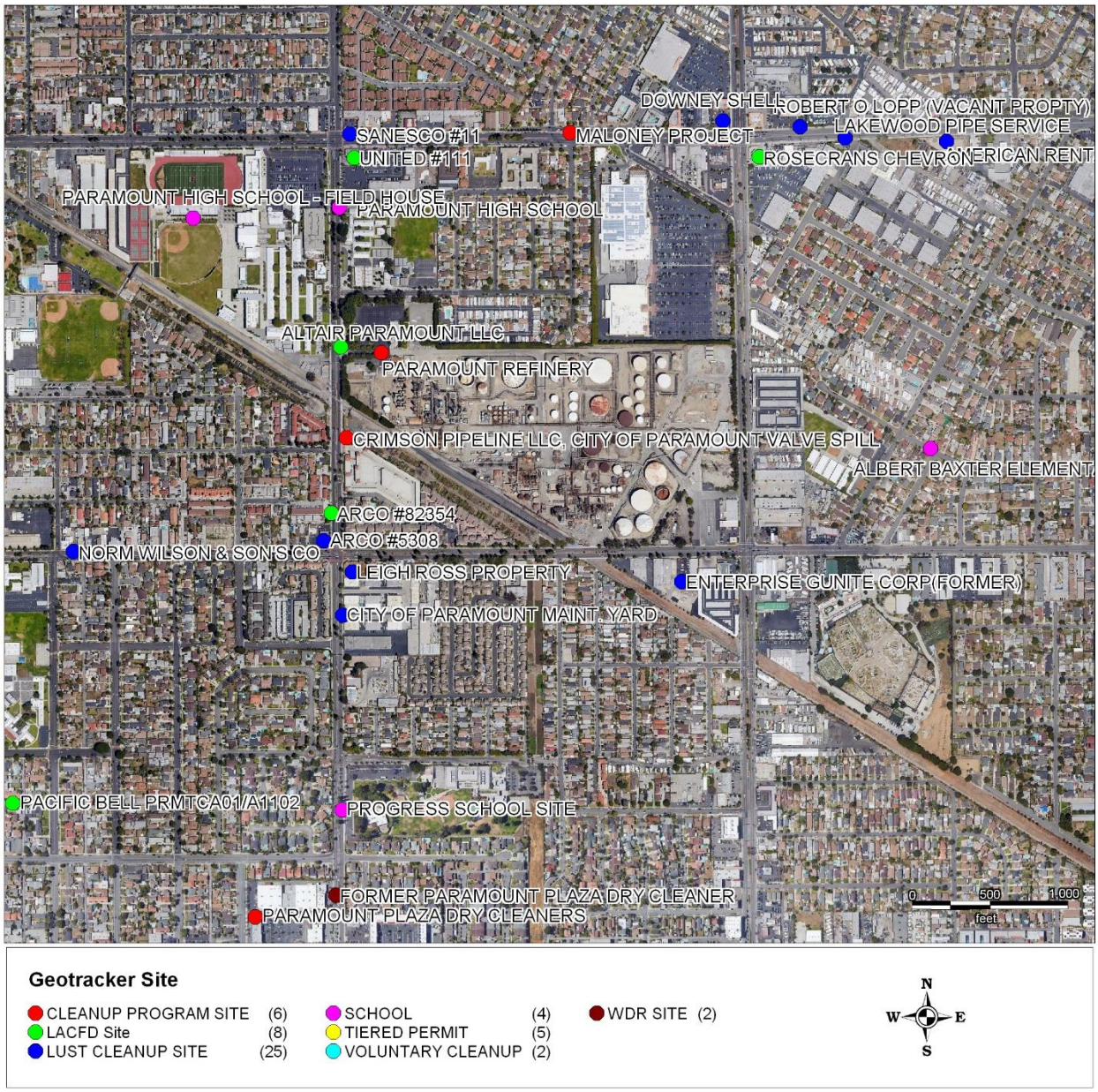
4.4.1.8 Soil and Groundwater Contamination

The area near the refinery in the City of Paramount has a number of sites that are listed on California lists for underground storage tanks, Department of Toxic Substances Control (DTSC) cleanup sites as well as schools and Los Angeles County Fire Department lists for HMBPs. These sites can be viewed on the State of California Geotracker website, which lists a total of 52 sites within about 0.5 miles of the refinery. These sites are shown in Figure 4.4-2.

Historic operations at the refinery have resulted in releases of hazardous materials (primarily petroleum hydrocarbons) to soil and groundwater in some areas at the refinery. In some cases, these past releases deposited petroleum hydrocarbons in soils on-site, which then migrated to underlying groundwater. The refinery has groundwater and soil contamination that have been and will continue to be remediated and managed under a Cleanup and Abatement Order by the State Water Resources Control Board (Order No. 85-17 and 97-130). The refinery has completed quarterly and/or semi-annual groundwater monitoring events since 1992; therefore, the nature and extent of soil and groundwater contamination are well understood. Extensive soil and groundwater investigations have been conducted at the site with the oversight of the RWQCB, and ongoing remedial programs have been implemented to address the identified impacts. Monitoring and remediation are documented in reports publicly available at www.geotracker.waterboards.ca.gov.

There are 119 groundwater wells associated with the groundwater monitoring program, which are used for groundwater monitoring and light non-aqueous phase liquid (LNAPL) recovery, groundwater recovery, and/or vapor extraction. Data from quarterly groundwater reports identify the depth to groundwater, varying 35.8 to 56.5 feet below ground surface (bgs) (Trihydro, 2020). The monitoring tests quarterly for 48 constituents, including eight different hydrocarbon chains, 10 BTEX and oxygenates, 26 VOCs and two metals. Table 4.4.11 presents a summary of the range of concentrations of the impacted groundwater that exists beneath the refinery in both shallow zone (nine (9) to 73 feet bgs) and deep zone wells (76 to 140 feet bgs). LNAPL was detected in 30 monitoring wells in the shallow zone. A portion of the groundwater monitoring and recovery wells will be properly abandoned due to construction activities. They will be replaced upon construction completion. AltAir will continue its remediation program with the remaining wells during construction.

Figure 4.4-2 Geotracker Listed Sites Near the Refinery



Source: California Geotracker website, www.geotracker.ca.gov; Google Earth 2021.

In addition to groundwater monitoring, 22 soil vapor monitoring locations are located at the refinery. Third quarter 2020 monitoring results indicated that concentrations of several contaminants exceeded the Soil Vapor Screening Level (SVSL), including tetrachloroethene, tetrachloroethylene, ethyl benzene, chloroform, xylene, trimethyl benzene, and benzene in the northern, southern, and eastern portions of the refinery. Levels of hydrocarbons in samples ranged as high as 35 ppm maximum (4 ppm average) hexane, 12 ppm maximum level (1 ppm average) benzene, and 2 ppm maximum (0.2 ppm average) xylene.

Table 4.4.11 2020 Contaminant Concentrations in Groundwater

Constituent	Max Historical Sampled Value (ug/L)(1)	Most Recent Max Sampled Value (ug/L)(3)	Location and Date of Values
TPH-G(2)	310,000	1,100	R-32 Area 234 (2012), R-35D Area 5
Benzene	110,000	19	R-24 Area El Super (2012), MW-17 Area 5
Toluene	79,000	21	R-5A Area 234 (2010), R-35D Area 5
Ethylbenzene	16,000	20	R-5A Area 234 (2010), MW-69 Area 1
Xylenes	4,600	28	L-1 (2011), MW-69 Area 1
MTBE	94,000	190	R-32 Area 234 (2013), MW-69 Area 1
Tert-Butyl Alcohol	100,000	96,000	DUP-2 (2018), R-35D Area 5
Arsenic	24,000	3,010	R-18 Area 1 (2009), MW-6 Area 5
Lead	1,000	7.82	HP-A5-04 (2009), MW-70 Area 1

Sources: Geotracker website and Trihydro, 2020. Third Quarter 2020 Groundwater Monitoring Report and Remedial Action Air Paramount Refinery, October 30, 2020. 1) As per Geotracker website, 2) TPH-G: Total Petroleum Hydrocarbons as Gasoline (C4-C12). 3) 2020 3rd quarter (although the 4th quarter report has been issued, it does not contain all constituents).

The refinery has implemented a remediation program with the following objectives:

- Remove recoverable LNAPL to the extent practicable, particularly in areas that contain benzene and MTBE;
- Reduce hydrocarbons in the vadose zone via vapor extraction, thereby reducing the source of hydrocarbon constituents to groundwater, and reducing the potential for migration of hydrocarbon vapors. Vapor extraction also oxygenates the subsurface to enhance biodegradation of hydrocarbons; and
- Contain and recover dissolved-phase hydrocarbons, particularly at the facility property boundaries to remediate groundwater and minimize off-site migration.

4.4.1.9 Previous Environmental Review

The December 2013 MND for the Original Renewable Fuels Project evaluated the addition of equipment and operations to the refinery. In general, operations were reduced over the historical refinery operations, yet many of the hazards remained, such as the propane storage vessels. The 2013 MND authorized the addition of liquid hydrogen to the operations, with all other hazards being similar to the 2011 refinery operations. As the liquid hydrogen hazards did not extend the size of the worst-case hazard zones, impacts were determined to be less than significant in the 2013 MND.

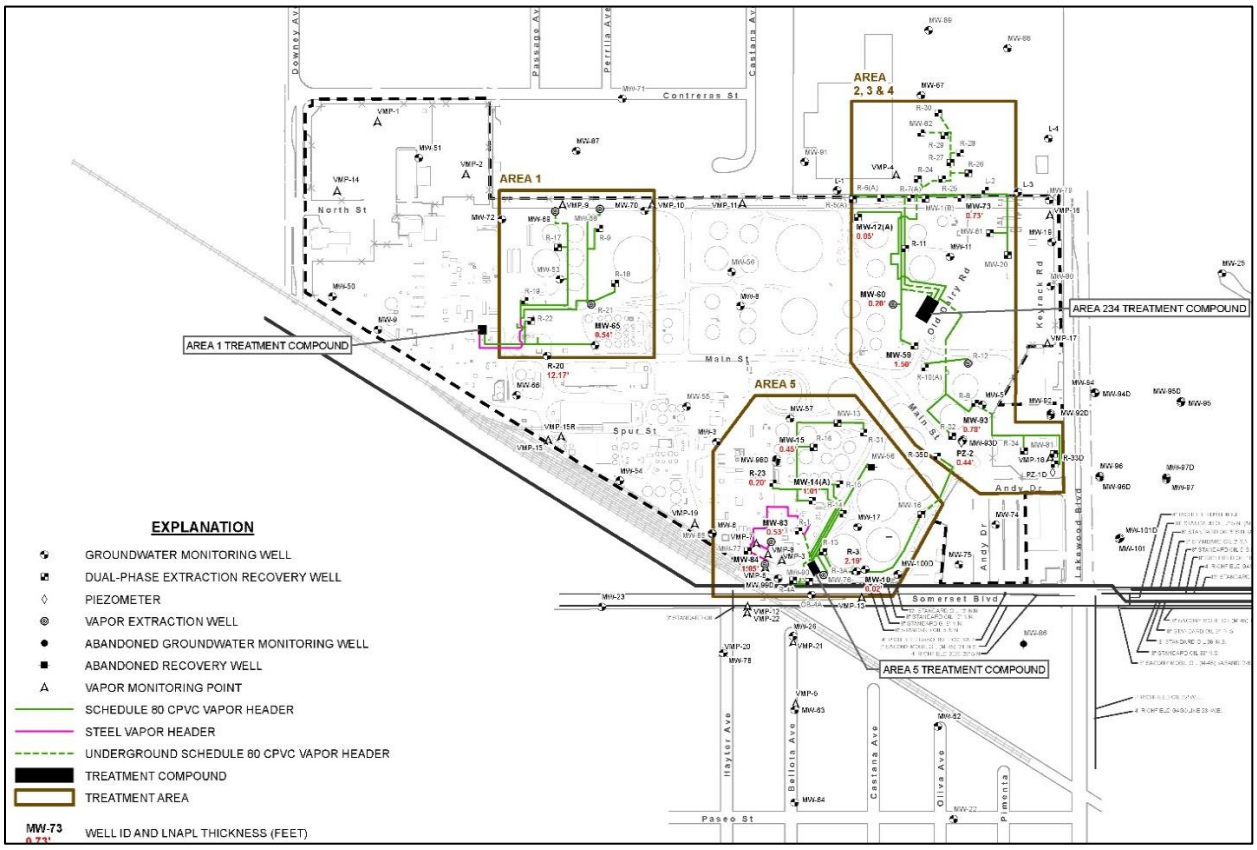
The hydrogen use and storage hazard zones as a worst case were identified using the CANARY© modeling software in the 2013 MND and extended 414 feet from the Process Area, which is identified as location #8 on the map above. This impact zone would not extend off-site and therefore did not contribute to any additional off-site impacts.

The 2013 MND included two mitigation measures:

- Mitigation Measure #3 (Hazardous Materials). The facility's Emergency Response Plan must be updated and reviewed as necessary to take into account the new equipment and the different operations; and

- Mitigation Measure #4 (Hazardous Materials). The new equipment installation, operational elements, and any modifications to the Emergency Response Plan must be reviewed and approved by the Los Angeles County Fire Department.

Figure 4.4-3 Monitoring at the Refinery Site



Source: Trihydro 2020

4.4.2 Regulatory Setting

Regulations associated with federal, state and local regulations are discussed below.

4.4.2.1 Federal Regulations

U.S. EPA Emergency Planning and Community Right-to-Know Act (EPCRA)

The objective of the EPCRA is to: (1) allow state and local planning for chemical emergencies, (2) provide for notification of emergency releases of chemicals, and (3) address communities' right-to-know about toxic and hazardous chemicals. EPCRA §302 requires facilities to notify the State Emergency Response Commission and any Local Emergency Response Committees of the presence of any "extremely hazardous substance" (the list of such substances is in 40, CFR Part 355) if it has such a substance in excess of the substance's threshold planning quantity and directs the facility to appoint an emergency response coordinator. Implementation of 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 Program Agencies (CUPA, overseeing multiple regulatory programs) for use by State and local emergency response agencies.

Department of Transportation Hazardous Materials Regulations (Title 49 CFR Parts 100-185)

The U.S. DOT 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 applicable project activities.

The Hazardous Materials Transportation Act, (49 CFR 171 Subchapter C)

The Hazardous Materials Transportation Act (HMTA) is the federal legislation that regulates transportation of hazardous materials. The primary objective of the HMTA is to provide adequate protection against hazards 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 U.S. DOT, the Federal Highway Administration, and the Federal Railroad Administration. The HMTA requires that carriers report accidental releases of hazardous materials to the U.S. DOT 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. Caltrans sets similar standards for trucks in California. The Caltrans and federal regulations are enforced by the California Highway Patrol (CHP).

Hazardous Materials and Waste Regulations

Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA) of 1976 authorizes the United States Environmental Protection Agency (U.S. EPA) to control the generation, transportation, treatment, storage, and disposal of hazardous waste. This federal regulation is codified in 40 CFR. In 1984, the RCRA was amended with addition of the Hazardous and Solid Waste Amendments, which authorized increased enforcement by the U.S. EPA, more strict hazardous waste standards, and a comprehensive underground storage tank program. Likewise, the Hazardous and Solid Waste Amendments focused on waste reduction and corrective action for hazardous releases. The use of certain techniques for the disposal of some hazardous wastes was specifically prohibited by the Hazardous and Solid Waste Amendments. 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 DTSC received authorization from the U.S. EPA to implement the RCRA, Subtitle C requirements and the associated regulations in California.

Occupational Safety and Health Administration Regulations

The Occupational Safety and Health Administration regulations, intended to create a safe workplace, are found at 29 CFR Part 1910, Subpart H, and include procedures and standards for safe handling, storage, operation, remediation, and emergency response activities involving hazardous materials and waste. Pertinent sections of Subpart H include § 1910.106 (Flammable and Combustible Liquids) and § 1910.120 (Hazardous Waste Operations and Emergency Response).

The Hazardous Waste Operations and Emergency Response regulations contain requirements for worker training programs, medical surveillance for workers engaging in the handling of hazardous materials or wastes, and waste site emergency and remediation planning for those who are engaged in specific clean-up, corrective action, hazardous material handling, and emergency response activities as specified by §§ 1910.120(a)(1)(i-v) and 1926.65(a)(1)(i-v).

29 CFR Part 1910.119 Process safety management (PSM) of highly hazardous chemicals, addresses requirements for preventing or minimizing the consequences of catastrophic releases of toxic, reactive, flammable, or explosive chemicals that may result in toxic, fire or explosion hazards. The PSM standard applies to all industries except retail facilities, oil or gas well drilling or servicing operations, and normally unoccupied remote facilities. In each industry, PSM applies to any of more than 130 specific toxic and reactive chemicals in listed quantities on site in one location; it also includes flammable liquids and gases in quantities of 10,000 pounds or more. PSM clarifies the responsibilities of employers and contractors involved in work that affects or takes place near covered processes to ensure that the safety of both plant and contractor employees is considered. The standard also mandates written operating procedures; employee training; pre-startup safety reviews; evaluation of mechanical integrity of critical equipment; written procedures for managing change; incident investigation; emergency planning and response; and compliance audits.

Emergency Action Plans (29 CFR 1910.38): Under this section, facilities that are required to have fire extinguishers must also have an emergency action plan to ensure the safe response to emergencies. The purpose of an emergency action plan is to facilitate and organize employer and employee actions during workplace emergencies.

Comprehensive Environmental Response, Compensation and Liability Act

The Comprehensive Environmental Response, Compensation, and Liability Act, which is often commonly referred to as Superfund, is a federal statute that was enacted in 1980 to address abandoned sites containing hazardous waste and/or contamination. The Comprehensive Environmental Response, Compensation, and Liability Act was amended in 1986 by the Superfund Amendments and Reauthorization Act, and by the Small Business Liability Relief and Brownfields Revitalization Act of 2002.

The Comprehensive Environmental Response, Compensation, and Liability Act establishes prohibitions and requirements concerning closed and abandoned hazardous waste sites; establishes liability of persons responsible for releases of hazardous waste at these sites; and establishes a trust fund to provide for cleanup when no responsible party can be identified. The trust fund is funded largely by a tax on the chemical and petroleum industries. The Comprehensive Environmental Response, Compensation, and Liability Act also provides federal jurisdiction to respond directly to releases or impending releases of hazardous substances that may endanger public health or the environment.

Oil Storage and Pipeline Regulations

Oil Pollution Act

The Oil Pollution Act was signed into law in 1990 to give the federal government authority to better respond to oil spills. The Oil Pollution Act improved the federal government's ability to prevent and respond to oil spills, including provision of money and resources. The Oil Pollution Act 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 Oil Pollution Act also establishes 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 Oil Pollution Act 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. The Oil Pollution Act also requires area committees, composed of federal, state, and local government officials, to develop detailed, location-specific area contingency plans. In addition, the Oil Pollution Act 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 Oil Pollution Act 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.

Spill Prevention, Control, and Countermeasure (SPCC) Rule (40 CFR Part 112)

The 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.

U.S. Department of Transportation, Office of Pipeline Safety

The Office of Pipeline Safety (OPS), within the U.S. DOT, PHMSA, 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.C. 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 Federal Pipeline and Hazardous Materials Safety Administration to assure pipeline operators are meeting requirements for safe, reliable, and environmentally sound operation of their facilities for intrastate pipelines within California.

49 CFR Part 190 – Pipeline Safety Procedures: 49 CFR Part 190 outlines the pipeline safety programs and rulemaking procedures utilized by the Pipeline and Hazardous Materials Safety Administration under Title 49 U.S.C. 60101 et seq. (pipeline safety laws) and Title 49 U.S.C. 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 above ground 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 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 U.S. DOT 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 or others, or both, exceeding $50,000.

Natural Gas Pipeline Safety Act of 1968

The Natural Gas Pipeline Safety Act of 1968 gave the Federal Energy Regulatory Commission (FERC) jurisdiction over the siting of new interstate natural gas pipelines and required the U.S. DOT to establish minimum federal safety standards for interstate natural gas transmission and distribution lines. The OPS is responsible for regulating the safety of natural gas transportation pipelines, including safety aspects related to design, construction, operation, and maintenance. Minimum safety requirements for gas pipelines are described in the Code of Federal Regulations 49 CFR Parts 191, 192 and 193.

Pipeline Area Classifications - 49 CFR 192

Under natural gas pipeline regulation 49 CFR 192, pipeline operators must classify the area through which the pipeline travels, on the basis of population density in the vicinity. The area classification is defined by the population density that extends 660 feet (1⁄8 mile) on either side of the centerline of any continuous one-mile length pipeline. More rigorous safety requirements are proscribed as the population density increases. These requirements include depth of cover, pipe wall thickness, MAOP, pipeline design factor, valve spacing, frequency of inspection and frequency of leak surveys.

Four area classifications are defined as follows:

- Class 1. Locations with 10 or fewer buildings intended for human occupancy;
- Class 2. Locations with more than 10 but fewer than 46 buildings intended for human occupancy;
- Class 3. Locations with 46 or more buildings intended for human occupancy or where the pipeline lies within 100 yards of any building or small, well-defined outside area occupied by 20 or more people during normal use; and
- Class 4. Locations where buildings with four or more stories above-ground are prevalent.

Pipeline Incident Reporting - 49 CFR 191

Significant natural gas pipeline incidents are required to be reported to the Pipeline and Hazardous Materials Safety Administration (PHMSA) of the DOT. A DOT reportable incident is currently defined as an event that results in one or more of the following consequences:

- A death, or personal injury necessitating in-patient hospitalization;

- Estimated property damage of $50,000 or more in total costs, measured in 1984 dollars, excluding the cost of gas released;
- Unintentional estimated gas loss of three million cubic feet or more; or
- An event that is significant in the judgment of the operator, even though it did not meet the above criteria.

The definition of a reportable incident has changed since the original regulations were established in 1970. At the time, an incident was defined as that which required taking any segment of a transmission pipeline out of service, or caused estimated damage of $5,000 or more. In 1984, the total estimated damage value was increased to $50,000 or more for an incident to be reportable. This resulted in fewer incidents being reportable, including smaller diameter pipeline ruptures, and holes for all pipeline sizes. In 2010, the reporting criteria changed again to exclude the cost of gas released.

Integrity Management Program - 49 CFR 192 Subpart O

In 2003, the OPS implemented the Integrity Management Program (IMP), described in 49 CFR 192 Subpart O. This regulation requires pipeline operators to assess, identify, and address the safety of pipeline segments that are located in areas where the consequences of a pipeline failure could be significant. These are called High Consequence Areas (HCAs).

Under the IMP, pipeline operators are required to; identify all segments of the pipeline that pass through an HCA, conduct a baseline assessment of the integrity of these segments, address any safety issues, reassess the integrity of the pipeline at intervals not to exceed five years, and establish performance measures to assess the program's effectiveness.

HCAs are defined as:

- Current Class 3 and 4 areas; or
- Any area with a potential impact radius (PIR) greater than 660 feet, or an impact circle that contains 20 or more buildings intended for human occupancy; or
- An "identified site" (for example; recreational or religious facilities, or other areas where high concentrations of the public may gather periodically).

Other Federal Regulations

Chemical Facility Anti-Terrorism Standards

The Chemical Facility Anti-Terrorism Standards are a set of U.S. Government 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.

4.4.2.2 State Regulations

Hazardous Materials and Waste 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 the 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 regulates hazardous waste, oversees the cleanup of existing contamination, and pursues avenues to reduce hazardous waste produced in California. The DTSC regulates hazardous waste in California under the authority of the RCRA, the California Hazardous Waste Control Law, and the California Health and Safety Code. Under the direction of the CalEPA, the DTSC maintains the Cortese and Envirostor databases of hazardous materials and waste sites as specified under Government Code §65962.5. The refinery is included in the §65962.5 list.

The Hazardous Waste Control Law (22 CCR Chapter 11, Appendix X) also lists 791 chemicals and approximately 300 common materials which may be hazardous; establishes criteria for identifying, packaging, and labeling hazardous wastes; prescribes management controls; establishes permit requirements for treatment, storage, disposal, and transportation; and identifies some wastes that cannot be disposed of in landfills.

California Occupational Safety and Health Administration: CalOSHA is the primary agency responsible for worker safety in the handling and use of chemicals in the workplace. The CalOSHA requires the employer to monitor worker exposure to listed hazardous substances and notify workers of exposure (8 CCR Sections 337-340). The regulations specify requirements for employee training, availability of safety equipment, accident-prevention programs, and hazardous substance exposure warnings. The CalOSHA standards are generally more stringent than federal regulations.

Hazardous Materials Release Notification: Many state statutes require emergency notification of a hazardous chemical release, including:

- California Health and Safety Code §§ 25270.7, 25270.8, 25507; and 25510;
- California Vehicle Code § 23112.5;
- California Public Utilities Code § 7673 (General Orders #22-B, 161);
- California Government Code §§ 51018 and 8670.25.5(a);
- California Water Code §§ 13271 and 13272; and,
- California Labor Code § 6409.1(b)10.

California Accident Release Prevention (CalARP) Program

The CalARP Program (19 CCR Division 2, Chapter 4.5) requires the preparation of Risk Management Plans (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. For the refinery facility, designated as a Program Level 4, requires the following elements:

- § 2762.0.1. Applicability;
- § 2762.0.2. Purpose;
- § 2762.1. Process Safety Information;

- § 2762.2. Process Hazard Analysis [Pha];
- § 2762.2.1. Safeguard Protection Analysis;
- § 2762.3. Operating Procedures;
- § 2762.4. Training;
- § 2762.5. Mechanical Integrity;
- § 2762.6. Management of Change;
- § 2762.7. Pre-Startup Safety Review;
- § 2762.8. Compliance Audits;
- § 2762.9. Incident Investigation;
- § 2762.10. Employee Participation;
- § 2762.11. Hot Work Permit;
- § 2762.12. Contractors;
- § 2762.13. Hierarchy of Hazard Control Analysis;
- § 2762.14. Process Safety Culture Assessment;
- § 2762.15. Human Factors Program;
- § 2762.16. Accidental Release Prevention Program Management System; and
- § 2762.17. Access to Documents and Information.

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 California Accidental Release Prevention 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. The Los Angeles County Fire Department is the CUPA for the entire County except in the cities of El Segundo, Glendale, Long Beach, Los Angeles, Santa Fe Springs, Santa Monica, and Vernon, where the fire departments of these cities are CUPAs within their own jurisdictions, except for Vernon where the Vernon Health and Environmental Control Department is the City's CUPA.

Hazardous Materials Management Act

The State of California (California Health and Safety Code Division 20, Chapter 6.95) requires any business that handles more than a specified amount of hazardous material to submit a Hazardous Materials Business Plan to its 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 three 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. The requirements for hazardous materials business plans are specified in the California Health and Safety Code as noted above and 19 CCR.

Hazardous Materials Transportation in California

California regulates the transportation of hazardous waste originating or passing through the State in Title 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 all part of the responsibility of the CHP. Caltrans has emergency chemical spill identification teams at locations throughout the State.

Oil Production and Pipeline Regulations and Oversight

Overview of California Pipeline Safety Regulations

State of California laws found at Part 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 any 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."

California Public Utilities Commission - General Order 112-F

State regulations are specified by the CPUC in General Order 112-F. The regulations incorporate the federal regulations by reference and provide additional state safety requirements for automatic shut-off valves, operations, maintenance, inspection, increased frequency of leak surveys, emergency planning and incident notification.

California Department of Education

California regulations require that school sites shall not be located within 1,500 feet of an easement of an underground pipeline that can pose a safety hazard. (Title 5, California Code of Regulations, Division 1, Chapter 13, Standards for School Site Selection.) These regulations went into effect in 2000.

The California Department of Education (CDE) have developed an advisory protocol to assist Local Education Agencies assess the safety of pipelines within 1,500 feet of a school. The acceptability of a new school or pipeline proposal is determined by an estimation of individual risk at the school site. If the estimated risk of fatality is less than one in a million years (1×10^{-6} per year), it is below the threshold of

significance and no significant safety hazard is predicted. If the estimated risk of fatality is greater than one in a million years, mitigation measures are required to reduce the risk to acceptable limits.

The CDE protocol was developed to ensure that risks are calculated in a consistent manner. The methodology uses historic data to estimate the probability of a pipeline release, models to determine the consequences of a release, the probability of fatality for different exposures, and school attendance hours. These are combined to estimate the risk of fatality.

The CDE protocols are provided in the Guidance Protocol for School Site Pipeline Risk Analysis, 2007(5). The protocols have also been used to determine pipeline risk for other proposed residential projects near pipelines.

4.4.2.3 Local Regulations

South Coast Air Quality Management District – Rule 1166

South Coast AQMD Rule 1166 establishes requirements to control the emission of VOCs from excavating, grading, handling, and treating soil contaminated from leakage, spillage, or other means of VOCs deposition. Rule 1166 stipulates that any parties planning on excavating, grading, handling, transporting, or treating soils contaminated with VOCs must first apply for and obtain, and operate pursuant to, a mitigation plan approved by the Executive Officer prior to commencement of operation. BACT is required during all phases of remediation of soil contaminated with VOCs. Rule 1166 also sets forth testing, record keeping and reporting procedures that must be followed at all times. Non-compliance with Rule 1166 can result in the revocation of the approved mitigation plan, the owner and/or the operator being served with a Notice of Violation for creating a public nuisance, or an order to halt the offending operation until the public nuisance is mitigated to the satisfaction of the Executive Officer.

South Coast Air Quality Management District – Rule 1466

Rule 1466 addresses the control of particulate emissions from soils with toxic air contaminants. The purpose of this rule is to minimize the amount of off-site fugitive dust emissions containing toxic air contaminants by reducing particulate emissions in the ambient air as a result of earth-moving activities, including, dredging, excavating, grading, earth-cutting and filling, loading, unloading, handling, mechanized land clearing, treating, stockpiling, transferring, and removing of soil that contains applicable toxic air contaminants, from sites that meet the applicability requirements. Ambient monitoring during soil moving activities is required.

South Coast Air Quality Management District – Rule 1403

Rule 1403 addresses asbestos emissions from demolition/renovation activities. The purpose of this rule is to specify work practice requirements to limit asbestos emissions from building demolition and renovation activities, including the removal and associated disturbance of asbestos-containing materials (ACM). The requirements for demolition and renovation activities include asbestos surveying, notification, ACM removal procedures and time schedules, ACM handling and clean-up procedures, and storage, disposal, and landfilling requirements for asbestos-containing waste materials (ACWM). All operators are required to maintain records, including waste shipment records, and are required to use appropriate warning labels, signs, and markings.

Los Angeles County Fire Department (LACFD)

Fire protection services within the City of Paramount are provided by the LACFD. The LACFD includes hazardous materials firefighters with capabilities of responding to chemical, biological, explosive and other threats to the community. The Department provides four 24-hour Haz Mat units geographically located throughout the County with the closest one to Paramount being Haz Mat 105, located at 18915 South Santa Fe Avenue, Compton, CA 90221.

In the event of a hazardous materials release on-site, the Health Hazardous Material Division of the LACFD would respond. All Hazardous Material Specialists employed by the LACFD are sworn and badged Los Angeles County Deputy Health Officers. The Health Hazardous Materials Division of LACFD is responsible for protecting public health and the environment from accidental releases and improper handling, storage, transportation, and disposal of hazardous materials and wastes through coordinated efforts of inspections, emergency response, enforcement, and site mitigation oversight.

The Health Hazardous Materials Division is a CUPA and can administer the following programs throughout the County: (1) Hazardous Waste Generator Program; (2) Hazardous Materials Release Response Plans and Inventory Program; (3) California Accidental Release Prevention Program; (4) Above Ground Storage Tank Program, and (5) Underground Storage Tank Program. The CUPA for the City of Paramount is the County of Los Angeles. Therefore, the County of Los Angeles Health Hazardous Materials Division is the CUPA for the Paramount Refinery.

County of Los Angeles General Plan

The County General Plan has a specified goal of effective County emergency response management capabilities (Goal S.4) and a number of policies related to emergency response and transportation (Goal M.6), including:

- Policy S 4.1: Ensure that residents are protected from the public health consequences of natural or man-made disasters through increased readiness and response capabilities, risk communication, and the dissemination of public information;
- Policy S 4.2: Support County emergency providers in reaching their response time goals;
- Policy S 4.3: Coordinate with other County and public agencies, such as transportation agencies, and health care providers on emergency planning and response activities, and evacuation planning;
- Policy S 4.4: Encourage the improvement of hazard prediction and early warning capabilities;
- Policy S 4.5: Ensure that there are adequate resources, such as sheriff and fire services, for emergency response;
- Policy M 6.3: Designate official truck routes to minimize the impacts of truck traffic on residential neighborhoods and other sensitive land uses; and
- Policy M 6.4: Minimize noise and other impacts of goods movement, truck traffic, deliveries, and staging in residential and mixed-use neighborhoods.

City of Paramount General Plan

The City of Paramount General Plan discusses hazardous materials in the health and safety element and has a number of declarations and policies that are applicable, including:

- Code enforcement;

- Fire prevention;
- Hazardous material control;
- Fire safety development review program including design standards;
- Multi-Hazard Functional Plan for Emergency Operations; and
- Environmental review.

4.4.3 Significance Thresholds

Impacts resulting from hazards and hazardous materials are evaluated pursuant to the CEQA Appendix G. In accordance with the CEQA Guidelines Appendix G, impacts are considered significant if the Project would:

a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;

b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;

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

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

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

f. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; or

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

As the baseline in this CEQA document involves an operating crude oil refinery, a “significant hazard” is defined as an increase in the hazards associated with the refinery from the Project over the previously operating refinery. The Project will be deemed to result in a significant impact if the off-site impacts exceed the hazard identified for the baseline as measured by total off-site impacted area.

This would also apply to threshold (c) above as the refinery is located immediately adjacent to two schools. If the Project would increase the hazards, through the exposure of the schools to hazard areas that are not a part of the baseline, then the impacts would be significant for criterion (c).

For off-site impacts from pipelines, the hazards are similar to the refinery fixed facility in that any increase in the size of hazard zones would constitute an increase in the hazards and would be a significant impact.

For transportation hazards, such as trucks and rail, an increase in the number of trucks or rail cars carrying hazardous materials, without a corresponding decrease in other hazards such as pipeline hazards, would constitute a significant increase in the hazards and would be considered a significant impact.

4.4.4 Project Impacts and Mitigation Measures

The Project is evaluated against the significance thresholds defined above. Each of these is discussed below.

The Applicant has proposed a number of measures to reduce the impacts. These are listed below.

- Implementation of the refinery's Management Plan for Excavated Soil, including 1) pre-Project exploratory borings; 2) Project-specific Soil Management Plan; 3) special soil handling procedures would include: (a) assuring sufficient moisture content of the soil to prevent dust during soil movement; (b) covering excavated soil with tarps/impermeable coverings to minimize the generation of wind-blown dust as well as minimize VOC emissions; (c) conduct VOC monitoring every 15 minutes during excavation activities; and (d) employ appropriate mitigation measures if VOC contamination exceeds 50 ppm.

The measures listed above are all Project design features and are part of the Applicant's Project description and therefore are a part of the Project and have been included in the impact estimates summarized below.

4.4.4.1 Hazards of Routine Operations

The Project refinery would handle a number of hazardous materials that would be used during normal, routine operations.

Impact #	Impact Description	Phase	Impact Classification
HM.1	The Project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.	Construction or Operation	Class III

However, during routine operations at the refinery, hazardous materials would be confined to piping and vessels and tanks and would not be released to the environment. Some leakage of materials from components and flanges could occur (fugitive emissions), and the impacts of these are discussed in Section 4.2, Air Quality, related to health risk. Hazardous materials would also be transported by truck, rail and pipeline and, during routine operations, no releases of materials would occur. Releases due to accidents are discussed in the following impact.

The Project proposes to increase the size of the substation at the refinery to allow for the increased use of electricity at the hydrogen plant. Electro-magnetic Fields (EMF) are associated with electrical systems, including power lines as well as substations. As per studies (NCCEH, 2022), magnetic field strength varies depending on voltage and current, type of transformer and substation, and distance from the source, with increasing distance corresponding to decreasing magnetic field strength. The highest magnetic field is usually produced by the lines and cables supplying the substation and not by the equipment inside the substation itself (NCCEH, 2022). "Electric and magnetic fields produced by substation equipment are generally not appreciable beyond the substation boundaries" (NRC, 1997).

The U.S. and California do not have specific limits on EMF, but limits in Europe range from 0.4 to 100 µT. As the distance from the substation to the closest fence line would be 280 feet, EMF levels are not anticipated to exceed even the strictest European standards from the refinery.

Construction activities associated with the Project also would not routinely release hazardous materials to the environment. Emissions from contaminated soils are discussed in a subsequent impact below.

Therefore, as hazardous materials would not be released during routine operations, the Project would not create a significant hazard and impacts would be **less than significant (Class III)**.

4.4.4.2 Hazards of Upset Conditions

Hazards associated with upsets could occur at the refinery or along transportation routes that could release hazardous materials to the environment and impact the public. These are discussed below for the refinery and for transportation activities.

Refinery Hazards

The refinery would handle a number of hazardous materials that, given an upset condition, could be released to the environment. Table 4.4.12 shows the anticipated inventory of materials at the refinery during the Project.

Table 4.4.12 Summary of Project Materials

Material, Gallons	Gallons	Material, Ft^3	Cubic Feet	Material, Pounds	Pounds
Rf feed	32,130,000	Liquid nitrogen	860,000	Gasoline, distillate	26,495,000
Distillate	11,760,000	Naphtha	20,569	Distillate, ethanol	11,906,000
Stormwater	5,250,000	Oxygen	11,500	Distillate	4,662,000
Gasoline, distillate	3,150,000	Reconstituted air, compressed air, synthetic air	9,020	Pretreat - bleaching earth	858,000
Oily water	1,890,000	Nitrogen	7,650	Lpg	819,187
Sour water	1,050,000	Argon	6,912	Pb-511, pb-5301 polymer	500,000
Unit b amine	347,857	Compressed hydrogen gas	6,900	Unit b catalyst - isomerization	438,750
Caustic	147,330	Compressed nitrogen gas	6,750	Unit b catalyst - pretreat	372,500
Light slop	126,000	Compressed helium gas	4,200	Unit b catalyst - de-oxygenation	355,000
Sodium hydroxide caustic	51,480	Compressed air	4,000	Amine formulation	93,800
Rme	42,000	Reconstituted breathing air	3,100	Aqueous ammonia, 19%	83,400
Cetane improver (c1-0801)	18,000	Compressed gases: various hydrogen/nitrogen mixtures	2,400	Sulfuric acid	77,611
Jc-747 diesel combustion	10,800	Air	2,000	Pretreat - filter aid	50,000
Dimethyl disulfide	10,000	Air	2,000	Pretreat - filter aid	50,000
Fsii additive	8,400	Natural gas	1,200	Salt	26,950

Source: Applicant submissions based on changes to 2013 HMBP. Top inventory of materials only. A total of 129 different materials would be stored on-site.

Sodium hydroxide caustic will be brought in by truck. Reacted sodium hydroxide (sodium hydrosulfide) will also be shipped out either by truck or rail or will go to the wastewater system. There will be no sodium naphthenate generated post-Project.

Catalyst is replaced in reactors between one and three years from start of use. All of the catalyst is transported by truck, which includes hydrotreating catalyst and SCR catalyst.

Impact #	Impact Description	Phase	Impact Classification
HM.2	The Project refinery would not create a significant increased hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.	Construction or Operation	Class III

Refinery Operational Hazards

The refinery has historically used hazardous materials at the site. The determination of "significant hazard", as per the CEQA thresholds, is based on the changes in hazards from the baseline operations, which are discussed above. The refinery has historically presented a hazard to the public due to an accidental release of hazardous materials and this hazard would continue under the Project, but at a slightly reduced level.

This approach to determining "significant hazard" impacts is the same as was utilized in the 2003 Paramount Refinery Clean Fuels EIR and the 2013 MND.

The major types of public safety hazards are related to the use of hazardous materials and consists of impacts from toxic substance releases, or releases of flammable materials resulting in fires and explosions. The shipping, handling, storing, and disposing of hazardous materials inherently poses a hazard of a release to the environment.

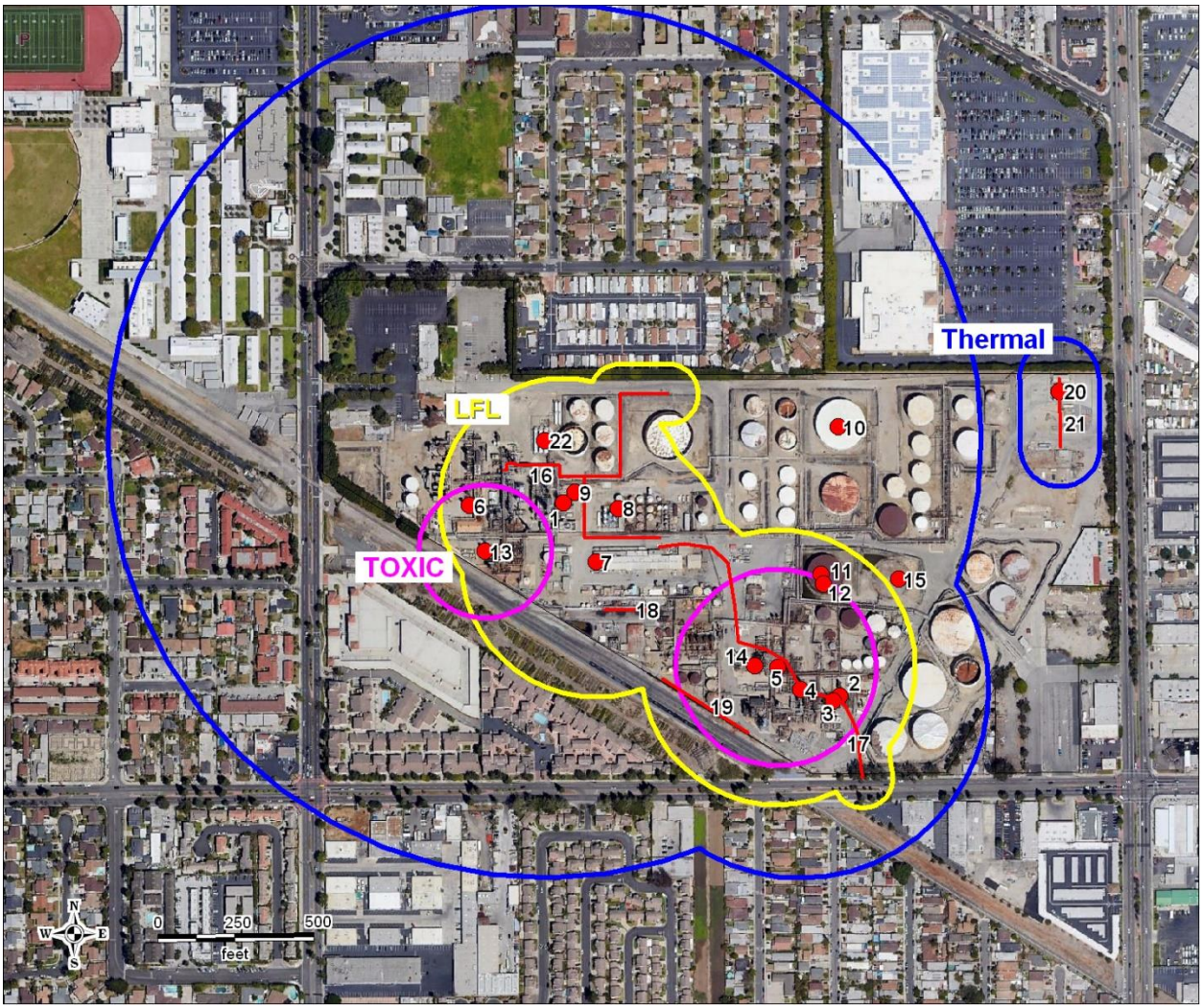
As part of the Project, most of the existing refinery site will be completely revamped from its existing configuration to a full renewable fuels production facility. Most of the existing operating units will be modified (e.g., Unit A); equipment will be re-purposed or put into alternative uses (e.g., crude unit); some units will be completely demolished to make room for new units (e.g., Cogen Unit); and new units will be constructed (e.g., Pretreat, Propane Recovery Unit, and Hydrogen Generation Units). Therefore, there will be a number of substantive changes to the refinery.

The Applicant prepared a hazards assessment to determine the maximum distance from a potential hazard that could cause injuries, based on the operational characteristics of the refinery operating under the Project. The hazards assessment was peer reviewed by the SEIR preparer. Hazard impact results were developed for existing equipment that would be utilized under the Project and the new equipment. The Project proposes to change some existing operations (e.g., contents of existing storage vessels and tanks).

In order to determine the hazards from the Project, the CANARY© consequence analysis models were used in the same manner as under the assessment for the baseline operations. Sixty new/modified worst-case release scenarios were identified and modeled during the hazard analysis. For each of these release scenarios, one to five hazard zones were determined. The modeled hazards included flash fire (LFL) hazards, toxic hazards (hydrogen sulfide ERPG-2 levels), radiant heat hazards from torch and pool fires (second degree skin burns), and explosion overpressure (1 psig) hazards.

The potential hazard zones from releases originating within the refinery are dominated by radiation (flash fire and torch fire) and overpressure hazards from Units A and B and the Unit A/B common areas. Table 4.4.13 lists the Project scenarios analyzed as part of the Project and the modeling results. Figure 4.4-4 shows the modeling results graphically.

Figure 4.4-4 Modeling Locations and Hazard Impact Zones: Project Refinery



Notes: Red dots and lines indicate release locations. See Table above.
Source: Google Earth 2021.

In order to assess the potential impacts, the overall hazard footprint associated with the operation of the historical refinery is compared to the overall worst-case hazards associated with the Project (see Figure 4.4-5).

The hazard analysis shows that the combined hazard zone generated by the modifications of the refinery under the Project could extended to areas outside of the fence line. While all of the individual hazard zones (thermal, toxic, or overpressure) extended beyond the refinery boundary, there would be a small reduction in the size and extent of hazard zones, as shown in the figures. Hazard zones would decrease in area that could be impacted off-site for the Project over the baseline operations by about 4.5 percent for the combined hazard zones.

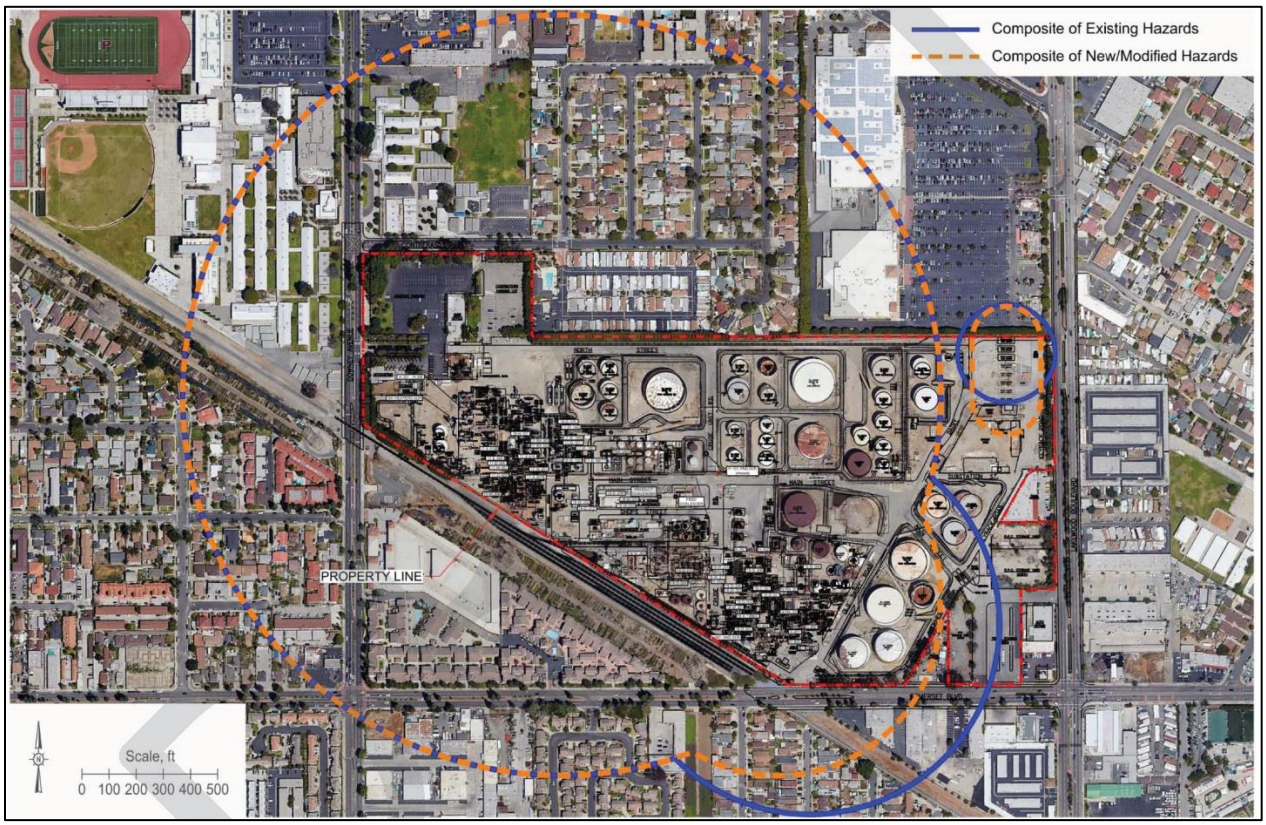
Table 4.4.13 Project Refinery Release Scenarios Modeling Results

Area	Release Location Number	Fence Line Distance, ft	Vapor Cloud LFL, ft	Toxic, 30 ppm ft	Torch Fire	Pool Fire	Off-site Hazard?
					1600 Btu/hr-ft^2		
Feed to Fractionator	1	327	309	na	273	na	N
Fractionator Overheads	1	318	397	na	181	104	Y
HDO Reactors Combined Stream	4	189	292	132	601	na	Y
Hot Separator Liquid	5	189	439	314	591	na	Y
Debutanizer Condensed Ovhds.	7	217	431	na	216	na	Y
Hydrogen Production	8	403	115	na	76	na	Y
New Flare	12	541	na	na	13	na	N
TK-125001 (after mod.)	10	170	na	na	na	214	Y
Concentrated Acid Gas Leaving H_2S Recovery Unit	14	165	10	253	5	na	Y
Combined Acid Gas to Regen	13	53	na	216	na	na	Y
Pretreatment Feed Piping	15	462	na	na	na	127	N
Rail Loading/Unloading Rack – New Spur	18, 19	98	na	na	na	127	Y
Truck Loading/Unloading	21	108	na	na	na	127	Y
Natural Gas Line – interior	17	0	96	na	159	na	Y
Natural Gas Pipeline – exterior	Off-site	0	109	na	199	na	Y
Hydrogen Line – interior – export	16	129	100	na	74	na	Y
Hydrogen Pipeline – exterior - export	Off-site	0	95	na	75	na	Y
TK-1201	22	215	304	na	126	1,397	Y
Maximum Distance			439	314	601	1,397	
Estimated Area Impacted Off-site, Acres			5.7	1.3	100.1		
Percentage Reduction from Baseline			73%	85%	-3%		
Combined Hazard Zone Areas, Off-site Area							
Baseline, acres off-site	104.8						
Project, acres off-site	100.1						
Change from Baseline	negative 4.5 % (decrease in area)						

Source: Quest 2021

Note: "na" indicates that the scenario does not produce the impact listed (for example, the fractionator does not contain toxic materials) or does not produce impacts for the scenario type that are greater than impacts for another scenario of a similar type (thermal, for example).

Figure 4.4-5 Combined Hazard Impact Zones: Project Refinery



Source: Quest 2021

The modeling indicated that (1) the composite new/modified hazard zone extended outside of the refinery boundary; and (2) the composite hazard zone for Project equipment would be slightly smaller than the baseline hazard zone. Therefore, the overall hazards for equipment within the refinery associated with the Project is expected to be less than the hazards associated with the baseline refinery, and the hazard impacts are **less than significant (Class III).**

The operations of the Lakewood Tank Farm would not change under the Project and no new tanks or pipelines are required. The tank farm would continue operations as a petroleum tank farm and no new hazards will be introduced or changed.

Hazard Impacts During Construction

The refinery is known to have groundwater and soil contamination that have been and will continue to be remediated and managed under RWQCB oversight. Extensive soil and groundwater investigations have been conducted at the site with the oversight of the RWQCB as discussed above.

The construction phase of the Project would require construction workers to excavate soil across the refinery for the construction of new foundations. Therefore, construction workers could encounter contaminated soils. 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 professional training to safely work around the potentially hazardous conditions that exist within an industrial facility. 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. The following analysis of potential hazard impacts during construction identifies potential hazards during construction and whether such hazards could pose hazards to off-site receptors.

All excavated soil would be handled in accordance with the refinery's Management Plan for Excavated Soil and as per South Coast AQMD Rules 1466 and 1403, as applicable. The refinery's management plan details the refinery's process for soil handling, excavation planning and soil management, and compliance with South Coast AQMD's Rule 1166 VOC Monitoring and fugitive-dust controls. The Management Plan for Excavated Soil would be followed prior to and during the excavation of soil within the property boundaries of the refinery. Existing site characterization data showing contaminated soil sites would be supplemented with sample data from pre-Project exploratory borings conducted throughout the construction zone to develop a Project-specific Soil Management Plan. Soil samples that exceed VOC concentrations of 50 ppm require special soil handling procedures to be implemented under the requirements of South Coast AQMD Rule 1166. Those special soil handling procedures would include: (1) assuring sufficient moisture content of the soil to prevent dust during soil movement; (2) covering excavated soil with tarps/impermeable coverings to minimize the generation of wind-blown dust as well as minimize VOC emissions; (3) conduct VOC monitoring every 15 minutes during excavation activities; and (4) employ appropriate mitigation measures if VOC contamination exceeds 50 ppm. These measures are expected to reduce emissions on-site as well as minimize the migration of emissions off-site, reducing the impact to the public. Further, the removal of contaminated soil would have the long-term impact of permanently removing the potential for off-site migration on contamination. Therefore, the impacts associated with construction activities from contaminated soils would be less than significant.

Construction activities associated with the Project could also introduce hazardous materials to the area in the form of fuels and hydraulic oils used for construction equipment, paint used for coating of the equipment and other miscellaneous construction -related hazardous materials. None of these materials would generate off-site impacts and would therefore produce **less than significant (Class III)** impacts.

Transportation Hazards

The refinery has historically transported a number of hazardous materials to and from the site by truck, rail and pipeline. The Project would introduce additional transportation of materials, including expanded natural gas by pipeline, and feedstock and product by truck and rail. Each of these are discussed below.

Impact #	Impact Description	Phase	Impact Classification
HM.3	The Project transportation of materials by truck, rail, marine barge and pipeline could create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.	Construction or Operation	Class I

Hydrogen Pipeline Hazards

The Project includes the use of an existing pipeline to supply hydrogen to the refinery following the Unit A upgrade but prior to the construction of Unit B and the Hydrogen Generation Unit. The hydrogen pipeline was modified from an existing crude oil pipeline in 2020 and developed in order to provide hydrogen to the Original Renewable Fuels Project and take the place of the hydrogen trucked in. As indicated in the City of Carson Air Products Hydrogen Pipeline Project EIR:

- Air Products proposed to utilize this pipeline route to connect Air Products with a new customer in the City of Paramount to support renewable bio-fuel production;

- The pipeline project would eliminate the need for five to seven tanker trucks per day that currently deliver hydrogen to the Paramount Refinery to produce approximately 3,500 barrels of diesel and jet fuel per day from beef tallow and vegetable oils;
- The underlying purpose of the pipeline project was to supply the Paramount Refinery with hydrogen and to provide for the safe flow of up to seven million standard cubic feet per day (7 MMSCFD) through the pipeline at a maximum pressure of 160 psig; and
- Since the pipeline project was designed to replace the existing truck deliveries of hydrogen that the Paramount Refinery receives, any environmental impacts associated with future modifications to the Paramount Refinery are not analyzed here [in the Air Products Hydrogen Pipeline EIR] but will be analyzed in the CEQA document to be prepared for that proposed modification.

The Air Products Hydrogen Pipeline Project addressed only the transportation of hydrogen from the Carson Plant to the Paramount Refinery, and primarily only during the interim period between the hydrogen pipeline start of operations and the Paramount Refinery hydrogen plant start of operations, and then as only a backup to the Paramount Refinery hydrogen plant thereafter.

There were two emergency relief scenarios examined in the Air Products Hydrogen Pipeline EIR that could occur during the hydrogen pipeline operation that would need to be managed by the existing flare at the Carson Plant: 1) the pressure reduction system fails and medium pressure product uncontrollably flows into the lower pressure pipeline creating an over-pressurization that must be relieved via the Carson Hydrogen Plant flare (until manual isolation can occur), and 2) a rupture or leak in the proposed pipeline is detected by the SCADA monitoring system and the system operator needs to relieve the pressure in the pipeline via the Carson Hydrogen Plant flare.

Currently, the hydrogen pipeline became operational in April 2021 and supplies gaseous hydrogen from the Carson Hydrogen Plant located in the City of Carson. Under the Project, following the construction of the Hydrogen Generation Unit, the hydrogen pipeline would be used to only receive a backup supply of hydrogen if the Hydrogen Generation Unit is down for maintenance or upset conditions. During the "backup mode", if there is no upset or maintenance condition at the Paramount Refinery, the pipeline could either be depressurized or pressurized, depending on the operating mode.

The hazards associated with operating the hydrogen pipeline as only a backup system after the Paramount Refinery upgrades are completed were examined in the City of Carson Air Products Hydrogen Pipeline EIR in 2020. Because the Project would not introduce changes to the hydrogen pipeline operations, this would therefore be a less than significant impact.

Natural Gas Pipeline Hazards

The Project would install a new natural gas pipeline to supply natural gas to the Hydrogen Generation Unit. Hydrogen is produced in the Hydrogen Generation Unit by reforming natural gas to hydrogen. Since the natural gas pipeline will be new, and larger than the existing natural gas pipelines into the refinery, there would be an increase in size over the existing hazard zones. The worst-case scenario was developed using a maximum expected pipeline pressure (maximum 1,000 psig for transmission pipelines), line size (16 inches), and average distance to the line rupture point (assumed to be 2,000 feet) to determine the hazard zones. Impacts range from 248 feet for the LFL hazard zone to 321 feet for the torch fire hazard zones. Hazard zone calculations were also made for the pipeline blowdown station and are also presented in Appendix C. Both the flash fire (LFL) and torch fire hazard zones for the blowdown station are smaller than those for the pipeline and do not increase the pipeline hazard to the public over the proposed pipeline.

Since the major portion of the pipeline would be off-site and these hazards are greater than those associated with the baseline operations, these impacts would be significant.

Liquid Pipeline Hazards

The Project proposes to move some jet fuel by pipeline and eliminate the transportation of crude oil by pipeline over the baseline operations. The movement of jet fuel occurs both in the baseline and the Project operations and no new jet fuel pipelines are proposed. Therefore, hazards would not increase with the Project transportation of jet fuel. The Project would eliminate the pipeline transportation of crude oil. Although crude oil pipeline releases have historically produced only a low level of injuries or fatalities due to releases, the elimination of crude oil pipeline operations would constitute a reduction in pipeline hazards associated with the Project and therefore liquid pipeline hazards would decrease. Pipeline transportation impacts would be reduced under the Project.

The existing Lakewood Tank Farm will continue to be used for fuel storage and blending. Some renewable jet fuel will be transferred from the refinery via an existing pipeline. Conventional jet fuel will be transferred from other suppliers via existing pipelines to the Lakewood Tank Farm, where the products would be blended together. The final blended product would be transferred via pipeline for distribution. The operations of the Lakewood Tank Farm pipelines are not expected to change, and no new pipelines are required. Therefore, no new hazards will be introduced or changed at the Lakewood Tank Farm.

Truck Hazards

The transportation of hazardous materials by truck poses a potential for hazardous materials releases along area roadways and highways resulting in fires or explosions or exposure to vapor cloud fires. The size of a potential release is related to the maximum volume of a hazardous substance that can be released in a single accident, should an accident occur, and the type of failure of the containment structure. The same size trucks would be utilized for both the baseline and the Project. However, as discussed above, for truck hazards, the hazard exists only when the truck is located near the receptor. When a truck is not located near a receptor, a hazard does not exist. If the amount of transportation increases with a project, the time that a truck will be in front of a specific receptor will increase, thereby increasing the time that the receptor is exposed to the hazard. Therefore, for trucks (and rail), the significance is based on the relative increase or decrease in truck (or railcar) trips, and the corresponding changes in hazards associated with other forms of transportation.

The Project would result in the transportation of the following materials by truck:

- Aqueous ammonia;
- Caustic;
- Biodiesel;
- Diesel;
- DMDS (dimethyl disulfide);
- E85 Gasoline (Naphtha + 85 percent ethanol);
- Filter Aid for Pretreat;
- Gasoline;
- Jet Fuel;

- Kerosene;
- Naphtha;
- LPG (including propane, butane, and pentane); and
- Renewable Feedstocks

The Project would eliminate the truck transportation of Asphalt, Crude Oil, Distillates, Emulsion, Fuel Oil, Gas Oil, and Slop Oil and would add Biodiesel and Filter Aid for Pretreat to the truck transportation. The Project would continue transporting gasoline blend stocks, light products, naphtha or distillates, which are used for blendstocks.

The Project feedstocks include vegetable oils, soybean oil, rendered fats, and other miscellaneous renewable feedstocks. The Project feedstocks would shift transportation of feedstocks from pipeline transportation of crude oil to truck and rail transportation of renewable feedstocks, thereby increasing truck and rail transportation but decreasing pipeline transportation.

The renewable feedstocks associated with the Project are Class IIIB materials (see above) do not volatilize readily and do not contain detectable levels of sulfur, benzene, or other toxic air contaminants found in crude oil. However, renewable feedstocks, such as vegetable oil if spilled and subjected to high energy ignition sources of sufficient energy (such as truck accident fires), still have a very low potential to produce fires and cause thermal impacts. Modeling using CANARY© indicates that hazard zones from a pool fire for vegetable oils could extend as far as 79 feet, which is similar to the thermal hazard zones from crude oil. However, vegetable oils would not produce vapor clouds (LFL), or vapor cloud explosion impacts due to the low volatility, and therefore present a much lower hazard than the transportation of crude oils.

The new materials used for the Project include a filter aid, clay and silica, all of which are solid materials. The filter aid includes diatomaceous earth which is generally not considered to be hazardous, and it is not flammable or explosive. The clay is used in the processing of unsaturated vegetable oil or other unsaturated organic compounds to remove coloring components and to decompose hydro-peroxides and is also not flammable or explosive. The silica is in powdered form and not flammable or explosive. The only health hazard associated with any of these compounds is the potential for dust generation and exposure to particulate matter.

During baseline operations, movement of materials by trucks totaled over 28,000 trucks in 2011 associated with metered (measuring volume loaded) and scale (measuring weight) trucks loading product and scale trucks unloading refinery feed and materials. The majority, 82 percent of the baseline truck trips, were for the transport of asphalt, which presents a minimal hazard since asphalt is neither volatile nor a combustible liquid. Some baseline truck trips, 11 percent, were for the transport of butane (LPG) or pentane, which are volatile and present a hazard.

The Project proposes to increase the truck activity to over 100,000 truck trips per year, primarily due to the shift of refinery feedstocks to truck transportation from pipeline transportation of crude oil and the movement of products by truck instead of pipeline. Many of these truck movements will contain products comprised of less volatile materials, such as the Project renewable feedstocks, versus the baseline refinery use of crude oil. Butane, propane, gasoline and other hazardous materials will continue to be transported by truck under the Project.

Hazards from liquid pipelines would be reduced under the Project as fewer liquid pipelines would be utilized due to the elimination of crude oil as a feedstock (see above). Yet as trucking would increase, there would be a potential increase in the hazards associated with a release of materials during truck

transport trips. As crude oil hazards would be eliminated, and the truck transportation would be primarily of low hazardous materials, the net potential for hazards from transportation releases (both trucks and pipelines combined) would be similar under the Project and the baseline. Truck and pipeline combined transportation impacts are therefore estimated to be less than significant.

Rail Hazards

The Project proposes to move the following materials by rail car:

- Biodiesel;
- Clay for Pretreat;
- Ethanol for blending;
- Gasoline Blending Stocks;
- Renewable Feedstocks;
- Renewable Jet Fuel;
- Renewable Naphtha; and
- Spent Caustic.

The Project would eliminate Asphalt, Crude Oil, Fuel Oil, and Gas Oil from transportation by rail and would add Biodiesel, Clay for Pretreat, Ethanol for blending, Gasoline Blending Stocks, Renewable Jet Fuel and Renewable Naphtha to rail transportation under the Project.

Rail hazards are similar to trucks in that the size of the rail cars would be the same between the Project and the baseline operations. Rail cars use in the baseline year 2011 totaled 1,356 rails cars loaded or unloaded. The Project proposes to utilize a greater number of rail cars than the baseline, totaling almost 1,000 rail cars just of product to be loaded at the refinery. Additional rail cars would bring materials into the refinery, including less hazardous feedstocks (than crude oil). As the movement of rail cars would increase primarily due to the increase feedstocks, yet the feedstocks would be less hazardous, hazards from rail car movements would be similar to the baseline operations and would therefore be less than significant.

Marine Hazards

The Project would involve the transportation of materials through the Port of Los Angeles (POLA) via marine barge. Up to 36 barge visits per year could be delivered to the POLA, loaded onto trucks, and delivered to the refinery. The baseline operations did not involve the use of the POLA for marine barge transport of refinery feedstocks. Therefore, this increase in transportation of feedstocks via marine barge could produce a significant impact to marine resources if a spill were to occur either inside or outside the POLA. The POLA CEQA analysis for the Port Master Plan Update (POLA 2013) indicated that:

> *Marine terminals handling hazardous liquid bulk are governed by several federal, state, and local regulations that are aimed at preventing releases and accidents and ensuring the capability to respond in the event of an accident….All marine oil terminals are required to comply with MOTEMS, which include audits and inspections to determine the level of compliance and an evaluation of the continuing fitness-for-purpose. The MOTEMS regulations are extensive and detailed and require regular inspections and the correction of deficiencies on a timely basis, along with periodic audit reports….The foreseeable risks of upset resulting in hazardous material releases to the environment are very small… In the event of an upset or release, impacts would be*

significant if containment systems (e.g., floating booms, berms, and other designed containment structures) were ineffective and clean-up procedures were not sufficient to prevent dispersion of spilled materials to areas supporting sensitive resources.

The POLA EIR indicated that the potential impacts within the POLA would be less than significant and no significant and unavoidable impacts were identified associated with marine vessel transport of bulk liquids within the POLA.

Spills from barges while outside the port could introduce hazards to the environment. According to the EPA (https://www.epa.gov/emergency-response/vegetable-oils-and-animal-fats):

Animal fats and vegetable oils are regulated under 40 CFR 112, which has identical requirements for petroleum and non-petroleum oils. Petroleum oils, vegetable oils, and animal fats share common physical properties and produce similar environmental effects. Like petroleum oils, vegetable oils and animal fats and their constituents can:

- *Cause devastating physical effects, such as coating animals and plants with oil and suffocating them by oxygen depletion;*
- *Be toxic and form toxic products;*
- *Destroy future and existing food supplies, breeding animals, and habitats;*
- *Produce rancid odors;*
- *Foul shorelines, clog water treatment plants, and catch fire when ignition sources are present; and*
- *Form products that linger in the environment for many years.*

Scientific research and experience with actual spills have shown that spills of animal fats and vegetable oils kill or injure wildlife and produce other undesirable effects. Wildlife that becomes coated with animal fats or vegetable oils could die of hypothermia, dehydration and diarrhea, or starvation. Aquatic life may suffocate because of the depletion of oxygen caused by spilled animal fats and vegetable oils in water. Spills of animal fats and vegetable oils have the same or similar devastating impacts on the aquatic environment as petroleum oils.

In addition, in accordance with the EPA and other studies (Fingas, 2001):

In 1997, the United States Environmental Protection Agency conducted a thorough review of the issue regarding vegetable oil spills. Recent attention has refocused on this issue as a result of an incident where 20 tons of canola oil was spilled in the Vancouver Harbour in 2000. Recent studies have shown that spills of vegetable oils can have major environmental consequences, equivalent to those of petroleum oil spills. The spills have devastating effects on birds and intertidal organisms. The aquatic toxicity of vegetable oil is low, but their fate is quite different from petroleum. Vegetable oils do not evaporate to a significant degree, they do not form water-in-oil emulsions, nor do they disperse in water. Most environmental damage reported in the literature is by contact with birds' feathers resulting in hypothermia and secondly by smothering of intertidal organisms.

The increased potential for hazards associated with spills from marine barges into the marine environment is a significant impact.

The potential impacts associated with the operation of the new natural gas pipeline or marine spills are potentially significant; therefore, CEQA requires that feasible mitigation measures be implemented. Natural gas pipelines are heavily regulated and require that a number of safety measures be implemented, as summarized below. New pipelines are subject to comprehensive regulation including requirements for pre-operational testing to ensure the operational integrity of the pipeline. The hydrogen pipeline would need to be equipped with emergency flaring systems, similar to that located at the Carson Hydrogen Plant, in order to ensure appropriate emergency response capabilities. Marine operations are also heavily regulated, both at the POLA and within U.S. water by the USCG.

Mitigation Measures

None

Impacts Remaining

Significant impacts are associated with operation of the natural gas pipeline. The natural gas pipeline would be installed by Southern California Gas Company (SoCalGas) and would be subject to a number of regulatory requirements, including the following:

- Hydrostatic testing to 125 percent of the operating pressure is required by the State Fire Marshal prior to operation of a pipeline. Additional periodic testing is required for pipelines, with the frequency of testing based on pipeline age, use of cathodic protection, and release history;
- New pipelines are required to accommodate instrumented internal inspection devices (commonly referred to as "smart pigs"). "Smart pigs" detect where corrosion or other damage has affected the wall thickness or shape. Additionally, to ensure the pipeline is operating properly and the total volume of material shipped is received, monitoring of operations during transfer of material is required and may include pressure indicators along the pipeline route, as well as flow meters at both the shipping and receiving ends of the pipeline;
- Cathodic protection is required for new pipelines. Cathodic protection is a technique used to control the corrosion of a metal surface by making it the cathode of an electrochemical cell. Avoiding corrosion protects the integrity of the pipeline and minimizes that potential for releases; therefore, installation of cathodic protection helps to prevent pipeline releases;
- Federal regulations require the installation and maintenance of line marker posts so that the pipeline is easily identifiable. In addition, annual inspections are required to look for corrosion and other issues;
- Pipelines are registered with the USA North underground service alert system. Contractors contact this organization prior to beginning excavation activities. The organization notifies the owners of underground facilities in the area of the proposed construction activities. The owners and contractors can then discuss the proposed construction activities. Owners typically mark the exact location of the pipelines and communicate the locations to the contractors. Participation in the USA system minimizes the potential for damage and meets the requirements of the operator's damage prevention program pursuant to 49 CFR 192 requirements;
- 49 CFR 192, Subpart N, requires minimum training requirements for operators of pipeline facilities. These requirements assure that individuals working on the pipeline would have appropriate training and experience.;
- The operation of the pipeline is required to have an Emergency Response Plan that identifies specific measures that would be implemented in the event of upset conditions. The Emergency Response Plan identifies responsible parties for the incident command and supporting agencies and organizations; and

- The new natural gas pipeline will require the installation of safety blowdown equipment at one location along the designated route. The blowdown equipment will allow for the controlled release and dispersion of gas in the pipeline in the event of an upset condition. Blowdown equipment is part of the PHMSA requirements.

The CPUC ensures that intra-state natural gas and LPG pipeline systems are designed, constructed, operated, and maintained according to safety standards set by the CPUC and the federal government. The CPUC enforces natural gas and LPG safety regulations; inspects construction, operation, and maintenance activities; and makes necessary amendments to regulations to protect and promote the safety of the public, the utility employees that work on the gas pipeline systems, and the environment. In addition, the CPUC conducts operation and maintenance compliance inspections, accident investigations, reviews utilities' reports and records, conducts construction inspections, conducts special studies, and takes action in response to complaints and inquiries from the public on issues regarding gas pipeline safety.

Because of the extensive state and federal requirements on new (and existing) natural gas pipelines and the extensive regulation of ports and shipping, all feasible mitigation measures are expected to be implemented and enforced for pipelines and marine operations. Implementation of these extensive requirements is expected to minimize the severity of potential hazard impacts of natural gas pipeline or marine barge releases, should they occur.

The operational impacts associated with the new natural gas pipeline or marine barges would remain significant as a release could potentially impact receptors, including residents, and would be a new or intensified hazard. Impacts remain **significant (Class I).**

4.4.4.3 Hazards to Schools

Impact #	Impact Description	Phase	Impact Classification
HM.4	The Project would emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.	Operation	Class III

The refinery is located immediately adjacent to the Paramount High School and the Harry Wirtz Elementary School. The existing refinery operations could impact the schools through a BLEVE scenario associated with the large LPG storage vessels located at the refinery. LPG materials are produced and stored both under the baseline historical operations and the Project operations. As can be seen under the discussion for Impact HM.2, the hazard zones associated with the Project would be slightly smaller than the baseline refinery operations, yet impact zones would continue to reach the schools at the same level as the baseline historical operations. Therefore, impacts would be the same as the baseline and would be **less than significant (Class III).**

4.4.4.4 Site Contamination Hazards

Impact #	Impact Description	Phase	Impact Classification
HM.5	The Project would not create a significant hazard to the public or the environment by being located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5.	Construction	Class III

As discussed above, the refinery currently has extensive groundwater and soil contamination from historical operations and is under a RWQCB cleanup and abatement order (and therefore on the Government Code Section 65962.5 listing compiled by the Department of Toxic Substances Control (DTSC)). There are 119 groundwater wells located and monitored on the refinery site and 22 soil vapor monitoring locations. Construction activities associated with the Project would involve soil excavations that could encounter contaminated soils. However, additional requirements by the South Coast AQMD related to contaminated soils handling (Rule 1166), including covering of contaminated soils, monitoring of ambient air quality and timely removal of contaminated soils, would ensure that off-site hazards to the public would be managed. See Section 4.5, Hydrology, for a discussion of groundwater impacts.

Spills of materials at the refinery could also, if not contained, enter into storm drains and result in environmental contamination of areas. The refinery has an SPCC Plan (dated 2018) that requires measures be implemented. The topography of the refinery Process Areas has its interior premises lower than the property boundaries to assure that all surface runoff is contained within the confines of the refinery. Drainage in the Process Areas generally flows towards the south, where a system of sumps, pumps and piping direct the drainage either to containment areas or to tanks. Drainage, i.e., stormwater, is normally routed to the refinery's oily water treatment system as allowed by the refinery wastewater permit. If the refinery cannot contain the stormwater, it is pumped from the containment pond through a treatment system for solids removal and VOC removal. The treated stormwater is discharged to an on-site stormwater drain. Most tanks at the refinery (except historical slop and asphalt tanks) are contained by berms. All tanks and process equipment are contained by the refinery Process Areas. Therefore, spills at the refinery would be contained.

Spills off-site, from liquid pipelines, would be reduced under the Project as fewer liquid pipelines would be utilized due to the elimination of crude oil as a feedstock. As trucking would increase, there would be a potential increase in the hazards of materials spills affecting the environment from trucking. But as crude oil spills from pipelines would be eliminated, the net potential for hazards from spills would be similar under the Project and the baseline. Impacts are therefore **less than significant (Class III).**

4.4.4.5 Airport Hazards

Impact #	Impact Description	Phase	Impact Classification
HM.6	The Project would not be 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; the Project would not result in a safety hazard or excessive noise for people residing or working in the Project area.	Construction or Operation	Class III

The refinery and the Lakewood Tank Farm are not located within two miles of an operational airport. The Compton-Woodley Airport, a general aviation airport, is located approximately five miles west of both the existing refinery and Lakewood Tank Farm, and the Long Beach Airport is located about four miles south of the refinery.

The Project natural gas pipeline would be located as close as 1.5 miles from the Long Beach Airport Planning Boundary/Area of Influence as per the Los Angeles County Airports Land Use Plan (LAC, 1991) and would therefore not produce safety or noise impacts. Therefore, impacts would be **less than significant (Class III).**

4.4.4.6 Emergency Response Planning

Impact #	Impact Description	Phase	Impact Classification
HM.7	The Project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.	Construction or Operation	Class III

None of the surrounding roadways will be closed to traffic during the Project's construction and subsequent operation. During operations, the hazards associated with the refinery will be slightly less than the hazards associated with the baseline operations (see HM.2). Therefore, emergency response requirements would be slightly reduced over the baseline operations. The refinery would continue to be required to comply with the Los Angeles County Fire Department Hazardous Materials Business Plan requirements including emergency response preparedness. The installation of an additional natural gas pipeline would introduce additional hazards to the area but would not impact emergency response or preparedness as issues related to the natural gas pipeline would be infrequent occurrences. Impacts to emergency response or emergency response planning would therefore be **less than significant (Class III).**

4.4.4.7 Wildland Fires

Impact #	Impact Description	Phase	Impact Classification
HM.8	The Project would not expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires.	Construction or Operation	Class III

The Project would be located within a highly urban area and would not expose wildland areas to an increase in wildland fire potential. Impacts to wildland fire potential would therefore be **less than significant (Class III).**

4.4.5 Cumulative Effects

The potential impacts related to hazardous materials are site specific. Cumulative impacts associated with hazardous materials are realized when the impacts of the cumulative project (such as the hazard zones) overlap with the impacts from the Project. At the refinery site, the Project was determined to produce less than significant impacts with slightly smaller hazard zones than those associated with the baseline operations. As no other cumulative projects are located near the refinery, no significant adverse cumulative impacts related to hazards or hazardous materials would occur at the refinery site.

As listed in Section 3.0. Cumulative Projects, there are a number of projects that are proposed in the Project area. None of these involve the use of hazardous materials and would therefore not contribute to the hazards identified associated with the operational phase of the Project. Some components of the cumulative projects would involve construction and there is the potential for these to impact the natural gas pipeline when it is being constructed or once it is operating. However, the management systems in place for construction projects and "dig alerts" requirements effectively mitigate these potential impacts.

Projects proposed for the POLA are indicated in the POLA CEQA analysis to not produce significant and unavoidable impacts. Therefore, cumulative impacts at the POLA associated with the marine barging would not be cumulatively significant.

Impact #	Impact Description	Phase	Impact Classification
HM.Cum1	The Project could overlap with LA Metro projects and create potential hazard or upset issues.	Construction or Operation	Class II

The Metro West Santa Ana Branch Transit Corridor (WSAB) project would intersect the Project natural gas pipeline near the tie-in location at the Paramount Refinery or trucking routes that intersect with the WSAB project construction activities. Construction activities could impact the natural gas pipeline if sufficient coordination activities are not implemented. Coordination activities are required as part of permitting and construction design, including "dig alerts". However, as both projects could be in the design or construction phases at the same time, lack of coordination could result in potentially significant cumulative impacts.

Mitigation Measures

HM-Cum1 ***Coordination with LA Metro.*** *Since the Project and the Los Angeles County Metropolitan Transit Authority are developing projects in the same area at the same time, coordination between these two projects shall be completed before any permit issuance, and clearance from the LA Metro shall be required prior to any permit issuance.*

Impacts Remaining After Mitigation

With the implementation of Mitigation Measure HM-Cum1, the location of pipeline segments and associated support structures shall be coordinated with the LA Metro prior to any construction to ensure that overlapping design elements do not interfere with either project and increase the potential for upset issues. With the implementation of HM-Cum1, impacts would be **less than significant with mitigation (Class II).**

4.4.6 References

American Industrial Hygiene Association (AIHA). 2011. Emergency Response Planning Guidelines threshold values. American Industrial Hygiene Association, http://www.aiha.org/1documents/Committees/ERP-erpglevels.pdf

Center for Chemical Process Safety (CCPS). 1995. Guidelines for Chemical Transportation Risk Analysis. ftp://ftp.consrv.ca.gov/pub/oil/SB4DEIR/docs/RSK_Center_for_Chemical_Process_Safety_1995.pdf (Accessed January 22, 2016).

EPA. 1996. Accidental Release Prevention Requirements: Risk Management Programs Under the Clean Air Act, Section 112(r)(7). Environmental Protection Agency, 40 CFR Part 68; 1996.

Fingas. 2001. Vegetable oil spills: oil properties and behaviour. Proceedings of the 24 Arctic and Marine Oilspill Program (AMOP) Technical Seminar, including the 18 Technical Seminar on Chemical Spills (TSOCS) and the 3 Phytoremediation/Biotechnology Solutions for Spills (PHYTO), (p. 925). Canada: Environment Canada.

FMCSA. 2001. Comparative Risks of Hazardous Materials and Non-Hazardous Materials Truck Shipment Accidents/Incidents. Prepared by Battelle. March 2001.

FRA. 2021. Office of Safety Analysis Ten Year Accident/Incident Reports. https://safetydata.fra.dot.gov/officeofsafety/publicsite/query/TenYearAccidentIncidentOverview.aspx. (Accessed March 3, 2021)

Geotracker. 2021. Accessed 2021, https://geotracker.waterboards.ca.gov/

Los Angeles County (LAC). 1991. Los Angeles County Airports Land Use Plan. 1991.

NCCEH. 2022. National Collaborating Center for Environment and Health, Going Underground: Electrical Substations and Health, 2022

NRC. 1997. National Research Council, Possible Health Effects of Exposure to Residential Electric and Magnetic Fields, Committee on the Possible Effects of Electromagnetic, Fields on Biologic Systems, 1997

PHMSA. 2020a. PHMSA Pipeline Incidents: (2010–2019). U.S. DOT Pipeline and Hazardous Materials Safety Administration. http://www.phmsa.dot.gov/pipeline/library/datastatistics/pipelineincidenttrends (Accessed November 13, 2020).

PHMSA. 2020b. PHMSA Incident Report Database. https://hazmatonline.phmsa.dot.gov/IncidentReportsSearch/incrsearch.aspx (Accessed April 16, 2015).

POLA. 2013. Port of Los Angeles Master Plan Update Draft Program Environmental Impact Report ADP No. 110518-060, SCH No. 2012071081

Quest. 2021. As part of the Applicant Application Materials, Worst-Case Consequence Analysis for the Altair Renewable Fuels Project. February 2021.

Trihydro. 2020. Third Quarter 2020 Groundwater Monitoring Report and Remedial Action Plan Progress Report Alt Air Paramount Refinery, Paramount, California; October 30, 2020. https://documents.geotracker.waterboards.ca.gov/esi/uploads/geo_report/7473812401/SL373402443.PDF. (Accessed February 2, 2021).

U.S. DOT Pipeline and Hazardous Materials Safety Administration (PHMSA), Incident Listings http://www.phmsa.dot.gov/pipeline/library/data-stats

4.5 Hydrology and Water Quality

This section describes the environmental and regulatory settings for hydrology and water quality in the Project area. This section identifies the applicable significance thresholds for hydrology and water quality impacts and addresses the potential Project impacts related to surface and groundwater quality standards and control plans, erosion, surface runoff, stormwater drainage at the refinery, and flood hazard. Water supply and demand for the Project as well as wastewater treatment facilities are discussed in Section 4.10, Utilities and Service Systems.

Changes from Draft SEIR

Since the Draft SEIR was released in December 2021, this section has not been changed for the Final SEIR.

4.5.1 Environmental Setting

The Paramount Refinery (refinery) is located at 14700 Downey Avenue in Paramount, California (Figure 2-1). The refinery encompasses approximately 66 acres and is bounded by Downey Avenue to the west; Contreras Street, a mobile home park, and a commercial shopping center to the north; Lakewood Boulevard, residential housing, and commercial buildings to the east; Somerset Boulevard and residential housing to the south; and a railroad right-of-way to the southwest.

The refinery is located on a topographically flat area in the Los Angeles Central Plain, at an elevation of approximately 77 feet above mean sea level. The Los Angeles Coastal Plain is described as a low-lying alluvial plain which is bounded by the Pacific Ocean on the west and south, by the Santa Monica Mountains and Repetto Hills on the north, and by the Santa Ana Mountains on the east. In general, the Los Angeles Coastal Plain slopes gradually to the south with an average topographic gradient of approximately 15 feet per mile. At the refinery, the plain slopes to the southwest into the southward flowing Los Angeles River, which is located approximately one mile west of the refinery. The Los Angeles River was channelized for the purpose of flood control beginning in 1938 by the Army Corps of Engineers, and the river serves as the drainage for impervious surfaces throughout the Los Angeles basin.

The Project site is underlain by alluvial sediments consisting primarily of sand and silty sand, interbedded with silts and clays to a depth of about 140 feet below ground surface (ft bgs). Groundwater elevations in the shallow, unconfined, groundwater zone have been as shallow as 25 ft bgs (1998) but have since dropped to approximately 45 ft bgs (Trihydro, 2021).

There are no natural lakes or streams within or adjacent to the refinery (see Figure 4.5-1). The San Gabriel River is located approximately two miles east of the refinery; this river is also channelized and concrete-lined in the Project area. The Project site has been paved and developed for previously approved projects at the refinery. As such, the Project site largely consists of impervious ground surfaces. The Project area is not located within a flood hazard area, as defined by the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Maps (see Figure 4.5-2).

There are two general drainage runoffs at the Project site: (1) Process Areas and (2) Non-Refining Areas.

4.5.1.1 Process Areas

Feed for the renewable fuels process arrives by rail. Products are shipped out via pipeline or by truck. The renewable fuels process equipment is mainly within what was previously the hydro-processing unit of the

refinery, on the central western portion of the plant. Approximately 100 above ground storage tanks for petroleum products are on site, mostly bounding the north and east areas of the refinery. There are 26 loading and/or unloading truck racks on the site, and two rail car loading and unloading facilities. However, a majority of the renewable product is shipped out via pipeline. Other process areas for the refinery include the crude units, additional hydro-processing units, and two asphalt plants.

The topography of the Process Areas has its interior premises lower than the property boundaries to assure that all surface runoff is contained within the confines of the site. Drainage in the Process Areas generally flows towards the south, where a system of sumps, pumps and piping direct the drainage either to containment areas or to tanks. Drainage, i.e., stormwater, is normally routed to the refinery's oily water treatment system as allowed by the refinery wastewater permit. If the refinery cannot contain the stormwater, it is directed to the containment pond located at the south-west corner of the refinery (at the corner of the railroad tracks and Downey Ave.) and then pumped from the containment pond through a treatment system for solids removal and VOC removal. The treated stormwater is then discharged to an on-site stormwater drain.

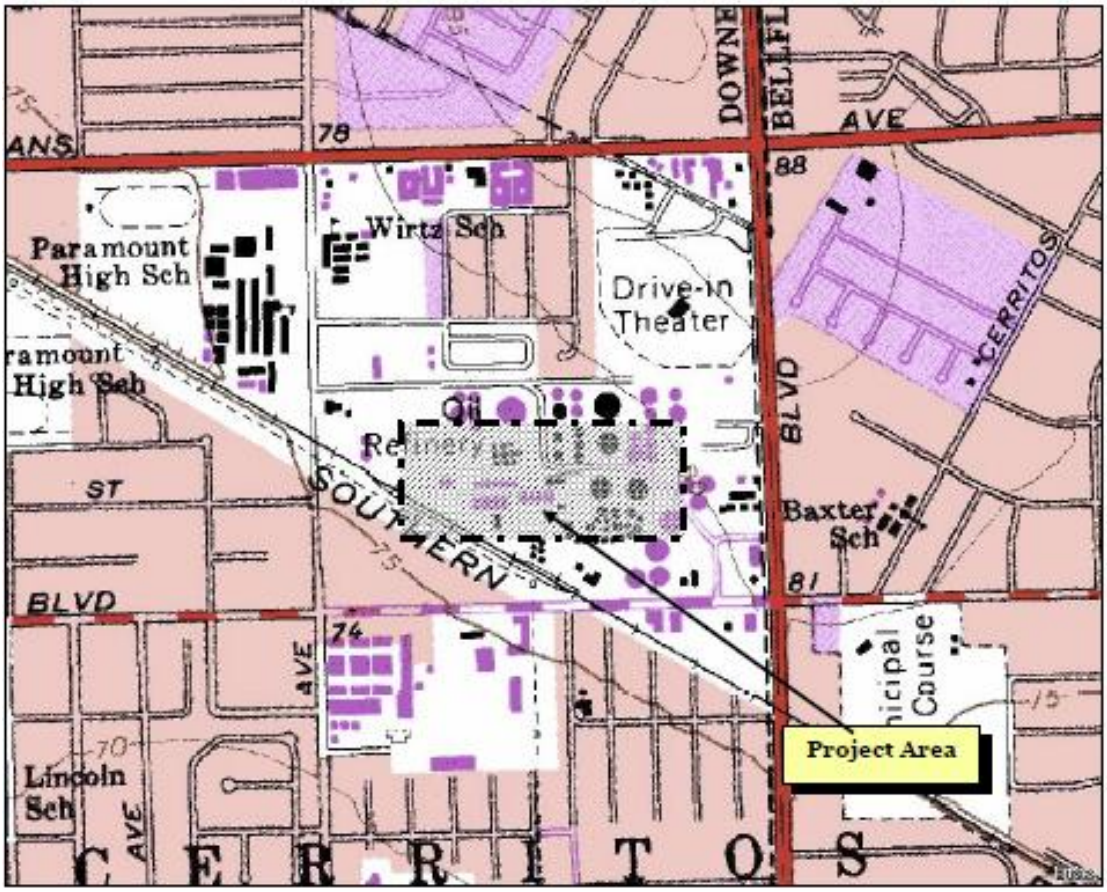
4.5.1.2 Non-Refining Area

The non-refining area of the Project site includes the refinery's North Road and the parking lots located at the western portion of the refinery as well as the North Storage Yard and the Scale House Area located at the eastern portion of the refinery (referred to as the GP Area). Stormwater that comes into contact with the GP Areas exits the refinery as sheet flow.

Stormwater in the GP Area flows west along the refinery's north road and joins sheet flow from the parking lots to discharge out the main driveway of the refinery and directly to a stormwater drain on Downey Avenue.

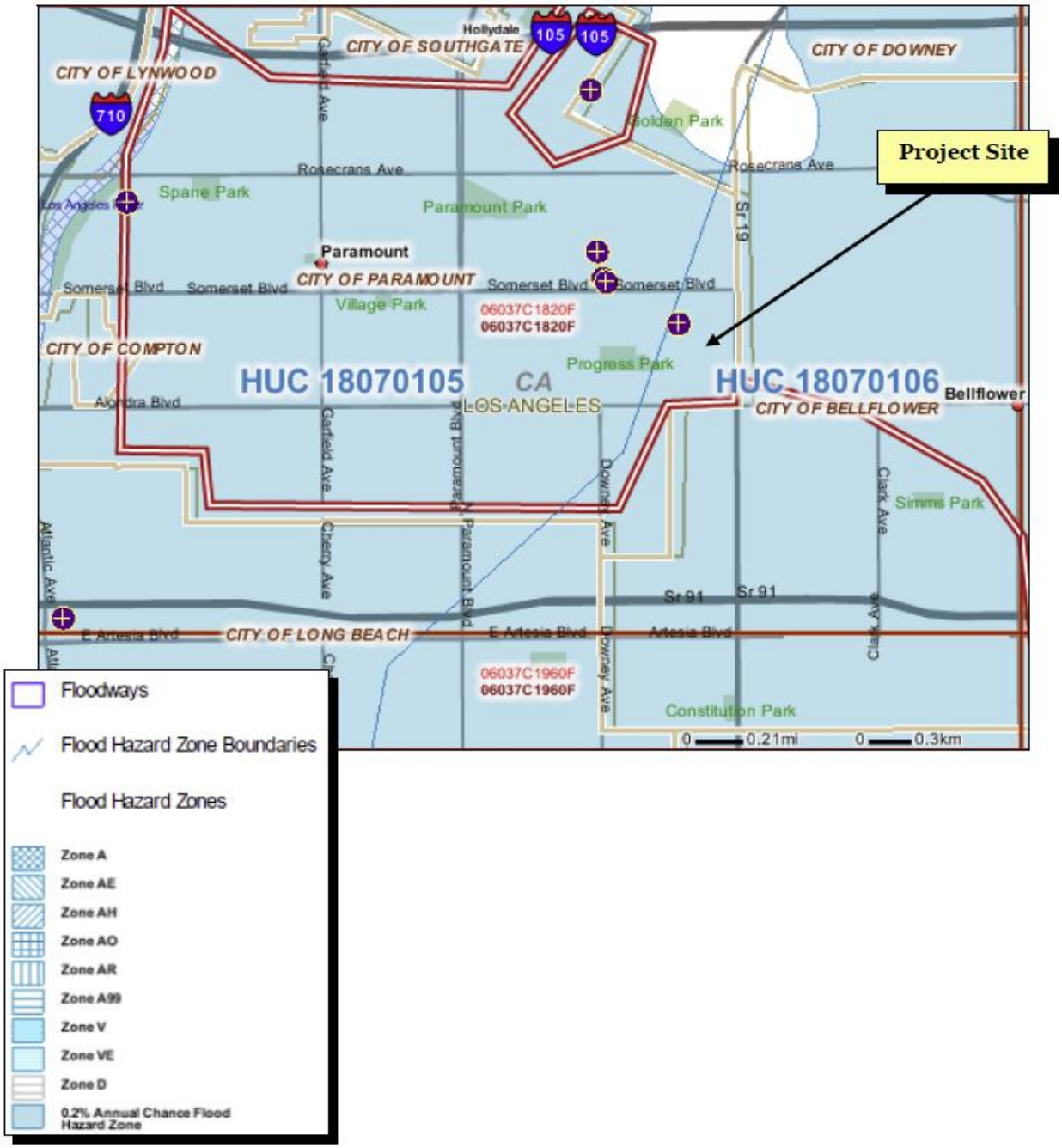
Drainage discharged from the Process and Non-Refining Area flows to the Cerritos Channel. Water discharged to the stormwater sewer would flow southward through county sewer 1106, located under Downey Ave. At Del Amo Blvd., the storm sewer identified as RDD 171, turns eastward and continues to Civic Center Way where it turns south and, identified as sewer 5106, flows into Cerritos Channel at Spring Street. Cerritos Channel is an open waterway that empties into Marine Stadium and Long Beach Marina before reaching Long Beach Outer Harbor and the Pacific Ocean. The distance of these sewer lines and channel from the refinery to the marina is approximately 10.25 miles (CET Engineering, Inc., 2018).

Figure 4.5-1 Hydrology of the Project Site



Source: City of Paramount 2013; United States Geological Survey, Paramount 7½ Minute Quadrangle. Release Date March 25, 1999.

Figure 4.5-2 Project Site Flood Risk



Source: City of Paramount 2013; FEMA 2011.

4.5.1.3 Previous Environmental Review

The December 2013 Mitigated Negative Declaration (MND) determined that the Original Renewable Fuels Project would not affect the quantity, direction, or velocity of on-site stormwater runoff due to the paved character of the areas where new equipment would be installed. As a result, no impacts on water quality were anticipated to result from the implementation of the Original Renewable Fuels Project.

The 2013 MND determined the limited excavation required for the Original Renewable Fuels Project would not be deep enough to interfere with any local aquifer. Given the nature of the Original Renewable Fuels Project, no significant net change in the availability of water would occur.

No natural drainage or riparian areas remain within the refinery site due to past development. In addition, there are no natural lakes or streams within or adjacent to the site. The Original Renewable Fuels Project would not lead to an increase in surface runoff due to the location and extent of impervious surfaces at the refinery site, and there would be no changes in the hydrologic characteristics of any nearby drainage. No additional impervious and/or paved surfaces were proposed. No significant adverse changes were anticipated.

The 2013 MND determined that the Original Renewable Fuels Project would not impede or redirect the flows of potential floodwater, since the Original Renewable Fuels Project area is not located within a flood hazard area as defined by FEMA's Flood Insurance Rate Maps, and the Original Renewable Fuels Project would not involve the placement of any structures that would impede or redirect potential floodwater flows. Therefore, no impacts related to flood flows were anticipated.

The 2013 MND determined that the refinery is located approximately nine miles inland from the Pacific Ocean and would not be exposed to the effects of a tsunami. In addition, there are no surface water bodies in the immediate area of the refinery that would result in a potential seiche hazard. As a result, no significant adverse impacts related to seiche, tsunami or mudflows would result from implementation of the Original Renewable Fuels Project.

The 2013 MND did not evaluate whether the Original Renewable Fuels Project would conflict with a water quality control plan or sustainable groundwater management plan. The State CEQA Guidelines were amended in July 2015 and the CEQA Checklist has been amended since the 2013 MND was prepared to include this question.

4.5.2 Regulatory Setting

This subsection summarizes the federal, state, and local laws, regulations, and standards that address the management and protection of water quality and quantity as applies to the Project.

4.5.2.1 Federal Regulations

Clean Water Act

The Clean Water Act (CWA) is the primary federal law that protects the quality of the nation's surface waters, including lakes, rivers, and coastal wetlands. It operates on the principle that all discharges into the nation's waters are unlawful unless specifically authorized by a permit. Permit review is the CWA's primary regulatory tool. The permits regulate the discharge of dredged and fill materials (CWA Section 404), prevention and response to spills of hazardous materials, construction-related stormwater discharges (CWA Section 402), and activities that may result in the discharges of pollutants (CWA Section 401) into designated "waters of the United States," which include oceans, bays, rivers, streams, lakes, ponds, and wetlands. The Project site does not have any designated waters of the United States or wetlands located within its boundaries.

Although the Project site does not have any water bodies designated as waters of the United States, and runoff from the Project site would not drain directly into any identifiable waters of the United States, CWA sections 401 and 402 are still relevant to the Project, as discharge into downstream water bodies

designated as waters of the United States is still possible. Section 402 is enforced through the NPDES permitting process. The authority to implement CWA provisions has been delegated to the State of California, with oversight by the U.S. EPA.

Section 311 of the Clean Water Act addresses oil spill prevention. The Oil Pollution Prevention regulation sets forth requirements for prevention of, preparedness for, and response to oil discharges at specific non-transportation-related facilities. To prevent oil from reaching navigable waters and adjoining shorelines, and to contain discharges of oil, the regulation requires regulated facilities to develop and implement Spill Prevention Control and Countermeasure (SPCC) Plans and establishes procedures, methods, and equipment requirements. In 1990, the Oil Pollution Act amended the Clean Water Act to require some oil storage facilities to prepare Facility Response Plans. On July 1, 1994, U.S EPA finalized the revisions that direct facility owners or operators to prepare and submit plans for responding to a worst-case discharge of oil.

Safe Drinking Water Act

The Safe Drinking Water Act sets drinking water standards throughout the country and is administered by the U.S. EPA. These drinking water standards are referred to as the National Primary Drinking Water Regulations, and are set forth in 40 CFR Part 141, and the National Secondary Drinking Water Regulations, 40 CFR Part 143. These regulations set maximum contaminant levels (MCLs) for substances including naturally occurring and man-made contaminants in drinking water.

4.5.2.2 State Regulations

Porter-Cologne Water Quality Control Act (California Water Code)

The Porter-Cologne Water Quality Control Act, embodied in the California Water Code, establishes the principal California legal and regulatory framework for water quality control. The Porter-Cologne Act protects groundwater and surface water for use by the people of the State. The California Water Code authorizes the State Water Resources Control Board (SWRCB) and the Regional Water Quality Control Boards (RWQCBs) to implement the provisions of the federal Clean Water Act. Based on the SWRCB procedures, the RWQCBs develop local water quality control plans. Once approved by the SWRCB, these local plans are incorporated into the California Water Plan.

Construction Stormwater General Permit

Dischargers whose projects disturb one or more acres of soil or whose projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres, are required to obtain coverage under the General Permit for Discharges of Stormwater Associated with Construction Activity Construction General Permit Order 2009-0009-DWQ. The permit is issued by the SWRCB. Construction activity subject to this permit includes clearing, grading, and disturbances to the ground such as stockpiling, or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the refinery. The Construction General Permit requires the development and implementation of a Stormwater Pollution Prevention Plan (SWPPP). The SWPPP must list Best Management Practices (BMPs) the discharger will use to protect stormwater runoff and the placement of those BMPs. Additionally, the SWPPP must contain a visual monitoring program; a chemical monitoring program for "nonvisible" pollutants to be implemented if there is a failure of BMPs; and a sediment monitoring plan if the site discharges directly to a water body listed on the 303(d) list for sediment.

Industrial Stormwater General Permit

The Industrial Stormwater General Permit Order 97-03-DWQ (General Industrial Permit) is an NPDES permit that regulates discharges associated with 10 broad categories of industrial activities. The permit requirement is implemented through the SWRCB. The General Industrial Permit requires the implementation of management measures that will achieve the performance standard of best available technology economically achievable and best conventional pollutant control technology. The General Industrial Permit also requires the development of a SWPPP and a monitoring plan. Through the SWPPP, sources of pollutants are to be identified and the means to manage the sources to reduce stormwater pollution are described. The General Industrial Permit requires that an annual report be submitted.

NPDES Permit

The NPDES Permit Program controls water pollution by regulating point sources that discharge pollutants into waters of the United States. Individual permits may be issued to users that do not meet the general stormwater permit requirements or intend to discharge waters other than stormwater. The permit sets limits on the concentrations and total quantity of pollutants that can be discharged from any permitted discharge point. The authority to issue and enforce NPDES permits has been delegated to the Regional Boards, with oversight by the SWRCB. The Project is not expected to have operational discharges into waters of the United States.

Groundwater Quality

The quality of groundwater delivered for public supply is also regulated under the California Domestic Water Quality and Monitoring Regulations found in 22 CCR Division 4, Chapter 15. These regulations identify primary and secondary drinking water standards for public drinking water supplies in the state.

4.5.2.3 Local Regulations

County NPDES Permit

In compliance with the County of Los Angeles NPDES Permit, Title 12.80 - Environmental Protection Code, and Title 26 - Building Code, all construction sites are required to implement BMPs to control erosion, debris, and construction-related pollutants. BMPs that can potentially be implemented are described in the County of Los Angeles Construction Site Best Management Practices Manual (County of Los Angeles, 2010).

The NPDES permit requires that a Local Stormwater Pollution Prevention Plan (LSWPPP) and a Wet Weather Erosion Control Plan (WWECP) be developed and implemented on construction projects. LSWPPPs include year-round BMP measures that must be incorporated into the construction plans and activities where the disturbed area is one-acre or more. The LSWPPP plan must include appropriate BMPs for general site management, construction materials and waste management, and erosion and sediment controls.

A WWECP must be developed and submitted (or revised) every year to reflect site conditions at the start of the rainy season (October 15). The WWECP addresses erosion and sediment control during wet season operations. Details for WWECP may be included in the LSWPPP or submitted as a separate plan.

County Standards for Drainage

RWQCB Order Number 01-182, NPDES Permit No. CAS004001 (MS4 Permit) most recently amended April 11, 2011, sets requirements for the Los Angeles County Flood Control District (LACFCD), the County of Los Angeles, and the incorporated cities within the LACFCD, including Paramount, for area-wide urban stormwater runoff.

The MS4 Permit requires post-construction BMPs to be implemented for new development and significant redevelopment, for both private and public agency projects. The MS4 Permit requires that BMPs be implemented to meet the requirements of the order and also specifies the maintenance of those BMPs post-construction.

Additionally, the County NPDES permit requires that stormwater runoff be infiltrated or treated. The design volume for infiltration or treatment can be measured several ways. Each of the alternative measures is roughly equivalent to the 0.75-inch storm event (the 85-year storm event).

City of Paramount General Plan

Public Facilities Element

Water

The City is served by the City of Paramount Water Department. Paramount has formulated and adopted a water master plan and will continue these efforts through the following policies:

- *Public Facilities Element Policy 1.* The City of Paramount will work to maintain good water quality;
- *Public Facilities Element Policy 3*. The City of Paramount will continue to identify sources of industrial pollution and require any pertinent remediation to be undertaken in a timely manner; and
- *Public Facilities Element Policy 4*. The City of Paramount will protect, conserve, and enhance water resources through implementation of the Water Master Plan.

4.5.3 Significance Thresholds

Significance criteria for the Project are based on the CEQA Guidelines Appendix G. In accordance with the CEQA Guidelines Appendix G, would the Project:

a. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality;

b. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the Project may impede sustainable groundwater management of the basin;

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

    i. result in a substantial erosion or siltation on- or off-site;

    ii. substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site;

iii. create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or

iv. impede or redirect flood flows;

d. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to Project inundation; or

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

4.5.4 Project Impacts and Mitigation Measures

Impact #	Impact Description	Phase	Impact Classification
WQ.1	The Project would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality.	Construction or Operation	Class III

The existing Project site is largely developed. The Project would not result in the construction of additional impervious surfaces. Rainwater and surface runoff in the refinery Process Areas are controlled, collected, and treated within the operating portions of the refinery and tank farm. The Project would not result in an increase in surface water or polluted runoff; therefore, the Project is not expected to violate water quality standards or degrade surface water quality.

The Project includes the construction of several new units that would generate additional wastewater, including the Pretreat Unit, wastewater treatment facilities to support the Pretreat Unit, a new Sour Water Stripper, and a new Hydrogen Generation Unit. Refer to the discussion for impact US.3 in Section 4.10.4 for the complete discussion on the Project's impact on wastewater treatment facilities.

All of these facilities would generate additional wastewater that would require treatment in the existing wastewater treatment plant (see Table 4.10.10). The estimated increase in wastewater discharge associated with the Project modifications is approximately 850,000 gallons per day (590 gpm), which is well above the wastewater discharge evaluated in the 2013 MND.

While the existing refinery has existing wastewater treatment equipment, the equipment would be modified to treat an increase in wastewater generated by the Project modifications. In addition, the existing Industrial Wastewater Discharge Permit would need to be modified with the LACSD. Therefore, the Project modifications would increase the wastewater discharged, require additional wastewater treatment facilities, and require modifications to the wastewater discharge permit.

The only wastewater currently generated at the Lakewood Tank Farm is from groundwater remediation efforts and the sanitary system (i.e., restroom facilities). The refinery has previous groundwater and soil contamination that have been and will continue to be remediated and managed under a Cleanup and Abatement Order Nos. 85-17 and 97-130 by the SWRCB (see Section 4.4.1.8). The refinery has completed quarterly and/or semi-annual groundwater monitoring events since 1992; therefore, the nature and extent of soil and groundwater contamination are well understood. Extensive soil and groundwater investigations have been conducted at the site with the oversight of the RWQCB, and ongoing remedial programs have been implemented to address the identified impacts. Groundwater is pumped up and transferred to the refinery for treatment in the refinery's wastewater treatment plant. No increase in workers is expected at the Lakewood Tank Farm so no increase in sanitary wastewater is expected. No

other sources of wastewater are generated at the Lakewood Tank Farm and no increase in wastewater generation would be required as part of the Project.

As discussed for Impact WQ.2 (see Impact US.2 for more detail), the current allotment for groundwater pumping rights from the Central Basin is insufficient to meet the total water demand for the Project. However, there is sufficient recycled water supply contracted and available through the Los Angeles County Sanitation Districts (LACSD) and the Los Coyotes Water Reclamation Plant (WRP) to supply additional water to the Project to meet Project demand. As a result, the Project would not substantially degrade groundwater quality in the Basin. Therefore, the Project is not expected to violate water quality standards or waste discharge requirements, or degrade surface or groundwater quality, and **less than significant impacts (Class III)** are anticipated.

Impact #	Impact Description	Phase	Impact Classification
WQ.2	The Project would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the Project may impede sustainable groundwater management of the Basin.	Operation	Class III

Project impacts on groundwater supplies are discussed in detail in Section 4.10.4 under impact US.2. The current allotment for groundwater pumping rights from the Central Basin is insufficient to meet the total water demand for the Project. The Central Basin Municipal Water District (CBMWD) has reported to the City of Paramount that there is adequate pressure and sufficient recycled water supply contracted and available through the LACSD and the Los Coyotes WRP to supply additional water to the Project. The use of reclaimed water is expected to require the addition of a service line sufficient for delivery of Project water demands; a tie-in to the reclaimed water distribution system is readily available (see Figure 4.10-1 for the tie-in location). With the use of reclaimed water, the Project modifications are expected to have sufficient water supplies available to serve the Project in the reasonably foreseeable future during normal, dry, and multiple dry years; refer to Appendix G, Water Demand Assessment, for more information. Impacts would be **less than significant (Class III).**

Impact #	Impact Description	Phase	Impact Classification
WQ.3	The Project would not substantially alter the existing drainage pattern of the site in a manner which would: result in substantial erosion; substantially increase surface runoff which would result in flooding; create runoff which would exceed the capacity of existing stormwater drainage systems or provide polluted runoff; or impede or redirect flood flows.	Construction or Operation	Class III

The Project would not require the construction of additional impervious surfaces; the existing refinery and Lakewood Tank Farm are largely developed and urbanized. There are no streams, rivers, or other natural drainage within the confines of the existing refinery or tank farm property. Rainwater and surface runoff within the existing refinery Process Areas are controlled, collected, and treated within the refinery wastewater treatment plant, if needed. Additionally, the Project is not expected to result in an increase in surface water or impact stormwater drainage facilities. Therefore, the proposed modifications would not result in impacts related to flooding associated with the alteration of streams and rivers or increased surface runoff, and the Project would not require new stormwater drainage facilities or the expansion of existing stormwater facilities. Therefore, the Project would result in **less than significant (Class III)** impacts to drainage systems in the Project area.

Impact #	Impact Description	Phase	Impact Classification
WQ.4	The Project would not risk release of pollutants due to Project inundation in flood hazard, tsunami, or seiche zones.	Construction or Operation	Class III

The Project modifications would not place housing within a 100-year flood hazard area, as defined by FEMA's Flood Insurance Rate Maps, since the Project does not propose the construction of housing. Further, the existing refinery and tank farm sites are not located within a FEMA flood hazard area (see Figure 4.5-2) and would not impede or redirect potential floodwater flows. Therefore, there would be no impacts associated with flooding.

The existing refinery and tank farm are located approximately nine miles inland from the Pacific Ocean and would not be exposed to the effects of a tsunami. There are no surface water bodies in the immediate area of the Project site that would result in a potential seiche hazard. No significant adverse impacts related to seiche, tsunami or mudflows would result from implementation of the Project. The Project sites are located in an area of flat topography and no hills are located in the area, so mudflows would not be expected to impact either the refinery or Lakewood Tank Farm sites. As a result, the Project would not risk release of pollutants due to Project inundation in flood hazard, tsunami, or seiche zones, and there would be a **less than significant impact (Class III).**

Impact #	Impact Description	Phase	Impact Classification
WQ.5	The Project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.	Construction or Operation	Class III

The Project modifications are not expected to result in the construction of additional impervious surfaces, since the existing refinery and tank farm sites are largely developed and urbanized. There is no natural drainage within the existing refinery or tank farm property. Rainwater and surface runoff are controlled, collected, and treated within the operating portions of the existing refinery and tank farm. Therefore, the Project modifications are not expected to impact a water quality control plan. However, as discussed above for impact WQ.2 and in Section 4.10.4 for impact US.2, the Project would result in an increase in water demand compared to the Original Renewable Fuels Project. The current allotment for groundwater pumping rights from the Central Basin is insufficient to meet the total Project water demand. The CBMWD has reported to the City of Paramount that there is sufficient recycled water supply contracted and available through the LACSD and the Los Coyotes WRP to supply additional water to the Project. With the use of reclaimed water, the Project modifications are expected to have sufficient water supplies available to serve the Project. Therefore, the Project would not conflict with or obstruct implementation of a water quality control plan or a sustainable groundwater management plan for the Project area, and impacts would be **less than significant (Class III).**

4.5.5 Cumulative Effects

As discussed in Section 3.1 of this SEIR, if the Project would not result in a Project-specific impact, then the Project could not contribute to any existing adverse cumulative impact that might exist. The Project would not result in significant impacts to hydrology or water quality, including groundwater management or stormwater drainage. Sustainable groundwater management plans would not be impacted by the Project due to the availability of reclaimed water for Project operations, therefore, the Project would not significantly or cumulatively contribute to the depletion of groundwater in the Central Basin. The Project

would not result in the construction of additional impervious surfaces, and all surface runoff is contained within the confines of the site to either be treated or discharged to a stormwater drain. There are no natural lakes or streams within or adjacent to the refinery, and the refinery is not located within a flood hazard zone. Therefore, the Project would not cumulatively contribute to the pollution of natural waters or flood hazard in the Project vicinity. The Project would increase the wastewater discharged, require additional wastewater treatment facilities, and require modifications to the wastewater discharge permit. See Section 3.0 for a full discussion of cumulative projects within two miles of the refinery. However, the review and approval of the modified Industrial Wastewater Discharge Permit would be expected to provide sufficient assurance that there are sufficient resources to treat the wastewater and that wastewater treatment standards would be achieved.

4.5.6 References

CET Engineering, Inc. 2018. AltAir Paramount Spill Prevention Control and Countermeasure Plan; June 2018.

City of Paramount. 2007. Final Paramount General Plan. Adopted August 7, 2007. Available at: http://www.paramountcity.com/home/showdocument?id=2538

City of Paramount. 2013. Paramount Petroleum Alt-Air Renewable Fuels Project. Mitigated Negative Declaration and Initial Study, Conditional Use Permit (CUP) 757 and Zone Variance (ZV) 401. Adopted December 30, 2013 (PARA 059).

County of Los Angeles. 2010. Los Angeles County Department of Public Works: Construction Site Best Management Practices (BMPs) Manual; August 2010.

Trihydro. 2021. Fourth Quarter 2020 Groundwater Monitoring Report and Remedial Action Plan Progress Report, AltAir Paramount Refinery. January 28, 2021.

4.6 Land Use and Planning

This section describes the land uses in the vicinity of the Project area and applicable regulations related to land use. This section also considers the consistency of the Project with governing land use plans and policies, as well as the Project's compatibility with surrounding land uses, both existing and proposed. The proposed modifications would be located entirely within the existing Paramount Refinery (refinery) and Lakewood Tank Farm.

Changes from Draft SEIR

Since the Draft SEIR was released in December 2021, this section has the following changes incorporated into the Final SEIR:

- Additional information on businesses near the refinery.

4.6.1 Environmental Setting

The City of Paramount (City) is located in the south-central portion of Los Angeles County, approximately 16.5 miles southeast of downtown Los Angeles. The City is bounded by South Gate and Downey on the north; the Los Angeles River, Lynwood, Compton, and the unincorporated community of Rancho Dominguez on the west; Long Beach and Bellflower on the south; and Bellflower and Downey on the east. The City has a total land area of 3,072 acres, or 4.8 square miles. Approximately 52 percent of the City is developed with residential land uses. Industrial land uses account for 23 percent of the City's total land area, and commercial land uses account for five percent. The remaining 20 percent of the City's land area is devoted to streets, freeways, and other rights-of-way (ROW).

The Project site is located within the existing refinery which is located in the northeastern portion of the City. The refinery property consists of approximately 66 acres bounded on the north by Contreras Street, on the south by Somerset Boulevard and the Los Angeles Metropolitan Transportation Authority (LA Metro) ROW, on the west by Downey Avenue, and on the east by Lakewood Boulevard. The Lakewood Tank Farm is located on East 56th Street in the City of Lakewood, west of Downey Avenue (see Figure 2-1).

The City of Paramount General Plan and Zoning Ordinance define the permitted land uses and the corresponding development standards within the City. The refinery is located within the Somerset Ranch Area. The refinery is zoned M-2, Heavy Manufacturing. The Lakewood Tank Farm is zoned M-1, Light Manufacturing. The General Plan designations for the Project area are noted in Figure 4.6-1.

4.6.1.1 Somerset Ranch Area Plan

The refinery is located within the Somerset Ranch Area which is a specific plan that governs development and land uses in an area of the City that includes the refinery. The Somerset Ranch Planning Area is located in the northeasterly portion of the City and is generally bounded by Lakewood Boulevard on the east and Downey Avenue on the west. The area encompassed in the Somerset Ranch Area Plan covers an area of approximately 129 acres. The Planning Area is divided into northerly and southerly halves by a railroad ROW. The north half is occupied by the refinery, which is the largest single landholding within the land area governed by the Area Plan. The southerly half is occupied by single-family residential and multiple family development.

The Somerset Ranch Area Plan is designated as Mixed-Use Complex (MC). The purpose of this designation is to allow the most creative and cost-effective responses possible to a more detailed market analysis and related development strategy. The development plan may include any proportion of retail, residential, industrial, and office uses that can be accommodated in response to market opportunities. In general, residential uses will occupy the westerly portion of the Planning Area with more intensive non-residential uses encouraged along the Somerset, Lakewood, and Century Boulevards frontages. The Area Plan also includes an industrial park and City yard south of Somerset Boulevard and key intersections are designated for limited general commercial development.

4.6.1.2 Surrounding Land Uses

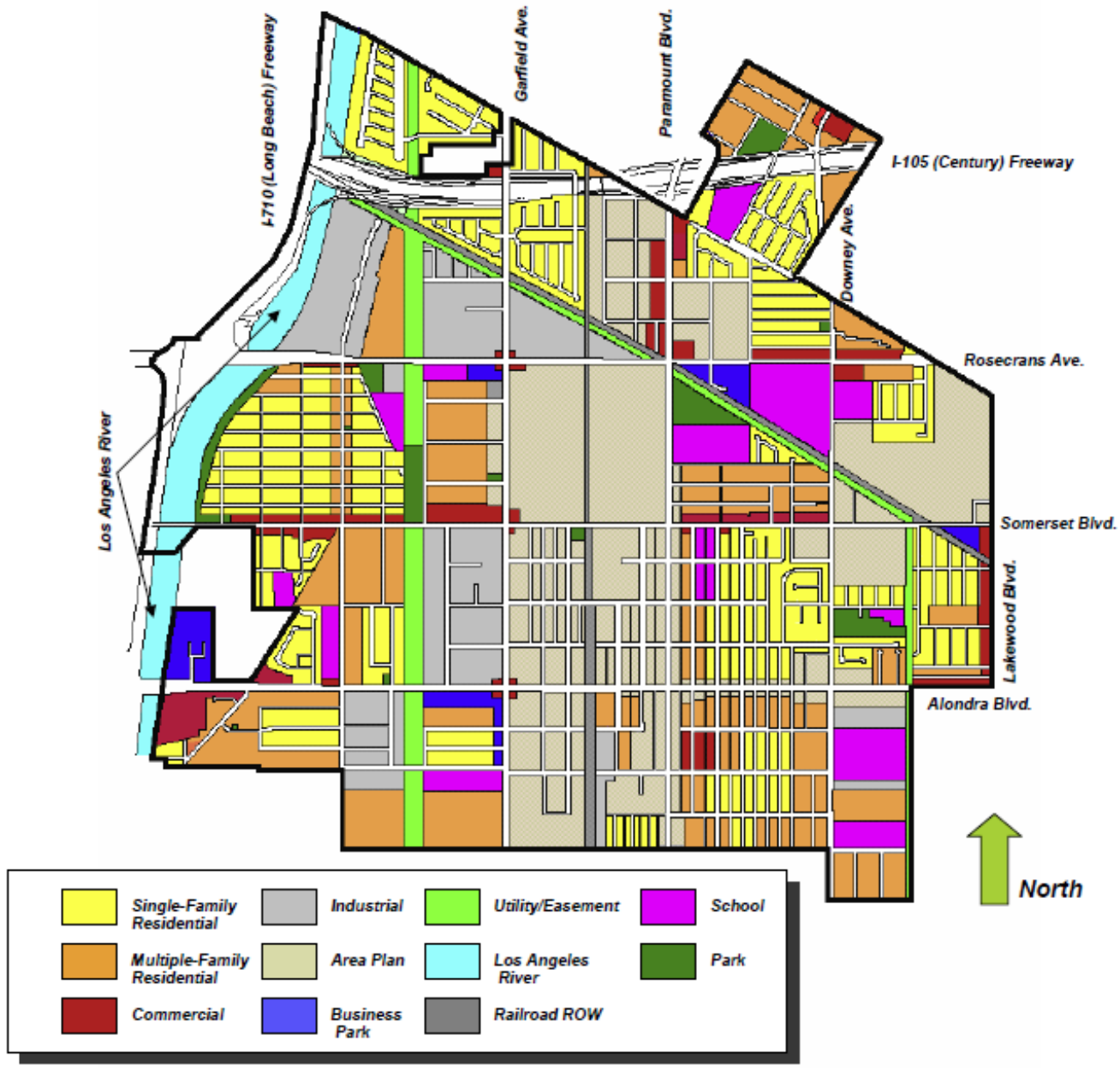
The City of Paramount is completely urbanized with the remaining undeveloped areas consisting of infill properties. Land uses and development found in the vicinity of the refinery include schools, residential areas, a mobile home park, apartments, commercial buildings, and transportation corridors (see Figure 4.6-1). The land use pattern varies widely in the Paramount area on a parcel-by-parcel basis and reflects an area in transition from a variety of older land uses (that include the refinery) to newer development (including apartment houses and commercial land uses, e.g., grocery stores and a Walmart). Land uses surrounding the Project site include the following:

- Harry Wirtz Elementary School is located north of the refinery at the corner of Contreras Avenue and Downey Avenue. This school is operated by the Paramount Unified School District;
- Paramount High School is located to the west of the refinery, on the west side of Downey Avenue. This school is operated by the Paramount Unified School District;
- The Cinderella Mobile Home Community and single-family homes are located further east along Contreras Avenue on the north side of the refinery;
- Two parcels located to the northeast of the refinery are occupied by a commercial retail center that includes a supermarket and Walmart;
- The Los Angeles Department of Water and Power (LADWP) easement and the Union Pacific Railroad (UPPR) tracks extend diagonally across Somerset Boulevard and Downey Avenue and separate the refinery from the Somerset Village condominiums and a neighborhood that consists of single-family dwellings;
- The Somerset Village Condominiums are located to the south of the LADWP easement and north of Somerset Boulevard;
- A public storage facility (A-1 Self Storage) is located to the south of the LADWP easement, on the east side of Downey Avenue;
- An auto parts store (Mustang Country International) and an auto body shop (Elite Restoration Auto Body) are located east of the refinery, on the west side of Lakewood Blvd.;
- The east side of Lakewood Boulevard is developed with commercial uses, including several auto-related businesses, the Rainbow Trailer Park, the Fox Trailer Court, and the Hazy 8 Motel;
- Albert Baxter Elementary School is located east of Lakewood Boulevard in the City of Bellflower approximately 415 feet west of the refinery. This school is operated by the Bellflower Unified School District; and

- Further south, along the south side of Somerset Boulevard, there are single-family neighborhoods and commercial and industrial land uses. The opposite side of Downey Avenue contains a mix of single and multiple-family developments and Paramount High School.

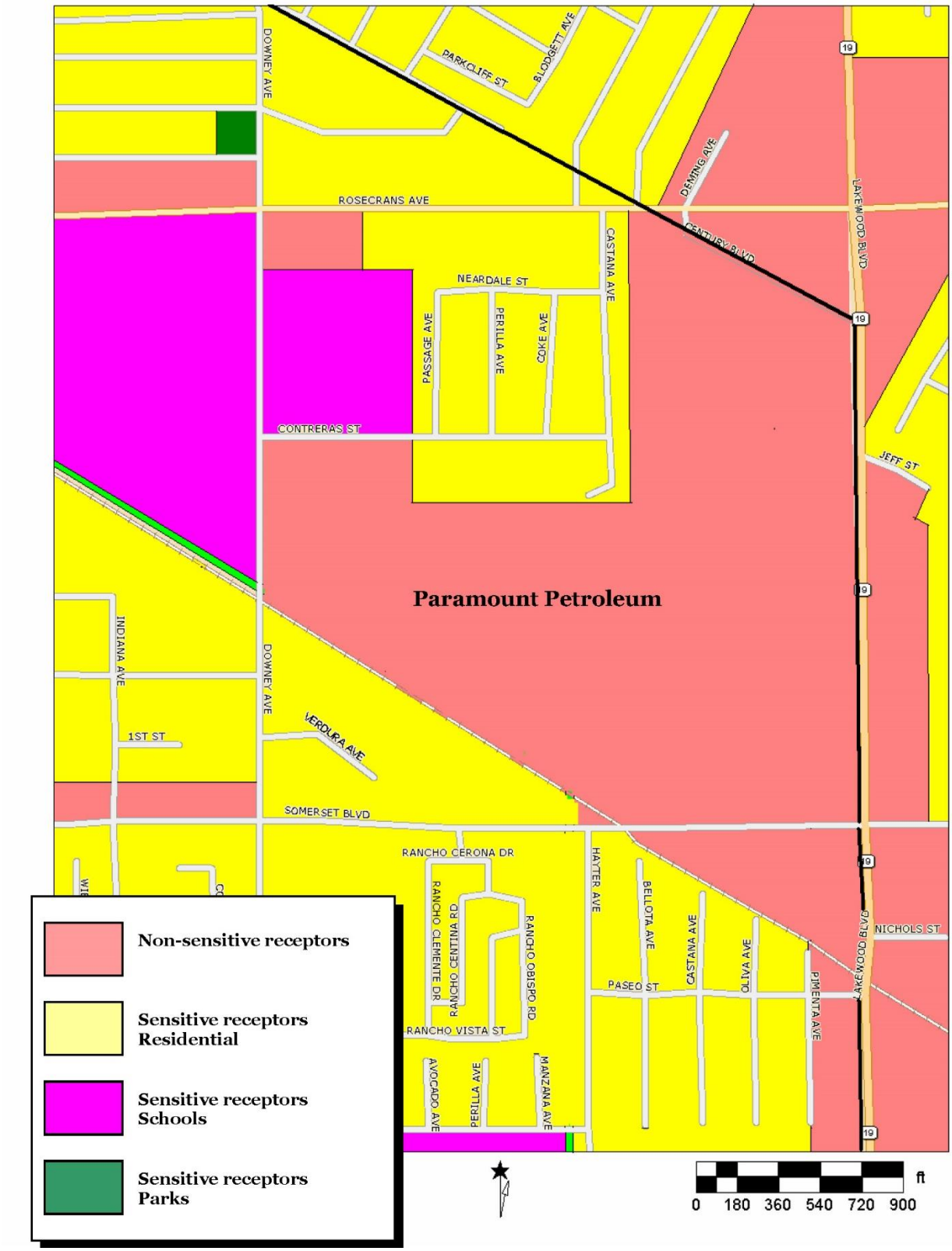
Land uses surrounding the Lakewood Tank Farm include commercial and residential land uses, as well as Davenport Park.

Figure 4.6-1 Paramount Land Use Plan



Source: City of Paramount 2007.

Figure 4.6-2 Existing General Plan Designations



Source: City of Paramount 2013.

4.6.1.3 Previous Environmental Review

The December 2013 Mitigated Negative Declaration (MND) for the Original Renewable Fuels Project determined that the City of Paramount is completely urbanized with the remaining undeveloped areas consisting of infill properties. The Original Renewable Fuels Project was located within the existing refinery, and the Original Renewable Fuels Project did not involve the permanent closure of any existing roadways or result in the division of an established residential neighborhood.

The City of Paramount General Plan and Zoning Ordinance define the permitted land uses and the corresponding development standards within the City. The refinery is included in the Somerset Ranch Area Plan. No zone change or general plan amendment was required to accommodate the Original Renewable Fuels Project use; however, a Conditional Use Permit (CUP) and a Zone Variance were required. The refinery is located inland from the Pacific Ocean and is not located within a designated Coastal Zone.

4.6.2 Regulatory Setting

This subsection presents a summary of the key land use regulations that would be applicable to the Project.

4.6.2.1 Local Regulations

Los Angeles County General Plan

Safety Element

- *Policy S 4.3*. Coordinate with other County and public agencies, such as transportation agencies, and health care providers on emergency planning and response activities, and evacuation planning; and
- *Policy S 4.5.* Ensure that there are adequate resources, such as sheriff and fire services, for emergency response.

Mobility Element

- *Policy M* 6.3. Designate official truck routes to minimize the impacts of truck traffic on residential neighborhoods and other sensitive land uses; and
- *Policy M 6.4.* Minimize noise and other impacts of goods movement, truck traffic, deliveries, and staging in residential and mixed-use neighborhoods.

City of Paramount General Plan

The California Government Code requires each city and county to have a planning agency and to develop a General Plan providing a comprehensive, long-term plan for its physical development. The General Plan of the City of Paramount was adopted in 2007. The current General Plan consists of eight elements, listed below:

- Land Use Element;
- Transportation Element;
- Resources Element;
- Health and Safety Element;

- Economic Development Element;
- Public Facilities Element;
- Housing Element; and
- Implementation Element.

Land Use Element

The Paramount Land Use Element designates the general distribution and intensity of land use and development contemplated within the land area governed by the General Plan. Through the implementation of the Land Use Plan, the City of Paramount seeks to accomplish the following:

- The establishment and maintenance of an orderly pattern of development in the City;
- The establishment of a land use classification system as a means to implement the City's land use policy;
- The identification of permitted land uses, their general location, and distribution; and
- The establishment of standards for population density and development intensity for both existing and future development.

Land Use Designation - Industrial

The Industrial land use classification includes those land uses involved in manufacturing, processing, and warehousing activities. The nature and extent of permitted uses included in the Industrial land use designation are governed by the City's Zoning Ordinance, the "Planned Development" standards, or through the use of specific plans, such as the Somerset Ranch Area Plan which applies to the Project site. The development standards for this land use category also rely on the floor area ratio (FAR) with the maximum allowable intensity of two to one.

Citywide Land Use Policies

City of Paramount land use policies applicable to the Project are summarized below.

Land Use Compatibility

- *Land Use Element Policy 3.* The City of Paramount will provide guidance for land use and development within specific geographic areas of the City in the form of Specific Plans and Area Plans;
- *Land Use Element Policy 4*. The City of Paramount will limit the intrusion of dissimilar uses as a means to minimize potential land use conflicts and incompatibility in the future; and
- *Land Use Element Policy 5*. The City of Paramount, through continued comprehensive land use planning, will strive to preserve the overall mix of land uses and development in the City.

Industrial Development

- *Land Use Element Policy 14.* The City of Paramount will encourage the continued revitalization of its industrial districts to accommodate economic development and growth.

Urban Design

- *Land Use Element Policy 18.* The City of Paramount will continue to promote the maintenance of existing properties; and

- *Land Use Element Policy 22.* The City of Paramount will continue to promote quality design in the review of residential, commercial, and industrial development.

Somerset Ranch Area Plan

The following policies are intended to carry out the Somerset Ranch Area Plan:

- *Somerset Ranch Area Plan Policy 1.* Mixed uses are allowed throughout the Planning Area and may include combination of residential, cultural, commercial, hotel, industrial or office uses;
- *Somerset Ranch Area Plan Policy 2.* Landscape buffer zones and frontage treatments to integrate uses shall be subject to site plan review in accordance with City design guidelines;
- *Somerset Ranch Area Plan Policy 3*. The City or the Redevelopment Agency may share in property acquisition and/or development costs of improvements where it is cost effective;
- *Somerset Ranch Area Plan Policy 4.* Incentives for lot consolidation or integrated planning of parcels in separate ownership will be negotiated on a case-by-case basis;
- *Somerset Ranch Area Plan Policy 5.* Frontage treatments for Somerset Boulevard and Downey Avenue involving architectural elevations, materials, color, texture, landscaping, and signs shall be the subject of the Site Plan review in accordance with City design projects;
- *Somerset Ranch Area Plan Policy 6.* Planned development with Performance Standards (PDPS) zoning will normally be used to regulate land use and development standards in this area; although conventional zoning may be applied in some cases if the Area Plan objectives can still be satisfied;
- *Somerset Ranch Area Plan Policy 7*. The City and/or the Redevelopment Agency may assist in conceptual project design, if necessary, to facilitate a quality development project; and
- *Somerset Ranch Area Plan Policy 8*. Comprehensive planning will take into consideration the segregation of residential/nonresidential traffic and the character of adjacent arterial highways.

Transportation Element

The Transportation Element identifies the location and extent of existing and proposed streets and roadways, intersection improvements, public transit facilities, railroads, transportation terminals, and other transportation facilities.

Circulation and Traffic

- *Transportation Element Policy 4.* The City of Paramount will continue to develop and implement a designated system of truck routes as a means to keep industrial traffic out of residential neighborhoods.

Alternative Forms of Transportation

- *Transportation Element Policy 10.* The City of Paramount will encourage new and existing businesses to include those improvements that will promote the use of alternative forms of transit.

Levels of Service

- Any new development or redevelopment in the city should have a Traffic Impact Analysis (TIA) conducted if the project is expected to generate more than 500 new trips per day.

Health and Safety Element

The Health and Safety Element identifies the City's policy relative to the reduction and mitigation of natural hazards as a means to improve the safety of its citizens. This Element complies with the State requirements for both a noise element and safety element.

Seismic Safety

- *Health and Safety Element Policy 14.* The City of Paramount will continue redevelopment efforts, particularly in older commercial and industrial areas.

Fire Protection

- *Health and Safety Element Policy 17.* The City of Paramount will continue to provide efficient fire protection services; and
- *Health and Safety Element Policy 19.* The City of Paramount will require contemporary fire protection for multi-story structures and larger industrial facilities.

Noise Control

- *Health and Safety Element Policy 32.* The City of Paramount will cooperate with State and Federal agencies so as to minimize transportation related noise;
- *Health and Safety Element Policy 34.* The City of Paramount will promote the development of a compatible noise environment throughout the City; and
- *Health and Safety Element Policy 36.* The City of Paramount will periodically review County and regional plans for land use, transportation, airport operation, etc. to identify any potential noise impacts and to develop corresponding noise attenuation strategies.

Noise and Land Use Compatibility

- The State Office of Noise Control has prepared Guidelines for the Preparation and Content of Noise Elements of General Plans. These guidelines serve as a guide for compatibility of noise-sensitive land uses. Residential uses should not be located in areas exceeding 70 dB CNEL. Schools, libraries, hospitals, and nursing homes are treated as noise-sensitive land uses, requiring mitigation when such development occurs in areas where the ambient noise levels exceed 60 dB CNEL

Public Facilities Element

The Public Facilities Element identifies policies and programs with respect to those public facilities that serve the community.

Water

- *Public Facilities Element Policy 1.* The City of Paramount will work to maintain good water quality;
- *Public Facilities Element Policy 2.* The City of Paramount will provide water storage and delivery capacity to meet normal usage and fire requirements; and
- *Public Facilities Element Policy 3.* The City of Paramount will continue to identify sources of industrial pollution and require any pertinent remediation to be undertaken in a timely manner.

Waste Disposal

- *Public Facilities Element Policy 6.* The City of Paramount will require solid waste collection, disposal, and recycling techniques to be undertaken in such a manner so as to reduce noise and other adverse effects; and
- *Public Facilities Element Policy 7.* The City of Paramount will continue to implement its recycling and waste reduction programs as a means to comply with the AB 939 requirements.

Wastewater

- *Public Facilities Element Policy 8.* The City of Paramount will provide adequate sewage service to ensure that waste disposal practices are in accordance with policies and procedures of the Sanitation Districts of Los Angeles County.

City of Paramount Municipal Code

- *Municipal Code Section 9.12.060.A: Excessive Noise*. It is unlawful for any person from any location within the City, including commercial, agricultural and industrial zoned property, to create, maintain, cause or allow to be created or maintained, any noise or sound upon any property within the City, which exceeds the noise standards as specified in Section 9.12.040 as measured in accordance with procedures specified in Section 9.12.050, unless the noise or sound source or sound is specifically exempted in this chapter; and
- *Municipal Code Section 9.12.060.B.4: Sources of Noise.* Construction equipment or work, including, but not limited to, the operation, use or employment of pile drivers, hammers, saws, steam shovels, pneumatic hammers, drills, derricks, steam or electric hoists, motorized mechanical equipment or other similar construction equipment.
    - a. Exemption. Construction, repair or remodeling equipment and devices and other related construction noise sources shall be exempted from the provisions of this chapter provided a permit for such construction, repair or remodeling shall have been obtained for such construction, repair or remodeling from the Building Department of the City and the construction, repair or remodeling does not take place between the hours of 8:00 p.m. and 7:00 a.m.

City of Lakewood Municipal Code

- *Municipal Code Section 9376.* No person within any area of the City zoned for residential use or any area adjacent thereto shall own, possess, control, or maintain any machinery, equipment, pumps, fans, air conditioning or air-handling apparatus, or similar mechanical devices which cause the noise level at the property line of any property zoned for residential uses to exceed the sound pressure level permitted herein by more than five decibels.

City of Bellflower Municipal Code

- *Municipal Code Chapter 8.32.* It is unlawful for any person to willfully make or continue, or cause to be made or continued, any loud, unnecessary, and unusual noise which disturbs the peace or quiet of any neighborhood or which causes discomfort or annoyance to any reasonable person of normal sensitiveness residing in the area. Standards which may be considered in determining whether a violation of the provisions of this section exists may include the nature and origin of the noise, the time of the day and/or night the noise occurs, and the duration of the noise.

4.6.3 Significance Thresholds

Appendix G of the CEQA Statute and Guidelines provides the following thresholds for determining the potential environmental impact of a proposed project regarding land use. Would the Project:

a. Physically divide an established community; or

b. Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

Section 4.6.4 discusses potential Project impacts in relation to these CEQA Appendix G thresholds.

4.6.4 Project Impacts and Mitigation Measures

Impact #	Impact Description	Phase	Impact Classification
LU.1	The Project would not physically divide an established community.	Construction or Operation	Class III

Most of the proposed modifications to the Original Renewable Fuels Project would continue to be located within the existing refinery and Lakewood Tank Farm, both of which are zoned for industrial uses. The Project would involve the modification of existing and installation of new refinery equipment within the refinery to complete the conversion of the refinery into a renewable fuels production facility. The existing refinery is located in the Somerset Ranch Area Plan and is zoned M-2 (Heavy Manufacturing) and refining activities are compatible uses within the Plan. The Lakewood Tank Farm is zoned by the City of Lakewood as M-1 (Light Manufacturing) and is compatible with the operation of storage tanks. The continued operation of storage tanks at the Lakewood Tank Farm would not disrupt or divide an existing community.

Under the Project, a new natural gas supply pipeline would be installed to provide natural gas that would feed and fuel the new Hydrogen Generation Unit. The potential pipeline route provided by Southern California Gas Company (SoCalGas) to the refinery would be approximately 3.7 miles of new pipeline that would extend north from Lakewood Boulevard to Somerset Boulevard and enter the refinery from the east on Somerset Boulevard (see Figure 2-5). This new pipeline would extend along existing public roads and would not result in the division of an established community.

Therefore, the Project would not divide an established community, and potential impacts for LU.1 would be **less than significant (Class III).**

Impact #	Impact Description	Phase	Impact Classification
LU.2	The Project would not conflict with a land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.	Construction or Operation	Class III

The existing refinery accounts for slightly more than half of the total acreage within the Somerset Ranch Area of the 1990 Paramount General Plan. The Somerset Ranch Area is designated as "Mixed Use" and includes a mix of residential, commercial, industrial, and public uses (see Somerset Ranch Area Plan Policy 1). The refinery is zoned M-2 (Heavy Manufacturing) under the City of Paramount zoning codes. The proposed modifications would continue the use of the site as an industrial facility, i.e., a renewable fuels production facility, although crude oil would no longer be used. This would be consistent with the zoning

and existing land use, and no zone change or general plan amendment would be required to accommodate the Project modifications. A CUP and a Zone Variance would be required for equipment that would exceed the height limit of 55 feet in a heavy industrial zone. The modifications include new process vessels greater than 55 feet and the installation of a new 135-foot-tall flare. The new Hydrogen Generation Unit and the associated heater stack are expected to be approximately 100 feet tall, and the new Pretreat Unit is expected to be 56 to 60 feet tall.

The Project would continue the use of the existing Lakewood Tank Farm for storage and blending of jet fuel in addition to on-site tankage at the refinery. The Lakewood Tank Farm is zoned by the City of Lakewood as M-1 (Light Manufacturing); this zoning is compatible with the operation of storage tanks.

The Project is consistent with the site land use and zoning designations, however, noise generated from the construction and operation of the Project may be inconsistent with certain land use policies and municipal codes of Los Angeles County and the cities of Paramount, Lakewood, and Bellflower as discussed in Section 4.6.5, Policy Consistency Analysis, due to nighttime construction. Section 4.7, Noise and Vibration, concludes the Project may generate nighttime construction noise levels related to pipeline construction activities and nighttime construction at the refinery that could exceed the Paramount Municipal Code. Section 4.7 also concluded that noise levels from the operation of the Project may produce substantial increases in CNEL noise levels related to rail movements.

The potential to exceed noise thresholds may also be inconsistent with the cities of Lakewood and Bellflower Municipal Code as noted in Section 4.6.5 for nighttime noise construction along the pipeline route.

Mitigation measure N-1a prohibits the nighttime construction at the refinery and prohibits nighttime construction along the pipeline route in areas that could affect residential areas. Therefore, the Project would be consistent with the respective jurisdiction's municipal codes. Ultimate determination of consistency and inconsistency is left to the City Council. Potential impacts for LU.2 would be **less than significant (Class III).**

4.6.5 Policy Consistency Analysis

State CEQA Guidelines §15125(d) requires that an EIR discuss any inconsistencies between a proposed project and applicable general plans, specific plans, and regional plans. Table 4.6.1 (located at the end of Section 4.6) provides a preliminary evaluation of the Project's potential inconsistency or consistency with applicable local policies. Inconsistency with a plan or policy that does not have a physical impact on the environment may not be considered an impact under CEQA.

The City staff report for the Project will contain a final Project Consistency Analysis, which will serve as the basis for the City decision maker deliberations. The final determination of consistency or inconsistency with adopted plans rests with City decision makers.

Table 4.6.1 Policy Consistency Analysis

Source	Item	Plan, Ordinance, Regulation or Standard	Preliminary Analysis
Los Angeles County General Plan			
Los Angeles County General Plan	Policy S 4.3	Coordinate with other County and public agencies, such as transportation agencies, and health care providers on emergency planning and response activities, and evacuation planning.	**Potentially Consistent.** The existing refinery has its own emergency response team, along with the local fire department and other emergency services. The existing refinery currently maintains personnel and equipment on-site for fire suppression efforts and posts fire emergency procedures. On-site fire training exercises with the City Fire Department staff are conducted. Firefighting and emergency response personnel and equipment would continue to be maintained and operated at the refinery.
Los Angeles County General Plan	Policy S 4.5	Ensure that there are adequate resources, such as sheriff and fire services, for emergency response.	**Potentially Consistent.** Entry and exit at the existing refinery are currently monitored and no additional or altered police protection is expected**.** The Project would not increase the requirements for additional or altered fire protection. Firefighting and emergency response personnel and equipment would continue to be maintained and operated at the refinery.
Los Angeles County General Plan	Policy M 6.3	Designate official truck routes to minimize the impacts of truck traffic on residential neighborhoods and other sensitive land uses.	**Potentially Consistent.** Project truck trips would follow the same routes as current trips, relying on designated truck routes, with automobiles generally utilizing the Downey Avenue entrance and trucks utilizing Andry Drive.
Los Angeles County General Plan	Policy M 6.4	Minimize noise and other impacts of goods movement, truck traffic, deliveries, and staging in residential and mixed-use neighborhoods.	**Potentially Consistent.** Project truck trips would follow the same routes as current trips, relying on designated truck routes, with automobiles generally utilizing the Downey Avenue entrance and trucks utilizing Andry Drive. In order to minimize noise impacts, MM-N-1a requires that construction activities be limited to daytime hours. MM-N-1b requires the Applicant produce a Noise Monitoring and Management Plan for construction that would restrict staging to industrial and commercial zones and, to the extent feasible, staging sites shall not be located within 500 feet of a sensitive receptor. In addition, equipment will be stored in the construction zone to the extent practicable to minimize noise associated with repeated transportation of equipment.

Source	Item	Plan, Ordinance, Regulation or Standard	Preliminary Analysis
			MM-N-2a requires the Applicant to provide a detailed noise assessment and also provides for additional noise barriers and/or other equipment to lower the noise from operation of the Project. Noise will be reduced with the proposed mitigation measures and the Project is found to be consistent with this policy.
City of Paramount General Plan			
Land Use Element	Land Use Element Policy 14	The City of Paramount will encourage the continued revitalization of its industrial districts to accommodate economic development and growth.	**Potentially Consistent.** Existing refinery equipment would be used to the extent possible and new equipment would be brought in as needed. Some existing refinery equipment would be eliminated in areas where new equipment would be installed. Several upgrades are being included that would improve efficiencies and reduce emissions throughout the operation. The Project modifications to the existing refinery are consistent with Land Use Element Policy 14.
Land Use Element	Land Use Element Policy 18	The City of Paramount will continue to promote the maintenance of existing properties.	**Potentially Consistent.** Existing refinery equipment would be used to the extent possible and new equipment would be brought in as needed. Some existing refinery equipment would be eliminated in areas where new equipment would be installed. Several upgrades are being included that would improve efficiencies and reduce emissions throughout the operation. Modifications at the Lakewood Tank Farm would be limited to maintenance of existing equipment. The Project modifications to the existing refinery are consistent with Land Use Element Policy 18.
Land Use Element	Land Use Element Policy 22	The City of Paramount will continue to promote quality design in the review of residential, commercial, and industrial development.	**Potentially Consistent.** New vessels, towers, reactors, and flare associated with the Project are expected to be visible to the surrounding community because of their height; however, the visual quality of the area is dominated by the industrial nature of the refinery and will not result in a significant visual change to the refinery. The Project modifications would require a variance from the current height limit in Heavy Industrial zones of 55 feet. Other Project modifications would be located within the boundaries of the existing refinery and would be consistent with surrounding infrastructure.

Source	Item	Plan, Ordinance, Regulation or Standard	Preliminary Analysis
Land Use Element	Somerset Ranch Area Plan Policy 1	Mixed uses are allowed throughout the Planning Area and may include combination of residential, cultural, commercial, hotel, industrial or office uses.	**Potentially Consistent.** Industrial uses area allowed in the Area Plan; the refinery is zoned M-2 (Heavy Manufacturing) under the City of Paramount zoning codes. Therefore, the zoning of the Project site would be consistent with Somerset Ranch Area Plan Policy 1.
Land Use Element	Somerset Ranch Area Plan Policy 2	Landscape buffer zones and frontage treatments to integrate uses shall be subject to site plan review in accordance with City design guidelines.	**Potentially Consistent.** The refinery is surrounded by a six-foot perimeter wall and landscape vegetation obscures large portions of the refinery. On-site vegetation is limited to smaller trees, ruderal vegetation, and parkway landscaping along the major roadway frontage. Landscape zones and frontage treatments at the refinery would be consistent with Somerset Ranch Area Plan Policy 2.
Land Use Element	Somerset Ranch Area Plan Policy 3	The City or the Redevelopment Agency may share in property acquisition and/or development costs of improvements where it is cost effective.	**Potentially Consistent.** The Project modifications would occur within the boundaries of the existing refinery and tank farm, except for the installation of a natural gas pipeline that would utilize existing street rights-of-way through the cities of Paramount, Bellflower, and Lakewood. The Project would be consistent with Somerset Ranch Area Plan Policy 3 should the City or the Redevelopment Agency share in development costs.
Land Use Element	Somerset Ranch Area Plan Policy 4	Incentives for lot consolidation or integrated planning of parcels in separate ownership will be negotiated on a case-by-case basis.	**Potentially Consistent.** The Project modifications would occur within the boundaries of the existing refinery and tank farm, except for the installation of a natural gas pipeline that would utilize existing street rights-of-way through the cities of Paramount, Bellflower, and Lakewood. The Project would be consistent with Somerset Ranch Area Plan Policy 4.
Land Use Element	Somerset Ranch Area Plan Policy 5	Frontage treatments for Somerset Boulevard and Downey Avenue involving architectural elevations, materials, color, texture, landscaping, and signs shall be the subject of the Site Plan review in accordance with City design projects.	**Potentially Consistent.** The visual character of the refinery will remain the same (i.e., an industrial facility). The refinery is surrounded by a six-foot perimeter wall and landscape vegetation obscures large portions of the refinery. On-site vegetation is limited to smaller trees, ruderal vegetation, and parkway landscaping along the major roadway frontage. Aesthetic and visual aspects of the Project are further discussed in Section 4.1, Aesthetics. Visual changes to the refinery as part of the Project would be consistent with Somerset Ranch Area Plan Policy 5.
Land Use Element	Somerset Ranch Area Plan Policy 6	Planned development with Performance Standards (PDPS) zoning will normally be used to regulate land use and development standards in this area; although conventional	**Potentially Consistent.** The refinery is zoned M-2 (Heavy Manufacturing) under the City of Paramount zoning codes. Project modifications within the Somerset Ranch Area will

Source	Item	Plan, Ordinance, Regulation or Standard	Preliminary Analysis
		zoning may be applied in some cases if the Area Plan objectives can still be satisfied.	occur within the existing refinery. The Somerset Ranch Area Plan allows for industrial land use. Therefore, the zoning of the Project site would be consistent with Somerset Ranch Area Plan Policy 6.
Land Use Element	Somerset Ranch Area Plan Policy 7	The City and/or the Redevelopment Agency may assist in conceptual project design, if necessary, to facilitate a quality development project.	**Potentially Consistent.** The City of Paramount has been involved in the design process of this Project; therefore, the Project would be consistent with Somerset Ranch Area Plan Policy 7.
Land Use Element	Somerset Ranch Area Plan Policy 8	Comprehensive planning will take into consideration the segregation of residential/nonresidential traffic and the character of adjacent arterial highways.	**Potentially Consistent.** In order to minimize impacts to residential roadways, Project truck trips would follow the same routes as current trips, relying on designated truck routes, with automobiles generally utilizing the Downey Avenue entrance and trucks utilizing Andry Drive. The Project would be consistent with Somerset Ranch Area Plan Policy 8.
Transportation Element	Transportation Element Policy 4	The City of Paramount will continue to develop and implement a designated system of truck routes as a means to keep industrial traffic out of residential neighborhoods.	**Potentially Consistent.** Project truck trips would follow the same routes as current trips, relying on designated truck routes, with automobiles generally utilizing the Downey Avenue entrance and trucks utilizing Andry Drive.
Transportation Element	Transportation Element Policy 10	The City of Paramount will encourage new and existing businesses to include those improvements that will promote the use of alternative forms of transit.	**Potentially Consistent.** The Project is being developed in coordination with the County of LA and LA Metro's WSAB project. The WSAB line will run adjacent to the southwest boundary of the refinery; The refinery is located between the proposed Paramount/Rosecrans Station and Bellflower Station but is located outside the ½-mile walk shed of each station.
Transportation Element	Traffic Impact Analysis (TIA)	The Transportation Element notes that any new development or redevelopment in the city should have a Traffic Impact Analysis (TIA) conducted if the project is expected to generate more than 500 new trips per day.	**Potentially Consistent.** A TIA was conducted for the Project. Construction vehicle trips would peak during year two at 1,324 light-duty vehicles (autos and pickup trucks) round trips per day. On an average day of operation, the Project will generate 74 new daily automobile one-way trips and 228 new daily truck round trips. On a peak day of operation, the Project will generate 384 new daily truck round trips.
Health and Safety Element	Health and Safety Element Policy 14	The City of Paramount will continue redevelopment efforts, particularly in older commercial and industrial areas.	**Potentially Consistent.** The Project is potentially consistent with the City's policy since it would not create a new industrial area and will continue the existing use of the refinery and result in improvements to an existing industrial facility.

Source	Item	Plan, Ordinance, Regulation or Standard	Preliminary Analysis
Health and Safety Element	Health and Safety Element Policy 17	The City of Paramount will continue to provide efficient fire protection services.	**Potentially Consistent.** The existing refinery has its own emergency response team, along with the local fire department and other emergency services. The existing refinery currently maintains personnel and equipment on-site for fire suppression efforts and posts fire emergency procedures. On-site fire training exercises with the County Fire Department staff are conducted. The Project would not increase the requirements for additional or altered fire protection. Firefighting and emergency response personnel and equipment would continue to be maintained and operated at the refinery.
Health and Safety Element	Health and Safety Element Policy 19	The City of Paramount will require contemporary fire protection for multi-story structures and larger industrial facilities.	**Potentially Consistent.** The existing refinery currently maintains personnel and equipment on-site for fire suppression efforts. Firefighting and emergency response personnel and equipment would continue to be maintained and operated at the refinery.
Health and Safety Element	Health and Safety Element Policy 32	The City of Paramount will cooperate with State and Federal agencies so as to minimize transportation related noise.	**Potentially Consistent.** Caltrans was involved in the environmental review process for the Project's NOP. Project truck trips would follow the same routes as current trips, relying on designated truck routes. Project Mitigation Measure N-1b subpart 11 states that to the extent practicable, construction equipment shall be stored in the construction zone while in use, in order to eliminate noise associated with repeated transportation of the equipment to and from the site.
Health and Safety Element	Health and Safety Element Policy 34	The City of Paramount will promote the development of a compatible noise environment throughout the City.	**Potentially Consistent.** Project construction and operation would result in the generation of a substantial increase in ambient noise levels in the vicinity of the Project. The Paramount Municipal Code exempts construction noise sources between the hours of 7:00 a.m. and 8:00 p.m. However, the Project is proposed to involve nighttime construction activities at the refinery and associated with pipeline construction that could exceed City Municipal Code. MM-N-1a requires construction activities be performed during daytime hours only, and MM-N-1b requires the Applicant prepare a Noise Monitoring and Management Plan for Project construction. These measures would eliminate noise associated with Project nighttime

Source	Item	Plan, Ordinance, Regulation or Standard	Preliminary Analysis
			construction, and noise levels would therefore be consistent. Project operations related to rail movements during operations may produce substantial increases in CNEL. MM-N-2a requires the Applicant to provide a detailed noise assessment and also provides for additional noise barriers and/or other equipment at the refinery to ensure the noise from operation of the Project at the refinery is below the thresholds.
Health and Safety Element	Health and Safety Element Policy 36	The City of Paramount will periodically review County and regional plans for land use, transportation, airport operation, etc. to identify any potential noise impacts and to develop corresponding noise attenuation strategies.	**Potentially Consistent.** The Project is being reviewed by the City for potential noise impacts. Project noise levels during nighttime pipeline construction, nighttime construction at the refinery could exceed the municipal codes. Operational activities associated with rail movements may produce substantial increases in CNEL. The Project would also result in cumulatively significant noise impacts associated with the West Santa Ana Branch Transit Corridor (WSAB) project. The WSAB project would involve construction and operation of a light rail system along the rail corridor that runs south of the refinery. In combination, the Project and the WSAB project could produce significant noise impacts at receptors near the refinery. Several measures have been developed to help mitigate potential impacts. MM-N-1a requires construction activities be performed during daytime only. MM-N-2a requires the Applicant to provide a detailed noise assessment and also provides for additional noise barriers and/or other equipment to lower the noise from operation of the Project at the refinery. MM-N-2b requires noise monitoring prior to permit issuance, and MM-N-1b requires the Applicant prepare a Noise Monitoring and Management Plan for Project construction. MM-N-2c requires railroad noise reduction measures including limiting train operations along the 1-mile connection to daytime hours. Although noise attenuation strategies have been developed for the Project,

Source	Item	Plan, Ordinance, Regulation or Standard	Preliminary Analysis
			noise impacts may be above the guidelines in Table 5-1 of the General Plan for rail movements.
Health and Safety Element	Table 5-1 Noise and Land Use Compatibility Guidelines	The State Office of Noise Control has prepared Guidelines for the Preparation and Content of Noise Elements of General Plans. These guidelines serve as a guide for compatibility of noise-sensitive land uses. Residential uses should not be located in areas exceeding up to 70 dB CNEL. Schools, libraries, hospitals, and nursing homes are treated as noise-sensitive land uses, requiring mitigation when such development occurs in areas where the ambient noise levels exceed 60 dB CNEL.	**Potentially Consistent.** Noise levels during operation of the Project at certain residences to the South and North of the Project and at Paramount High School could be above the guidelines in Table 5-1 of the General Plan. Noise from rail activities could also produce substantial CNEL increases. In addition, Exhibit 5-2 of the General Plan identifies noise sensitive land uses in the City which include residential locations to the North, South and East of the Project and Harry Wirtz Elementary and Paramount High Schools. Mitigation measure MM-N-2a requires the Applicant to provide a detailed noise assessment and also provides for additional noise barriers and/or other equipment to lower the noise from operation of the Project at the refinery.
Public Facilities Element	Public Facilities Element Policy 1	The City of Paramount will work to maintain good water quality.	**Potentially Consistent.** Review and approval of the Industrial Waste Discharge Permit discussed for Project Impact US.3 and improvements to wastewater treatment facilities that are part of the Project would provide sufficient assurance that wastewater treatment standards would be achieved by the Project.
Public Facilities Element	Public Facilities Element Policy 2	The City of Paramount will provide water storage and delivery capacity to meet normal usage and fire requirements.	**Potentially Consistent.** The current allotment for groundwater pumping rights from the Central Basin is insufficient to meet the total water demand for the Project. The CBMWD has reported to the City that there is adequate pressure and sufficient recycled water supply contracted and available through the Los Angeles County Sanitation District and the Los Coyotes WRP to supply additional water to the Project. The use of reclaimed water is expected to require the addition of a service line sufficient for delivery of Project water demands; a tie-in to the reclaimed water distribution system is available (see Figure 4.10-1). With the use of reclaimed water, there is expected to be sufficient water supplies available to serve the Project in the reasonably foreseeable future during normal years, including fire requirements.

Source	Item	Plan, Ordinance, Regulation or Standard	Preliminary Analysis
Public Facilities Element	Public Facilities Element Policy 3	The City of Paramount will continue to identify sources of industrial pollution and require any pertinent remediation to be undertaken in a timely manner.	**Potentially Consistent.** The Project modifications would increase the wastewater discharged, require additional wastewater treatment facilities, and require modifications to the wastewater discharge permit. The Project is not expected to violate water quality standards or result in a significant increase in industrial pollution to local waters.
Public Facilities Element	Public Facilities Element Policy 6	The City of Paramount will require solid waste collection, disposal, and recycling techniques to be undertaken in such a manner so as to reduce noise and other adverse effects.	**Potentially Consistent.** Some structures associated with the existing refinery are expected to require demolition. Solid waste associated with demolition of these structures would largely generate metal debris that is expected to be recycled for metal content and would be expected to generate minimal solid waste. Noise associated with these and other construction activities would occur during daytime hours in accordance with MM-N-1a and the City General Plan.
Public Facilities Element	Public Facilities Element Policy 7	The City of Paramount will continue to implement its recycling and waste reduction programs as a means to comply with the AB 939 requirements.	**Potentially Consistent.** While the Project modifications are expected to increase the amount of solid and hazardous waste generated by the refinery, the refinery would be required to adhere to federal, state, and local regulations with respect to waste handling, treatment, documentation, waste reduction and recycling, transportation, and ultimate disposal. As discussed under impact US.4, the Project modifications would not interfere with the refinery's ability to comply with existing federal, state, and local regulations for solid and hazardous waste handling and disposal, with which the refinery is currently compliant.
Public Facilities Element	Public Facilities Element Policy 8	The City of Paramount will provide adequate sewage service to ensure that waste disposal practices are in accordance with policies and procedures of the Sanitation Districts of Los Angeles County.	**Potentially Consistent.** Wastewater in Paramount is collected and treated by the LACSD sewage system and sent to either the Joint Water Pollution Control Plant (JWPCP) or one of six satellite water reclamation plants (WRPs) as part of the Joint Outfall System (JOS). Existing refinery equipment would be modified to treat an increase in wastewater generated by the Project. The installation of new treatment facilities must be reviewed and approved by the LACSD as part of modifications to the existing Industrial Waste Discharge Permit. Review and approval of the Industrial Waste Discharge Permit would provide sufficient assurance that the utility has sufficient resources to treat the wastewater.

Source	Item	Plan, Ordinance, Regulation or Standard	Preliminary Analysis
City of Paramount Municipal Code			
Municipal Code	Section 9.12.060.A	"It is unlawful for any person from any location within the City, including commercial, agricultural and industrial zoned property, to create, maintain, cause or allow to be created or maintained, any noise or sound upon any property within the City, which exceeds the noise standards as specified in Section 9.12.040."	**Potentially Consistent.** Noise levels from Project construction, if performed at night as proposed, could exceed the municipal code levels. MM-N-1 requires the Applicant to prohibit nighttime construction and to provide noise monitoring These measures would ensure that noise levels from the Project would comply with the municipal code. Therefore, the Project is consistent with Municipal Code Section 9.12.060A.
Municipal Code	Section 9.12.060.B.4	The City of Paramount Municipal Code, Sections 9.12 (as per the recodified code December 2020), exempts construction noise sources between the hours of 7:00 a.m. and 8:00 p.m.	**Potentially Consistent**. Project construction impacts between 7:00 a.m. and 8:00 p.m. are exempt per the City Municipal Code, however, some construction activities are proposed to be conducted during nighttime hours. Construction noise at night may exceed the Municipal Code standards during pipeline construction and nighttime construction at the refinery. MM-N-1 limits construction to daytime only at the refinery. MM-N-1 requires nighttime pipeline construction buffers from residences, which would reduce noise levels at residences and would therefore be consistent with the municipal code. Therefore, the Project would be consistent with Municipal Code 9.12.060.B.4. Construction noise would cease following the completion of construction activities. No construction activities are associated with the Lakewood Tank Farm, so there will be no increase in noise levels related to construction at the tank farm. Noise generated from construction during the daytime hours would be consistent with Section 9.12.060.B.4 of the Paramount Municipal Code.
City of Lakewood Municipal Code			
Municipal Code	Section 9376	The City of Lakewood Municipal Code Section 9376 specifies limits on noise related to air conditioners, mechanical equipment and machinery noise in residential areas at the property line of any property zoned for residential uses to exceed a 5 dBA increase.	**Potentially Consistent.** The natural gas pipeline associated with the Project would pass through the City of Lakewood along Lakewood Blvd. from just past Artesia Blvd. to the connection to the natural gas transmission pipeline at Del Amo Blvd. Construction of the pipeline is expected to occur for eight months (see Figure 2-8).

Source	Item	Plan, Ordinance, Regulation or Standard	Preliminary Analysis
			Pipeline construction activities that occur during daytime hours would be consistent with the Lakewood Municipal Code. However, pipeline construction may occur at night, and nighttime construction noise levels may be inconsistent with the Municipal Code. MM-N-1 requires nighttime pipeline construction buffers from residences, which would reduce noise levels at residences and would therefore be consistent with the municipal code.
City of Bellflower Municipal Code			
Municipal Code	Chapter 8.32	The City of Bellflower specifies limits on noise in Municipal Code Chapter 8.32 and primarily is related to amplification of voice or music, but also qualitatively address "any loud, unnecessary, and unusual noise which disturbs the peace or quiet of any neighborhood or which causes discomfort or annoyance to any reasonable person of normal sensitiveness residing in the area." Standards which may be considered in determining whether a violation of the provisions of this section exists may include the time of the day and/or night the noise occurs and the duration of the noise. Although the Bellflower Municipal Code does not specifically describe construction activities, Chapter 8.32 specifies limits on the operation of a mechanical blower, mower, or similar equipment between the hours of 7:00 p.m. and 8:00 a.m.	**Potentially Consistent.** The City of Bellflower Municipal Code Chapter 8.32 specifies limits on the operation of a mechanical blower, mower, or similar equipment between the hours of 7:00 p.m. and 8:00 a.m. Bellflower would exempt noise generated from daytime short-term construction activities. Noise generated from Project construction that would occur during daytime hours would be consistent with the Municipal Code. Bellflower would exempt short-term construction activities (Section 4.7.4 of this SEIR). The new natural gas pipeline associated with the Project would pass through Bellflower along Lakewood Blvd. until just past Artesia Blvd. Pipeline construction activities may occur at night; nighttime construction would be inconsistent with the Municipal Code. MM-N-1 requires nighttime pipeline construction buffers from residences, which would reduce noise levels at residences and would therefore be consistent with the municipal code.

4.6.6 Cumulative Effects

The Project would not result in any significant land use impacts; therefore, the Project would not have a cumulative effect on the land use plans and regulations of the City of Paramount or any surrounding jurisdiction.

4.6.7 References

City of Bellflower. 2021. Bellflower Municipal Code, Chapter 8.32 Noise. April 2021.

City of Lakewood. 2013. Lakewood Municipal Code, Section 9376 Air Conditioners, Mechanical Equipment and Machinery Noise in Residential Areas. December 2013.

City of Paramount. 2007. Final Paramount General Plan. Adopted August 7, 2007. Available at: http://www.paramountcity.com/home/showdocument?id=2538

City of Paramount. 2013. Paramount Petroleum Alt-Air Renewable Fuels Project. Mitigated Negative Declaration and Initial Study, Conditional Use Permit (CUP) 757 and Zone Variance (ZV) 401. Adopted December 30, 2013 (PARA 059).

City of Paramount. 2021. Paramount Municipal Code, Section 9.12.060 Prohibited types of noise. September 2021.

Los Angeles County. 2015. Los Angeles County General Plan, Mobility Element and Transportation Element. October 2015.

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4.7 Noise and Vibration

This section describes the concepts and terminology of noise, defines the baseline noise levels at noise sensitive locations nearest to the Project site, and describes the regulatory setting associated with the Project. This section also identifies the applicable significance thresholds for noise and vibration impacts, assesses potential impacts of the Project in the context of those criteria, and recommends measures to mitigate significant impacts. This section also provides a discussion of cumulative noise impacts.

Changes from Draft SEIR

Since the Draft SEIR was released in December 2021, this section has not been changed for the Final SEIR except for some minor editorial changes.

4.7.1 Environmental Setting

Noise is often defined as unwanted sound, which is perceived subjectively by individuals. Environmental noise is defined as unwanted or harmful sound created by human activity such as noise emitted by means of transport, road traffic, rail traffic, air traffic, industrial activity, manufacturing activity, etc. Noise levels at various locations of an area fluctuate and change character during different periods of the day and night. Exposure to severe noise levels over prolonged periods can cause physiological changes, including ear damage. The acceptability of more common noise levels and types of noise varies among neighborhoods, individuals, and time of day. Numerous metrics have been developed to characterize noise in terms of its amplitude, amplitude weighting, frequency content, temporal variation, etc. The following sections describe the concepts and terminology of noise and vibration.

4.7.1.1 Noise Terminology

Noise is a by-product of urbanization and there are numerous noise sources and receptors in an urban community. The range of sound pressure perceived as sound is large. The decibel is the preferred unit for measuring sound since it accounts for these variations using a relative scale adjusted to the human range for hearing (referred to as the A-weighted decibel or dBA). The A-weighted decibel is a method of sound measurement which assigns weighted values to selected frequency bands in an attempt to reflect how the human ear responds to sound. The range of human hearing is from 0 dBA (the threshold of hearing) to about 140 dBA which is the threshold for pain. Examples of noise and their A-weighted decibel levels are shown in Table 4.7.1.

Table 4.7.1 Representative Environmental Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	—110—	Rock Band
Jet Fly-over at 100 feet	—105—	
	—100—	
Gas Lawnmower at 3 feet	—95—	
	—90—	
	—85—	Food Blender at 3 feet
Diesel Truck going 50 mph at 50 feet	—80—	Garbage Disposal at 3 feet
Noisy Urban Area during Daytime	—75—	
Gas Lawnmower at 100 feet	—70—	Vacuum Cleaner at 10 feet
Commercial Area	—65—	Normal Speech at 3 feet
Heavy Traffic at 300 feet	—60—	

Table 4.7.1 Representative Environmental Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	—55—	Large Business Office
Quiet Urban Area during Daytime	—50—	Dishwasher in Next Room
	—45—	
Quiet Urban Area during Nighttime	—40—	Theater, Large Conference Room (background)
Quiet Suburban Area during Nighttime	—35—	
	—30—	Library
Quiet Rural Area during Nighttime	—25—	Bedroom at Night, Concert Hall (background)
	—20—	
	—15—	Broadcast/Recording Studio
	—10—	
	—5—	
Lowest Threshold of Human Hearing	—0—	Lowest Threshold of Human Hearing

Idling locomotive would have a noise level of about 75 dBA at 50 feet.
Source: FTA 2006.

In addition to the actual instantaneous measurements of sound levels, the duration of sound is important since sounds that occur over a long period of time are more likely to be an annoyance or cause direct physical damage or environmental stress. To analyze the overall noise levels in an area, noise events are combined for an instantaneous value or averaged over a specific time period. The time-weighted measure is referred to as equivalent sound level and represented by energy equivalent sound level (Leq).

A typical noise environment consists of a base of steady background noise that is the sum of many distant and indistinguishable noise sources. Superimposed on this background noise are the sounds from individual local sources. These sounds can vary from an occasional aircraft flyover to virtually continuous noise from traffic on a nearby roadway.

Applicable noise terminology is described in Table 4.7.2.

Table 4.7.2 Definition of Acoustical Terms

Term	Definition
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
A-Weighted Sound Level (dBA)	The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise.
Community Noise Equivalent Level (CNEL)	The average A-weighted noise level during a 24-hour day, obtained after addition of 5 decibels to sound levels in the evening from 7:00 p.m. to 10:00 p.m. and after addition of 10 decibels to sound levels in the night between 10:00 p.m. and 7:00 a.m.
Day/Night Noise Level (L_{dn})	The average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured in the night between 10:00 p.m. and 7:00 a.m. The L_{dn} and CNEL are very similar.
Decibel (dB)	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure. The reference pressure for air is 20 micro-Pascals.
Equivalent Noise Level (L_{eq})	The average A-weighted noise level during the measurement period.
Frequency (Hz)	The number of complete pressure fluctuations per second above and below atmospheric pressure. Normal human hearing is between 20 Hz and 20,000 Hz. Infrasonic sounds are below 20 Hz and ultrasonic sounds are above 20,000 Hz.

Table 4.7.2 Definition of Acoustical Terms

Term	Definition
Intrusive	That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, time of occurrence, and tonal or informational content as well as the prevailing ambient noise level.
L_{01}, L_{10}, L_{50}, L_{90}	The A-weighted noise levels that are exceeded 1 percent, 10 percent, 50 percent, and 90 percent of the time during the measurement period.
L_{max}, L_{min}	The maximum and minimum noise levels during the measurement period.
Loudness	The amplitude of sound waves combined with the reception characteristics of the human ear.
Pitch	The height or depth of a tone or sound, depending on the relative rapidity (frequency) of the vibrations by which it is produced.
SEL	Sound Exposure Level is a measure of cumulative noise exposure of a noise event expressed as the sum of the sound energy over the duration of a noise event, normalized to a one-second duration.
Sound Power Level	Sound power is the energy rate, or energy of sound per unit of time, expressed as Watts. The sound power level is the sound power relative a reference power - 10^{-12} W. Roughly, the sound power level is equal to the sound pressure level at 1 foot.
Sound Pressure	Sound pressure or acoustic pressure is the local pressure deviation from the ambient atmospheric pressure caused by a sound wave. Sound pressure can be measured using a microphone. The unit for sound pressure is the Pascal [symbol: Pa or 1 Newton exerted over an area of 1 square meter (N/m^2).
Sound Pressure Level	The sound pressure level is expressed in decibels as 20 times the logarithm to the base 10 of the ratio between the pressures exerted by the sound to a reference sound pressure (e.g., 20 micro-Pascals in air). Sound pressure level is the quantity that is directly measured by a sound level meter.
Vibration	Vibration means mechanical motion of the earth or ground, building, or other type of structure, induced by the operation of any mechanical device or equipment. The magnitude of vibration is stated as the acceleration in "g" units (1 g is equal to 32.2 feet/second^2 or 9.3 meters/second^2).

Environmental noise is measured on a logarithmic scale in decibels (dB). Therefore, an increase of 10 decibels represents a 10-time increase in acoustic energy, which is perceived by people as approximately a doubling of loudness over a wide range of amplitudes. Since decibels are logarithmic units, sound pressure levels are not added arithmetically. When two point sources of equal sound level are added, the result is a sound level that is three dB higher. For example, 60 dB plus 60 dB equals 63 dB. However, where sound levels differ, there may be little change in comparison to the louder noise source; for example, when 70 dB and 60 dB sources are added, the resulting sound level equals 70.4 dB.

In general, a three to five dBA change in noise levels is noticeable, while one to two dBA changes are generally not noticeable. It is generally accepted that the average healthy ear can barely perceive a noise level change of 3 dBA (Caltrans, 2013).

The frequency of a sound wave is the number of times in one second that the sound wave is repeated (i.e., the number of cycles per second). Frequency is designated by a number and is expressed by the unit Hertz (Hz). The frequency range over which a healthy, young person is capable of hearing is approximately 20 Hz at the low frequency end to 20,000 Hz at the high frequency end.

Because the human hearing system is not equally sensitive to sound at all frequencies, the A-weighted filter system is used to express measured sound levels, in units of dBA, based on the sensitivity of the human ear. The dBA scale emphasizes mid- to high-range frequencies and de-emphasizes the low frequencies to which human hearing is less sensitive.

Because A-weighted sound levels are adjusted to the sensitivity of the human ear, they are commonly used to quantify noise events and environmental noise. However, community response also depends on the existing ambient sound level, magnitude of sound with respect to the background noise level, duration of the sound, repetitiveness, number of events, and time of day.

Several rating scales have been developed to analyze the adverse effect of noise on people. Because environmental noise fluctuates over time, these scales consider that the effect of noise upon people largely depends upon the total acoustical energy content of the noise, as well as the time of day when the noise occurs. The rating scale of Equivalent Sound Level (Leq) is a measure of the average ambient noise, while the Day-Night Average Level (Ldn) and Community Noise Equivalent Level (CNEL) are measures of community noise. CNEL and Ldn are A-weighted average sound level measured over a 24-hour period with penalties applied for evening and nighttime noise.

Examples of low daytime noise levels are isolated, natural settings that can provide noise levels under 30 dBA Leq and quiet, suburban, residential streets that can provide noise levels around 40 dBA Leq. Noise levels above 45 dBA Leq at night can disrupt sleep. Examples of moderate-level noise environments are urban residential or semi-commercial areas (typically 55 to 60 dBA daytime Leq) and commercial locations (typically above 60 dBA daytime Leq). People may consider louder environments adverse, but most will accept the higher noise levels associated with noisier urban residential or residential-commercial areas (60 to 75 dBA) or dense urban or industrial areas (65 to 80 dBA) due to the expectations within the land use. For example, people might accept these noise levels when out shopping, on the freeway or visiting their mechanic, but these levels would not be acceptable when at home or in the middle of the night.

4.7.1.2 Noise Effects

Noise levels are reduced the farther away a receptor is from the source because of several effects, including geometry, atmosphere, ground, and barriers.

Geometric Effects

Geometric effect refers to the spreading of sound energy as a result of the expansion of the wave fronts. Geometric spreading is independent of frequency and has a major effect in almost all sound propagation situations. There are two common kinds of geometric spreading: point source spherical and cylindrical spreading. In the case of spherical spreading from a point source, which is due to a noise source radiating sound equally in all directions, the sound level is reduced by six (6) decibels (dB) for each doubling of distance from the source. A busy highway would be a cylindrical source with equal sound power output per unit length of highway. A cylindrical source will produce cylindrical spreading, resulting in a sound-level reduction of three (3) dB per doubling of distance.

Atmospheric Effects

Atmospheric effects are due to air absorption and wind and temperature gradients. Air absorption is primarily due to the “molecular relaxation effect” between air molecules, where air molecules are excited and then relaxed by the passing sound pressure wave. High frequencies are absorbed more than low frequencies. The amount of absorption depends on the temperature and humidity of the atmosphere.

Precipitation (rain, snow, or fog) has a nominal effect on sound levels although the precipitation will affect the humidity and may also affect wind and temperature gradients. Atmospheric absorption is only an issue at higher frequencies and is a strong function of humidity and temperature. For example, at 68 degrees Fahrenheit (°F) and 70 percent humidity, air absorption of sound at frequencies of 16,000 hertz

(Hz) occurs at approximately eight (8) dB per 100 feet (ft). However, at zero percent humidity, the rate drops to approximately one (1) dB per 100 ft.

Under normal circumstances, atmospheric absorption can be neglected except where long distances or high frequencies are involved (greater than 4,000 Hz). At less than 2,000 Hz, the rate of sound level drop, due to air absorption, is less than 0.25 dB per 100 ft (at 68°F and 70 percent humidity).

Under conditions of a temperature inversion (temperature increasing with increasing height), the sound waves will be refracted downwards, and therefore may be heard over larger distances. This frequently occurs in clear winter nights and at sundown.

When a wind is blowing there will be a vertical wind gradient because the layer of air next to the ground is stationary. A vertical wind gradient results in sound waves propagating upwind being 'bent' upwards and those propagating downwind being 'bent' downwards. This effect can cause noise levels downwind to be higher than those upwind. Wind can cause sound effects to travel substantial distances.

Temperature and wind gradients can result in measured sound levels being very different to those predicted from geometrical spreading and atmospheric absorption considerations alone. These differences may be as great as 20 dB. These effects are particularly important where sound is propagating over distances greater than 500 ft. Temperature inversions and winds can also result in the effectiveness of a barrier being dramatically reduced.

Ground and Barrier Effects

If sound is propagating over ground, attenuation will occur due to acoustic energy losses on reflection. These losses will depend on the surface. Smooth, hard surfaces will produce little absorption, whereas thick grass may result in sound levels being reduced by up to about 10 dB per 300 ft at 2000 Hz. High frequencies are generally attenuated more than low frequencies.

Significant attenuation can be achieved with solid barriers. A barrier attenuates sound more effectively when it is at least high enough to obscure the 'line of sight' between the noise source and receiver. A barrier is most effective for high frequencies since low frequencies are diffracted around the edge of a barrier more easily. The maximum performance of a barrier is limited to about 20 dB, due to scattering by the atmosphere. A barrier is most effective when placed either very close to the source or the receiver.

Barriers not built for acoustical purposes are often found in sound propagation situations. The most common of these are hills and buildings. In urban situations, buildings can be effective barriers. It is possible for buildings to produce a different acoustical effect. In a city street with tall buildings, multiple reflections from parallel building facades can result in considerable reverberation and consequently reduced attenuation.

Tonal Effects

Noise in which a single frequency stands out is said to contain a 'pure tone.' Sources that produce pure tones are often described as being 'tonal' and tend to be more noticeable – and potentially annoying – to humans than sources that do not contain pure tones. In assessing the subjective impact of tonal noise, it is common practice to take this increased annoyance into account by adding a five dBA penalty to the measured noise level.

Modeling Noise Impacts

Models are often used to estimate noise levels from proposed activities and to estimate noise levels under a range of meteorological conditions. In addition, modeling can estimate the effect of noise mitigation devices, such as sound walls and noise blankets. Noise models can incorporate a variety of environmental conditions, including the wind, level of ground absorption, humidity, temperature inversions, atmospheric absorption, terrain, building reflections, and road type, as well as sources including automobiles, railroads, aircraft, and industry. Both A-weighted and octave band analysis can be performed with models. In addition, models incorporate a number of standards and methods, including International Organization for Standards (ISO) 9613 and the Federal Highway Administration (FHWA) Traffic Noise Model (TNM).

ISO 9613 specifies an engineering method for calculating the attenuation of sound during propagation outdoors to predict environmental noise levels at a distance from a variety of sources. ISO 9613 requires noise estimation using a downwind propagation under a mildly developed temperature inversion (both of which enhance sound propagation) and provides a case representation of potential effects during conditions that favor transmission of sound to the receptor. Since these conditions do not occur every day, model predictions using the ISO 9613 requirements are conservative.

In 1998, FHWA released the TNM (FHWA, 1998), which was developed to aid compliance with policies and procedures under FHWA regulations. The FHWA TNM addresses five different vehicle types (automobiles, medium trucks, heavy trucks, buses, and motorcycles), constant and interrupted-flow traffic, and different pavement types, as well as the effects of graded roadways.

The FHWA has also developed a Roadway Construction Noise Model (RCNM) used to estimate the noise levels associated with construction activities.

The Federal Transportation Administration (FTA) has also developed models to estimate the noise from trains (FTA, 2006).

The primary noise models currently available that incorporate ISO 9613 and TNM are SoundPlan© and Computer Aided Noise Abatement (CadnaA©). Each of these high-end computational models enables a wide range of analysis. SoundPlan© was used in this SEIR to estimate noise levels from Refinery activities.

In addition to complex noise models, simple spreadsheet models addressing only the geometric propagation of noise are utilized to conservatively estimate the effects of noise activities on receptors.

Noise Mitigation

Since industry and transportation related noise can often impact sensitive receptors, many mitigation methods are available to reduce this noise, including walls, engine exhaust silencers, mufflers, acoustical equipment enclosures, noise-absorbing blankets and padding, and sound-dampening flooring and siding materials. Properly installed acoustical materials can reduce noise by up to 40 dB, averaged over the frequency range.

The noise-reducing efficiency of insulating and acoustical materials is greater for higher frequency noise. For example, sound with a frequency of 4,000 Hz could be reduced as much as 50 to 60 dB by the same materials that would reduce 125 Hz frequency noise by less than 10 dB. Therefore, the choice of material and noise barrier design are functions of the type of equipment generating the noise.

A sound transmission class (STC) number, expressed as a frequency, rates insulating and noise barrier material as an average decibel loss across several sound frequencies. The stated STC for a given material is generally the maximum decibel reduction achievable with a perfect enclosure. Table 4.7.3 lists several barrier materials and their STC ratings.

Both the engine operation and the exhaust system of internal combustion engines generate noise. Advanced silencers and mufflers can reduce exhaust system noise levels by 10 dBA for industrial grade and by as much as 40 dBA for hospital grade silencers.

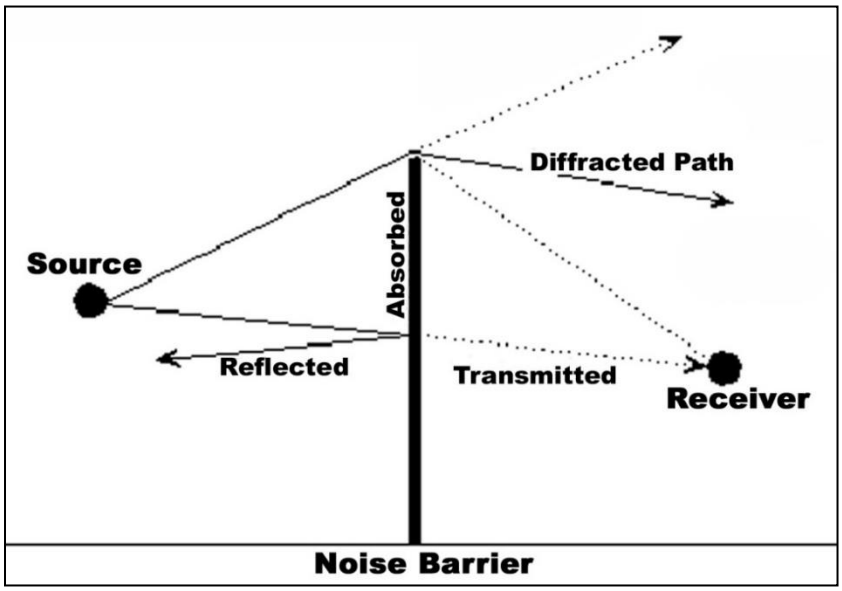
Table 4.7.3 Sound Loss by Various Noise Barrier Materials

Sound Transmission Class of Materials	STC (dB)
Concrete, 12 inches thick	53
Concrete block wall, unpainted	44
Metal panel, 4 inches thick (solid and perforated)	41
Metal panel, 2 inches thick (solid and perforated)	35
Fiberglass curtain, 2 inches with barrier of 2.5 pounds per square foot	33
Steel wall, 3/16 inch thick	31
Gypsum wallboard, 5/8 inch thick	30
Fiberglass curtain, 1 inch, barrier of 1.3 pounds per square foot	27
Wood door, solid core, closed	27
Plasterboard, 3/8 inch	26
Barrier material, density of 1.5 pounds per square foot	27
Barrier material, density of 2.5 pounds per square foot	33
Steel, 22-gauge	25

Note: STC = Sound Transmission Class, a single number rating derived from decibel loss data at several frequencies.
Source: Smock & Schonthaler.

Noise barriers attenuate sound in four ways: diffraction, absorption, reflection, and reduced transmission. Diffraction mechanisms reduce noise by extending the distance that noise waves travel to the receiver from the source (see Figure 4.7-1). The noise barrier material absorbs some noise energy, while some noise is transmitted through the barrier but at a reduced energy level, and some noise is reflected from the barrier and does not reach the receiver.

Figure 4.7-1 Noise Attenuation Mechanisms



Source: Adopted from FHWA 2000.

Transmitted noise is typically not taken into consideration when modeling noise attenuation by noise barriers because this noise is typically significantly lower than the diffracted noise (FHWA, 2006). The highest noise contribution is from the diffracted portion of the attenuated noise.

4.7.1.3 Vibration

Vibration is an oscillatory motion in a solid medium that can be described in terms of displacement, velocity, and acceleration. With a vibrating floor, for example, the displacement is simply the vertical distance that a point on the floor moves away from its static position. The velocity represents the instantaneous speed of the floor movement, while acceleration is the rate of change of that speed. In an environmental setting, vibratory motion will most often propagate through the soil, and can potentially affect humans, structures, and equipment. The effects of ground vibration are dependent on the source and amplitude of vibration, source to receptor distance, soil conditions, and receptor characteristics.

Like noise, the rate at which pressure changes occur is the frequency of the vibration, measured in hertz (Hz). Vibration may be the form of a single pulse of acoustical energy, a series of pulses, or a continuous oscillating motion. High frequency vibrations are generally attenuated rapidly as they travel through the ground, so that the vibration received at locations distant from the source tends to be dominated by low-frequency vibration. The frequencies of ground-borne vibration most perceptible to humans are in the range from less than one (1) Hz up to 100 Hz.

When a ground-borne vibration arrives at a building, there is usually an initial ground-to-foundation coupling loss. However, once the vibration energy is in the building structure it can be amplified by the resonance of the walls and floors. Occupants can perceive vibration as motion of the building elements (particularly floors) and also rattling of lightweight components, such as windows, shutters, or items on shelves. Vibrating building surfaces can also radiate noise, which is typically heard as a low-frequency rumbling known as ground-borne noise. At very high levels, low-frequency vibration can cause damage to buildings.

Soil and subsurface conditions are known to have a strong influence on the levels of ground-borne vibration. Among the most important factors are the stiffness and internal damping of the soil and the depth to bedrock. Experience with ground-borne vibration is that vibration propagation is more efficient in stiff clay soils, and shallow rock seems to concentrate the vibration energy close to the surface and can result in ground-borne vibration problems at large distances from the track. Factors such as layering of the soil and depth to water table can have significant effects on the propagation of ground-borne vibration (FTA, 2006).

Vibration Measurement

In environmental assessments, where human response is the primary concern, velocity is commonly used as the descriptor of vibration level, expressed in millimeters per second (mm/sec) or inches per second (in/sec). The amplitude of vibration can be expressed in terms of the wave peaks (PPV) or as an average, called the root mean square (rms). The rms level is generally used to assess the effect of vibration on humans. Vibration levels for typical sources of ground-borne vibration are shown in Table 4.7.4 below.

Table 4.7.4 Typical Levels of Ground-Borne Vibration

Source	Typical Velocity at 50 feet (inches/second)	Human or Building Response
Pile Driver, impact, sheet piling	0.40	Damage to fragile buildings
Blasting from construction projects	0.10	Minor cosmetic damage to fragile buildings
Bulldozers and other heavy tracked construction equipment.	0.06	Workplace annoyance; difficulty with vibration-sensitive tasks.
Commuter rail, upper range	0.02	
Rapid transit rail, upper range	0.010	Distinctly Perceptible Residential annoyance for infrequent events
Commuter rail, typical range	0.008	
Bus or truck over bump	0.004	Barely perceptible. Residential annoyance for frequent events
Rapid transit rail, typical range	0.003	
Bus or truck typical	0.002	Threshold of perception
Background vibration	0.0004	None

Source: FTA 2018 (Table 7-4 and Figure 5-4), with PPV converted to rms with reference velocity of 1x10-6 in/sec. Values expresses a root mean square.

Large vehicles can also increase ground vibration along streets that they travel. Vibration is a function of the vehicle speeds and the condition of the pavement. Caltrans indicates that "vehicles traveling on a smooth roadway are rarely, if ever, the source of perceptible ground vibration" and that "vibration from vehicle operations is almost always the result of pavement discontinuities, the solution is to smooth the pavement to eliminate the discontinuities (Caltrans, 2004)." Trucks traveling on area roadways could cause vibrations at nearby receptors if roadways are not maintained.

4.7.1.4 Sensitive Receptors

Noise-sensitive receptors (also called "receivers") are locations where people reside or where the presence of unwanted sound may adversely affect the use of the land. Noise-sensitive receptors typically include residences, hospitals, schools, guest lodging, libraries, parks, and certain types of passive recreational uses.

In most cases, effects from sounds typically found in the natural environment (compared to an industrial or an occupational setting) would be limited to creating an annoyance or interference with activities, as opposed to producing acute health effects. There is a wide variation in individual thresholds of annoyance and habituation to sound. Therefore, an important way of determining a person's subjective reaction to a new sound is by comparing it to the existing or "ambient" environment to which that person has adapted. In general, the more the level of a sound exceeds the previously existing ambient sound level, the less acceptable the new sound will be, as judged by the exposed individual.

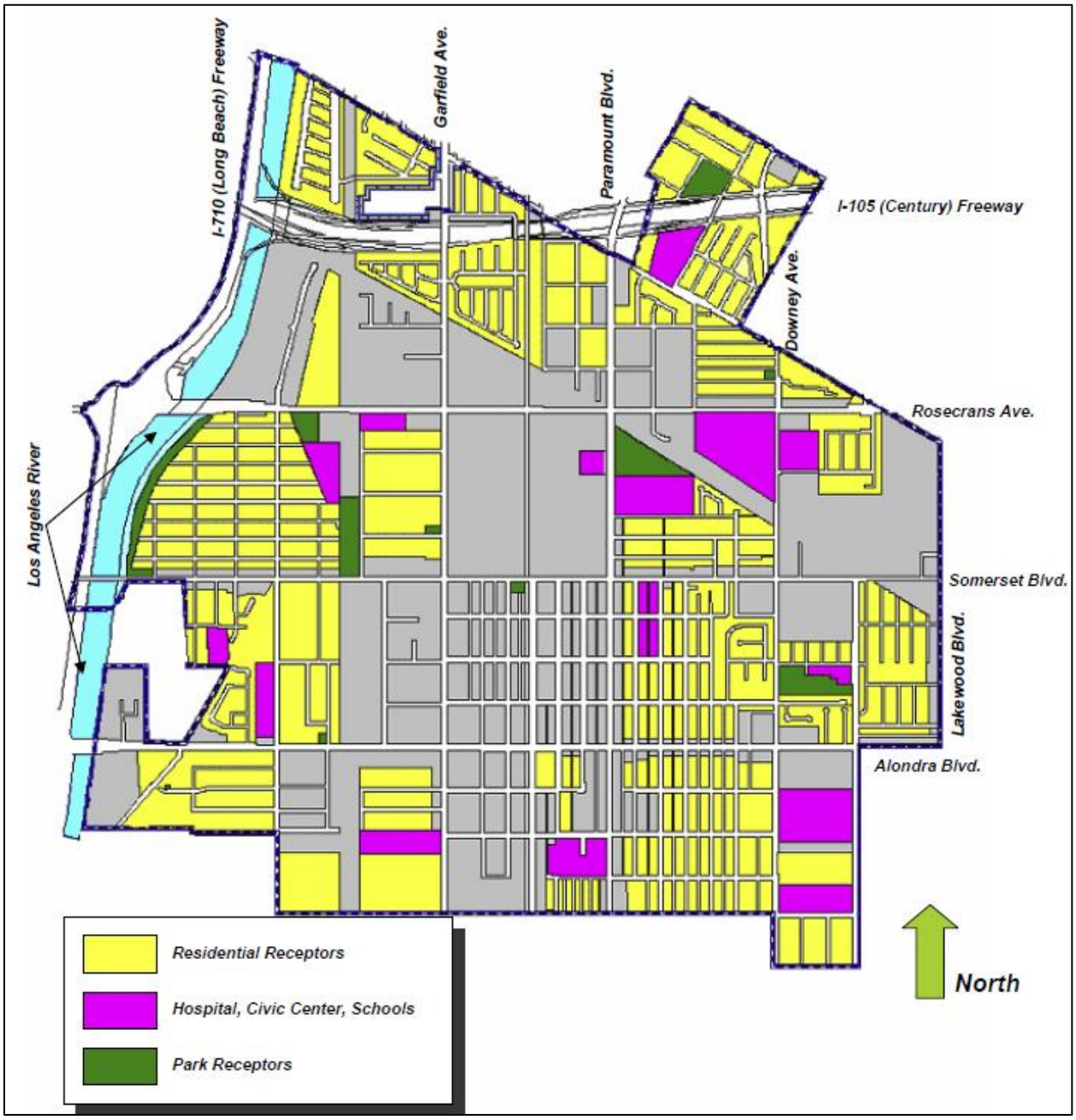
Figure 4.7-2 shows the location of various noise sensitive land uses in the City of Paramount as presented in the General Plan Health and Safety Element.

4.7.1.5 Noise Environment

The existing noise environment in the vicinity of the Paramount Refinery is dominated by traffic noise emanating from the adjacent arterial roadways and railroad operations. The adjacent roadways include Downey Avenue, Somerset Boulevard, Rosecrans Avenue, and Lakewood Boulevard. Locomotive engines and trains using the railroad tracks are also a source of noise in the area. Industrial operations at the Paramount Refinery are also a source of noise within the vicinity of the site. The nearest noise sensitive receptors include the homes located adjacent to the Paramount Refinery on the north, east and south

sides. In addition, Wirtz Elementary School is located to the north of the Paramount Refinery and Paramount High School is located to the west (on the west side of Downey Avenue).

Figure 4.7-2 Noise Exposure-Noise Sensitive Land Uses



Source: City of Paramount 2007.

The background noise levels in a highly urban environment can be quite high. Noise levels have been measured associated with some recent projects in the City of Paramount and these are listed in Table 4.7.5. Note that, based on these studies, some areas in the City may already exceed the acceptability levels defined in the Municipal Code.

Noise monitoring was also conducted by the EIR consultant in representative areas around the refinery in 2021. Noise levels ranged from maximum levels of 70 dBA along Lakewood Avenue during the day to minimum levels of 45.1 dBA in the residential areas to the immediate north of the refinery during the nighttime. CNEL levels range from 54.8 to 73.4. All measurements were taken in residential locations.

Note that these noise levels identified by recent measurements are for disclosure purposes only and are not used to determine significance of the Project under CEQA.

Table 4.7.5 City of Paramount Ambient Noise Levels

Project	Locations of Monitoring	Noise Level, dBA
Paramount Senior Living Project, 2020	Along Paramount Blvd	68.2 Leq
Garfield Avenue Capacity Enhancement Project, 2017	Along Garfield Avenue	55.9 – 72.9 Leq
Noise Monitoring in Refinery Vicinity 2021	Castana Ave south, close to the refinery	55.1 Leq daytime 46.0 Leq evening 45.1 Leq nighttime 54.8 CNEL
Noise Monitoring in Refinery Vicinity 2021	Bellota Ave, north end	67.6 Leq daytime 55.6 Leq evening 54.0 Leq nighttime 66.0 CNEL
Noise Monitoring in Refinery Vicinity 2021	Lakewood Ave, across from the refinery	70.0 Leq daytime 69.8 Leq evening 65.5 Leq nighttime 73.4 CNEL

Source: MNDs for Senior Living Project and Garfield Project, City of Paramount 2020 and 2017. MRS Environmental noise monitoring with a Larson Davis Type 1 meter, 3/17/2021.

4.7.1.6 Modeled Noise Levels from Baseline Refinery Operations

The Paramount Refinery is within an urban environment characterized by industrial, commercial, transportation-related and residential land uses. The baseline operations would be the operating crude oil refinery in 2011. The 2013 MND did not identify any increases in noise levels associated with the Original Renewable Fuels Project.

The changes produced by the Project would be associated primarily with operations at the refinery. Other ambient noise levels would not change, such as freeway or non-refinery related traffic or other residential or commercial noise sources. Therefore, in order to estimate the noise change from the Project over the 2011 refinery operations (the baseline), and examine the potential noise impacts and thresholds, the baseline refinery operations were modeled and compared to the noise levels from models of the Project construction and operations. The baseline noise modeling results are discussed below while the Project noise modeling results are discussed in the Project impact section.

A three-dimensional acoustical noise model was developed using the noise modeling software, SoundPLAN, described in more detail in Appendix E. SoundPLAN is a standards-based program with more than 50 national and international noise modeling guidelines. The program is used primarily for environmental noise impact assessments (such as CEQA), noise planning, and noise control.

The three-dimensional acoustical noise model for the historical operating crude oil refinery utilized estimated noise sources as points, lines or area sources, along with the source height and strength.

Buildings and equipment, such as tanks, are also input into the model to utilize in noise reflection calculations. The ground surface properties as are utilized to estimate the noise levels at all the receptors.

The noise model predictions were made using the algorithms and methods described in the following noise prediction standards.

- ISO 9613-1, Acoustics - Attenuation of sound during propagation outdoors - Part 1: Calculation of the absorption of sound by the atmosphere
- ISO 9613-2, Acoustics -- Attenuation of sound during propagation outdoors - Part 2, Acoustics - Attenuation of Sound During Propagation Outdoors

All acoustically significant structures were modeled as reflective surfaces and as diffractive bodies. The refinery ground was defined as a totally reflective surface. The ground outside the refinery was defined as 50 percent reflective as it is a mix of hardscapes and landscaping. The noise sources are shown as point sources, line sources and area sources. The models were run with a relative humidity of 50 percent and a temperature of 20 °C (i.e., 68 °F). Table 4.7.6 shows the equipment units at the crude oil refinery and the estimated noise levels from each equipment unit.

Table 4.7.6 Baseline Refinery Operations Noise Sources

Source	Operating Assumption	Sound Power Level (dBA)
Rail Switch Engine	2 hrs. operation per day	109
Union Pacific Train Delivery/Pickup	1-train with 33 cars - daytime	112
Rail Cars Bumping (1-train w/ 33 cars)	6 impacts/day, 2 sec/impact - daytime	135
Truck Traffic	156 trucks per day (78/19/59 d/e/n), 5mph	Noise Model Calcs
Crude Unit	24/7 operation	118
Asphalt Unit	24/7 operation	114
Cogen Unit	24/7 operation	111
Unit A	24/7 operation	124

Source: Navcon Engineering Network 2021.

The crude unit, asphalt unit, cogen unit and Unit A are composed of a total of 167 individual noise sources, including pumps, heaters, cooling towers, compressors, motors, etc. These sources are all combined to produce the noise levels listed above. Sources for the noise levels used in the analysis include the following:

- The noise emission from the rail switch engine, Union Pacific train delivery/pickup and rail cars bumping was calculated from field tests conducted by Navcon Engineering;
- The noise emission from trucks and busses within the refinery was based upon the FHWA Traffic Noise Model (TNM);
- The noise emission from the Renewable Fuels Unit A (approximately 90 noise sources) was based upon measurements made by Navcon in 2004 as well as manufacturer supplied data; and
- The Crude Unit, Asphalt Plant and Cogen Plant noise emission levels was based upon in-plant and community noise measurements made between 1976 and 2004. Area sound power levels were established such that noise levels predicted at the community receptor locations agreed with the measurement.

Noise models were used to predict the CNEL at 18 sensitive receptor locations shown in Figures 4.7-3 and 4.7-4. Receptors MH-1 through MH-8 are located in the Cinderella Mobile Home Park on the North side

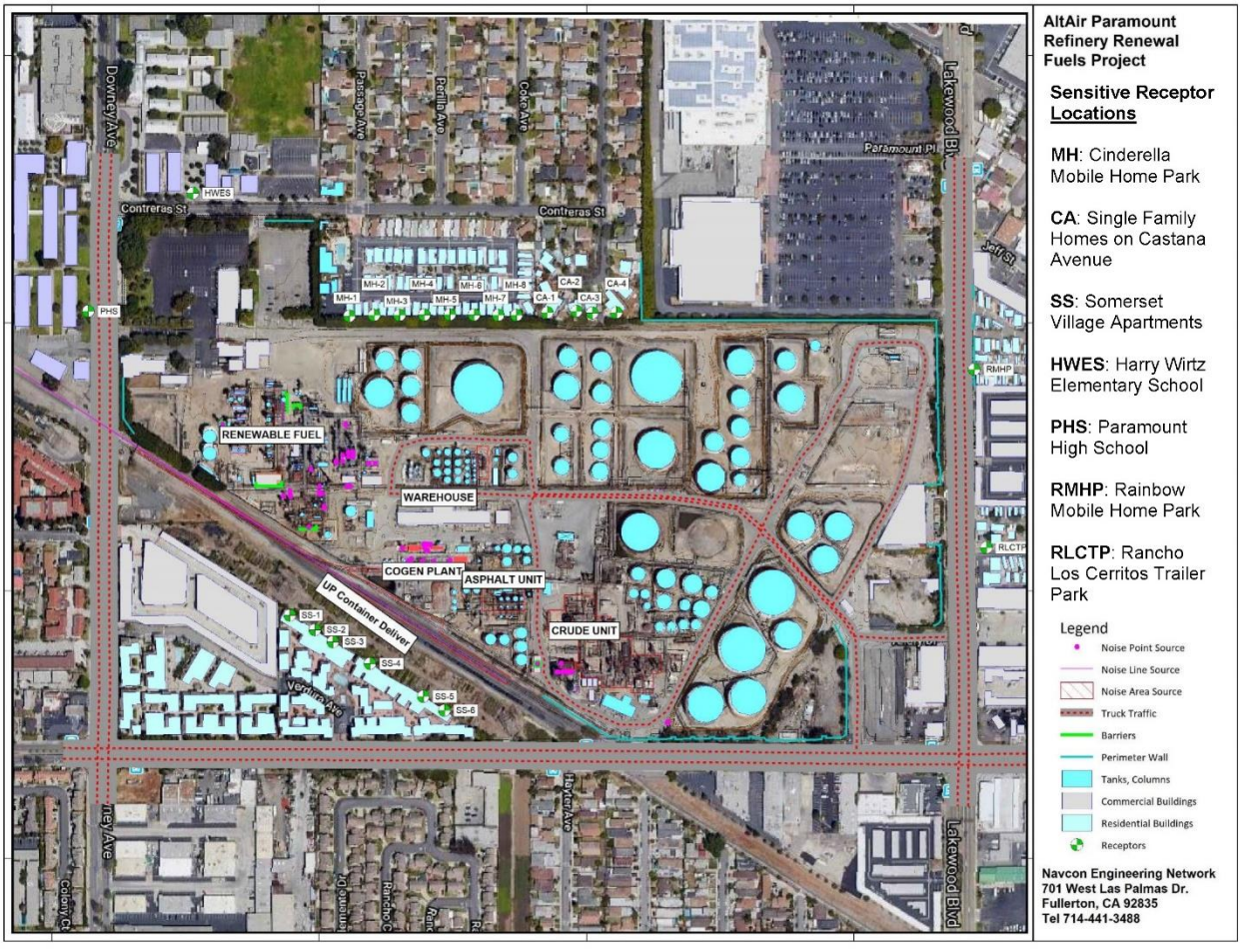
of the refinery. Receptors CA-1 through CA-4 are single family, single story homes also located on the north side of the refinery on Castana Avenue. Receptors SS-1 through SS-6 are located South of the refinery at the Somerset Village Apartments. In addition, Harry Wirtz Elementary School is located to the north of the refinery and Paramount High School is located to the west, on the west side of Downey Avenue.

To estimate the baseline noise levels at the difference receptors, the noise models were run assuming the Paramount Refinery was operating as the 2011 crude oil refinery. The Crude Unit, Asphalt Unit, Cogeneration Plant and hydroprocessing Unit A were operational at that time. In addition, one rail trip per day, 2 hours of rail switching and 156 trucks per day were operating under the pre-project conditions. In addition, rail car "bumping" producing an impulse noise level were also included at 6 bumps per day during railcar maneuvering.

Community Noise Levels

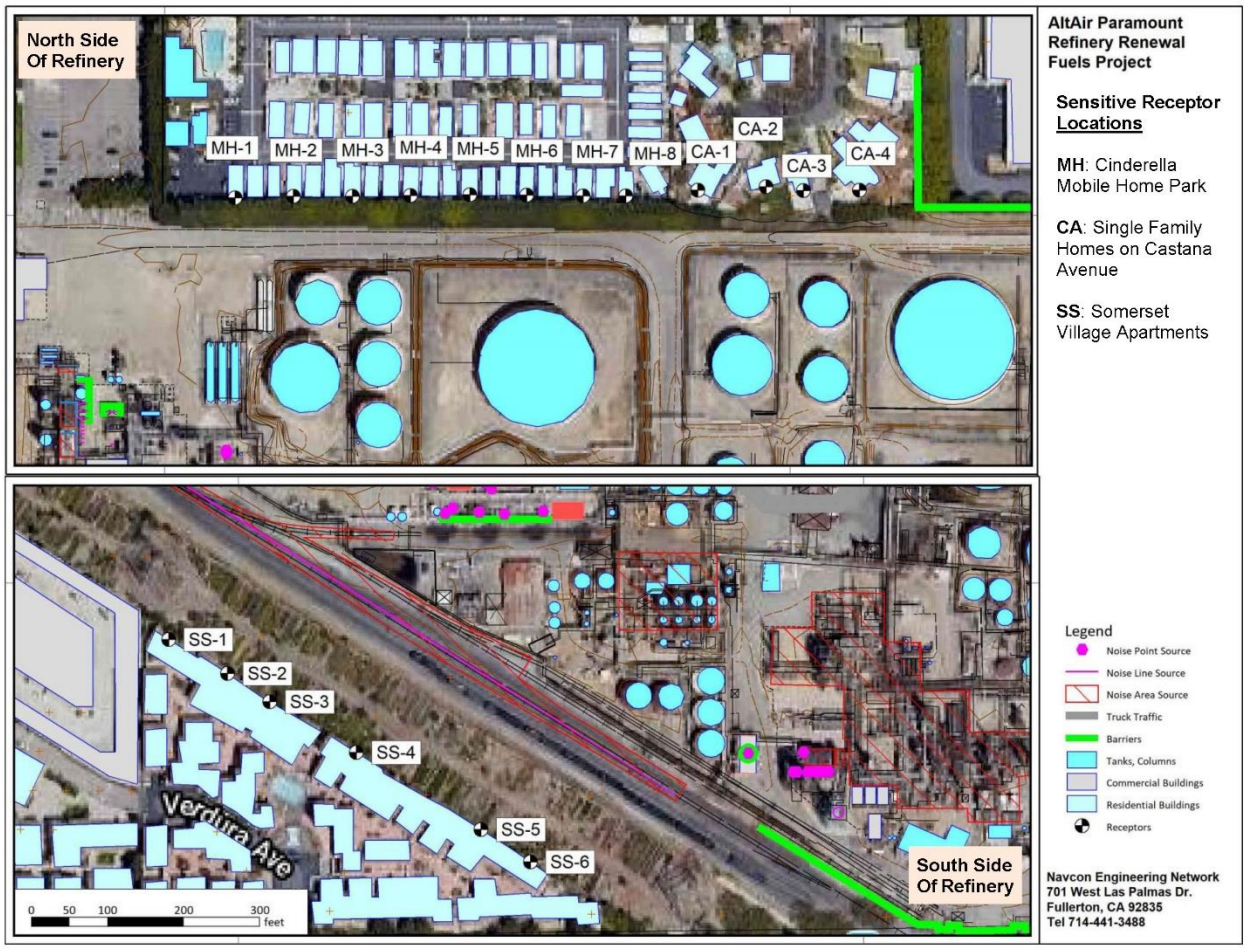
The estimated CNEL noise levels associated with the operating refinery at the different receptors are summarized in Table 4.7.7. Existing CNEL noise levels from the crude oil refinery in the vicinity of the site are estimated to range from about 61 to 73 dBA.

Figure 4.7-3 Refinery Site Plan and Sensitive Receptor Locations



Source: Navcon Engineering Network 2021.

Figure 4.7-4 Refinery Site Plan and Sensitive Receptor Locations (Zoom View)



Source: Navcon Engineering Network 2021.

Table 4.7.7 Baseline Modeled CNEL Noise Levels Associated with Operating Refinery

Receptor	Location	Operating Crude Refinery, dBA CNEL (Case 1)
SS-1	South Residences	73.4
SS-2	South Residences	72.4
SS-3	South Residences	71.6
SS-4	South Residences	71.0
SS-5	South Residences	71.8
SS-6	South Residences	71.7
MH-1	Mobile Homes	72.6
MH-2	Mobile Homes	70.7
MH-3	Mobile Homes	68.3
MH-4	Mobile Homes	65.6
MH-5	Mobile Homes	62.4
MH-6	Mobile Homes	62.1
MH-7	Mobile Homes	63.3
MH-8	Mobile Homes	63.7
CA-1	North homes	62.4
CA-2	North homes	62.3
CA-3	North homes	61.1
CA-4	North homes	60.9
HWES	Elementary school	65.7
PHS	High School	73.2
RMHP	Lakewood Blvd North	71.1
LCTP	Lakewood Blvd South	67.5
Range:	-	60.9 - 73.4

Note: Sound levels for SS-1 through SS-6 are for the highest noise level at the building of all three floors.
Source: Navcon Engineering Network 2021.

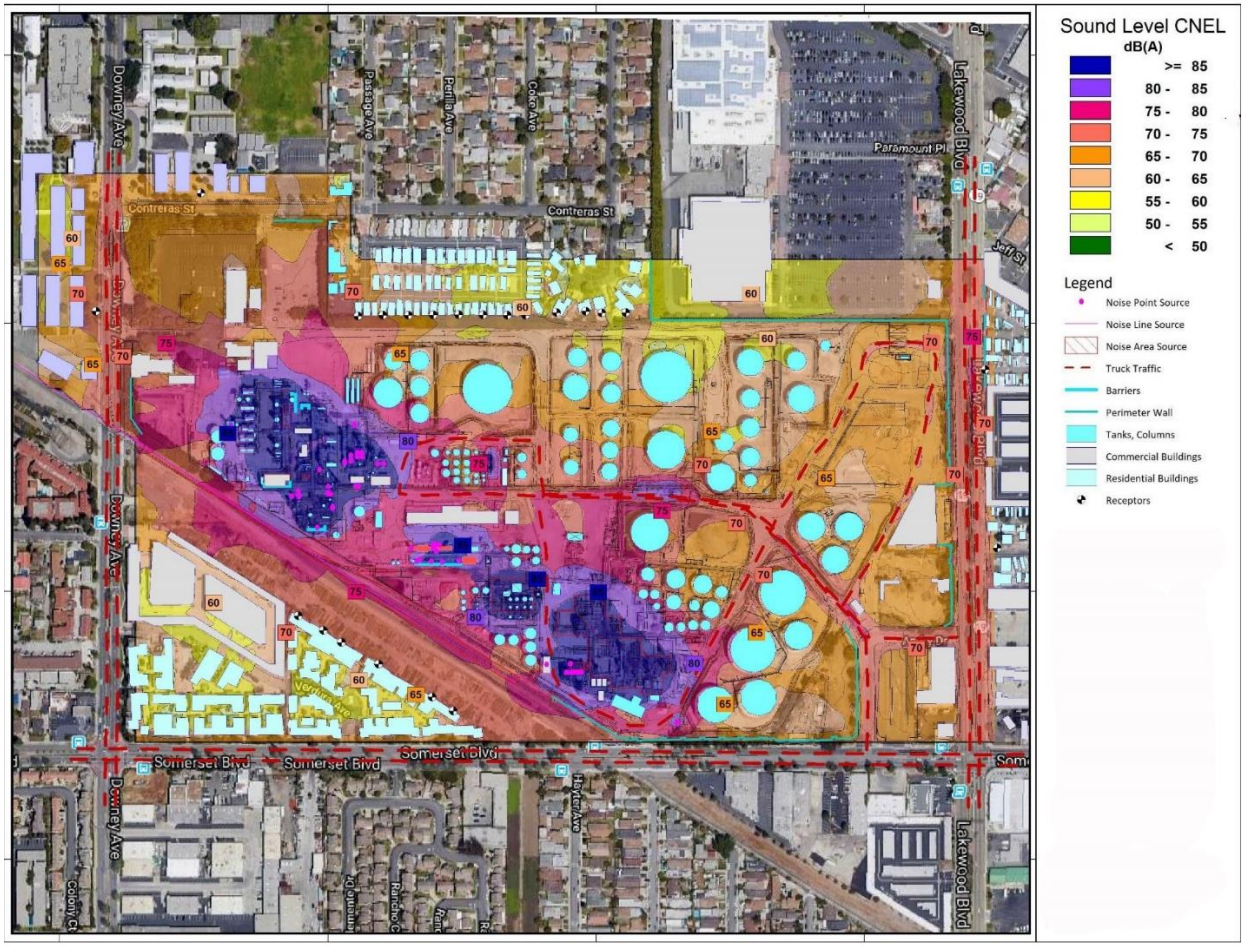
The CNEL noise level contours for the operating crude oil refinery are shown in Figure 4.7-5.

Maximum Noise Levels

In addition to CNEL estimates, which are a time averaged noise level over 24 hours (with penalties assigned for evening and nighttime noise levels), the maximum noise level along the refinery fence line was also estimated. These noise levels receptor locations for the maximum noise assessment along the fence line are shown in Figure 4.7-6.

Maximum noise levels at each of the fence line receptors as modeled based on the sources discussed above are shown in Table 4.7.8. Maximum noise levels are estimated to range from 49.6 to 77.3 dBA at the different receptors, with the highest maximum noise level estimated to occur at the areas near the south-west side of the refinery along the fence line. Noise levels at the residential areas located south of the refinery and separated from the refinery by a light manufacturing zoned area (the nursery area), range from 65–70 dBA as they are separated from the refinery fence line receptors (receptors S6–S10) by more than 200 feet. Noise levels at the residences located to the north of the refinery are estimated to be as high as about 68 dBA during the daytime and nighttime.

Figure 4.7-5 Baseline Crude Oil Refinery CNEL Noise Levels

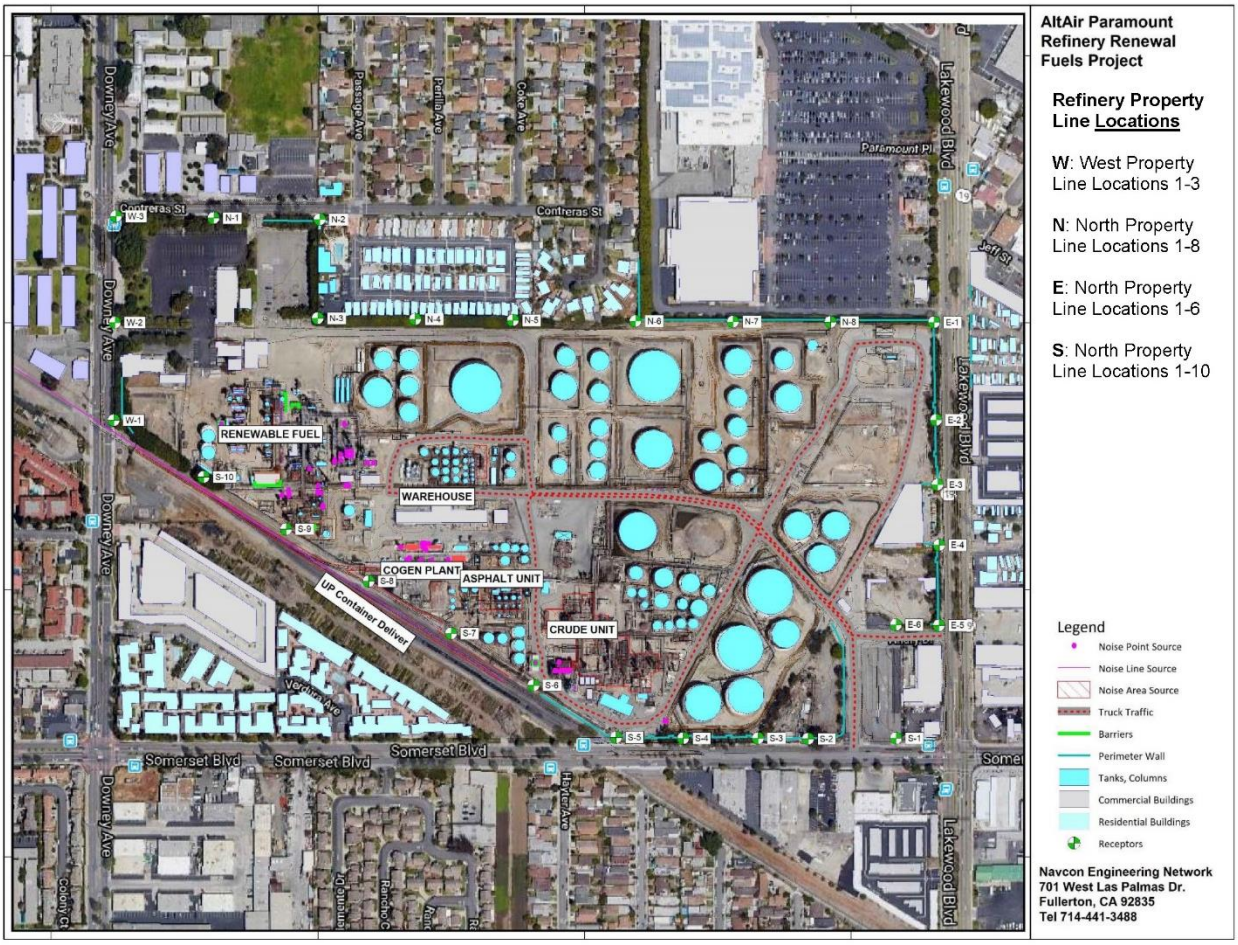


Source: Navcon Engineering Network 2021.

Nighttime noise levels are somewhat lower than during the daytime due to the absence of trucks and rail activity during the nighttime hours.

Figure 4.7-7 and Figure 4.7-8 shows the maximum noise level contours for the daytime and nighttime activities.

Figure 4.7-6 Baseline Crude Oil Refinery Fence Line Noise Receptors



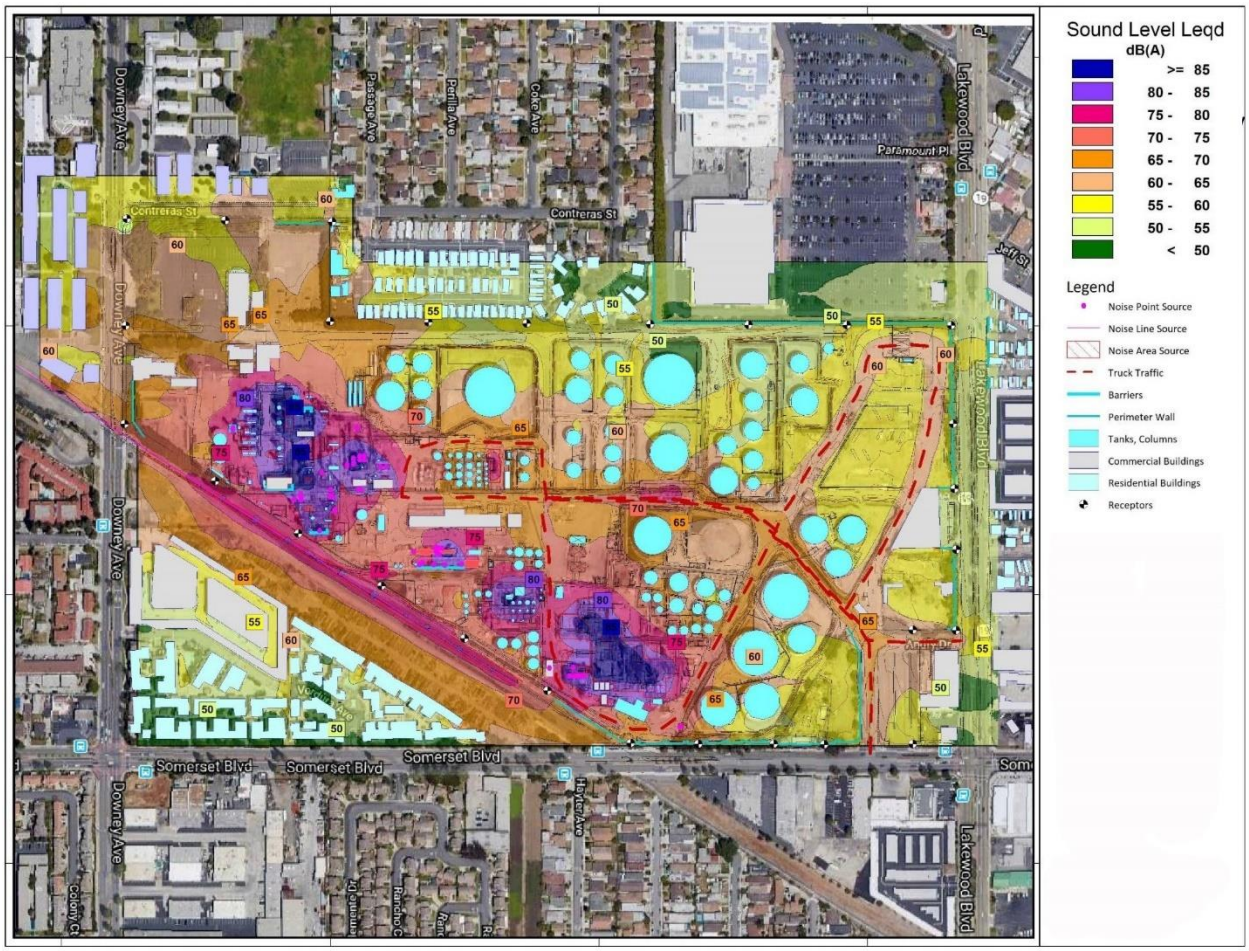
Source: Navcon Engineering Network 2021.

Table 4.7.8 Baseline Modeled Maximum Noise Levels Associated with Operating Refinery

Receptor	Location	Operating Crude Refinery, Maximum Hourly Daytime dBA (Case 1)	Operating Crude Refinery, Maximum Hourly Nighttime dBA (Case 1)
W-1	Along Downey Ave	69.6	64.7
W-2	Along Downey Ave	65.3	65.1
W-3	Along Downey Ave	59.9	59.5
N-1	Along Contreras St.	60.1	59.8
N-2	Along Contreras St.	54	53.6
N-3	Mobile Homes	67.9	67.8
N-4	Mobile Homes	60.1	60.0
N-5	Castana Ave Homes	56.6	56.5
N-6	Castana Ave Homes	53.9	53.8
N-7	Shopping Center	55	54.9
N-8	Shopping Center	56	55.9
E-1	Lakewood Blvd	53.3	53.2
E-2	Lakewood Blvd	53.7	53.6
E-3	Lakewood Blvd	51.6	51.6
E-4	Lakewood Blvd	53.9	53.8
E-5	Lakewood Blvd	60.7	60.7
E-6	Lakewood Blvd	61.5	61.5
S-1	Somerset Blvd	55.9	55.8
S-2	Somerset Blvd	51.9	51.8
S-3	Somerset Blvd	49.6	49.2
S-4	Somerset Blvd	59.3	59.1
S-5	Somerset Blvd	62.6	62.0
S-6	Railroad	74.6	74.3
S-7	Railroad	73.6	70.0
S-8	Railroad	73.9	69.0
S-9	Railroad	77.3	75.7
S-10	Railroad	74.1	68.6
Range:	-	49.6 – 77.3	49.2 – 75.7

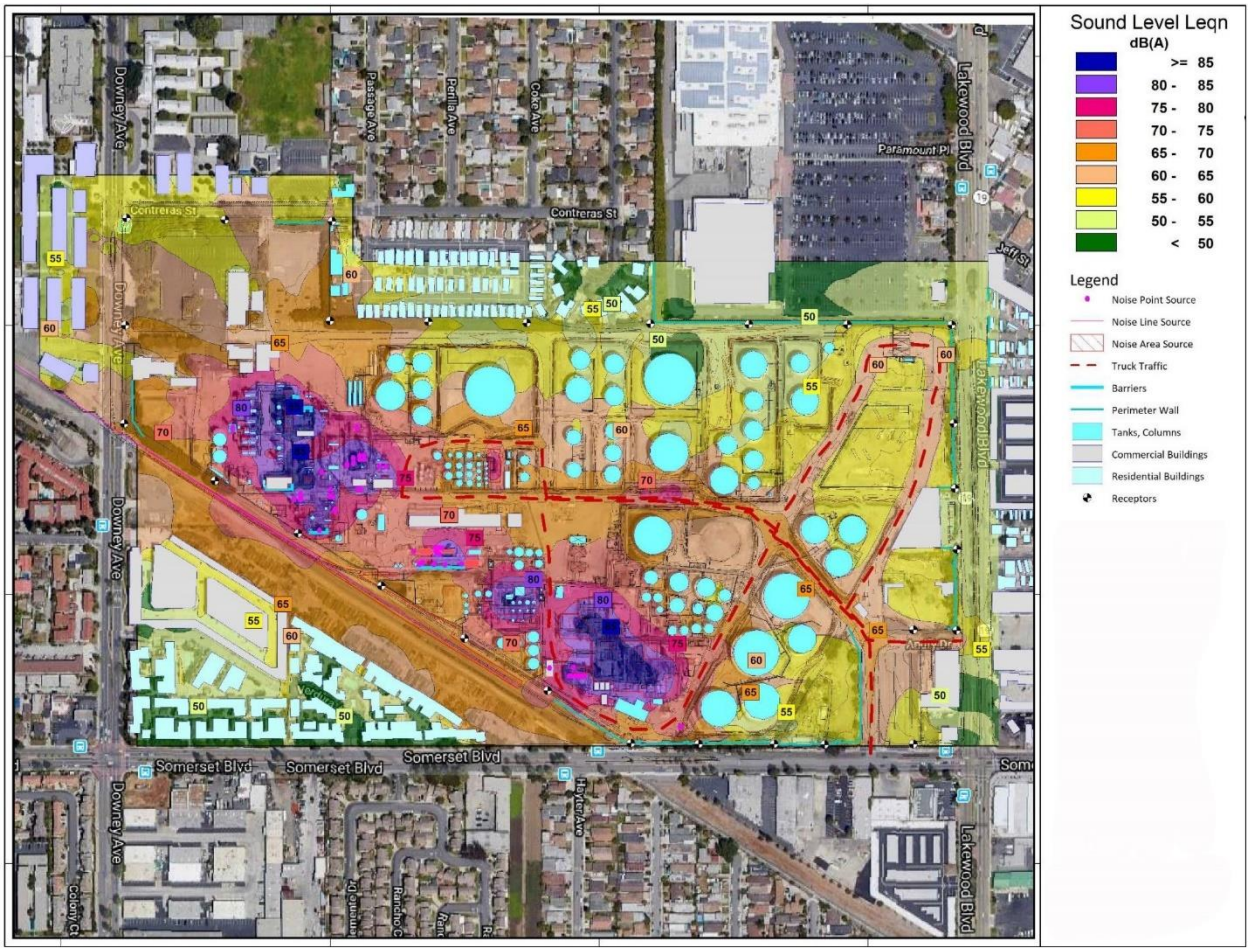
Source: Navcon Engineering Network 2021. Noise levels at refinery fence line.

Figure 4.7-7 Baseline Crude Oil Refinery Maximum Daytime Noise Levels



Source: Navcon Engineering Network 2021.

Figure 4.7-8 Baseline Crude Oil Refinery Maximum Nighttime Noise Levels



Source: Navcon Engineering Network 2021.

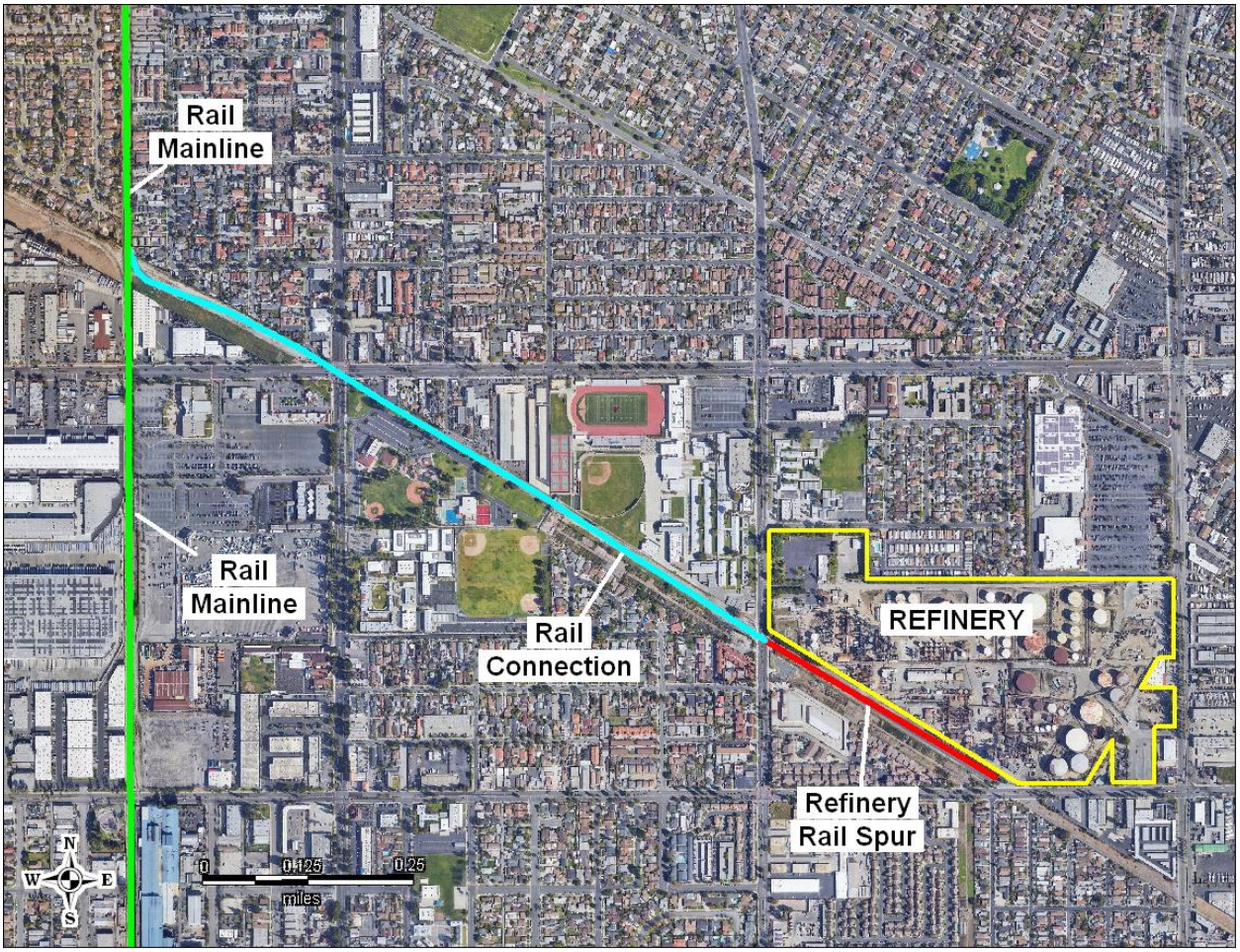
4.7.1.7 Railroad Noise Levels

The refinery-related railroad activities include the railroad that enters the refinery and is on the refinery property, about a mile of railroad that connects the refinery to the mainline UP railroad (only used by the refinery-related rail traffic) and rail activity on the mainline. The rail activity on the refinery property has been included in the refinery noise modeling discussed above. The rail connection to the mainline is located north of Rosecrans Ave near the intersections of Arthur Ave/Rose Street and Racine Ave/Façade Ave. See Figure 4.7-9. The refinery rail spur was included in the modeling using SoundPlan©. The rail connection was not and is addressed here. The railroad connection is located in close proximity to residential areas at this location, as well as along the mainline. The noise generated by rail car deliveries to the refinery occurs along the connection as well as along the mainline. Noise from rail activities along the mainline are a function of the level of train activity along the mainline as well as the refinery rail deliveries.

The baseline deliveries of one train per day, with 25 rail cars, generated noise at nearby receptors during the delivery activities. The Federal Transit Administration (FTA, 2006) provides algorithms that can be used to estimate noise from rail activities. Using the FTA approach, noise levels from a single train delivery a day, with 4 locomotives and along the rail connection generates a peak noise of 77.3 dBA with a CNEL

noise of between 58.7 dBA (if the train comes during the day as current operations are limited to daytime only).

Figure 4.7-9 Rail Connections



Source: Google Earth 2021.

Baseline noise levels along the mainline are dependent on the number and type and size of trains along the mainline on a daily basis. Detailed numbers of mainline activity along this stretch of track was not available, although as it is a rail mainline that connects to the port areas, it has potentially high levels of traffic. Assuming 15 trains per day as an estimate of daily mainline train activity (Port of LA 2013, estimated off-dock train levels of UP of 36 – 50 one-way trains), noise levels would be the same peak level of 77.3 dBA, and with a CNEL of 73.7 dBA.

4.7.1.8 Roadway Noise Levels

Roadway noises is generally the largest contributors to noise in an urban environment. Roadway noise levels can be estimated using models and algorithms, such as the FHWA Highway Noise Prediction Model (FHWA, 2019), given traffic flows and vehicle distributions. For Lakewood Blvd, for example, noise levels are estimated for the baseline using the models to be a CNEL of 75.0 dBA at 50 feet from the roadway centerline, which is similar to the noise levels measured in-field (see Section 4.7.1.5).

4.7.1.9 Previous Environmental Review

The December 2013 MND for the Original Renewable Fuels Project evaluated construction and operations of the refinery operating under the renewable fuels refinery configuration. The 2013 MND determined that noise impacts from construction and operations would be a less than significant impact. Noise levels since 2011 have decreased due to the reduction in activity at the refinery associated with the Original Renewable Fuels Project compared to the 2011 refinery operations.

The 2013 MND included the following mitigation measures:

- The facility's operation must conform to the City of Paramount Noise Control Ordinance; and
- Rail car deliveries and pick-ups will be limited to the non-peak hour traffic periods, after 10:00 a.m. and before 6:00 p.m. The refinery operators and management will continue to work with the railroad so that train traffic to and from the refinery does not coincide with the morning and evening commute times or when students are going to or leaving school.

4.7.2 Regulatory Setting

This subsection summarizes the federal, state, and local laws, regulations, and standards that address the noise impacts as applies to the Project.

4.7.2.1 Federal Regulations

The Noise Control Act of 1972 established a national policy to establish a means for effective coordination of Federal research and activities in noise control; authorized the establishment of Federal noise emission standards for products distributed in commerce; and provided information to the public respecting the noise emission and noise reduction characteristics of such products.

4.7.2.2 State Regulations

California Health and Safety Code, Division 28, Noise Control Act

The California Noise Control Act states that "excessive noise is a serious hazard to public health and welfare" and that "it is the policy of the state to provide an environment for all Californians free from noise that jeopardizes their health or welfare." (Health and Safety Code, Section 46000)

California Government Code Section 65302

Section 65302(f) of the California Government Code and the Guidelines for the Preparation and Content of the Noise Element of the General Plan provide requirements and guidance to local agencies in the preparation of their Noise Elements. The guidelines require that major noise sources and areas containing noise-sensitive land uses be identified and quantified by preparing generalized noise exposure contours for current and projected conditions. Contours may be prepared in terms of either the CNEL or the Ldn, which are descriptors of total noise exposure at a given location for an annual average day. The CNEL and Ldn are generally considered to be equivalent descriptors of the community noise environment within plus or minus 1.0 dB.

4.7.2.3 Local Regulations

City of Paramount General Plan

Health and Safety Element

The Health and Safety Element of the General Plan identifies the City's policy relative to the reduction and mitigation of natural hazards as a means to improve the safety of its citizens. This Element complies with the State requirements for both a noise element and a safety element.

- *Health and Safety Element Policy 32*. The City of Paramount will cooperate with State and Federal agencies so as to minimize transportation related noise;
- *Health and Safety Element Policy 34.* The City of Paramount will promote the development of a compatible noise environment throughout the City; and
- *Health and Safety Element Policy 36.* The City of Paramount will periodically review County and Regional plans for land use, transportation, airport operation, etc. to identify any potential noise impacts and to develop corresponding noise attenuation strategies.

The City of Paramount General Plan also specifies noise and land use compatibility guidelines in the Health and Safety Element. These are specified below in Table 4.7.9.

Table 4.7.9 Noise and Land Use Compatibility Guidelines

Land Use	Maximum Desirable CNEL Noise Level	Maximum Acceptable CNEL Noise Level
Low Density Residential	55 dBA	65 dBA
Medium Density Residential	60 dBA	65 dBA
High Density Residential	65 dBA	70 dBA
Schools	60 dBA	70 dBA
Office & Commercial	65 dBA	75 dBA
Industrial	70 dBA	75 dBA

Source: City of Paramount General Plan Table 5-1, 2007.

The City of Paramount General Plan also discusses the Federal Department of Housing and Urban Development (HUD) standards for noise. These are specified in 24 CFR Part 51 - Environmental Criteria and Standards, Subpart B - Noise Abatement and Control. HUD states:

> *A HUD goal is that exterior noise levels do not exceed a day-night average [or CNEL as they are very similar] sound level of 55 decibels. This level is recommended by the Environmental Protection Agency as a goal for outdoors in residential areas. The levels recommended by EPA are not standards and do not take into account cost or feasibility. For the purposes of this regulation and to meet other program objectives, sites with a day-night average sound level of 65 and below are acceptable and are allowable (see Standards in Sec. 51.103(c)).*

And

> *Interior noise goals. It is a HUD goal that the interior auditory environment shall not exceed a day-night average sound level of 45 decibels. Attenuation measures to meet these interior goals shall be employed where feasible. Emphasis shall be given to noise sensitive interior spaces such as bedrooms. Minimum attenuation requirements are prescribed in Sec. 51.104(a).*

In addition, HUD species site acceptability standards as below 65 dBA CNEL is acceptable, with 65–75 dBA CNEL normally unacceptable and above 75 dBA CNEL unacceptable. For low and medium residential areas, these are in line with the City General Plan compatibility guidelines.

City of Paramount Municipal Code

The refinery is located within the City of Paramount. The City of Paramount Municipal Code, Sections 9.12 (according to the recodified code December 2020), exempts construction noise sources between the hours of 7:00 a.m. and 8:00 p.m. (Section 9.12.060.B.4). Construction activities conducted between 7:00 a.m. and 8:00 p.m. are considered to be in compliance with the City of Paramount's Municipal Code.

The City of Paramount has established noise performance standards in Section 9.12 of the Paramount Municipal Code. The code applies to all property within their assigned noise zones and the standards constitute the "maximum permissible noise level" within the respective zones. Code Section 9.12.060.A states as follows,

> *"it is unlawful for any person from any location within the City, including commercial, agricultural and industrial zoned property, to create, maintain, cause or allow to be created or maintained, any noise or sound upon any property within the City, which exceeds the noise standards as specified in Section 9.12.040 [shown in Table 4.7.10 below]."*

The City of Paramount Zoning map is shown in Figure 4.7-10.

Table 4.7.10 City of Paramount Operations Municipal Code Limits

Noise Zone	DAY (Maximum) 6 a.m. to 10 p.m.	NIGHT (Maximum) 10 p.m. to 6 a.m.
Industrial and Commercial	82 dBA	77 dBA
Residential (R1 and R2)	62 dBA	57 dBA
Multi-Family Residential (R3 and R4)	67 dBA	62 dBA

Source: Paramount Municipal Code Section 9.12.

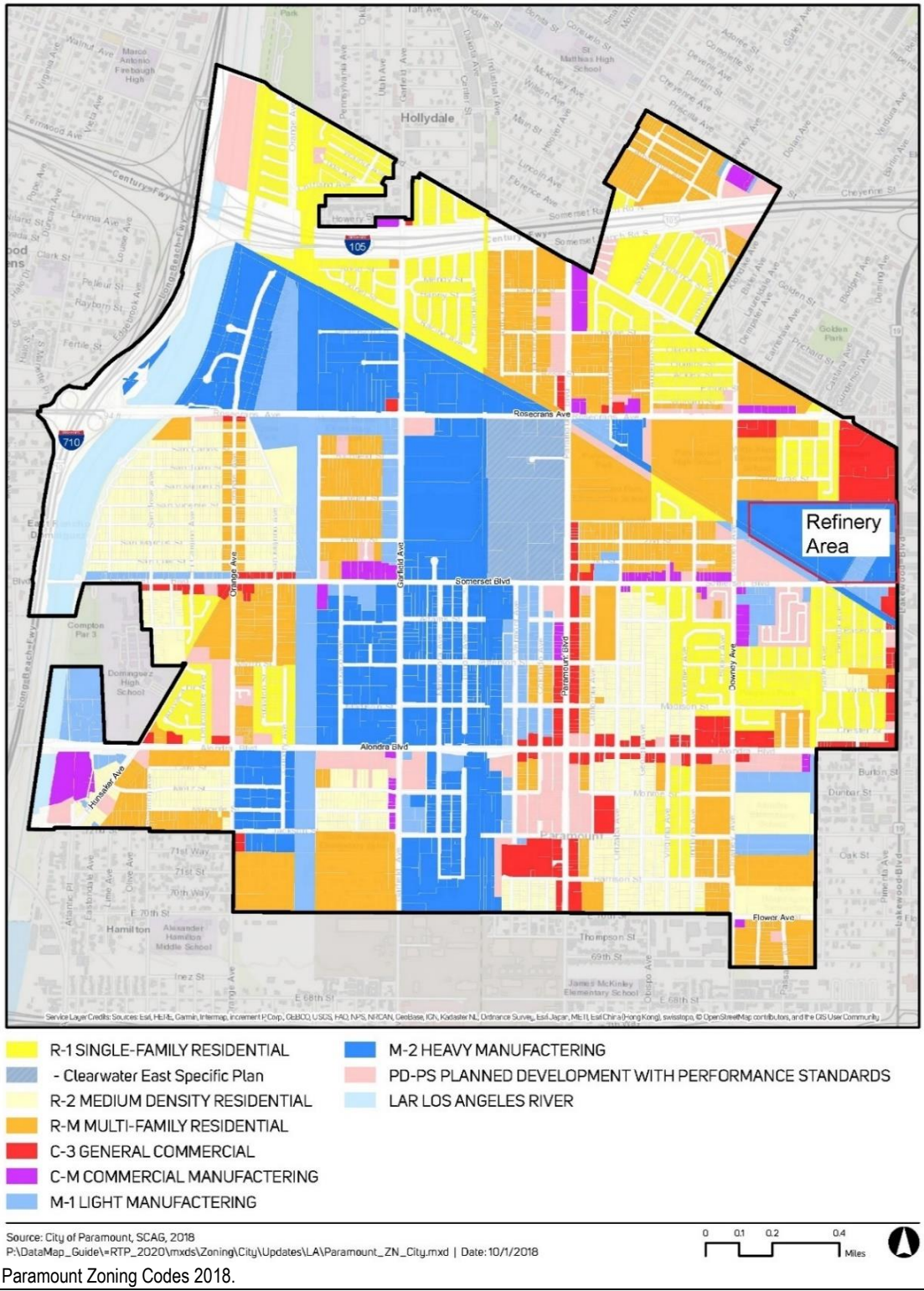
In addition, as described in code Section 9.12.060.D,

> *"it is unlawful for any person to create, maintain or cause to be created or maintained, any noise or sound upon any school, hospital or church while the same is in use, which exceeds the noise standards as specified in Section 9.12.040 (see Table above) for the assigned noise zone in which the school, hospital or church is located, or which noise level unreasonably interferes with the working of such installations."*

In addition, under the public nuisance code 9.04.140, public nuisance states that

> *"No person shall make, cause, suffer or permit to be made upon any premises owned, occupied or controlled by him or her any unnecessary noises or sounds which are physically annoying to persons of ordinary sensitiveness or which are so harsh or so prolonged or unnatural or unusual in their use, time or place as to occasion physical discomfort to the inhabitants of any neighborhood".*

Figure 4.7-10 City of Paramount Zoning Map



Source: Paramount Zoning Codes 2018.

City of Bellflower

The City of Bellflower is located adjacent to the City of Paramount to the east. The natural gas pipeline construction activities would pass through the City of Bellflower along Lakewood until just past Artesia Blvd. The City of Bellflower specifies limits on noise in Municipal Code Chapter 8.32 and primarily is related to amplification of voice or music, but also qualitatively address "any loud, unnecessary, and unusual noise which disturbs the peace or quiet of any neighborhood or which causes discomfort or annoyance to any reasonable person of normal sensitiveness residing in the area".

Standards which may be considered in determining whether a violation of the provisions of this section exists may include the time of the day and/or night the noise occurs and the duration of the noise.

City of Lakewood

The City of Lakewood is located south of the City of Bellflower. The natural gas pipeline construction activities would pass through the City of Lakewood along Lakewood from just past Artesia Blvd to the connection to the natural gas transmission pipeline at Del Amo Blvd. The City of Lakewood Municipal Code Section 9376 specifies limits on noise related to air conditioners, mechanical equipment and machinery noise in residential areas at the property line of any property zoned for residential uses to exceed a five (5) dBA increase.

4.7.3 Significance Thresholds

Noise and vibration impacts are considered significant under the California Environmental Quality Act (CEQA) Appendix G if one or a combination of the following apply:

a. Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;

b. Generation of excessive ground-borne vibration or ground-borne noise levels; or

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

In order to identify a "substantial" increase, the thresholds are based on both incremental increases in noise levels that could cause disturbances and based on the noise levels relative to acceptability criteria (as specified in the General Plan and Municipal Code). The General Plan Table 5-1 specifies general guidance on the acceptability based on the 24-hour average noise level CNEL. The Municipal Code specifies acceptability based on the maximum peak noise levels.

As per Municipal Code, the City of Paramount guidance on determining noise impacts is whether noise is "annoying to persons of ordinary sensitiveness". Annoyance due to noise exposure could occur due to two possible components: annoyance due to maximum noise levels and annoyance due to a substantial increases in average noise levels. Therefore, the SEIR examines both the project noise levels relative to the Municipal Code and potential increases over the guidance provided in the General Plan average noise level (CNEL).

For average noise levels, a project is considered to pose a significant impact on the community noise if the project causes the ambient CNEL noise level to result in an increase of more than three (3) dBA CNEL over existing conditions and the resulting noise level exceeds the applicable exterior guidance in the

General Plan at a sensitive use or a five (5) dBA CNEL or more increase for locations where the resulting noise level does not exceed the applicable exterior guidance at a sensitive use. The applicable guidance as defined in the General Plan is the limit above which would be considered unacceptable. These are the thresholds used in recent certified CEQA documents in the City of Paramount (Garfield Project, 2017) and are therefore continued to be utilized in this analysis for CNEL.

In addition, if the project would produce maximum noise levels in exceedance of the Municipal Code requirements for daytime or nighttime maximum noise levels, it would also be considered significant. If the existing baseline already exceeds the Municipal Code, then any increase in noise level would be considered significant.

With respect to vibration, the City of Paramount does not specify a quantitative threshold within the City General Plan's Health and Safety Element. As per Caltrans (2013), a vibration level of 0.2 inches/second corresponds to an annoying level or one which is distinctly perceptible and vibration thresholds for building damage range from 0.2–0.5 inches/second. Therefore, a vibration threshold of 0.2 inches per second is utilized as a threshold for assessing the potential for damage to residential structures. Furthermore, a level of 0.2 inches per second is utilized as the threshold for temporary activities for the nearest occupied residential structures to minimize the potential for human annoyance. This is also the level adopted by the County of Los Angeles.

4.7.4 Project Impacts and Mitigation Measures

Noise impacts would be associated with both the construction phase and the operational phase of the Project. During the construction phase, construction equipment would be utilized, and some refinery equipment would also be operating, and these were included in the noise model along with areas of construction equipment activities. Construction and operations impacts are discussed below.

The December 2013 Final MND determined that the Original Renewable Fuels Project was not expected to contribute to any noise since most of the new equipment (vessels and piping) did not generate noise. The Original Renewable Fuels Project included new pumps that were not major sources of noise outside the site boundary. Therefore, no discernable change to the existing noise setting during operation of 2013 modifications was expected. Noise is also attenuated by the walls and landscaping around the site.

To mitigate potential noise impacts associated with the operation of the 2013 modifications, mitigation measures were imposed in the MND as discussed above.

A noise assessment is complex and technical. It addresses both 24-hour average noise levels, CNEL, in order to address compliance with the General Plan; and maximum hour noise levels (both daytime and nighttime) in order to address compliance with the Municipal Code. A number of different Project activities are also addressed, including:

- Construction:
    - Construction at the refinery location, both daytime and nighttime; and
    - Construction along the natural gas pipeline route.
- Operations:
    - Operations at the refinery location;
    - Operations at the Lakewood Tank Farm location;
    - Operations-related trains along the railroad; and

- Operations-related trucks along area roadways.

Vibration is also discussed. Each of these is discussed below.

Construction Impacts

Impact #	Impact Description	Phase	Impact Classification
N.1	Construction: The Project would result in the generation of a temporary increase in ambient noise levels in the vicinity of the Project.	Construction	Class II

The discussion below focusses on potential construction impacts during the daytime at the refinery, construction impacts during the nighttime at the refinery and construction impacts related to pipeline construction. As with the baseline noise model assessment, three-dimensional (3D) acoustical noise models were created to predict the Project noise impacts at the refinery location.

For construction, the noise model includes seven construction/demolition zones. It was assumed that all seven construction zones would be active at the same time resulting in a conservative (i.e., on the high side) noise prediction. The model assumed that concurrent construction/demolition and some refinery operational activities would occur for Unit B, the Hydrogen Generation Unit, the new control room, the Pretreat Unit, the truck loading racks, rail loading rack, water treatment facilities, and the new warehouse. The model assumed that construction activities would run both during the daytime in all zones and during the nighttime in some zones.

Construction noise levels were estimated based on the types of equipment expected to be used on-site to complete the various construction activities. These sources include equipment such as loaders, dozers, cranes, trucks, pavers, etc. During any construction project, the overall average noise levels vary with the level of construction activity and the types of equipment that are on-site and operating at a particular time. In order to provide a conservative estimate of potential noise impacts, the construction noise assessment assumes that all construction activities would occur during the same timeframe and that some zones would entail construction during the nighttime hours.

The sound power levels for the Project construction activities are summarized in Table 4.7.11. Note that some refinery equipment would be operational during the construction activities, and these are also listed in Table 4.7.11.

Construction activities associated with the Project modifications are anticipated to increase noise levels during the multi-year phases of the Project construction at noise-sensitive (e.g., residential) receptors in the vicinity of the Paramount Refinery, because heavy construction equipment is required during construction activities associated with the Project and portions of the refinery will continue to operate. The magnitude of the increases would depend on the type of construction activity, the noise level generated by various pieces of construction equipment, site geometry (i.e., shielding by intervening fences, buildings, and other structures), and the distance between the noise source and the receptors.

The predicted noise levels at the noise-sensitive receptors during the construction period, as well as the change from the CEQA baseline levels, are summarized in Table 4.7.12 for the average 24-hour level using the CNEL. The noise increase associated with construction activities (and continued operation of the Renewable Fuels Unit A) was predicted by subtracting the baseline operating refinery from the CNEL noise estimates predicted during construction activities. Figure 4.7-11 shows the noise contours associated with the Project construction phase.

Table 4.7.11 Project Construction Phase Equipment Sound Level

Project Construction			
ID	**Noise Source**	**Notes**	**Sound Power Lw [dBA]**
1	Rail Switch Engine	2 hrs. operation per day - daytime	109
2	Union Pacific Train Delivery/Pickup	1-train with 33 cars - daytime	112
3	Rail Cars Bumping (1-train w/ 33 cars)	6 impacts/day, 2 sec/impact - daytime	135
4	Truck Traffic 5 mph speed	141 trucks/day (105/18/18 d/e/n)	TNM Calculation
5	Bus Traffic 5 mph speed	78 buses /day (72/6/0)	TNM Calculation
6	Renewable Fuels Unit A	24/7 operation	124
7	Construction Zone - Unit A	7 a.m. to 6 p.m. = 11 daytime hours	124
8	Construction Zone - Hydrogen Plant	7 a.m. to 6 p.m. = 11 daytime hours	124
9	Construction Zone - Unit B	Daytime and nighttime hours	124 d/113 e/n
10	Construction Zone - Centrifuges	Daytime and nighttime hours	124 d/113 e/n
11	Construction Zone - Control Room	Daytime and nighttime hours	124 d/113 e/n
12	Construction Zone - Warehouse	Daytime and nighttime hours	124 d/113 e/n
13	Construction Zone - Loading Rack	7 a.m. to 6 p.m. = 11 daytime hours	118

Note: The sound power emission is defined in the 1/1 octave bands centered between 31.5 Hz and 8 kHz. The sound power listed in this table is a summation of the individual equipment. d/e/n = day/evening/night
Source: Navcon Engineering Network 2021.

As shown in Table 4.7.12, construction activities would result in noise increases in the adjacent residential communities, depending on the location, with some locations experiencing a reduction in noise levels during the construction phase over the baseline operations. This is due to the elimination of a large number of operating refinery equipment from the baseline operations (crude oil refinery) during this transitional, construction phase as well as the assumption that nighttime activity would be reduced over daytime activities, and the installation of temporary noise walls during construction. Note that the changes in noise levels are based on the 2011 baseline noise levels as modeled and not on the noise differential between construction and current conditions. Current conditions are less noisy as indicated in ambient measurements taken as shown in Table 4.7.5 due to the reduced activities at the refinery since 2011. However, for this analysis and as per CEQA, the impacts are determined in comparison to the baseline operating refinery in 2011.

Construction activities maximum hour noise levels were also modeled and indicated that maximum noise levels would range from 59 – 82 during the daytime at the fence line receptors. As the Municipal Code exempts daytime construction noise, the detailed daytime construction maximum hour noise levels are not addressed. For nighttime noise levels, see below.

Because the CNEL noise changes from baseline would all be less than 3 dBA, no significant noise impacts related to Project construction CNEL are expected within the adjacent residential areas. Construction noise would cease following the completion of construction activities.

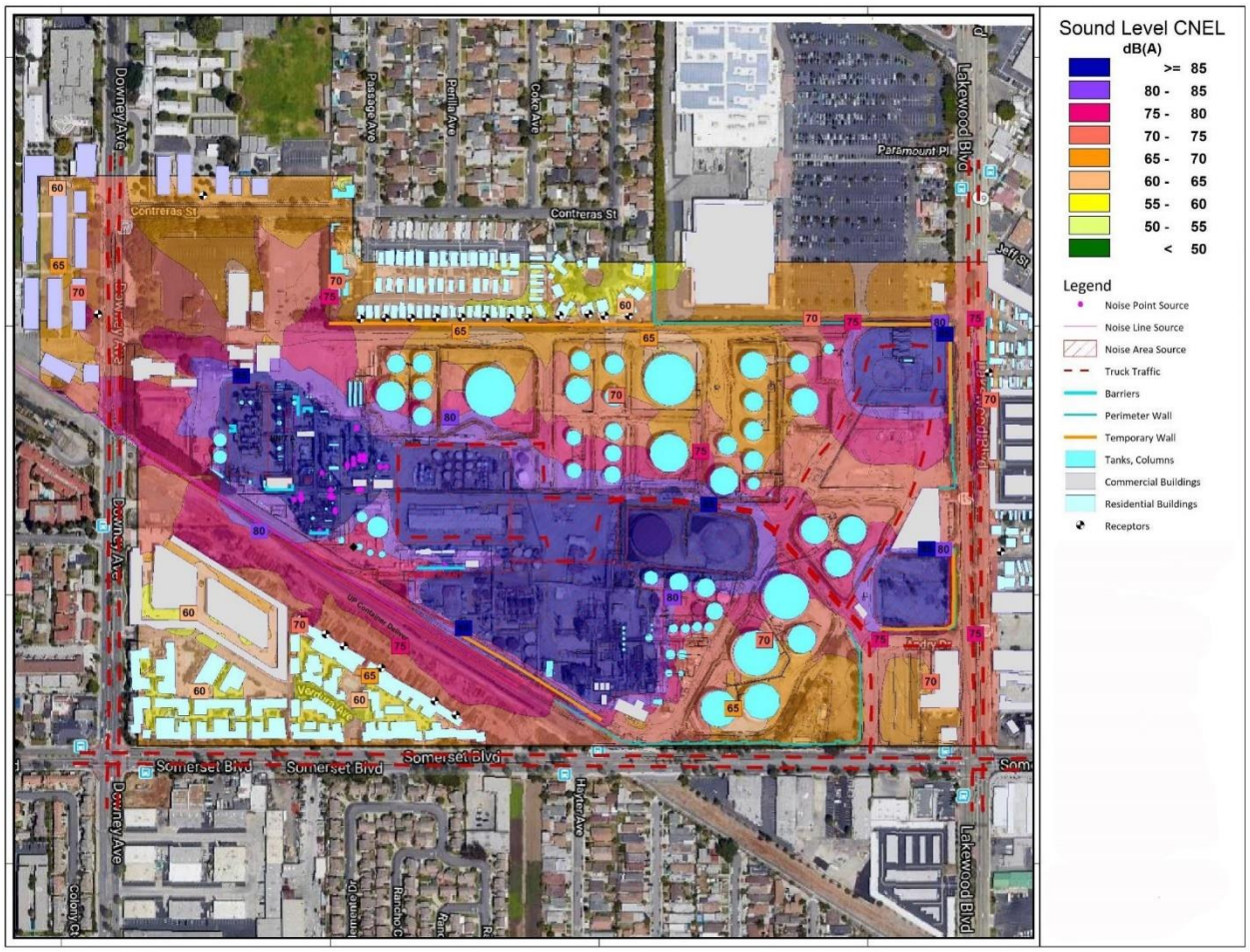
No construction activities are associated with the Lakewood Tank Farm, so there will be no increase in noise levels related to construction at the Lakewood Tank Farm.

Table 4.7.12 Project Construction Phase Modeled Noise Levels CNEL

Receptor	Location	Construction and Operating Crude Refinery, dBA CNEL	Exceed General Plan Guidance?	Change from Baseline, dBA	Significant?
SS-1	South Residences (R)	74.5	Yes	1.1	No
SS-2	South Residences (R)	73.9	Yes	1.5	No
SS-3	South Residences (R)	73.6	Yes	2.5	No
SS-4	South Residences (R)	73.4	Yes	2.9	No
SS-5	South Residences (R)	73.7	Yes	2.2	No
SS-6	South Residences (R)	73.6	Yes	2.2	No
MH-1	Mobile Homes (HR)	64.0	No	-8.6	No
MH-2	Mobile Homes (HR)	63.1	No	-7.6	No
MH-3	Mobile Homes (HR)	62.9	No	-5.4	No
MH-4	Mobile Homes (HR)	62.1	No	-3.5	No
MH-5	Mobile Homes (HR)	60.4	No	-2	No
MH-6	Mobile Homes (HR)	59.5	No	-2.6	No
MH-7	Mobile Homes (HR)	59.8	No	-3.5	No
MH-8	Mobile Homes (HR)	61.0	No	-2.7	No
CA-1	North homes (R)	62.4	No	0	No
CA-2	North homes (R)	62.1	No	-0.2	No
CA-3	North homes (R)	61.8	No	0.7	No
CA-4	North homes (R)	61.0	No	0.1	No
HWES	Elementary school (S)	66.4	No	0.7	No
PHS	High School (S)	74.8	Yes	1.6	No
RMHP	Lakewood Blvd North (C)	71.7	No	0.6	No
LCTP	Lakewood Blvd South (C)	69.1	No	1.6	No

Note: Sound levels for SS-1 through SS-6 are for the highest noise level at the building of all 3 floors.
General Plan defines 65 dBA as unacceptable CNEL level for low and medium density residential (R), 70 dBA for high density residential and schools (HR, S) and 75 dBA for commercial, industrial and office (C). Zoning based on City of Paramount and City of Bellflower zoning maps with high density residential equal to multifamily.
Source: Navcon Engineering Network 2021.

Figure 4.7-11 Project Construction Phase CNEL Noise Levels



Source: Navcon Engineering Network 2021.

The City of Paramount Municipal Code exempts construction noise sources between the hours of 7:00 a.m. and 8:00 p.m. Therefore, the maximum hour noise generated from construction during the daytime hours would be less than significant. Nighttime noise from construction would be subject to the Municipal Code requirements and is therefore discussed below.

Nighttime Construction

As discussed above, daytime noise levels are exempt from the Municipal Code requirements. However, the Applicant is proposing to conduct some construction activities during nighttime hours. Nighttime noise generation has the potential for increased impacts because residential receptors may be sleeping, ambient noise is substantially lower at night and disturbance potential is higher during the night. The CNEL calculation includes a penalty for noise levels generated at night and this factor was included in the analysis above for CNEL. The Applicant proposes installing sound walls during the construction activities to limit nighttime noise levels. Sound walls would be 16 feet tall and located along part of the south side, the east side and the north side of the refinery (see Appendix E).

For maximum levels, the analysis indicated that maximum noise levels would range from 45–76 dBA during the nighttime. The modeling analysis utilizes an average noise level over the peak hour to estimate the maximum noise levels. Table 4.7.13 shows the modeled maximum hour noise levels during the

nighttime, whether the levels exceed the municipal code at night (as daytime construction is exempt from the code requirements) and the incremental change from the baseline levels.

Modeling shows fence line noise levels would not exceed the municipal code during the nighttime hours.

However, there are a number of uncertainties associated with the modeling of construction activities: equipment is moved around a lot and activities can take place in unexpected areas, the exact location of all construction activities, including equipment storage, offloading, loading areas, can change and unanticipated construction equipment usage. These uncertainties produce a substantially greater uncertainty associated with modeling construction activities than is associated with modeling operational noise, where pumps and compressors, for example, are in a fixed location. In addition, the noise models utilize manufacturers and measured noise data from other projects and are an estimate of the noise levels that could be produced from the Project activities. There is still a wide variation in construction noise levels that, due to exemptions for daytime construction in most municipal codes, is normally not a concern. The models attempt to estimate a reasonable worst-case noise level, but these uncertainties remain. In addition, the noise model only estimates the maximum hourly noise levels, whereas there could be substantial variations in actual noise levels during the peak hour. Note that the Municipal Code (Section 9.12.050) requires monitoring with average noise levels over 15 second intervals over 15 minutes and using the minimum level monitored as the maximum noise level, which is different than an hourly average. The Applicant indicates that nighttime construction at the refinery would entail only 25 percent of the daytime levels, but this is only an estimate and is difficult to monitor and manage. Although monitoring would take place as indicated in the mitigation measures below, there is the potential for multiple exceedances of the Municipal Code during nighttime construction causing disturbances to area residences. Noise generated from construction at night in close proximity to residences has a greater potential for periodic exceedances causing disturbances than daytime activities.

Therefore, due to the uncertainties associated with modeling real-time noise generation for construction, impacts are potentially significant for nighttime construction activities.

Table 4.7.13 Project Construction Phase Modeled Noise Levels Maximum Nighttime Hour

Receptor	Location	Baseline Nighttime Leq Max Hour, dBA	Project Nighttime Leq Max Hour, dBA	Exceeds Municipal Code at Night?	Change from Baseline, dBA	Significant?
W-1	Along Downey Ave	64.7	68.3	No	3.6	No
W-2	Along Downey Ave	65.1	66.1	No	1.0	No
W-3	Along Downey Ave	59.5	60.4	No	0.9	No
N-1	Along Contreras St.	59.8	59.5	No	-0.3	No
N-2	Along Contreras St.	53.6	53.1	No	-0.5	No
N-3	Mobile Homes	67.8	58.0	No	-9.8	No
N-4	Mobile Homes	60.0	52.5	No	-7.5	No
N-5	Castana Ave Homes	56.5	49.1	No	-7.4	No
N-6	Castana Ave Homes	53.8	45.0	No	-8.8	No
N-7	Shopping Center	54.9	56.4	No	1.5	No
N-8	Shopping Center	55.9	48.2	No	-7.7	No
E-1	Lakewood Blvd	53.2	45.9	No	-7.3	No
E-2	Lakewood Blvd	53.6	51.8	No	-1.8	No
E-3	Lakewood Blvd	51.6	48.8	No	-2.8	No
E-4	Lakewood Blvd	53.8	47.3	No	-6.5	No
E-5	Lakewood Blvd	60.7	54.0	No	-6.7	No
E-6	Lakewood Blvd	61.5	54.4	No	-7.1	No
S-1	Somerset Blvd	55.8	51.0	No	-4.8	No
S-2	Somerset Blvd	51.8	47.4	No	-4.4	No
S-3	Somerset Blvd	49.2	44.6	No	-4.6	No
S-4	Somerset Blvd	59.1	52.8	No	-6.3	No
S-5	Somerset Blvd	62.0	57.2	No	-4.8	No
S-6	Railroad	74.3	69.4	No	-4.9	No
S-7	Railroad	70.0	70.7	No	0.7	No
S-8	Railroad	69.0	68.2	No	-0.8	No
S-9	Railroad	75.7	75.7	No	0.0	No
S-10	Railroad	68.6	68.7	No	0.1	No
All	Range	49.2 – 75.7	44.6 – 75.7	-	-	-

Note: Sound levels for SS-1 through SS-6 are for the highest noise level at the building of all 3 floors.
Municipal code levels are based on 82/77 dBA commercial/industrial © as per MC section 9.12. Zoning based on zoning maps for City of Paramount and City of Bellflower.
* for nighttime levels only. Daytime construction activities are excluded from the municipal code noise limit requirements.
Source: Navcon Engineering Network 2021.

Natural Gas Pipeline Construction Activities

A new 16-inch natural gas pipeline would be required to connect the natural gas supply to the Hydrogen Generation Unit. This new pipeline will be installed by Southern California Gas Company and includes approximately 3.7 miles of new transmission pipeline. Construction activities for this new natural gas pipeline are expected to take approximately six months and occur within the street rights-of-way.

Construction equipment associated with the pipeline is expected to require the following types of equipment; excavator, side boom (mobile crane), backhoe, boring rig, compressor, generator, welding machines, service vehicles (e.g., pickup trucks), dump truck, slurry truck, delivery trucks, and vacuum truck. Not all of the equipment would be used at the same time as the route would need to be cleared, a trench made, the pipe would be placed into the trench, welders would be used to weld the pipe in place, etc. Different construction equipment would be used for each of the phases and the phases would

generally not overlap. Construction noise levels associated with the construction activities are expected to range as high was 91 dBA maximum hour levels 50 feet from the pipeline construction activities. Existing noise levels along the streets (e.g., Lakewood Boulevard) tend to average 56–73 dBA (see noise environment section above). Since residential areas are located adjacent to Lakewood Boulevard, the pipeline construction activities could be within 50 feet of residents and could generate noise levels exceeding the nighttime allowable maximum hourly levels. Noise levels at 300 feet from these construction activities would drop to 76 dBA peak and 1,000 feet would drop to 65 dBA peak. These are conservative estimates as they assume all equipment would be operating simultaneously at a single location.

The City of Paramount Municipal Code exempts construction noise sources between the hours of 7:00 a.m. and 8:00 p.m. Noise codes for the City of Bellflower and Lakewood would also exempt daytime short-term construction activities. Therefore, the noise generated from construction of the pipeline during the daytime hours would be less than significant. However, if pipeline construction activities were to occur at night, impacts could be significant.

The following mitigation measures are proposed.

Mitigation Measures

N-1a ***Daytime Limits:*** *Construction activities at the refinery shall be performed only during the daytime hours between the hours of 7:00 a.m. and 8:00 p.m., including material and equipment delivery loading/unloading. This restriction shall be a note placed on all construction plans with signage placed at the construction site. For pipeline construction, no nighttime construction shall be allowed within 300 feet of a residence unless approved by the local jurisdiction.*

N-1b ***Noise Monitoring and Management Plan****: The Applicant shall produce a Noise Monitoring and Management Plan for construction which details the following:*

1) *Quieted generators or portable barriers shall be used around the generators for all off-site pipeline construction locations;*

2) *To minimize the time during which any single noise-sensitive receptor is exposed to construction noise, construction shall be completed as rapidly as possible;*

3) *Where possible, electric-powered equipment shall be used rather than diesel equipment and hydraulic-powered equipment shall be used rather than pneumatic power. If compressors powered by diesel or gasoline engines are used, they shall be contained or have baffles to help abate noise levels;*

4) *All construction equipment shall be properly maintained; and all construction equipment shall be equipped with suitable exhaust and air-intake silencers in proper working order;*

5) *Construction equipment shall be operated only when necessary, and shall be switched off when not in use;*

6) *Construction employees shall be trained in the proper operation and use of the equipment to minimize noise levels;*

7) *Contractors shall be required to participate in training programs related to Project-specific noise requirements, specifications, and/or equipment operations. Contractors shall also receive on-site training related to noise-specific issues and sensitive areas adjacent to the pipeline route;*

8) *Construction staging sites shall be located on properties restricted to industrial and commercial uses only and located as far away from residences as possible;*

9) *To the extent possible, construction staging sites shall not be located within 500 feet of a sensitive receptor. Where this is not possible, the contractor shall erect noise barriers, or ensure that existing structures provide adequate noise barriers between the staging site and the sensitive receptor;*

10) *Stationary noise sources such as generators and compressors shall be positioned as far away as possible from noise sensitive areas;*

11) *To the extent practicable, construction equipment shall be stored in the construction zone while in use. This will eliminate noise associated with repeated transportation of the equipment to and from the site;*

12) *Minimize nighttime construction delivery activities in residential areas and only use if needed to minimize traffic impacts (e.g., within intersections);*

13) *Restrict high level noise construction activities that generate tonal, impulsive, or repetitive sounds, such as back-up alarms, and certain demolition activities. Backup alarms shall be prohibited at night and the use of flaggers utilized as per OSHA requirements;*

14) *Public notice shall be given to residents and business adjacent to the refinery and along the pipeline route at least two weeks prior to the commencement of construction activities. The notice shall identify the location and dates of construction, and the name and phone number of the contractor's contact person in case of complaints. Residents shall also be kept informed of any changes to the schedule. The contractor's designated contact person shall be on-site throughout Project construction with a mobile phone. If a complaint is received, the contact person shall take whatever reasonable steps are necessary to resolve the complaint. If possible, a member of the contractor's team shall also travel to the complainant's location to understand the nature of the disturbance;*

15) *The City shall be notified of all complaints in a timely manner.*

Impacts Remaining After Mitigation

Some nighttime construction activities, such as pipeline installation at some intersections, and nighttime construction at the refinery, are proposed. Based on construction equipment noise estimates, noise levels along the pipeline route with nighttime construction could exceed the thresholds (see Appendix E). Modeling indicates that the 24-hour average CNEL noise levels due to construction at the refinery would be incrementally less than 3 dBA increase over the baseline operations. Modeling indicates that maximum hour noise levels due to nighttime construction at the refinery would not exceed the Municipal Code levels. However, there are uncertainties associated with nighttime construction activities that could cause exceedances. Mitigation N-1a requires that construction be limited to daytime hours. With construction entirely limited to daytime only, noise impacts during construction would be less than significant. As

construction would be limited to daytime activities, no monitoring would be necessary, although some construction measures are proposed to minimize potential disturbances during the daytime. Therefore, construction impacts for noise would be **less than significant with mitigation (Class II).**

Operation Impacts

Impact #	Impact Description	Phase	Impact Classification
N.2	Operation: The Project would result in the generation of an increase in ambient noise levels in the vicinity of the Project.	Operation	Class I

Similar to the baseline noise model assessment, three-dimensional (3D) acoustical noise models were created to predict the Project CNEL and maximum hourly noise levels for the period when the Project is operating at the refinery. The noise impact assessment was conducted by comparing the difference between the predicted noise levels for the Project and the baseline crude refinery operations relevant to the thresholds. See Appendix E for details.

Approximately 215 noise sources at the refinery were included in the 3D model (motors, pumps, compressors, fin fans, heat exchangers, cooling towers, etc.) for the Project operations. The octave band sound power emission levels (31.5 Hz to 8 kHz) were based upon manufacturer supplied data, test data from previous projects or the assumption of 85 dBA at three feet and the equipment dimensions (length, width, and height) as based on the OSHA 85 dBA hearing loss requirements.

Table 4.7.14 shows the sound levels assumed for the equipment in the Project operations.

Table 4.7.14 Project Operation Phase Equipment Sound Level

Project Operations			
ID	**Noise Source**	**Notes**	**Sound Power Lw [dBA]**
1	Rail Switch Engine	8 hrs. operation per day - daytime	109
2	Union Pacific Train Delivery/Pickup	2-trains with 25 cars/train - daytime	112
3	Rail Cars Bumping (2-trains, 25 cars/train)	6 impacts/day, 2 sec/impact - daytime	134
4	Truck Traffic 5 mph speed	540 trucks per day (270/67/203 d/e/n)	TNM Calculation
6	Renewable Fuels Unit A	24/7 operation	124
7	Renewable Fuels Unit B	24/7 operation	119
8	Pre-Treat Centrifuges	24/7 operation	119
9	Hydrogen Plant	24/7 operation	126
10	PSA Unit	24/7 operation	134
11	Propane Recovery	24/7 operation	113
12	Cogen Plant	Not operating	-

Note: The Noise models include approximately 215 individual pieces of equipment. The sound power emission is defined in the 1/1 octave bands centered between 31.5 Hz and 8 kHz. The sound power listed in this table is a summation of the individual equipment. d/e/n = day/evening/night.
Source: Navcon Engineering Network 2021.

Noise reduction measures are being designed into the Project to assure that the CNEL noise impact from the operations would be less than the thresholds and will not represent a significant noise impact to the residential community. The noise reduction measures in the analysis include the following:

- a 16.5 ft. noise barrier around the PSA Unit;
- 13 ft. Hydrogen Plant Fan noise barriers;

- 13 ft. Hydrogen Plant compressor noise barriers (370 A/B and Feed/Product A/B);
- a Hydrogen Plant stack acoustical silencer with an Insertion loss of 15 dB or more;
- acoustical lagging treatment on the PSA manifolds and piping; and
- 13 ft. Plant B compressor noise barriers (C-270 A/B/C, C-301 and C-351).

Detailed engineering design for the components of the Project is still ongoing at the time of the SEIR preparation. The above noise reduction measures are expected to reduce noise based on preliminary engineering design information. The noise reduction measures are expected to be refined as more detailed engineering is complete. The above or equivalent noise measures are expected to be the minimum required to minimize noise impacts from the Project.

Project Refinery Community Noise Levels (CNEL)

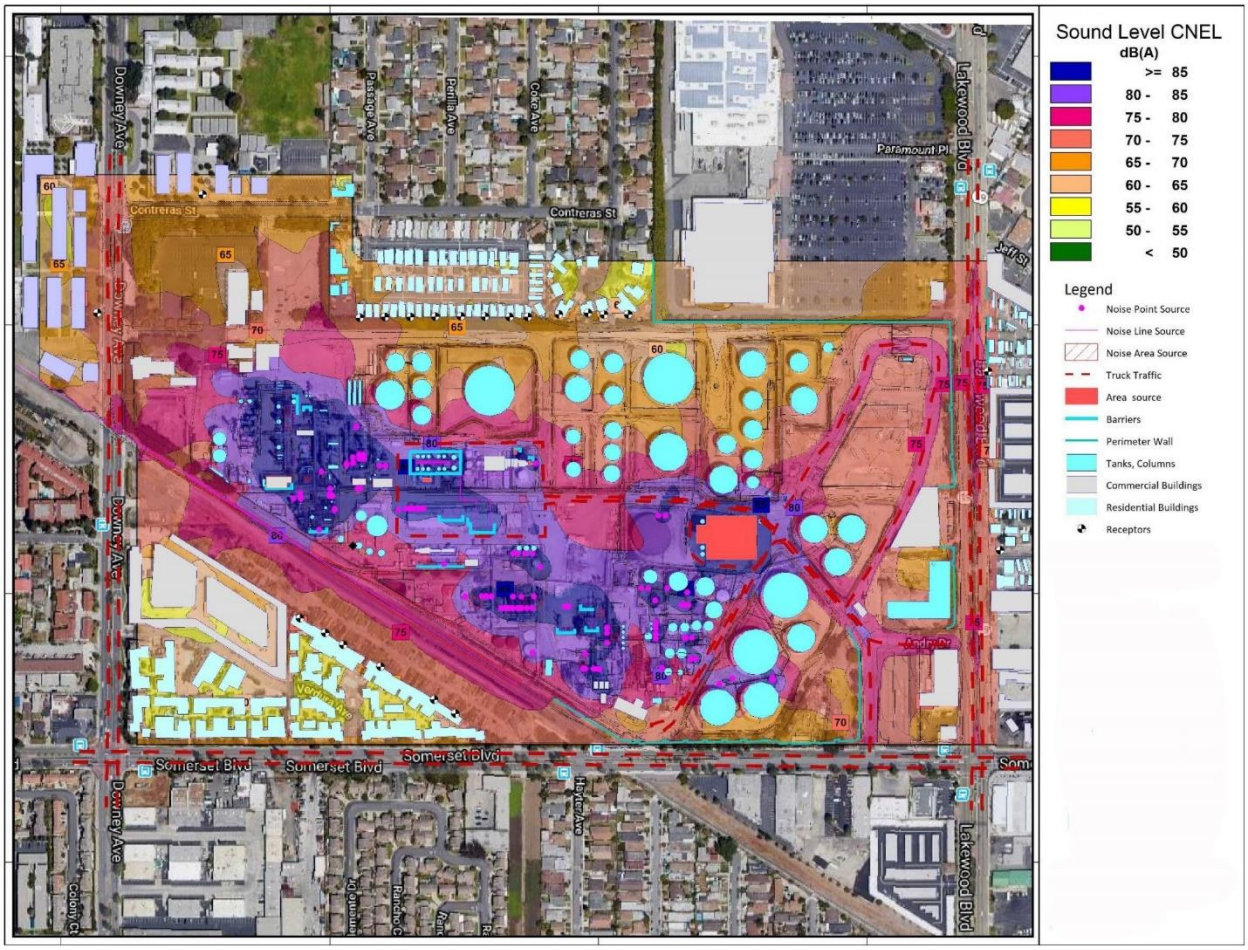
CNEL noise levels at the different receptors are shown in Table 4.7.15. The CNEL noise contours for the Project operations are shown in Figure 4.7-12.

Table 4.7.15 Project Operation Phase Modeled CNEL Noise Levels

Receptor	Location	Project Operating, dBA CNEL	Exceeds General Plan Guidelines	Change from Baseline, dBA	Significant?
SS-1	South Residences (R)	74.0	Yes	0.8	No
SS-2	South Residences (R)	73.5	Yes	1.1	No
SS-3	South Residences (R)	73.3	Yes	2.0	No
SS-4	South Residences (R)	72.8	Yes	1.8	No
SS-5	South Residences (R)	72.8	Yes	1.0	No
SS-6	South Residences (R)	72.9	Yes	1.2	No
MH-1	Mobile Homes (HR)	72.9	Yes	0.3	No
MH-2	Mobile Homes (HR)	71.1	Yes	0.4	No
MH-3	Mobile Homes (HR)	68.7	No	0.4	No
MH-4	Mobile Homes (HR)	67.2	No	1.6	No
MH-5	Mobile Homes (HR)	66.1	No	3.7	No
MH-6	Mobile Homes (HR)	63.8	No	1.7	No
MH-7	Mobile Homes (HR)	64.4	No	1.1	No
MH-8	Mobile Homes (HR)	66.0	No	2.3	No
CA-1	North homes (R)	66.8	Yes	4.4	**Yes**
CA-2	North homes (R)	64.5	No	2.2	No
CA-3	North homes (R)	64.9	No	3.8	No
CA-4	North homes (R)	61.8	No	0.9	No
HWES	Elementary school (S)	65.4	No	-0.3	No
PHS	High School (S)	73.2	Yes	0.0	No
RMHP	Lakewood Blvd North (C)	72.8	No	1.7	No
LCTP	Lakewood Blvd South (C)	68.7	No	1.2	No

Note: Sound levels for SS-1 through SS-6 are for the highest noise level at the building of all 3 floors.
General Plan defines 65 dBA as unacceptable CNEL level for low and medium density residential (R), 70 dBA for high density residential and schools (HR, S) and 75 dBA for commercial, industrial and office (C). Zoning based on City of Paramount and City of Bellflower zoning maps with high density residential equal to multifamily. Significance thresholds are defined as 3 dBA increase if exceeding the General Plan and 5 dBA increase if not exceeding the General Plan.
Source: Navcon Engineering Network 2021.

Figure 4.7-12 Project Operation Phase CNEL Noise Levels



Source: Navcon Engineering Network 2021

With the noise measures described above, the noise impact associated with the operation of the Project would be less than three (3) dBA CNEL increase over the baseline at all receptors except some receptors in the residential area located to the north of the refinery (receptor CA-1). At receptor CA-1, the Project CNEL noise levels would exceed the General Plan guidelines, which is considered the acceptable range for low and medium density residential areas. Because the noise increase at this residential area would be greater than three (3) dBA CNEL and the noise levels are estimated to be in the unacceptable range for low and medium density residential developments, the impacts would be significant.

Maximum Hour Refinery Noise Levels

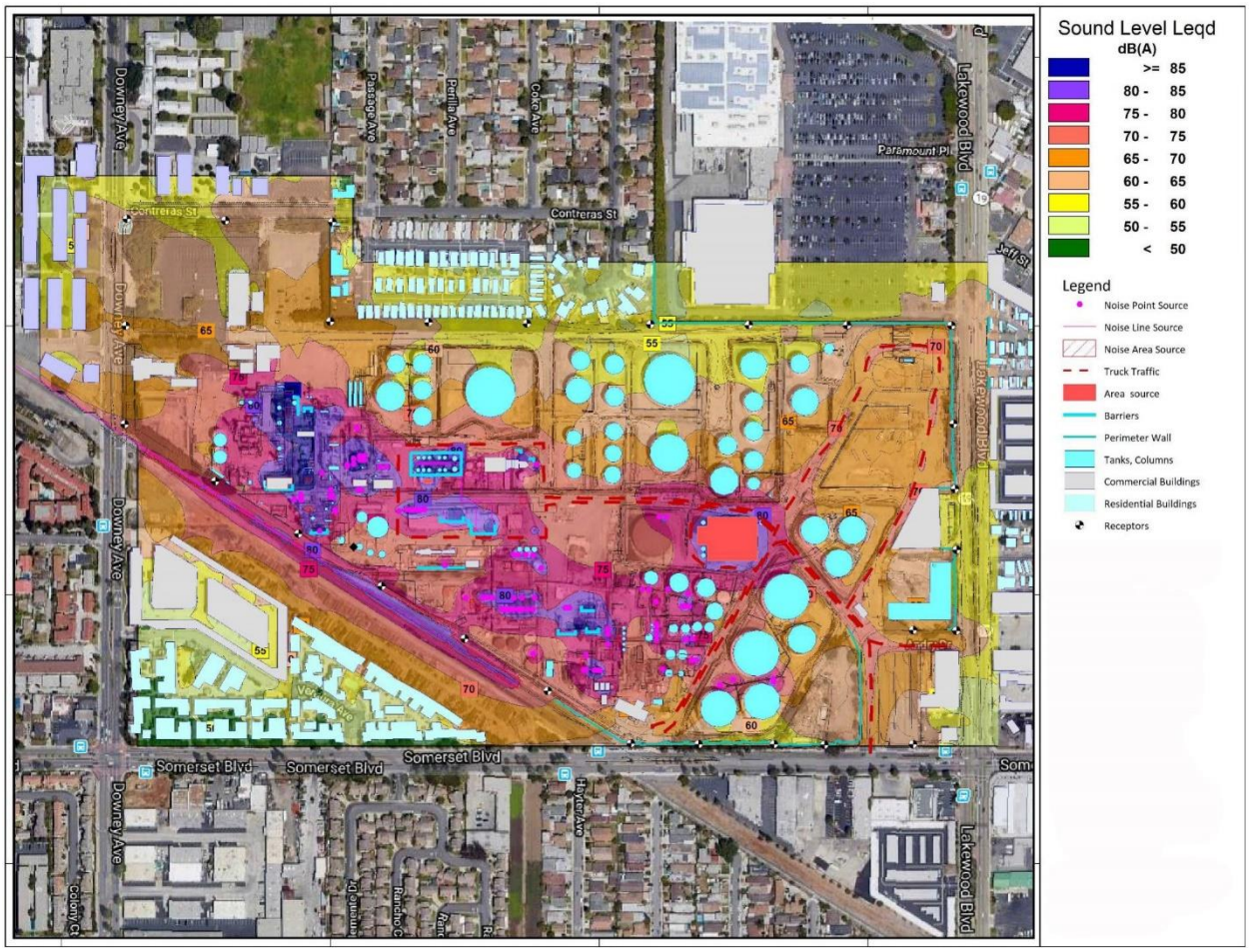
The Municipal Code requires noise levels to be below specified levels depending on the land use type. The land use of the refinery is industrial. The model was run in order to determine the maximum noise levels at the different refinery fence line receptors (as shown above). The maximum noise levels are shown in Table 4.7.16. Noise contours are shown in Figure 4.7-13 for daytime and Figure 4.7-14 for nighttime.

Table 4.7.16 Project Operation Phase Modeled Maximum Hour Noise Levels

Receptor	Project Operating, dBA Maximum Daytime	Project Operating, dBA Maximum Nighttime	Exceeds Municipal Code?	Increase Over Baseline, dBA (day/night)	Significant?
W-1 - Along Downey Ave	70.6	67.0	No	1.0/2.3	No
W-2 - Along Downey Ave	65.3	65.1	No	0/0	No
W-3 - Along Downey Ave	60.7	60.4	No	0.8/0.9	No
N-1 - Along Contreras St.	60.5	60.1	No	0.4/0.3	No
N-2 - Along Contreras St.	54.1	53.6	No	0.1/0	No
N-3 - Mobile Homes	68.4	68.3	No	0.5/0.5	No
N-4 - Mobile Homes	61.5	61.3	No	1.4/1.3	No
N-5 - Castana Ave Homes	59.2	59.1	No	2.6/2.6	No
N-6 - Castana Ave Homes	56.1	56.0	No	2.2/2.2	No
N-7 - Shopping Center	58.2	58.1	No	3.2/3.2	No
N-8 - Shopping Center	63.0	63.0	No	7.0/7.1	No
E-1 - Lakewood Blvd	60.9	60.9	No	7.6/7.7	No
E-2 - Lakewood Blvd	61.1	61.1	No	7.4/7.5	No
E-3 - Lakewood Blvd	57.5	57.5	No	5.9/5.9	No
E-4 - Lakewood Blvd	58.4	58.4	No	4.5/4.6	No
E-5 - Lakewood Blvd	64.9	64.9	No	4.2/4.2	No
E-6 - Lakewood Blvd	66.6	66.6	No	5.1/5.1	No
S-1 - Somerset Blvd	61.0	61.0	No	5.1/5.2	No
S-2 - Somerset Blvd	57.0	57.0	No	5.1/5.2	No
S-3 - Somerset Blvd	52.4	52.2	No	2.8/3	No
S-4 - Somerset Blvd	56.1	55.5	No	-3.2/-3.6	No
S-5 - Somerset Blvd	60.3	58.8	No	-2.3/-3.2	No
S-6 - Railroad	71.8	70.9	No	-2.8/-3.4	No
S-7 - Railroad	75.8	71.4	No	2.2/1.4	No
S-8 - Railroad	77.3	69.6	No	3.4/0.6	No
S-9 - Railroad	77.7	75.8	No	0.4/0.1	No
S-10 - Railroad	74.8	69.0	No	0.7/0.4	No
Range	52.4 - 77.7	52.2 - 75.8		-3.6 to 7.7	

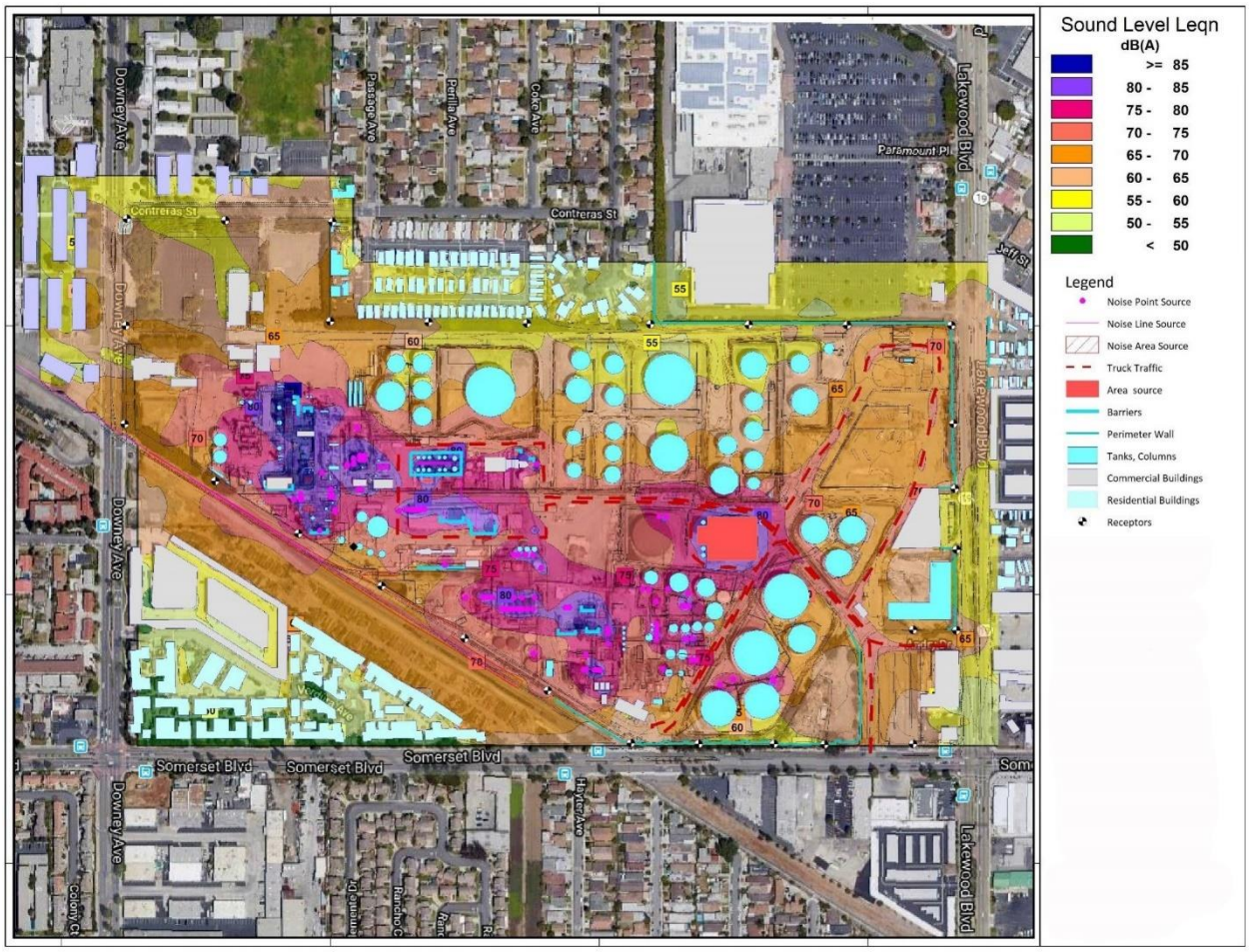
Notes: Significance threshold based on the incremental increase over the baseline.
Municipal code levels are based on industrial daytime/nighttime of 82/77 dBA commercial/industrial as per MC section 9.12.
Significance is based on whether the noise levels exceed the MC.
Source: Navcon Engineering Network 2021.

Figure 4.7-13 Project Operations Phase Maximum Daytime Noise Levels



Source: Navcon Engineering Network 2021.

Figure 4.7-14 Project Operations Phase Maximum Nighttime Noise Levels



Source: Navcon Engineering Network 2021.

None of the fence line areas would exceed the Municipal Code requirements. Therefore, impacts due to maximum noise levels would be less than significant.

Lakewood Tank Farm

Noise at the Lakewood Tank Farm would be limited to maintenance activities to replace tank seals and perform other routine maintenance activities. Maintenance activities would be limited to a few workers a day, one to two delivery trucks to deliver materials, and welders. There would be no permanent increase in ambient noise at the tank farm for operations as no additional noise generating equipment would be added. Therefore, operational noise impacts at the Lakewood Tank Farm would be less than significant.

Transportation Routes

Noise levels along the railroad connection would increase during the peak operations as the number of daily trains would increase to 2 trains visited the refinery on a peak day. CNEL noise levels would depend on when the two trains visit, with a greater increase in CNEL occurring if trains come at night due to the nighttime penalties incorporated into the CNEL calculations. CNEL levels would increase by 3.0 dBA for daytime train activity only. Generally, during the baseline period, train activity has been limited to daytime hours only. Note this does not include the contribution from other area sources. The MTA analysis

conducted some measurements of area noise levels and indicated area noise could range from about 54 short term and 64 long term (L_{dn}, similar to CNEL) although these measurements were taken farther from the rail road areas and did not necessarily include refinery-related rail traffic.

The peak noise levels would be the same as the baseline for an individual train passing by receptors. As increases in the average daily CNEL could be 3 dBA due to a change in train levels, impacts would be potentially significant along the rail connection.

In addition to the peak day analysis, there would be an annual increase in the number of trains to the refinery, increasing from 95 trains per year to 312 train per year. Along with the increase in CNEL, there would be a substantial increase in the number of days during the year where the CNEL would increase. This can be captured by estimating the annual average CNEL based on a summation of the total annual noise energy averaged over the entire year. The annual average CNEL is estimated to increase by at least 5.2 dBA CNEL, which would also be a significant impact.

Along the railroad mainline, the peak day would be the same as the peak day baseline activities for individual trains passing a receptor. On the days when only one train operated in the baseline, compared to the 2 trains operating in the Project period, CNEL for the mainline would increase by up to 0.1 dBA CNEL. These levels would be less than significant due to the activity already occurring on the mainline.

For roadways, note that for the CNEL analysis, roadway traffic was included in the SoundPlan© model for traffic located near the refinery. For area roadways located away from the refinery, increases in roadway noise would be generated due to the increased truck traffic on area roadways. Based on the FHWA noise models discussed under the baseline analysis, noise increases along roadways could be 1.7 dBA CNEL due to the peak level of truck traffic, with increases of 1.0 dBA CNEL with average truck levels. This would be a less than significant impact.

Because noise levels due to operations could exceed the CNEL acceptable levels along the rail connection, and since the final design of the operations and noise control systems are still being developed and in-field practice can vary from modeled levels, mitigation measures are included below. The noise model does include some uncertainties associated with operations, including the specified noise levels of some of the units and equipment as compared to anticipated levels. For this reason, noise monitoring is included as a mitigation in order to ensure that noise levels are maintained below the thresholds.

Mitigation Measures

N-2a ***Noise Assessment:*** *Prior to operations, the Applicant shall provide a detailed noise assessment indicating that the noise from the Project operations will not exceed a performance criteria of; a) 3 dBA CNEL increases over baseline at the areas to the north of the refinery property and; b) all areas are equal to or less than the baseline noise levels for those areas that exceed the Municipal Code allowable levels. Additional mitigation shall be proposed including the following or equivalent: 1) the construction of walls along the north side of the refinery to protect residential areas from excess noise levels; 2) additional noise barriers and walls around the hydrogen plant, around C-270 compressors and feed compressors, PSA skid, or other equipment depending on the source contributions to the noise levels along the north side; and 3) the selection of equipment with lower noise ratings.*

N-2b ***Noise Monitoring and Management Plan****: Prior to operations, the Applicant shall submit to the City for review and approval a Noise Monitoring and Management Plan that outlines procedures for regular noise monitoring of the operational aspects of the refinery facility and procedures to minimize noise from the refinery that could impact nearby residential or the*

school areas, as well as procedures to take in the event of noise complaints (including notification to the City), procedures for operators and contractors, time limits of noise-generating activities, including rail and truck deliveries and loading/unloading. The Plan shall specify at a minimum the duration and location of monitoring activities, the types of monitoring equipment and the results that will be submitted to the City. The noise monitoring shall be conducted within one month of refinery operations commencing and shall address both CNEL and maximum noise levels. The purpose of the monitoring is to ensure that noise levels at receptors meet the performance standards specified in the thresholds for acceptable CNEL and maximum levels. The results of the monitoring shall be reported to the City within one month of monitoring completion. If the results of the noise monitoring indicate that noise levels are above the thresholds, then the Applicant shall amend the Noise Monitoring and Management Plan with additional mitigation measures that would reduce noise levels below City thresholds and additional monitoring shall commence to demonstrate compliance with the performance standards. Additional mitigation measures could include 1) the construction of walls to protect residential areas from excess noise levels; 2) additional noise barriers and walls around equipment depending on the source contributions to the noise levels; and 3) the selection of equipment with lower noise ratings. Additional noise monitoring shall be conducted under the supervision of the City on periodic basis.

N-2c ***Railroad Noise Reduction Measures****: The Applicant shall work with the railroad operator to ensure that train operations along the 1-mile connection to the mainline tracks, including rail car deliveries and pick-ups, are limited to daytime hours only between 9 a.m. and 6 p.m. weekdays and 10 a.m. and 6 p.m. on Saturdays. No activity on Sundays is allowed. No deliveries during the evening, night, and early morning periods are permitted unless prior notification to the City is provided.*

Impacts Remaining After Mitigation

The mitigation would require that all operation activities be limited to a noise increase and maximum levels acceptable to the thresholds. Because noise mitigation is generally effective and feasible for operational activities where noise sources are stationary and predictable, this is an approach that can achieve additional levels of reductions if needed with additional measures. For example, the installation of a temporary noise wall on the north side of the refinery during construction provides a reduction in noise levels for residences located to the north of the refinery during construction and would be an effective additional mitigation technique if used permanently, if monitored noise levels demonstrate higher impacts than modeled. With the implementation of the noise barriers, or a wall along the north of the refinery, or other equivalent measures, in Mitigation Measure N-2a, and the ambient monitoring during refinery operations, the resulting noise impacts at the refinery would be less than significant.

Due to the substantial increase in rail activities, from 1 train per day to 2 trains per day peak, and from an average of 8 times per month in the baseline, to trains running almost daily over the year as part of the Project, increases along the rail connection in daily CNEL and average annual CNEL levels could be substantial and potentially significant. Mitigation measure N-2c would help to reduce rail noise due to ensuring a continued reduction in nighttime and Sunday train activity.

However, as railroad operations would continue to present a substantial increase in noise and therefore, operational noise would remain **significant and unavoidable (Class I).**

Impact #	Impact Description	Phase	Impact Classification
N.3	The Project could result in the generation of excessive ground-borne vibration or ground-borne noise levels.	Construction or Operation	Class III

The Project construction activities would generate ground-borne vibration due to the use of heavy construction equipment and construction-related traffic. The types of construction equipment that would be used to construct the Project include welding machines, trucks, cranes, compressors, loaders, concrete pumps, graders, and pavers. Table 4.7.17 provides estimated vibration levels for construction equipment as a function of distance from the source.

Table 4.7.17 Estimated Typical Construction Equipment Vibration Levels

Equipment	Vibration Level (in/sec), PPV		
	at 25-feet	at 100-feet	at 200-feet
Vibratory Roller/Tamper	0.210	0.0263	0.0093
Backhoe	0.089	0.0111	0.0039
Large Hydraulic Excavator	0.089	0.0111	0.0039
Large Bulldozer	0.089	0.0111	0.0039
Large Truck	0.076	0.0095	0.0034
Auger	0.022	0.0028	0.0010
Crane	0.008	0.0010	0.0004
Small bulldozer	0.003	0.0004	0.0001
Jackhammer	0.035	0.0040	0.0020

Source: Adapted from FTA 2006 and Caltrans 2013.

Based on threshold for vibration of 0.2 in/sec vibration velocity, construction equipment used for the Project would not exceed the vibration threshold beyond 25 feet. According to Caltrans studies (Caltrans, 2013), for transient vibrations, the vibration levels for barely perceptible are 0.035 in/sec. This level would not be exceeded beyond 82 feet from even a vibratory roller/tamper equipment, which produces the greatest vibration levels listed above. These levels would be temporary and would be below the levels identified as annoying or causing building damage and impacts associated with construction would be less than significant.

Operational vibration from locomotive engines and from train cars during mainline transportation from unloading operations at the site could also produce vibrations. The Federal Transit Administration (FTA) has developed vibration criteria and vibration assessment methods in order to assess whether train activities could exceed the appropriate criteria. Train vibrations are a function of distance, train type, locomotive type, track arrangement and configuration and of the soil types between the train tracks and the receptor.

The FTA screening assessment for residential locations indicates that residences should be located at least 200 feet from a railway with diesel locomotive traveling at 50 mph. For the new rail spur located within the Project site, locomotive speeds would be substantially below 50 mph and closer to five to 10 mph in the vicinity of the site. Vibration from trains at five to 10 miles per hour would be below the level of human detection of vibration at the residences. The closest residences to the refinery rail line are approximately 150 feet from the centerline and the estimated vibration at those residences (apartments and houses on the south side of the Paramount Refinery) would be low.

Vibration associated with the other operations at the refinery are associated with normal industrial operations and no activities are expected to generate regular vibration levels that would exceed the thresholds. Normal operations of industrial equipment are not tolerant of vibration as it can cause

substantial damage to equipment. No vibrations are expected from normal operations at the Lakewood Tank farm or along the natural gas pipeline route. Therefore, vibration associated with operations at the site is expected to be **less than significant (Class III).**

Impact #	Impact Description	Phase	Impact Classification
N.4	The Project would not result in excessive noise for people residing or working within two miles of a public, or public use, airport.	Construction or Operation	Class III

All of the proposed modifications to the Project would continue to be located within boundaries of the existing refinery or the Lakewood Tank Farm. Neither site is located within two miles of an operational airport. The Compton-Woodley Airport, a general aviation airport, is located approximately five miles west of both the existing refinery and Lakewood Tank Farm and the Long Beach Airport is located approximately four miles south of the refinery. Therefore, the Project would not result in any impacts associated with excessive noise within an airport land use plan or within two miles of a public, or public use, airport. Potential impacts would be **less than significant (Class III)**.

4.7.5 Cumulative Effects

None of the proposed development in the vicinity of the refinery found under the cumulative projects list (see Section 3.0) would be constructed in the immediate vicinity of the Project where there would be overlapping noise impacts associated with cumulative projects except for the West Santa Ana Branch Transit Corridor (WSAB) project. All cumulative projects must comply with County noise standards, specifically that related to limiting construction projects to daytime hours. These, in concert with individual project mitigation measures, would ensure cumulative construction noise impacts would be less than significant.

None of the proposed development in the vicinity of the refinery would generate operational noise such that it would impact the operational noise levels in the vicinity of the refinery except for the West Santa Ana Branch Transit Corridor (WSAB) project. This is primarily due to the types of cumulative projects and the fact that most of the cumulative projects are located distant to the refinery.

MTA West Santa Ana Branch Project

The WSAB project would involve the construction and operation of a light rail system through the City of Paramount along the rail corridor that runs south of the refinery (see Section 3.0). The construction phase of the WSAB project would involve the use of a range of construction equipment for the installation of the light rail and the relocation of some portions of the existing rail lines within the railroad ROW to make room for the light rail system. As operational activities of the WSAB project would be during the daytime, and the WSAB DEIR (MTA, 2021) indicates that "*Metro would comply with local noise ordinances when applicable",* construction would be exempt from the City of Paramount municipal codes and would therefore not produce any construction-related cumulative impacts with the Project.

The operation of the WSAB project (MTA, 2021) would involve noise from a number of sources, including:

- Light rail trains traveling on the rail lines;
- Traction Power Substations (TPSS) located near the end of Rose Ave and across from school tennis courts;
- Crossing noise from crossing audible warnings at Lakewood and Somerset;

- Maintenance facility noise from the maintenance facility located south of All American Way ; and
- Rail Station noise from the Rosecrans Station.

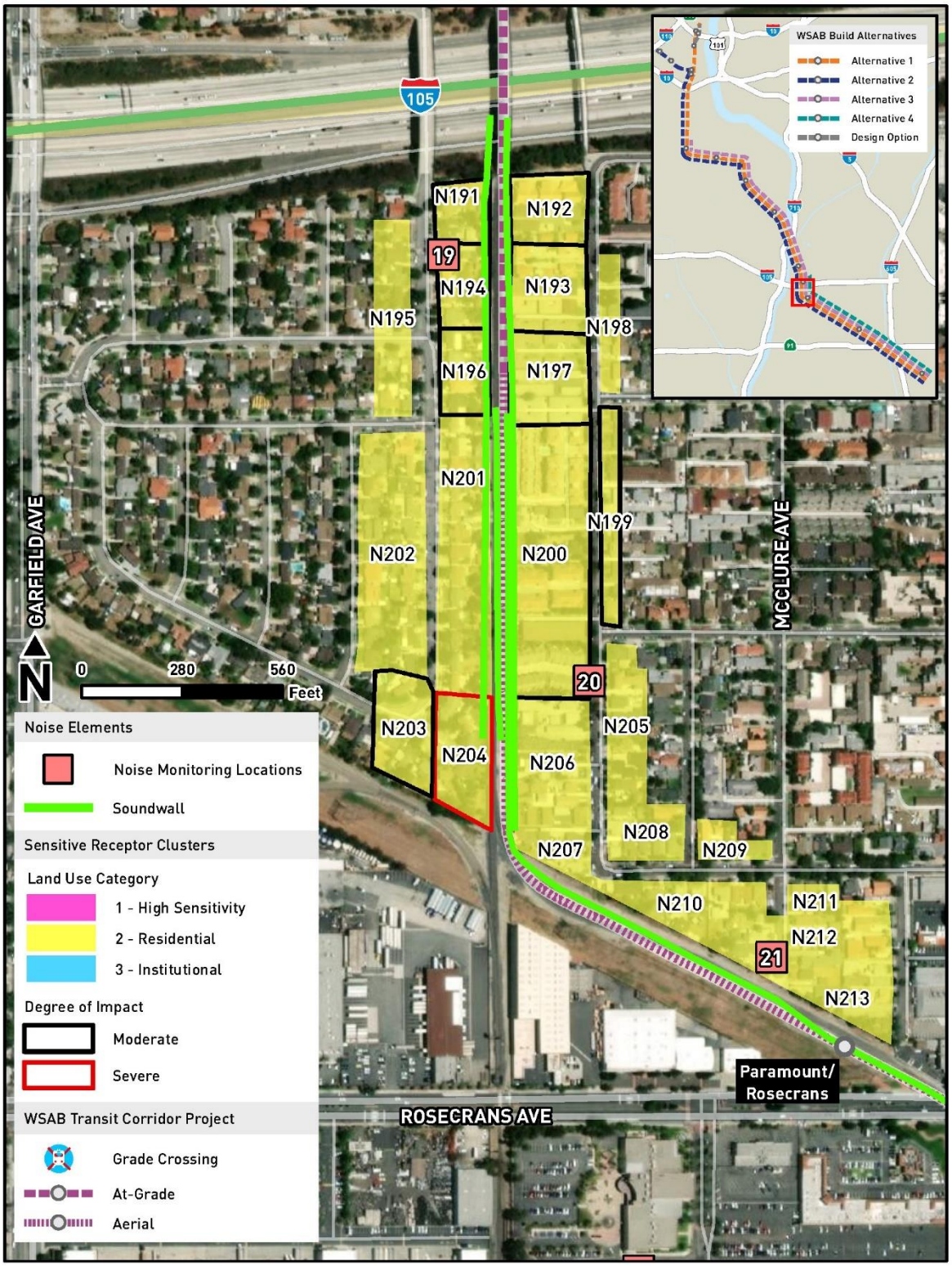
The light rail activity would occur along tracks installed within the City of Paramount along the rail right of way with the portion of the track approximately east of the High School Rail pedestrian overpass (to be removed as part of the WSAB project) located at grade and the portion located approximately west of the High School rail pedestrian bridge elevated 30-40 feet. The crossing at Downey would also be elevated while the crossings at Lakewood and Somerset would be at grade. The estimated levels of trains would range to as many as 304 trains per day, with 240 trains during the daytime and 64 trains at night. Trains produce noise due to a number of mechanisms, including propulsion noise, wheel noise on the track, wheel squeal, etc. The WSAB Draft EIR was released in June 2021, and includes detailed analysis of rail noise, utilizing the same FTA models as discussed above (MTA, 2021).

Due to the potential noise impacts of the WSAB project, a number of noise mitigations are included in the WSAB DEIR, including:

- The installation of 8-foot-high sound walls along light rail at-grade routes;
- The installation of 4-foot-high sound walls along the elevated routes on the elevated platforms;
- The installation of 8-foot-high sound walls along portions of the existing rail lines where the rail lines are relocated;
- Low impact crossing points;
- Wheel squeal noise monitoring;
- Crossing signal bell shrouds;
- TPSS noise reduction enclosures and other measures; and
- A Construction Noise Control Plan.

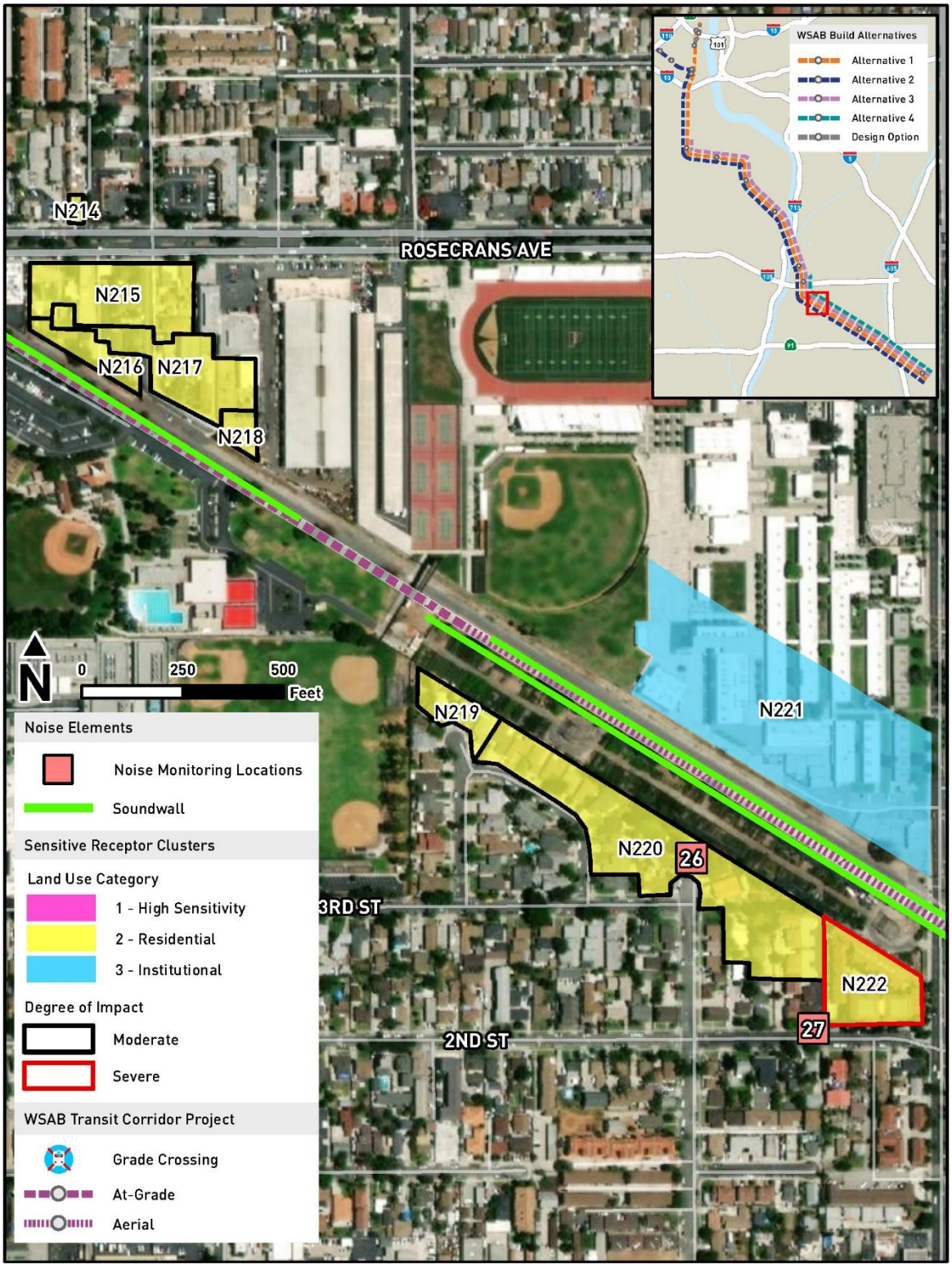
Noise mitigation would reduce noise impacts from the WSAB project by 5 to 19 dBA. Even with these measures, the impacts of the WSAB project were determined to be significant and unavoidable in the WSAB DEIR, with severe impacts being produced at residences located to the south of the refinery, and moderate impacts being produced along residential areas along the rail connection. Figures 4.7-15 through 4.7-17 show the areas impacted by the WSAB project along the rail connection and the refinery.

Figure 4.7-15 WSAB Operations Phase Noise Impacts - West



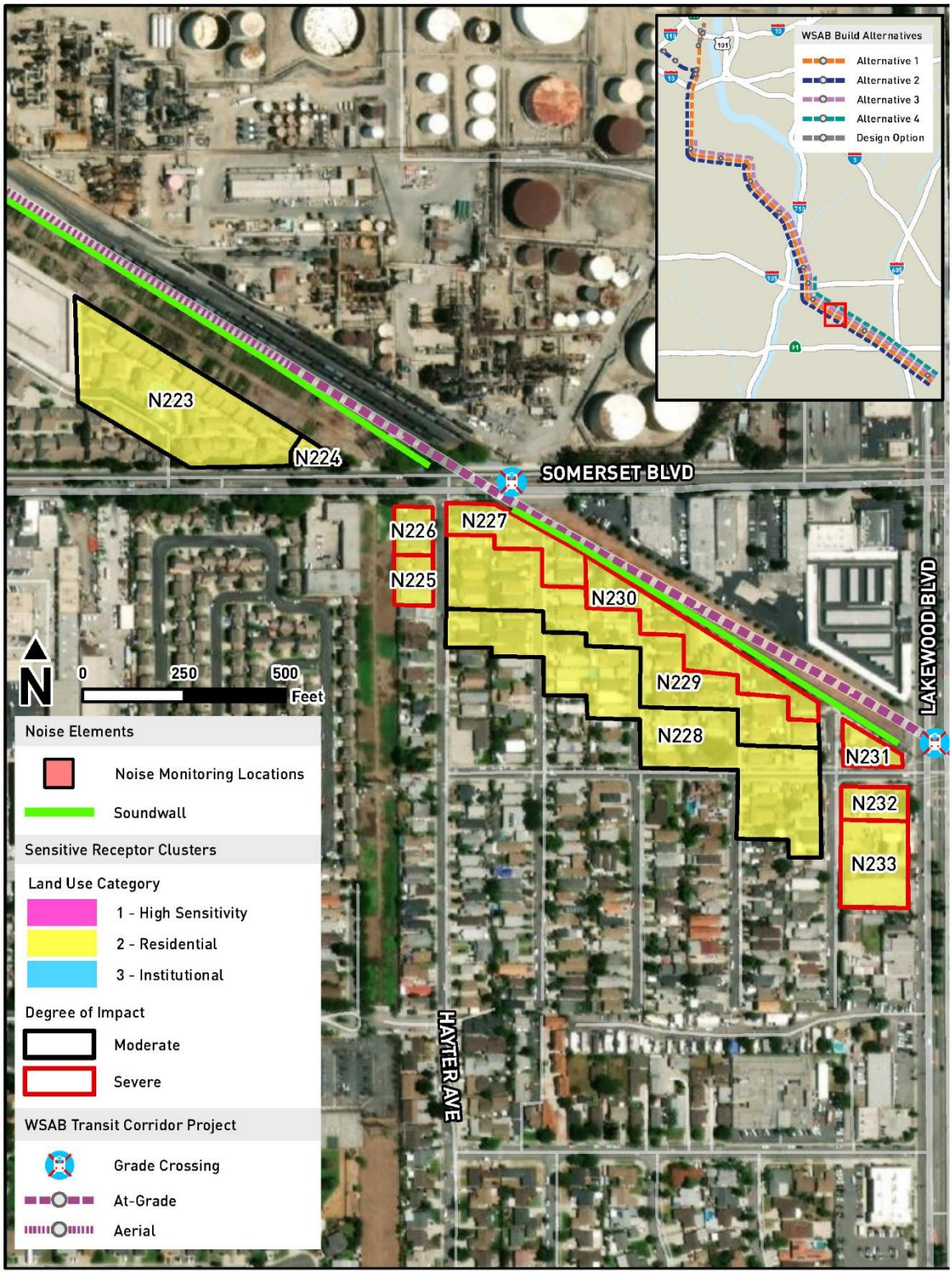
Source: MTA 2021.

Figure 4.7-16 WSAB Operations Phase Noise Impacts – Near the High School



Source: MTA 2021.

Figure 4.7-17 WSAB Operations Phase Noise Impacts – Near the Refinery



Source: MTA 2021.

Because the WSAB project would produce significant and unavoidable impacts to areas near the refinery, and the Project would potentially increase noise levels in these same areas, the cumulative impacts would also be cumulatively significant and unavoidable. The WSAB project includes extensive noise mitigation already and additional noise mitigation is not apparent. Note that for residences located on the western end of the rail connection, the mitigation sound walls installed by the WSAB project would actually reduce the noise levels from the Project train activities. However, other areas would not be reduced as much and would therefore remain **cumulatively significant and unavoidable**.

4.7.6 References

Caltrans. 2004. Transportation- and Construction-Induced Vibration Guidance Manual. June 2004.

Caltrans. 2013. Transportation and Construction Vibration Guidance Manual.

City of Paramount. 2007. Final Paramount General Plan. Adopted August 7, 2007. Available at: http://www.paramountcity.com/home/showdocument?id=2538

City of Paramount. 2013. Paramount Petroleum Alt-Air Renewable Fuels Project. Mitigated Negative Declaration and Initial Study, Conditional Use Permit (CUP) 757 and Zone Variance (ZV) 401. Adopted December 30, 2013 (PARA 059).

City of Paramount. 2017. Garfield Avenue Capacity Enhancement Project, MND and Appendices.

City of Paramount. 2020. Paramount Senior Living 16675 & 16683 Paramount Boulevard City of Paramount Development Review Application (DRA) 20:015 Zone Change (zc) 230Zone Change General Plan Amendment no. 20-2

FHWA. 1998. FHWA Traffic Noise Model Technical Manual.

FHWA. 2000. Highway Noise Barrier Design Handbook. Available at: https://www.fhwa.dot.gov/environment/noise/noise_barriers/design_construction/design/

FHWA. 2006. Construction Noise Handbook. August 2006. Available at: https://www.fhwa.dot.gov/environment/noise/construction_noise/handbook/

FTA. 2006. Transit Noise And Vibration Impact Assessment, FTA-VA-90-1003-06; May 2006.

FTA. 2018. “Transit Noise and Vibration Impact Assessment”; September 2018, FTA Report No. 0123

MTA. 2021. Draft Environmental Impact Statement/Environmental Impact Report For The West Santa Ana Branch Transit Corridor Project Prepared By The U.S. Department Of Transportation Federal Transit Administration And The Los Angeles County Metropolitan Transportation Authority

Navcon Engineering Network. 2021. Paramount Petroleum AltAir Renewable Fuels Project. CEQA Noise Impact Assessment. Navcon Engineering Report No. 204539L. October 2021.

Port of Los Angeles. 2012. Southern California International Gateway Project, Recirculated Draft Environmental Impact Report, ADP No. 041027-199 SCH # 2005091116

Smock & Schonthaler Industrial Insulation Sales Inc. [Online]: https://www.theinsulationguy.com/how-noise-barriers-work

4.8 Transportation and Circulation

The transportation and circulation section describes existing transportation and circulation conditions in the vicinity of the Project and the surrounding area. This section identifies the applicable significance thresholds for transportation impacts, assesses potential impacts that could result from the implementation of the Project, and recommends measures to mitigate potentially significant impacts.

Changes from Draft SEIR

Since the Draft SEIR was released in December 2021, this section has the following changes incorporated into the Final SEIR:

- The addition of the City of Bellflower to some review and approval measures;
- The addition of pavement monitoring and repair measure; and
- The clarification of the train arrival/departure measures.

4.8.1 Environmental Setting

The Paramount Refinery (refinery) is located at 14700 Downey Avenue, Paramount, California near the City of Paramount's (City) border with Bellflower. The City is located east of the Los Angeles River and is approximately 16.5 miles southeast of downtown Los Angeles. The refinery sits almost equidistant between the 105 Freeway to the north and the 91 Freeway to the south along Lakewood Blvd. The transportation setting for the Project includes those streets and intersections that would be used by both automobile and truck trips to gain access to and from the Project site.

4.8.1.1 Existing Circulation System

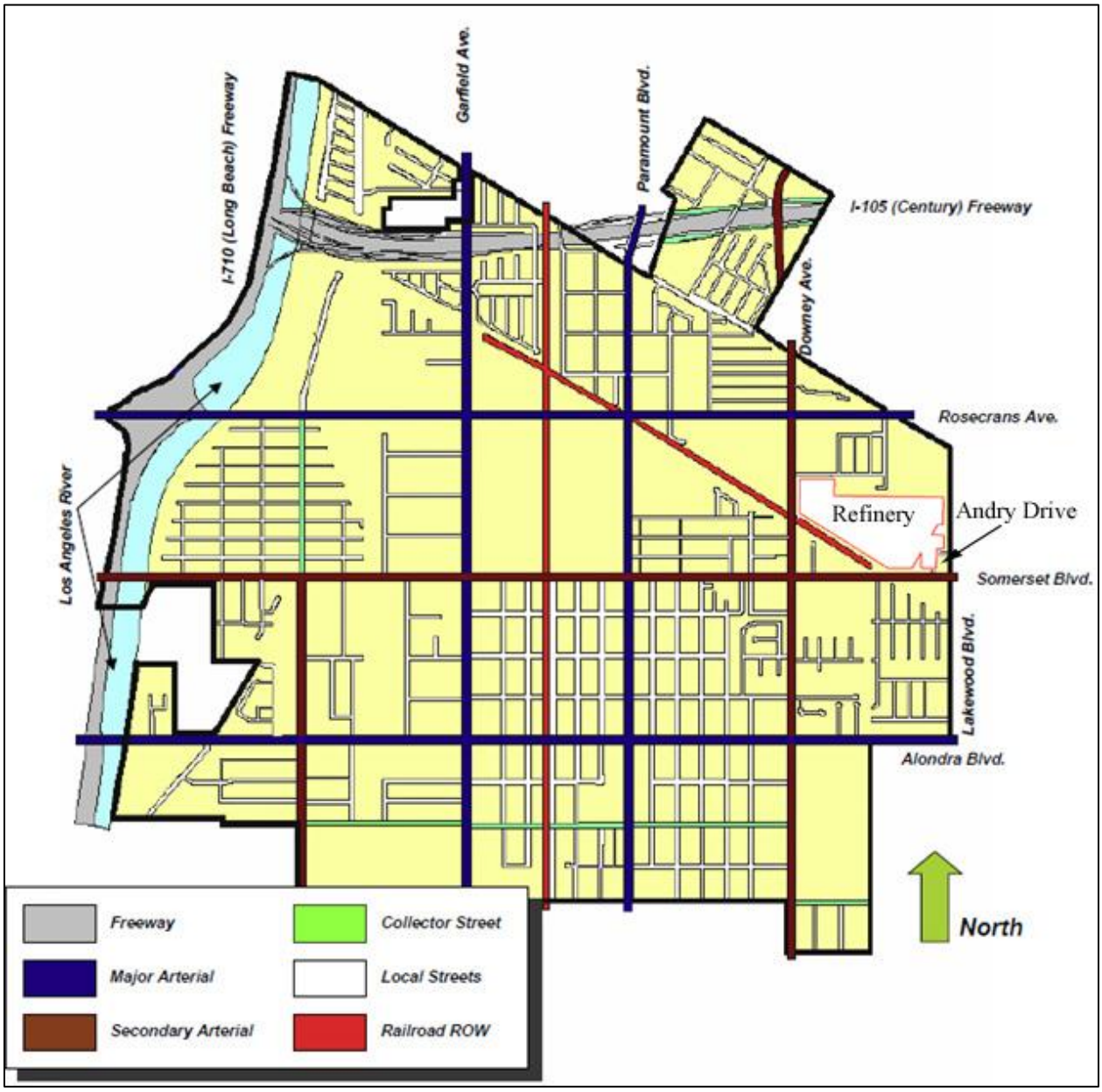
The roadway system in Paramount has been defined using a classification system that describes a hierarchy of roadway types. The categories of roadways included in this classification system differentiate the size, function, and capacity of each type of roadway. Streets in the City are also classified according to their primary function, consisting of four types of roadways. The roadways are described below and are shown in Figure 4.8-1.

- Major Arterials. The main function of a Major Arterial is to provide regional, subregional, and intra-city travel service. Through-traffic comprises the bulk of traffic volumes on major arterial roadways. These streets typically provide three traffic lanes in each direction, and the lanes may be separated by either a median strip or a two-way, left-turn lane. The roadway cross-section includes up to 84 feet of paving within a 100-foot right-of-way. Lanes are 12 feet wide, and the center median or turn lane is 16 feet wide;
- Secondary Arterials. Secondary Streets serve a similar function as Major Arterials, except the design capacity of the former is not as great as the latter. Secondary Arterials typically consist of four travel lanes that are undivided. This roadway classification has a typical right-of-way width of 80-feet with 64 feet of paving. Two roadway configurations are used. A Secondary Arterial may contain two, 12-foot-wide traffic lanes in each direction separated by a 16-foot-wide, two-way left-turn lane. Alternatively, the center left-turn lane may be replaced by 8-foot-wide curb parking lanes on each side of the street;
- Collector Streets. A Collector Street provides circulation in a defined geographic area of the City and connects this area to secondary streets, arterials, and freeways. Collector streets generally have a right-of-way width of 60 feet and a pavement width of 40 feet. The majority of the traffic use collector streets

to move to roadways carrying intra-city or through-traffic. Collector streets typically consist of two travel lanes; and

- Local Streets. Local streets are subordinate to the basic circulation network described above yet constitute the majority of the City's streets. These streets provide access to individual parcels and only provide circulation within a neighborhood block. Local streets in Paramount are generally 40 to 50 feet wide, with a pavement width between 24 to 30 feet. Most streets have been improved with curbs, gutters, and sidewalks. The City standard for local streets is 60 feet (with a curb-to-curb pavement width of 36 feet, two lanes, and on-street parking on both sides).

Figure 4.8-1 Paramount Transportation Plan



Source: City of Paramount 2007.

The refinery is located immediately west of the City of Bellflower municipal boundary lines, and approximately one-quarter mile south of the City of Downey boundary line. Regional access to the refinery is provided by Interstates 605 and 710, which run north-south approximately two-and-one quarter miles east and west of the refinery, respectively, and State Route 91 and Interstate 105, which run east-west. The Project site is bounded by Lakewood Blvd., Somerset Blvd., and Downey Avenue. The following is a description of Project area roadways:

- The Century Freeway (I-105) is an east-west freeway from the Los Angeles International Airport to Norwalk. It has four general-purpose lanes and one high-occupancy vehicle lane in the vicinity of the Project;
- The Artesia Freeway (SR-91) is an east-west freeway that extends from Gardena to the SR-60/I-215 interchange in Riverside. It has five general-purpose lanes and one high-occupancy vehicle lane in the vicinity of the Project;
- The Long Beach Freeway (I-710) is a north-south freeway that extends from Long Beach to Alhambra. It has five general-purpose lanes in the vicinity of the Project;
- The San Gabriel River Freeway (I-605) is a north-south freeway that extends from I-405 in Seal Beach to I-210 in Irwindale. It has six general-purpose lanes and one high-occupancy vehicle lane in the vicinity of the Project;
- Lakewood Blvd. is a north–south four-to-six lane major arterial. It has interchanges with both the SR-91 and I-105 freeways (with on-ramps either direction being either right turn access or double lane left turns). The roadway is a Terminal Access Route Surface Transportation Assistance Act (STAA) which allows large trucks to operate. Lakewood Blvd. is a state highway whose maintenance was relinquished to the City of Bellflower adjacent to the Project site;
- Somerset Blvd. is an east-west secondary arterial. Somerset Blvd. does not have direct freeway access to the I-710 or the I-605;
- Downey Avenue is a north-south secondary arterial. Downey Avenue has an interchange with SR-91;
- Rosecrans Blvd. is an east-west major arterial. Rosecrans Blvd. has interchanges with I-710 to the west and I-605 to the east. Rosecrans Avenue is designated a truck route from the west city limits to Century Blvd.; and
- Andry Drive is an L-shaped private street belonging to AltAir that connects Lakewood Blvd. and Somerset Blvd. and acts as the site driveway access. These access points are stop-controlled.

Truck Routes and Railroads

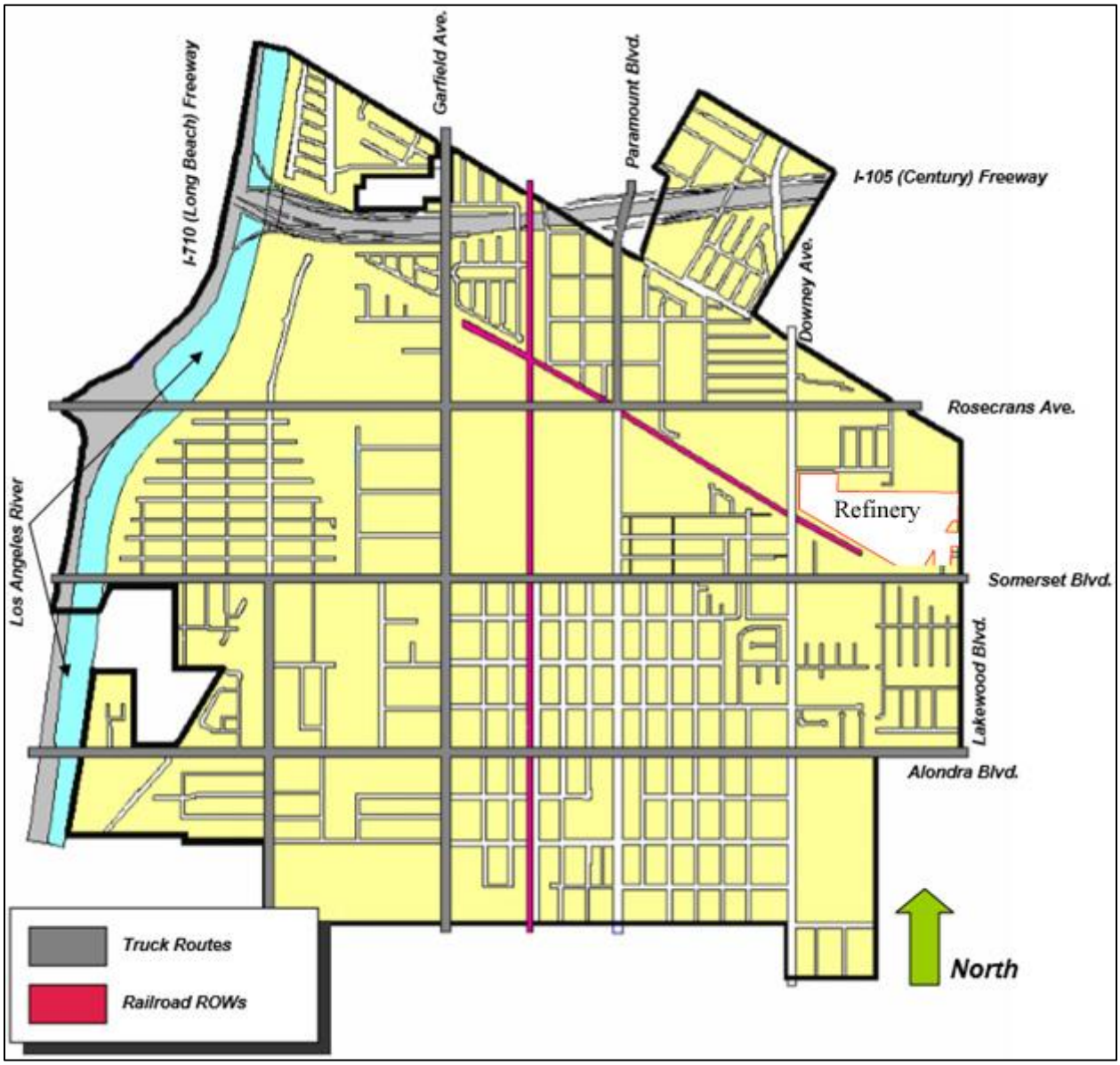
Truck routes are designed to provide access to areas of the City that utilize truck service (principally commercial and industrial areas) and to provide through-truck traffic with efficient routes, which avoid residential areas and congested streets as much as possible. Trucks making local deliveries are allowed to divert from these routes to businesses. Streets used for truck routes are designed to support the weight of the heavier vehicles and have intersections with sufficient room for turning movements.

Figure 4.8-2 depicts the truck routes designated by the City. As shown therein, designated truck routes include Rosecrans Avenue, Somerset Blvd., Alondra Blvd., Garfield Avenue, Orange Avenue (south of Somerset Blvd.), and Paramount Blvd. (north of Rosecrans Avenue). In addition, State law allows trucks to use State Highways (i.e., South Lakewood Blvd. just east of the City limits) as truck routes, unless Caltrans

has approved local ordinances prohibiting such use. Under current State regulations, trucks carrying hazardous materials or wastes are allowed to use normal truck routes.

Figure 4.8-2 also shows the location of railroad lines within the City of Paramount. The Union Pacific Railroad bisects the City of Paramount in a north/south direction between Paramount Blvd. and Garfield Avenue. It is currently utilized by industrial land uses in the City and typically carries three local freight trains in each direction daily to the container loading areas at the ports of Long Beach and Los Angeles. Trains operating along the Alameda Corridor now transport freight from the Port of Los Angeles to the rail yards located south of Downtown Los Angeles. The railroad rights of ways within the City that are currently operational, largely serve local businesses.

Figure 4.8-2 Paramount Truck Routes and Railroads



Source: City of Paramount 2007.

Truck routes within the City of Bellflower are defined in MC 10.20.010. The following streets and parts of streets are declared to be truck traffic routes:

- Alondra Boulevard from Hayter Avenue to the east side of the San Gabriel River (east City boundary);
- Artesia Place from Woodruff Avenue to Bixby Avenue;
- Artesia Boulevard from Downey Avenue (west City boundary) to the west side of the San Gabriel River (east City boundary);
- Bellflower Boulevard from one hundred fifty (150) feet south of Rose Street (south City boundary) to Flower Street;
- Bellflower Boulevard from Alondra Boulevard to Foster Road;
- Clark Avenue from Artesia Boulevard to Rosecrans Avenue;
- Somerset Boulevard from Lakewood Boulevard to Woodruff Avenue;
- Downey Avenue from Artesia Boulevard to four hundred fifty (450) feet north of Park Street (north City boundary);
- Flora Vista Street from Woodruff Avenue to Bellflower Boulevard and on Cornuta Avenue from Flora Vista Street (East of Cornuta) to Flora Vista Street (West of Cornuta). Also, that no truck parking at any time will be permitted on these streets included above;
- Flower Street from Lakewood Boulevard to Woodruff Avenue;
- Rosecrans Avenue from Lakewood Boulevard to the east side of the San Gabriel River (east City boundary); and
- Woodruff Avenue from one hundred fifty (150) feet south of Rose Street (south City boundary) to Foster Road.

In the City of Downey, Lakewood Blvd., Bellflower Blvd. and Woodruff Ave. are the applicable truck routes.

Transit Facilities

The Project area is served by fixed-route transit service by Long Beach Transit (LBT), Los Angeles County Metropolitan Transportation Authority (LA Metro), and the Bellflower Bus.

Long Beach Transit schedules of service in the Project area as of May 31, 2020 are:

- Long Beach Transit Route 22 from Long Beach to Downey along Downey Avenue operates from 6:00 a.m. to 9:00 p.m. with 15 to 30-minute headways; and
- Long Beach Transit Route 71 from Long Beach to Bellflower at Rosecrans Avenue/Lakewood Blvd. via Orange Avenue operates from 6:02 a.m. to 8:27 p.m. with 60-minute headways.

LA Metro schedules of service as of June 18, 2020 are:

- LA Metro Local Route 125 El Segundo to Norwalk Station operates along Rosecrans Avenue in the study area from 7:00 a.m. to 8:00 p.m. with hour headways;
- LA Metro Local Route 127 Compton Station to Downey via Compton Blvd. and Somerset Blvd. operates along Somerset Blvd. from 6:00 a.m. to 7:00 p.m. with hour headways;
- LA Metro Local Route 265 Pico Rivera to Lakewood Center Mall via Paramount Blvd. operates along Paramount Blvd. from 8:00 a.m. to 8:00 p.m. with hour headways; and

- LA Metro Local Route 266 Sierra Madre Villa Station to Lakewood Center Mall via Rosemead Blvd. and Lakewood Blvd. operates along Lakewood Blvd. from 6:00 a.m. to 7:00 p.m. with half hour headways.

The Bellflower Bus North Route passes the Project site from westbound Somerset Blvd. to northbound Lakewood Blvd. to eastbound Rosecrans as it proceeds on its circuitous route every half hour.

The Pacific Electric West Santa Ana Branch (WSAB) railroad right-of-way runs along the southern portion of the Project site. Union Pacific railroad operates the freight rail that serves the Project site. Currently the rail tracks terminate west of the intersection of Somerset Blvd. and Lakewood Blvd.

LA Metro is planning a light-rail line between Artesia and Union station using the West Santa Ana Branch right-of-way with stations planned for Paramount/Rosecrans and Bellflower south of Alondra. The new light-rail line would be located on the current freight right-of-way. The Project would construct an on-site rail spur to facilitate the construction of the West Santa Ana Branch Transit Corridor (WSAB) project which is a major regional multimodal transportation project to reduce vehicle miles traveled and reduce greenhouse gas emissions.

Bicycle and Pedestrian Facilities

The roadways surrounding the Project site have sidewalks along their entire lengths. There are unmarked crosswalks across Andry Drive at both the northeast and southwest legs of the road. The Bellflower Bike Trail begins west of the Lakewood Blvd./Somerset Blvd. intersection and travels 2.4 miles along the West Santa Ana Branch right-of-way to Bellflower City Caruthers Park just north of SR-91. Downey Avenue is a walking and bicycling route for students attending Harry Wirtz Elementary School and Paramount High School.

In the 2019 Bellflower-Paramount Active Transportation Plan and the WSAB Transit Oriented Development Strategic Implementation Plan (May 2019), a proposed bike-pedestrian path will be made along the WSAB rail line near the southwest portion of the Project site. This proposed multi-use path provides an enhanced east-west connection for residents wishing to reach Paramount Park, Paramount Middle School, Paramount High School, nearby shopping, places of worship, the proposed WSAB transit stop, the Los Angeles River Bike Trail, and the Bellflower Bike Trail. The Project is located on the opposite side of the WSAB tracks.

Other Project area active transportation and micro mobility improvements are:

- Class 1 bicycle facility (bicycle path) on the south side of the West Santa Ana Branch right-of-way and connecting Powerline Corridor Class 1 path south of the Project site; and
- Class II buffered bicycle lanes from the WSAB to Lakewood Blvd.

Collision History

Area collisions from January 2017 to December 2019 were reviewed. In total, there were 72 collisions in the vicinity of the refinery (the four analysis intersections at Lakewood Blvd., Somerset Blvd., Downey Ave. and Rosecrans Ave.). Only two of the collisions involved severe injuries and there were no fatal collisions during the period of analysis. The following table summarizes the primary collision factors, collision types and involvement with other modes.

Table 4.8.1 Area Collisions History

Intersection	Total Collisions	Tow Away	Violation	Type	Involved With
Lakewood and Somerset	24	14	Unsafe Speed-5, DUI-1, Following too close-3, Auto ROW-6, Traffic Signs-7, Ped ROW-1, Wrong Side of Road-1, Improper Turning-0, Other-0	Rear End-9, Head On-4, Side Swipe-1, Broadside-8, Overturn-1, Vehicle/Ped-1, Other-0	Ped-1, Bike-2, Motorcycle-1, Truck-0
Lakewood and Rosecrans	21	10	Unsafe Speed-4, DUI-0, Following too close-0, Auto ROW-2, Traffic Signs-1, Ped ROW-0, Wrong Side of Road-1, Improper Turning-7, Other-6	Rear End-8, Head On-0, Side Swipe-3, Broadside-7, Overturn-0, Vehicle/Ped-1, Other-2	Ped-3, Bike-3, Motorcycle-2, Truck-0
Downey and Somerset	10	3	Unsafe Speed-1, DUI-0, Following too close-0, Auto ROW-2, Traffic Signs-3, Ped ROW-0, Wrong Side of Road-1, Improper Turning-1, Other-2	Rear End-1, Head On-1, Side Swipe-1, Broadside-6, Overturn-0, Vehicle/Ped-1, Other-0	Ped-1, Bike-2, Motorcycle-0, Truck-0
Downey and Rosecrans	17	11	Unsafe Speed-4, DUI-1, Following too close-2, Auto ROW-3, Traffic Signs-4, Ped ROW-1, Wrong Side of Road-2, Improper Turning-0, Other-0	Rear End-4, Head On-2, Side Swipe-2, Broadside-4, Overturn-0, Vehicle/Ped-2, Other-3	Ped-3, Bike-2, Motorcycle-1, Truck-1

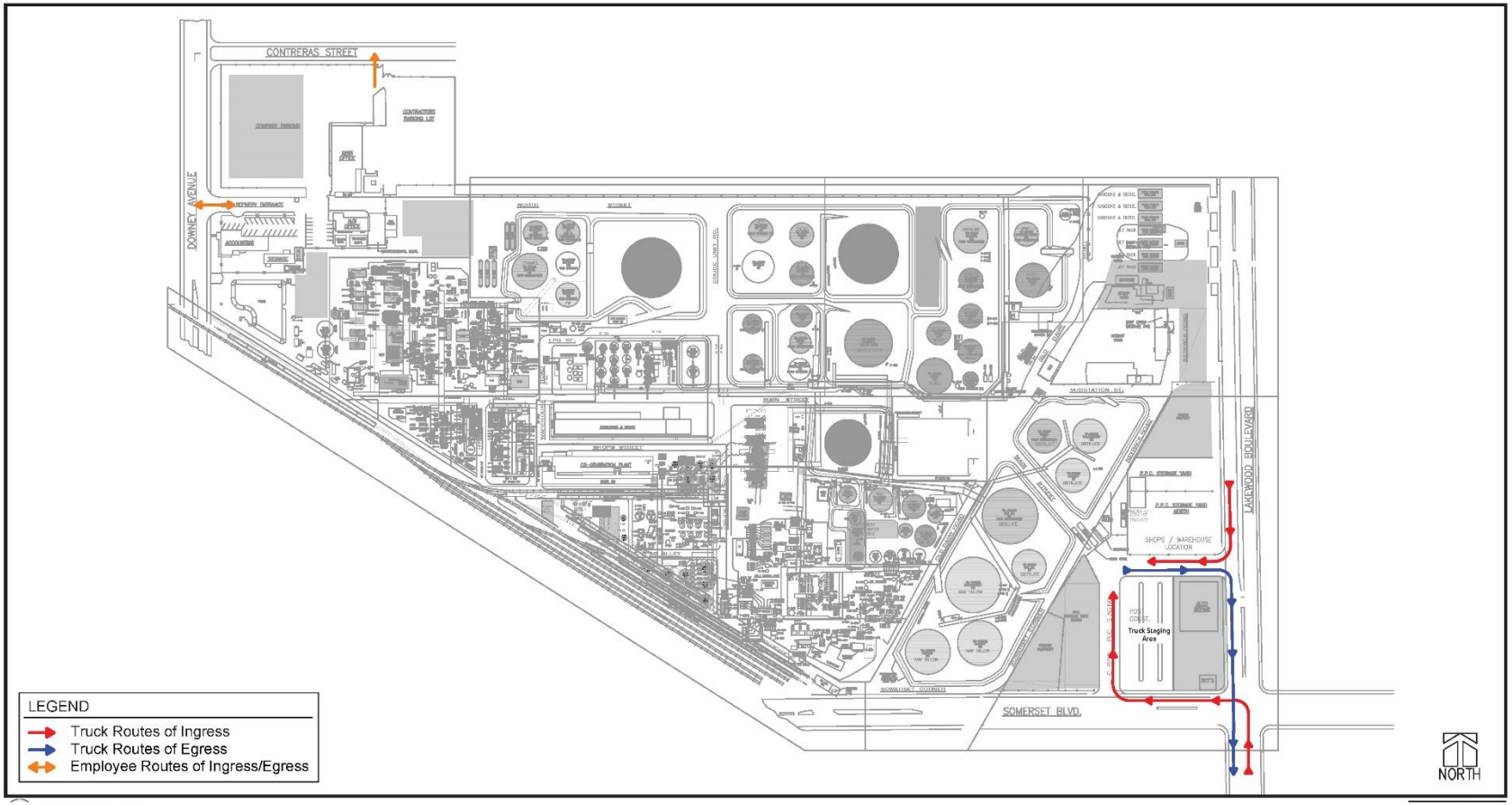
Source: Iteris, 2021.

Of the collisions, 35 of the 72 collisions were along or conflicted with Project trip routing and four were located in the Project's driveway areas. Three of the collisions in the driveway areas were along southbound Lakewood Blvd. north of the intersection. Two of these collisions involved unsafe speed involving other southbound vehicles and one involved a southbound vehicle not heeding an exiting vehicle from the tire shop/restaurant driveway south of the Project driveway. The collision near the Somerset Blvd. Project driveway was head-on with an eastbound vehicle impeding on the right-of-way of a westbound vehicle. Only one of the collisions involved a truck and that was located at the Downey/Rosecrans intersection (not along the Project routes).

Historical Vehicle Traffic Related to Refinery Operations

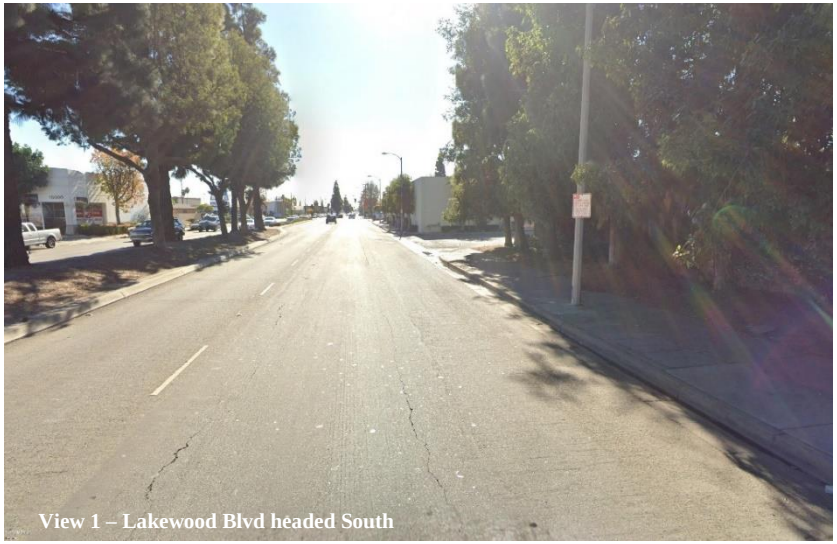
Both employee vehicles and trucks access the refinery. Employee vehicles access the refinery from the main gate on Downey Avenue. As shown in Figure 4.8-3, site access for trucks is from Lakewood Blvd. to Andry Drive. Figure 4.8-4 shows a detail of the Andry Drive area and views from two locations.

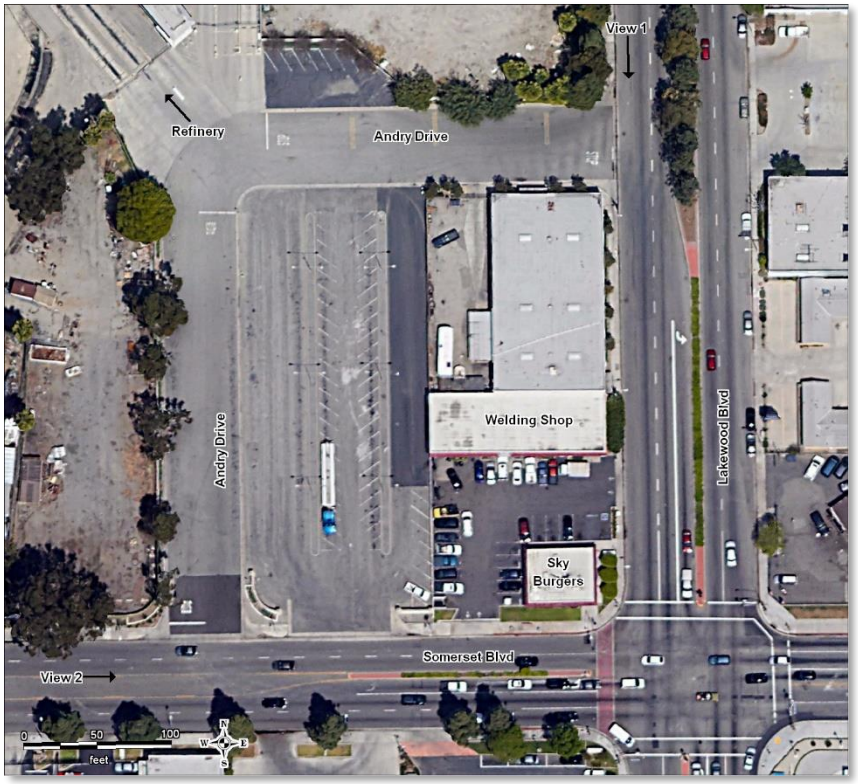
Figure 4.8-3 Refinery Vehicle Routing Map



Source: Applicant 2021.

Figure 4.8-4 Andry Intersections Map and Views





Source: Google Maps and Google Street View, 2021.

For inbound trucks accessing the refinery from the south, vehicles turn left from Lakewood Blvd. to Somerset Blvd. and then take a right turn to Andry Drive. For inbound access from the north, trucks turn right directly from Lakewood Blvd. to Andry Drive and then enter the refinery. As these movements are generally right turn or left turn with a signalized intersection, increased truck trips through these movement is not anticipated to generate potentially hazardous situations. Note that no LOS exceedances are estimated for these movements.

Outbound trucks to the south turn right from Andry Drive on to Lakewood Blvd. Outbound vehicles to the north turn left from Andry Drive to Somerset Blvd. across the westbound traffic lanes of Somerset Blvd. and then make a left turn to Lakewood Blvd. headed north.

There is one driveway south of the refinery Lakewood Blvd. driveway for a tire shop and restaurant. Another driveway for the refinery is on Somerset Blvd. with a driveway located to the east to a parking lot and then the Lakewood Blvd. intersection.

The employee driveway from Downey Avenue has a dedicated southbound left-turn lane at a break in the raised median that also allows both outbound right and left turns. Additional features are no U-turn signs for both the northbound and southbound left-turns along Downey and 'keep clear' roadway markings along Downey in front of the driveway.

The driveway from Andry Drive onto Lakewood Blvd. is onto an upstream section of Lakewood Blvd. The driveway from Andry onto Somerset Blvd. is onto a downstream section of Somerset Blvd. Since the Lakewood Blvd. is a right-turn in/out location, its access is controlled to minimize conflict points. Based on the collision data, on average one collision per year occurs in the upstream section of Lakewood Blvd. between the Project driveway and the Somerset Blvd. intersection. Over the past three years, two incidents were rear-end collisions due to southbound vehicles traveling at unsafe speeds, and one was a sideswipe collision caused by a southbound vehicle colliding with a vehicle exiting the tire shop/restaurant driveway that is only 75 feet from the intersection.

The traffic analysis focuses on intersections in the immediate vicinity of the refinery where turn movements might produce LOS or capacity issues. Trucks traveling to and from area freeways generally utilize Lakewood Blvd. Ramps at the SR-91 to the south of the refinery for both directions are accessed via right-hand merge lanes. Ramp at the I-105 to the north of the refinery are accessed via a right-hand merge lane headed east and a double left hand turn lane headed west. As ramp accesses are either right-hand merge or double lane left turn, capacity issues are not expected at the freeway ramps.

The historical refinery operations in 2011 generated an average number of truck trips of 78 trucks per day, with an estimated peak of 156 trucks per day (round trip). Automobile traffic totaled 124 autos per day (round trip). In addition, the 2013 MND included 23 delivery truck trips per day, with no additional automobile traffic. The baseline traffic levels were adjusted to represent the 2020 traffic levels (see Appendix F).

Historical Rail Activities at the Refinery

The refinery has a conditional use permit from the City of Paramount to operate the railcar-loading and unloading racks which limits the refinery to receive 25 railcars per delivery. A key consideration of rail use as part of the Project's operation is related to rail traffic impacts at the Downey Avenue rail crossing. This was discussed in the 2013 MND (City of Paramount, 2013b) and is partially repeated here. Trains accessing the refinery via spur tracks can temporarily obstruct traffic on Downey Avenue (see Figure 4.8-5) while the rail cars are being moved into and out of the refinery's loading and unloading areas. Historically, the

number of trains and rail cars was highly variable: in certain instances, several trains a day would travel to and from the refinery. Overall, the maximum number of cars a two-engine train could transport is 35 cars (because of the weight). The capacity of the rail spur within the refinery is 25 cars. As a result, trains carrying more than 25 rail cars need to make multiple movements across Downey Avenue to maneuver the cars into the respective loading or unloading positions. According to refinery personnel, trains typically arrive at the refinery between 12:00 p.m. (noon) and 3:00 p.m. The refinery schedules the rail deliveries and pick-ups for this period to avoid the peak traffic periods for Downey Avenue. In addition, no rail deliveries or pick-ups occur during the night-time and early morning periods due to noise restrictions. The maximum number of rail cars that would be anticipated on a typical day would be 20 to 30 cars per train. To better understand the potential impacts of local rail deliveries on Downey Avenue traffic, a field survey was conducted as part of the 2013 MND to observe the delays on Downey Avenue related to the delivery and pick up of rail cars. The results of the survey produced the mitigation measures detailed in the 2013 MND related to rail traffic and coordination.

Figure 4.8-5 Downey Avenue and Refinery Rail Gate

Source: Google Street View 2021.

Existing Levels of Service Operating Conditions

The Traffic Impact Analysis (TIA) prepared for the Project (Iteris, 2021) evaluates four intersections near the Project using 2020 traffic counts adjusted upward to reflect pre-pandemic traffic levels. The table below summarizes the existing operating conditions at the study intersections, which includes the baseline truck and automobile traffic discussed above.

Table 4.8.2 Existing Intersection Level of Service (LOS)

Intersection	AM Peak Hour		PM Peak Hour	
	LOS	ICU(1)	LOS	ICU(1)
Lakewood Blvd. / Somerset Blvd.	D	0.810	D	0.887
Lakewood Blvd. / Rosecrans Ave.	B	0.687	E	0.910
Downey Ave./ Somerset Blvd.	A	0.430	B	0.660
Downey Ave. / Rosecrans Ave.	A	0.502	C	0.729

Source: Iteris, 2021
(1) Intersection Capacity Utilization (ICU) analysis

4.8.1.2 Previous Environmental Review

The December 2013 MND for the Original Renewable Fuels Project evaluated the addition of equipment and operations to the refinery. The Original Renewable Fuels Project identified an increase in truck trips, but not enough to produce impacts. Transportation impacts were identified as less than significant in the 2013 MND.

The 2013 MND generated an additional 3,500 barrels of feedstock deliveries per day which translated into seven rail cars per day or 23 delivery truck trips per day. The increase in truck traffic in the 2013 MND was considered to be minimal and have a less than significant impact on area traffic and policies. The rail deliveries for the 2013 MND replaced existing rail car deliveries and therefore no additional rail traffic was anticipated in the 2013 MND.

As part of the 2013 MND, the following mitigation measures were applied as a means to minimize train and vehicle conflicts and delays at Downey Avenue and would continue to apply to the Project:

- Mitigation Measure #9 (Traffic and Circulation). No truck queuing or trailer drop off will be permitted on public streets;
- Mitigation Measure #10 (Traffic and Circulation). The refinery operators and management must continue to work with the railroad to schedule rail-car delivery and pick-ups so that traffic on Paramount Boulevard and Downey Avenue is not adversely impacted;
- Mitigation Measure #11 (Traffic and Circulation). Rail car deliveries and pick-ups will be limited to the non-peak hour traffic periods, after 10:00 a.m. and before 6:00 p.m. The refinery operators and management will continue to work with the railroad so that train traffic to and from the refinery does not coincide with the morning and evening commute times or when students are going to or leaving school. No deliveries during the evening, night, and early morning periods will be permitted unless prior notification to the City is provided;
- Mitigation Measure #12 (Traffic and Circulation). The length of an individual train will generally be limited to not more than 25 railcars. In the event more cars are required, the Community Development Department must be notified 24-hours in advance. The refinery operators will also be required to notify the Paramount Sheriff's station of the approximate delivery time;
- Mitigation Measure #13 (Traffic and Circulation). At no time may traffic on Downey Avenue be halted more than 5 minutes during any single delivery or pick-up. In the event of a longer train (a train consisting of more than 25 cars), multiple maneuvers by the train operators may be required to stay under the 5-minute limit; and
- Mitigation Measure #14 (Traffic and Circulation). The refinery operators and the train personnel must coordinate delivery times so the gate to the rail-loading/unloading areas within the refinery are open

prior to the arrival of the train. The means as to how the gate is to be opened (automated, manual, etc.) will be determined by the refinery management and the railroad.

4.8.2 Regulatory Setting

This subsection summarizes the federal, state, and local laws, regulations, and standards that govern traffic and transportation resources in the Project area.

4.8.2.1 State Regulations

The following Statewide regulations apply to the movement of heavy trucks and transport of crude oil and other hazardous materials on public freeways:

- California Vehicle Code (CVC), Division 6, Chapter 7; Division 14.8; and Division 15 all include regulations pertaining to the licensing, size, weight, and load of commercial vehicles operated on State highways and the safe operation of vehicles (California, 2018);
- California Streets and Highway Code, Divisions 1 and 2, Chapters 3 and 5 includes regulations for the care and protection of State and county highways as well as provisions for the issuance of written roadway permits (California, 2018); and
- California Street and Highway Code Sections 670 through 695 set forth the provisions for Caltrans issuance of roadway permits including, but not limited to, permits for roadway encroachment during truck transportation and delivery and permits for any load that exceeds Caltrans weight, length, or width standards for public roadways (California, 2018).

California Office of Planning and Research, California Environmental Quality Act (CEQA)

The CEQA Guidelines discuss use of the LOS methodology described in Section 4.5.1.3 for transportation analyses in CEQA documents. In response to Senate Bill 743, in December 2018, the California Natural Resources Agency certified and adopted CEQA Guideline updates that implement changes to the methodology used to assess traffic impacts in CEQA documents. The Guidelines require an alternative to LOS for evaluating transportation impacts by enhancing or replacing the typical LOS analysis with a vehicle miles traveled (VMT) analysis. These changes include elimination of auto delay, LOS, and other similar measures of vehicular capacity or traffic congestion as a basis for determining significant impacts. The CEQA Guidelines update states that "A lead agency may elect to be governed by the provisions of this section immediately. Beginning on July 1, 2020, the provisions of this section shall apply statewide." (CEQA Guidelines §15064.3 (d)).

CEQA Section 15064.3

This update to CEQA, effective December 28, 2018, codifies a switch from Level of Service (LOS) to Vehicle Miles Traveled (VMT) as metric for transportation impact analysis.

The update describes specific considerations for evaluating a project's transportation impacts. Generally, vehicle miles traveled is the most appropriate measure of transportation impacts. For the purposes of this section, "vehicle miles traveled" refers to the amount and distance of automobile travel attributable to a project. Other relevant considerations may include the effects of the project on transit and non-motorized travel. Except as provided in subdivision (b)(2) below (regarding roadway capacity), a project's effect on automobile delay shall not constitute a significant environmental impact.

Section 15064.3 (b) provides the criteria for analyzing transportation impacts:

(1) Land Use Projects. Vehicle miles traveled exceeding an applicable threshold of significance may indicate a significant impact. Generally, projects within one-half mile of either an existing major transit stop or a stop along an existing high-quality transit corridor should be presumed to cause a less than significant transportation impact. Projects that decrease vehicle miles traveled in the project area compared to existing conditions should be presumed to have a less than significant transportation impact;

(2) Transportation Projects. Transportation projects that reduce, or have no impact on, vehicle miles traveled should be presumed to cause a less than significant transportation impact. For roadway capacity projects, agencies have discretion to determine the appropriate measure of transportation impact consistent with CEQA and other applicable requirements. To the extent that such impacts have already been adequately addressed at a programmatic level, such as in a regional transportation plan EIR, a lead agency may tier from that analysis as provided in Section 15152;

(3) Qualitative Analysis. If existing models or methods are not available to estimate the vehicle miles traveled for the particular project being considered, a lead agency may analyze the project's vehicle miles traveled qualitatively. Such a qualitative analysis would evaluate factors such as the availability of transit, proximity to other destinations, etc. For many projects, a qualitative analysis of construction traffic may be appropriate; and

(4) Methodology. A lead agency has discretion to choose the most appropriate methodology to evaluate a project's vehicle miles traveled, including whether to express the change in absolute terms, per capita, per household or in any other measure. A lead agency may use models to estimate a project's vehicle miles traveled and may revise those estimates to reflect professional judgment based on substantial evidence. Any assumptions used to estimate vehicle miles traveled and any revisions to model outputs should be documented and explained in the environmental document prepared for the project. The standard of adequacy in Section 15151 shall apply to the analysis described in this section.

The Governor's Office of Planning and Research, Technical Advisory on Evaluating Transportation Impact in CEQA with the new VMT requirement states the following: "For the purposes of this section, 'vehicle miles traveled' refers to the amount and distance of automobile travel attributable to a project." Here, the term "automobile" refers to on-road passenger vehicles, specifically cars and light trucks (2018). Heavy duty trucks, such as the Project trucks, would not be considered in the evaluation of VMT impacts under the requirements of CEQA Guidelines §15064.3.

Congestion Management Program

In June 1990, Proposition 111 was passed in California, which mandated that each county with 50,000 or more residents develop a Congestion Management Program (CMP). AB 2419 was later passed in 1996, which allowed counties to opt out of the CMP if the majority of local governments adopt resolutions to do so. The City of Paramount is subject to the Los Angeles County CMP. The congestion management process is intended to use travel demand reduction and operational management strategies to provide for safe and effective integrated management and operation of a multimodal transportation system. The Century Freeway and the Long Beach Freeway ramps located in the City are CMP-designated facilities in the City of Paramount.

4.8.2.2 Local Regulations

Paramount General Plan

Transportation Element

The purpose of the Transportation Element is to provide a safe and efficient circulation system for the City and to promote the safe and efficient movement of goods and traffic within the City. This element identifies the location and extent of existing and proposed streets and roadways, intersection improvements, public transit facilities, railroads, transportation terminals, and other transportation facilities.

The City of Paramount seeks to accomplish the following objectives through implementation of the policies contained in this Transportation Element:

- The maintenance and improvement of the roadway system in the City to accommodate future traffic;
- The use of innovative circulation strategies designed to create a transportation system that is sensitive to the City's aims for continued economic development;
- The development of a roadway and circulation network that promotes pedestrian activity in selected areas of the City; and
- The efficient use of alternative forms of transportation that serve the City.

The following transportation policies have been adopted by the City and are applicable to the Project:

- *Transportation Element Policy 4.* The City of Paramount will continue to develop and implement a designated system of truck routes as a means to keep industrial traffic out of residential neighborhoods; and
- *Transportation Element Policy 10.* The City of Paramount will encourage new and existing businesses to include those improvements that will promote the use of alternative forms of transit.

The Transportation Element notes that any new development or redevelopment in the city should have a Traffic Impact Analysis (TIA) conducted if the project is expected to generate over 500 new trips per day. It provides impact thresholds for various levels of service (LOS) based on volume to capacity (V/C) ratios as shown below.

Table 4.8.3 Transportation Element Impacts Thresholds

Level of Service	Volume/Capacity	Incremental Increase
C	0.71-0.80	0.04 or more
D	0.81-0.90	0.02 or more
E	0.90-more	0.01 or more

Source: Paramount General Plan, 2007 with corrections from County of Los Angeles Traffic Impacts Assessment Guidelines (1997).

While LOS is not an allowable metric under the current CEQA Guidelines it is reported here as information consistent with the City's General Plan.

4.8.3 Significance Thresholds

CEQA Environmental Thresholds

Appendix G of the CEQA Guidelines provides these key questions to guide evaluation of impacts related to transportation and circulation. Would the Project:

a. Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities;

b. Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b) related to VMT;

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

d. Result in inadequate emergency access?

CEQA Guidelines § 15064.3, subdivision (a) directs a vehicle miles traveled metric should be used to assess potential CEQA significance in Transportation. "Vehicle miles traveled" (VMT) refers to the amount and distance of automobile travel attributable to a project; therefore, Project-related trucks are not part of this assessment. The VMT metric is intended to support the three statutory goals: the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses. A lead agency has discretion to choose the most appropriate methodology to evaluate a project's vehicle miles traveled.

The City of Paramount does not have a performance threshold of significance for project-level vehicle miles traveled. Based on the State Office of Planning and Research (OPR) Technical Advisory on Evaluating Transportation Impacts in CEQA (December 2018) which states that absent substantial evidence indicating that a project would generate a potentially significant level of VMT, or inconsistency with a Sustainable Communities Strategy (SCS) or general plan, projects that generate or attract fewer than 110 automobile trips per day generally may be assumed to cause a less-than significant transportation impact. This is based on the CEQA provision of a categorical exemption for existing facilities, including additions to existing structures of up to 10,000 square feet, so long as the project is in an area where public infrastructure is available to allow for maximum planned development and the project is not in an environmentally sensitive area. (CEQA Guidelines, § 15301(e)(2)). Typical project types for which trip generation increases relatively linearly generate or attract an additional 110–124 trips per 10,000 square feet. Therefore, absent substantial evidence otherwise, it is reasonable to conclude that the addition of 110 or fewer automobile trips could be considered not to lead to a significant impact.

4.8.4 Project Impacts and Mitigation Measures

The impact analysis presented below discusses the addition of vehicle trips during construction activities and operational vehicle trips associated with implementation of the Project, as well as rail trips, conflicts with policies, bicycle and pedestrian conflicts and impacts to emergency access.

4.8.4.1 Policy Conflicts

Impact #	Impact Description	Phase	Impact Classification
T.1	Project operations would not conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities.	Operation	Class II

The City of Paramount Transportation Element discusses the requirements related to V/C and acceptable incremental increases. Project changes that would exceed these levels would be considered in conflict with the City's policy regarding acceptable traffic impacts. Other policy issues related to transportation are discussed in Section 4.6, Land Use and Planning.

Operations

Existing truck loading and unloading racks will be modified and relocated as part of the Project to accommodate the renewable fuels operation. In general, existing asphalt truck loading/unloading racks will be converted to feed, blendstock and product receipts and sales. Vapor recovery for loading racks will be modified as needed. Anticipated truck trips will increase compared to activity levels evaluated for the Original Renewable Fuels Project. On an average day of operation, the Project is estimated to generate 303 total truck round trips, a net change of 228 truck round trips above the 75 average truck round trips per day in the baseline. On a peak day of operation, the Project is estimated to generate 540 truck round trips, a net change of 384 truck round trips over the baseline 156 peak truck round trips. The truck trips would be distributed throughout the day due to the 24-hour operation of the Project. The Project operations trip generation is summarized below.

Project truck trips would follow the same routes as current trips, relying on designated truck routes, with automobiles generally utilizing the Downey Avenue entrance and trucks utilizing Andry Drive. Truck trips were converted to their passenger car equivalents (PCE) in the TIA to reflect their greater effect on traffic operations than smaller, more maneuverable vehicles. Impacts are based on peak hour trips. Project trip levels are incremental increases over the current operations, which would have been included in the Lakewood Blvd. traffic counts conducted in January 2020, and therefore only the incremental trips are added to the model for the Project.

The Project would have 130 daily workers. Under the pre-Project conditions (2011), the refinery had 155 workers. Currently (year 2020) the refinery has utilized 100 workers. Pre-Project traffic data were generally not available in the vicinity of the Paramount Refinery. Therefore, in order to provide a conservative estimate of potential traffic impacts, it was assumed that the Project will result in an increase in 30 workers over the 2020 worker levels, even though the refinery had more than 130 workers under the pre-Project conditions. The majority of Project site workers work in two 12-hour shifts. The shifts change at 4:30 a.m. and 4:30 p.m. Office and maintenance workers arrive between 7 a.m. and 8 a.m. and leave at 5 p.m. Of the 30 worker trips that are added to the site due to the Project, twenty-five of them would be 12-hour shift workers and five of the new employees would be office and maintenance staff.

The Project will have no changes to current configuration of the roadways, rail or active transportation facilities. Future changes in area rail and road facilities will not alter the Project site or access points.

Table 4.8.4 Project Operations Round Trip Increases

Time Period	Auto Round Trips	Truck Round Trips
AM Peak Hour	5	22
PM Peak Hour	25	21
Daily Peak	74	540

Source: Iteris 2021. Trips do not include the PCE adjustment. This was done only in the model. Increases are from the January 2020 refinery operations.

The Project trips were added to the roadway network based on current circulation patterns and an Intersection Capacity Utilization (ICU) analysis was conducted to determine the LOS and ICU at each intersection with and without the Project. The operating conditions with Project traffic added is summarized below.

Table 4.8.5 Project Intersection Impacts - Operations

Intersection	Baseline				Baseline plus Project				Change in V/C		Exceeds Allowable Increase?
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour				
	LOS	ICU	LOS	ICU	LOS	ICU	LOS	ICU	AM	PM	
#1 Lakewood Blvd./ Somerset Blvd.	D	0.810	D	0.887	D	0.850	D	0.887	0.040	0.000	Yes
#2 Lakewood Blvd./ Rosecrans Ave.	B	0.687	E	0.910	B	0.687	E	0.910	0.000	0.000	No
#3 Downey Ave./ Somerset Blvd.	A	0.430	B	0.660	A	0.430	B	0.661	0.000	0.001	No
#4 Downey Ave./ Rosecrans Ave.	A	0.502	C	0.731	A	0.502	C	0.731	0.000	0.002	No

Source: Iteris 2021.

The volume to capacity ratios in the ICU analysis are unchanged with the Project at intersection #1 in the p.m. peak hour, Intersection #2 in the a.m. and p.m. peak hours and Intersections #3 and #4 in the a.m. peak hours since the Project would not add additional volume to a critical movement and is therefore not included in the ICU calculation of volume to capacity ratio.

Based on the analysis, Intersection #1 would exceed the City's traffic impact analysis threshold for incremental increase in volume-to-capacity ratio in the a.m. peak hour.

Construction

Construction of the Project will be phased, with the modifications to Unit A to be completed immediately following receipt of SCAQMD permits to construct. Unit A will be onstream while demolition activities are being completed to allow space for new construction. Demolition activities include relocation of loading and unloading racks and buildings, and removal of crude units and asphalt facilities to make room for new equipment installation, including the pretreatment unit, Hydrogen Generation Unit, and new equipment required for Unit B and the support units and utilities. Construction activities will overlap some of the demolition activities and then continue through completion. Therefore, full construction and commissioning activities will take place over a two to three-year timeframe. The demolition activities are expected to occur over a 10-month period and will overlap an estimated 19 months of Unit B construction activities. AltAir will modify existing equipment, demolish unused equipment that is located where new equipment will be placed, idle-in-place unused equipment, and install new equipment. During the

construction period, a peak of 1,312 workers per day would be onsite. Construction worker parking would be provided at the Drive-In at 7770 Rosecrans Avenue in Paramount 1.2 miles from the Project site. Workers would be shuttled to the Project site in approximately 33 bus round trips of 40 workers per bus in the morning (inbound) and evening (outbound).

Contractors will prepare a traffic management plan for the Project, which includes the following: coordination of any lane closures due to construction of the natural gas pipeline or any other part of the Project, notification to emergency services and transit providers, coordination with adjacent property owners and tenants as necessary, use of designated haul routes, use of truck staging areas, observance of hours of operation restrictions, and appropriate signage for construction activities. The traffic management plan would be submitted to the City of Paramount for approval before construction begins.

Construction traffic impacts on area intersections are addressed in the Iteris report (see Appendix F). Construction traffic impacts are summarized in Table 4.8.6.

Table 4.8.6 Project Intersection Impacts - Construction

Intersection	Baseline				Baseline plus Project				Change in V/C		Exceeds Allowable Increase?
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour				
	LOS	ICU	LOS	ICU	LOS	ICU	LOS	ICU	AM	PM	
#1 Lakewood Blvd./Somerset Blvd.	D	0.810	D	0.887	D	0.842	D	0.887	0.032	0.00	Yes
#2 Lakewood Blvd./Rosecrans Ave	B	0.687	E	0.910	D	0.687	E	0.910	0.0	0.0	No
#3 Downey Ave./ Somerset Blvd.	A	0.430	B	0.660	A	0.451	B	0.680	0.021	0.020	No
#4 Downey Ave./ Rosecrans Ave.	A	0.502	C	0.731	A	0.502	C	0.731	0.0	0.0	No

Source: Iteris 2021.

Similar to the analysis of the Project conditions analysis, Intersection #1 Lakewood Boulevard/Somerset Boulevard would exceed the City's traffic impact analysis threshold for incremental increase in volume to-capacity ratio in the a.m. peak hour.

Lakewood Tank Farm/Pipeline

An existing off-site tank farm in the City of Lakewood is expected to be used for jet fuel storage and blending. Renewable jet fuel can be transferred from the Paramount Refinery to the Lakewood Tank Farm via existing pipeline. Conventional jet fuel can be transferred from other suppliers via pipeline to the Lakewood Tank Farm, where the products will be blended together. The final blended product can be transferred via pipeline to tankage in Carson, California, where it can be delivered via other pipelines to Los Angeles International Airport. Although the use of the Lakewood Tank Farm could reduce truck trips on a peak day from 540 to 303 total truck round trips as more product would be transported by pipeline than via truck, to provide a conservative analysis of traffic impacts, it is assumed all the product associated with the Project will be transported via truck.

Because both operational and construction traffic impacts could conflict with program, plan, ordinance or policy addressing the City's circulation system, impacts for T.1 are potentially significant. However, under CEQA guidelines, impacts based on LOS and congestion are not to be considered in CEQA documents, and therefore this impact would be **less than significant (Class III).** However, since this is a policy of the City

of Paramount that would need to be addressed prior to the Project, it has been included as a recommended mitigation measure below.

Recommended Mitigation Measures

T-1a ***Lakewood Blvd. Restriping****: The Applicant shall provide funding and coordination to the City of Paramount and the City of Bellflower to ensure that the Lakewood Blvd. southbound lane is restriped to have a dedicated right turn lane on to Somerset Blvd. prior to the start of construction. Funding would be directed to the City of Bellflower as the intersection is owned and maintained by the City of Bellflower.*

Impacts Remaining After Mitigation

The TIA (Appendix F) indicates that restriping of the Lakewood Blvd. southbound lane would ensure that vehicles turning right onto Somerset Blvd. would not impede trucks continuing straight southbound on Lakewood Blvd. Currently, the southbound Lakewood Blvd. is two southbound lanes (and one dedicated left turn lane onto Somerset Blvd.) which prevents two full lanes of traffic continuing in the southbound direction without interference from vehicles turning right onto Somerset Blvd. This mitigation would reduce the ICU of this intersection to acceptable levels.

4.8.4.2 Vehicle Miles Traveled

Impact #	Impact Description	Phase	Impact Classification
T.2	Project operations would increase vehicle miles traveled (VMT).	Operations	Class III

The Project would add an estimated 30 employees to 100 existing on-site employees. Using the Institute of Transportation Engineers (ITE) Trip Generation Handbook code 140 (Manufacturing) daily rate of 2.47 vehicle trips per employee, these Project employees would represent 74 one-way trips (assuming no carpooling, transit, walking or biking modes used).

Vehicle miles traveled (VMT) as per CEQA Guidelines section 15064.3 refers to the amount and distance of automobile travel attributable to a project. Therefore Project-related trucks are not part of this assessment.

Based on the State Office of Planning and Research (OPR) Technical Advisory on Evaluating Transportation Impacts in CEQA (December 2018) which states that absent substantial evidence indicating that a project would generate a potentially significant level of VMT, or inconsistency with a Sustainable Communities Strategy (SCS) or general plan, projects that generate or attract fewer than 110 trips per day generally may be assumed to cause a less-than significant transportation impact. Therefore, the Project impact to VMT would be a **less than significant impact (Class III).**

4.8.4.3 Traffic Hazards

Impact #	Impact Description	Phase	Impact Classification
T.3	The Project could substantially increase hazards due to a design feature or incompatible use.	Construction and Operation	Class II

The Project would generate heavy truck and rail trips in an area with a variety of land uses, including schools. Truck and rail activities have the potential to conflict with students walking to school as well as create additional congestion, cueing on area streets (backing up of trucks) and potential hazardous turning situations for trucks exiting/entering the refinery along Lakewood Blvd. or Somerset Blvd. Both truck and rail traffic are anticipated to increase with the Project.

Truck Trips

Project truck trips would increase the refinery operations to peak level of 540 trucks per day (round trips). As per the TIA, truck trips were distributed 50/50 from the north and south along Lakewood Blvd. for inbound and 100 percent to the south for outbound.

For inbound trucks accessing the refinery from the south, vehicles turn left from Lakewood Blvd. to Somerset Blvd. and then take a right turn to Andry Drive.

Because these movements are generally right turn or left turn with a signalized intersection, increased truck trips through these movement is not anticipated to generate potentially hazardous situations. Note that no LOS exceedances are estimated for these movements.

For inbound access from the north, trucks turn right directly from Lakewood Blvd. to Andry Drive and then enter the refinery. The entry in to Andry Drive is not wide enough to allow a truck to enter while a truck is exiting the refinery and turning right onto Lakewood Blvd. Therefore, there is the potential for trucks to cue along Lakewood Blvd. as trucks are exiting the refinery. This could cause additional congestion and safety issues in this area and could be a significant impact.

Trucks may also continue along Lakewood Blvd. if there is a truck exiting the refinery into Lakewood Blvd. from Andry Drive (if allowed); however, this would require the trucks making a right turn on to Somerset Blvd., where there is a median and the turning radius would require two lanes, also potentially causing additional congestion or safety issues.

Outbound vehicles to the north, if allowed, would turn left from Andry Drive on to Somerset Blvd. across the two westbound traffic lanes of Somerset Blvd. and then make a left turn on to Lakewood Blvd. headed north. Due to the proximity to the Lakewood Blvd./Somerset Blvd. intersection, left-turn access and the use of large vehicles, there is a potential hazard associated with access management. The driveway is downstream from the Lakewood Blvd./Somerset Blvd. intersection. The Access Management Manual, published by the Transportation Research Board (TRB), notes that "stopping sight distance is one method for establishing the downstream functional distance of an intersection." Stopping sight distance is the roadway distance required for a driver to perceive and react to an object in the roadway and to brake to a complete stop before reaching that object. The stopping sight distance for a 40 miles per hour roadway (the posted speed limit along Somerset Blvd. is 40 mph) is a 305-foot design distance without horizontal or vertical obstructions. The center of Lakewood Blvd./Somerset Blvd. intersection to center of Andry Drive/Somerset Blvd. is 330 feet. For a vehicle making a right turn onto Somerset Blvd. headed west from

Lakewood Blvd., the sight distance would be about 270 feet, but the vehicle would be traveling slower than 40 mph. Stopping distances also increase with wet pavement, such as during rains (can be twice as far depending on the vehicle as per California DMV Commercial Driver Handbook). This means that vehicles from the intersection would have adequate stopping distance if a Project truck were leaving the Andry Drive driveway turning left onto Somerset Blvd., but not by a large margin and not during wet periods.

Because the turning movement from Andry Drive onto Somerset Drive headed east is a left turn across two lanes, with a minimum of sight distance from the Lakewood Blvd./Somerset Blvd. intersection, there is the potential for an increased traffic hazard to occur at this location. This could be a significant impact.

Historical accident data shows that there have not been any truck accidents in this area, therefore implying that the baseline level of traffic has not caused historical accident frequencies to increase. However, since the Project would generate a potential increase in truck traffic, there is the potential for an increased hazard and a potential significant impact.

Vehicles exiting the refinery onto Lakewood Blvd. and headed south would not generate issues crossing multiple lanes or create back and queuing-type issues and would therefore not be expected to generate hazardous impacts.

The increased truck traffic in the area, particularly at the Lakewood Blvd. and Somerset Blvd. intersection, in combination with the high truck weights, could cause degradation of pavement in the area at a faster rate than normal. Deteriorated pavement could cause traffic hazards and produce potential impacts.

Truck Queuing

Due to the close proximity of the site driveways to the intersection of Lakewood Blvd./Somerset Blvd., a focused queuing and stacking analysis of intersection of Lakewood Boulevard/Somerset Boulevard along with the Project site gates, the Andry Drive intersection with Lakewood Blvd. and Somerset Blvd. and the future West Santa Ana Branch at-grade crossings were analyzed in a traffic model to forecast the delay, queuing and stacking of trucks under existing and with-Project conditions. See Appendix F. The analysis indicated that the primary factor affecting queuing, and the potential backing up of trucks onto area public streets, is the amount of time at the refinery entrance gates. The refinery is equipped with multiple gates for entry and each truck arriving must go through a series of registration activities prior to entering, or leaving, the refinery. In general, only a single gate would be utilized. Figure 4.8-6 shows the refinery gate entrance/exit used by trucks.

There is approximately storage for nine trucks along Andry Drive in the inbound direction. In addition, the parking area to the east of the driveway north of Somerset Boulevard can also be used for truck staging. Any trucks from the north along Lakewood Boulevard have the option of utilizing the Somerset Boulevard Andry driveway for alternative site access. There are approximately 20 storage slots for inbound queuing along Andry Drive and in the parking lot area to the southeast of the Project gate. The flow of trucks bypassing direct access for the site gate and entering and exiting the staging area is also shown on the figure. The 20 slots could accommodate approximately 85 percent of peak inbound demand for one hour (20 of 23 trucks).

Figure 4.8-6 Refinery Entrance Gates

Source: Google Maps 2021.

The inbound gate queuing analysis (see Appendix F) was conducted based on the peak day gate demand, inbound gate processing time and the amount of available on-site storage for truck waiting for the inbound gate. At a peak Project trip generation demand based on maximum utilization of the racks for loading and unloading of products there would be a continuous demand of 23 inbound trucks per hour placed on the Project gate. The current estimated inbound gate processing time averages four minutes per truck. At an inbound gate processing time of four minutes, 15 trucks could be processed per hour before stacking outside of the refinery gate. With the parking lot storage of 20 trucks and an inbound gate processing time of four minutes, eight trucks would be queued in the parking lot area waiting for the inbound gate in the first hour of peak demand. In the second hour of peak demand another 23 inbound trucks would be added to the queued eight trucks from the previous hour for a total gate demand of 31 trucks. With only 15 trucks processed in the hour, 16 trucks would then be queued onsite at the end of the second hour of peak demand. The onsite storage would then be exceeded by three straight hours of peak demand and trucks would subsequently be backed up onto area public streets. This would be a potentially significant impact since it would introduce a safety hazard to area intersections.

Train Activity

Train activity would also increase under the Project as more feedstock will be delivered by rail instead of by pipeline. Total trains visiting the site are estimated to increase to over 300 per year, or almost daily, under the Project. This could increase the potential for conflicts with the at-grade crossing at Downey Avenue as well as the use of the Downey Avenue intersection by the nearby schools' attendees during school start or ending hours. This would be a potentially significant impact. This issue was addressed in

the 2013 MND with mitigation measures discussed above. As a part of CUP 751 (City of Paramount, 2013a) and CUP 757, these mitigation measures were imposed to minimize rail conflicts and delays at the Downey Avenue rail crossing. These measures would apply to the Project. The extent to which the 2013 MND mitigation measures would be considered sufficient to mitigate the significant impact is not known with the additional train deliveries. In the absence of monitoring and surveys, this could be a potentially significant impact.

Bicycle and Pedestrian Facilities

In the 2019 Bellflower-Paramount Active Transportation Plan and the WSAB Transit Oriented Development Strategic Implementation Plan (May 2019), a proposed bike-pedestrian path will be made along the WSAB rail line in the southwest portion of the Project facility. This proposed multi-use path provides an enhanced east-west connection for residents wishing to reach Paramount Park, Paramount Middle School, Paramount High School, nearby shopping, places of worship, the proposed WSAB transit stop, the Los Angeles River Bike Trail, and the Bellflower Bike Trail. The Project is located on the opposite side of the WSAB tracks and would not impact the development or use of the multi-use path. Therefore, the Project impact on the bicycle and pedestrian facilities of the City is less than significant.

Other Project area active transportation and micro mobility improvements are:

- Class 1 bicycle facility (bicycle path) on the south side of the West Santa Ana Branch right-of-way and connecting Powerline Corridor Class 1 path south of the Project site; and
- Class II buffered bicycle lanes from the WSAB to Lakewood Boulevard.

Mitigation Measures

T-3a ***Traffic Management Plan****: Prepare and implement Construction and Operations Traffic Management Plan. The plan shall address the following issues and performance standards to the satisfaction of the <u>City of Paramount and the City of Bellflower</u> Public Works Directors<u>:</u>*

1. *Truck traffic exiting the refinery utilizing the Somerset Blvd. shall be prohibited. Signs shall be posted so that truck drivers are alerted to this prohibition and contracts with trucking companies shall specify this prohibition;*

2. *Truck traffic exiting the refinery shall be required to utilize Lakewood Blvd. exit and south on Lakewood Blvd. Signs shall be posted so that truck drivers are alerted to this prohibition and contracts with trucking companies shall specify this requirement;*

3. *Trucks traffic entering the refinery a) from the south shall be required to utilize the Lakewood Blvd./Somerset Blvd. northbound left turn lane and then the Andry Drive entrance off of Somerset Blvd.; or b) from the north, the Lakewood Blvd. and Andry Drive intersection on Lakewood Blvd. Use of a right turn from Lakewood Blvd. on to Somerset and then the use of the Andry Drive/Somerset Blvd. entry for trucks arriving from the north shall be prohibited;*

4. *All Project vehicles shall be directed to Lakewood Blvd. and shall avoid areas of the City <u>of Paramount</u> to the west of Andry Drive to avoid passing a future at-grade crossing of the WSAB across Somerset Blvd. All truck travel on Somerset Blvd. west of Andry Drive shall be prohibited;*

5. *All truck traffic shall be directed to utilize SR-91 or I-105 via the Lakewood Blvd. exits/onramps;*

6. *Prohibit parking along Andry Drive by painting all curbs red so that trucks can have sufficient room to maneuver past each other when entering and exiting the refinery;*

7. *No trucks shall be allowed to Park or wait for entry in public areas off-site of the refinery. The refinery shall provide sufficient parking to accommodate all truck traffic, waiting and parking requirements;*

8. *The Applicant shall implement procedures and shall, when peak inbound demand on the gate occurs and more than 5 trucks are waiting to enter the refinery, open a second gate within the next hour to clear trucks waiting. If additional trucks continue to cue beyond 15 trucks, then a third gate shall be opened to reduce wait times for inbound refinery access in the staging area and prevent any queue stacking onto public roadways;*

9. *The plan shall indicate truck cueing areas on the refinery site equivalent to 10 trucks entering the refinery and 10 trucks exiting the refinery to ensure that cueing does not affect off-site areas;*

10. *The Applicant shall provide funding and design work to the City (City of Paramount and the City of Bellflower) to allow for the striping of Lakewood Blvd. southbound at Somerset Blvd. for a right turn lane to reduce traffic congestion at the Lakewood Blvd./Somerset Blvd. intersection;*

11. *Rail activity shall not coincide with the morning and evening commute times or when students are going to or leaving school along Downey Avenue, including limiting rail deliveries to 9 a.m. to 6 p.m. weekdays and 10 a.m. to 6 p.m. on Saturdays. No activity on Sundays is allowed. No deliveries during the evening, night, and early morning periods are permitted unless prior notification to the City of Paramount is provided;*

12. *Implement a system for monitoring of train arrivals and the associated impacts on Downey Avenue to identify any conflict issues or exceedances of the 5-minute delay times, including the installation of video recording, or equivalent, of the Downey Street/railroad intersection. Monitoring shall be conducted at least quarterly for the first year of the Project and as per the Public Works Director thereafter. A report shall be made to the City of Paramount within 60 days of each monitoring activity. Rail deliveries that occur with 30 minutes of school start or release hours shall be accompanied by a monitor at the Downey intersection. The Applicant shall obtain the school schedule from Paramount High School and Wirtz School every fall prior to the start of school for rail scheduling purposes.*

13. *The Applicant, in coordination with the City of Paramount and the City of Bellflower, shall implement a street pavement monitoring program to periodically video monitor street pavement condition along streets and intersections around the refinery. Any increased pavement deterioration shall be repaired by the respective street agencies at a reimbursement fair share rate provided by the refinery.*

Impacts Remaining After Mitigation

The continued implementation of the 2013 MND mitigation measures limiting rail traffic delivery times are expected to minimize the traffic impacts on access at the rail crossing. The Project would increase the number of trains but is not expected to result in longer trains (more than 25 railcars) or result in an increase in traffic delays than what currently exists (five minutes) for each train. Continued monitoring of the traffic delays on Downey Avenue caused by the increase rail activity will ensure that conflicts are minimized.

Limiting truck traffic to ensure traffic flow is optimized as well as implementing stripping changes, will also ensure that additional traffic hazards are not produced by the increased truck traffic.

Therefore, the Project impact to traffic hazards would be **less than significant with mitigation (Class II).**

4.8.4.4 Emergency Access

Impact #	Impact Description	Phase	Impact Classification
T.4	The Project would not result in inadequate emergency access.	Construction or Operation	Class III

Emergency access to the refinery is provided both from Downey Avenue as well as from Andry Drive via Somerset Blvd. and Lakewood Blvd. The Project does not propose any changes to the refinery access routes. The refinery is inspected by the Fire Department annually and drills are conducted with the refinery on an annual basis. Site access is one of the items reviewed by the Fire Department. Inspection reports and drill reports indicate no issues with site access at the refinery.

As part of the Original Renewable Fuels Project, the rail unloading rack was modified to add an off-loading manifold, pumps and piping to unload up to 25 railcars per delivery. A train survey was conducted as part of CUP 757 that determined that trains accessing the refinery via rail temporarily obstruct traffic on Downey Avenue while the rail cars are being moved onto and out of the loading and unloading areas. During the closure of Downey Avenue at the rail crossing, a large number of vehicles queue behind the crossing gates and emergency access at Downey could be impacted. In addition, students leave the local schools at the end of the school day, resulting in potential conflicts among pedestrians, vehicles and rail conflicts (City of Paramount, 2013).

The Project modifications will increase deliveries to the refinery by truck and rail and increase the products delivered from the refinery via truck, pipeline, and rail. The CUP for the existing Paramount Refinery currently limits the receipt of railcars to 25 railcars per delivery to limit the time blocking the Downey Avenue traffic. While the Project would result in up to 50 railcars per day, rail deliveries would still be limited to 25 rail cars per delivery, thereby ensuring that Downey Avenue would not be obstructed for long periods.

As part of CUP 751 and 757, mitigation measures were imposed to minimize train and vehicle conflicts and delays at the Downey Avenue rail crossing. The above listed measures (Section 4.8.1.2) also apply to the Project.

The Project is not expected to result in longer trains (more than 25 railcars) or result in an increase in traffic delays than currently exist (5 minutes). Therefore, impacts are considered **less than significant (Class III).**

4.8.5 Cumulative Effects

Cumulative traffic impacts are not anticipated for cumulative projects listed in Section 3.0 since none of the projects are located in the vicinity of the Project, except for the LA Metro West Santa Ana Branch and the Port of Los Angeles, which are discussed below.

LA Metro West Santa Ana Branch

The West Santa Ana Branch (WSAB) is a 19-mile light rail transit corridor projected to serve commuters from downtown Los Angeles to Artesia. The WSAB will mostly follow the historic Pacific Electric West Santa Ana Branch streetcar service route. Along the route, it will also serve the communities of Vernon, Huntington Park, Bell, Cudahy, South Gate, Downey, Paramount, Bellflower, and Cerritos in the southeast area of the Los Angeles County. The proposed WSAB line will run adjacent to the southwest of the Project site (see Figure 4.8-7).

Currently, there is an at-grade rail crossing at Downey Avenue. As part of the WSAB project, the Downey Avenue crossing for the WSAB project would be elevated; the freight rail will not be converted to above-grade crossing. The vehicle routes taken by the Project truck traffic are north-south along Lakewood Blvd. and are not forecasted to utilize the Downey Avenue crossing.

Rail car deliveries to the refinery would use the at-grade crossing with Downey Avenue, similar to what is done under current conditions. The Project will utilize only refinery on-site trackage for rail car delivery storage.

Truck traffic from the refinery would utilize Lakewood Blvd. south, which would have a crossing at the WSAB project at approximately Lakewood Blvd. and Paseo Street.

Current design elements for the WSAB light-rail line in the project area include:

- The moving of the pedestrian bridge connecting the Paramount High School campus (located 1,500 feet west of Downey Avenue) to below grade - The existing pedestrian bridge crosses the alignment aerial and will need to be reconstructed. The pedestrian crossing will be reconstructed below-grade to provide a safer pedestrian connection between the campuses and improve ADA access;
- Alignment will be aerial grade-separated at Downey Avenue before descending at-grade to Somerset Blvd. and continuing east to Bellflower Station - Due to the proximity to Paramount High School and Harry Wirtz Elementary School, the Downey Avenue intersection has high pedestrian volumes. Grade separation will improve pedestrian safety and travel time reliability; and
- Somerset Blvd. and Lakewood Blvd. are proposed to be crossed at-grade.

The Project is located between the proposed Paramount/Rosecrans Station and Bellflower Station but is located outside the 1⁄2-mile walk shed of each station. It is within a three-mile micro mobility (bicycle and other human powered device) shed for each station area which has been studied by LA Metro, and a network of facilities that would ensure 360-degree access to each station has been identified. The Project will not conflict with these connections since there are no off-site Project elements in the vicinity of the station.

Figure 4.8-7 West Santa Ana Branch Transit Corridor Map

Source: LA Metro, Fall 2019 Updated Southern Alignment Map.

At the Downey Avenue rail intersection, as the WSAB project would be elevated, the increase in rail activity associated with the Project in combination with the WSAB project would not produce additional cumulative effects for vehicle traffic or pedestrian traffic.

At the Lakewood Blvd. rail crossing for the WSAB project, there is the potential for the stoppage of vehicles on Lakewood Blvd. to back up into the WSAB rail crossing from the Lakewood Blvd./Somerset Blvd. intersection. This could cause impacts to rail operations. The WSAB DEIR (MTA, 2021) identified this as a potential impacts and analysis at this intersection indicated that the 95 percent queuing length would

exceed the distance to the Lakewood Blvd./Somerset Blvd. intersection, meaning that about five percent of the time, traffic could impact the rail crossing due to queuing at the Lakewood Blvd./Somerset Blvd. intersection. The addition of trucks from this Project would exacerbate this issue, with an addition of truck traffic increasing the queuing length by about two percent. The WSAB DEIR recommends mitigation to eliminate this scenario including the following:

> *TR PM-1: Pre-signals and Queue-cutter Signals. Installation of pre-signals or queue-cutter signals to prevent vehicles from stopping on tracks. Pre-signals are traffic control devices that control traffic approaching a grade crossing in conjunction with the traffic control for the intersection(s) beyond the tracks. Pre-signals can be used to stop vehicular traffic before the railroad crossing. Queue-cutter signals only control traffic approaching a crossing and are operated independently of other traffic signals in the vicinity. The concept of operation of a queue-cutter is to hold traffic upstream from a crossing before a queue caused by a downstream traffic control signal or other roadway congestion can grow long enough to back up into the crossing.*

With the use of queue cutter and pre-signals, the cumulative impacts of the project and the WSAB project would be reduced to less than significant.

Port of Los Angeles

Project activities at the Port of Los Angeles would include vessel/barge visits, offloading to tankage, and loading of trucks for transport to the Paramount Refinery. The Port of Los Angeles PMPU PEIR (see Section 3.0, Cumulative Projects) indicated that the projects projected to occur at the POLA would generate the following significant and unavoidable impacts:

> ***PMPU PEIR Impact TRANS-1****: The proposed Program would create a significant unavoidable traffic impact on the I-710 freeway at the Congestion Management Program (CMP) monitoring stations north of Pacific Coast Highway (PCH), north of I-405, and north of Firestone Boulevard. With implementation of MM TRANS-1, the LAHD would collaborate with the California Department of Transportation (Caltrans) and Los Angeles Metropolitan Transportation Authority (Metro) to secure funding and ensure timely implementation of the I-710 Corridor Project by 2035 to alleviate future Port area and regional traffic growth on the I-710. The I-710 Corridor EIS/EIR would address the traffic impact of overall Port area and regional growth on the I-710 corridor, which encompasses the significant impact determined as part of this analysis for the proposed Program. Until the I-710 Corridor Project is implemented, the proposed Program would cause a significant impact to the three freeway locations identified above along the I-710.*

Since potential projects at the Port of Los Angeles could produce significant and unavoidable impacts to traffic along the 710 freeway, and the Project would add to those traffic levels and subsequent impacts, there could be **significant and unavoidable cumulative impacts (Class I).**

4.8.6 References

City of Paramount. 2007. Final Paramount General Plan. Adopted August 7, 2007. Available at: http://www.paramountcity.com/home/showdocument?id=2538

City of Paramount. 2013a. Paramount Petroleum Asphalt and Crude Terminal Improvement Project. Mitigated Negative Declaration, Conditional Use Permit (CUP) 751. Approved July 2013.

City of Paramount. 2013b. Paramount Petroleum Alt-Air Renewable Fuels Project. Mitigated Negative Declaration and Initial Study, Conditional Use Permit (CUP) 757 and Zone Variance (ZV) 401. Adopted December 30, 2013 (PARA 059).

Iteris. 2021. Paramount Petroleum AltAir Renewable Fuels Project Traffic Impact Analysis; February 16, 2021.

LAC. 1994. Traffic Impacts Assessment Guidelines, Los Angeles County.

MTA. 2021. Draft Environmental Impact Statement/Environmental Impact Report For The West Santa Ana Branch Transit Corridor Project Prepared By The U.S. Department Of Transportation Federal Transit Administration And The Los Angeles County Metropolitan Transportation Authority

Office of Planning and Research. 2018. Technical Advisory on Evaluating Transportation Impacts in CEQA; December 2018. Available at: https://www.opr.ca.gov/docs/20190122-743_Technical_Advisory.pdf

4.9 Tribal Cultural Resources

This section describes the environmental and regulatory settings related to tribal cultural resources, identifies potential impacts to historical, cultural, or archaeological resources of significance to California Native American tribes that would result from the Project, and provides mitigation measures to reduce those impacts to a level of insignificance.

Changes from Draft SEIR

Since the Draft SEIR was released in December 2021, this section has not been changed for the Final SEIR.

4.9.1 Environmental Setting

Vegetation is presently sparse within the Project site, primarily due to development. Landscape trees are located in areas surrounding the boundaries of the existing refinery, mostly along the entrance from Downey Boulevard and the adjacent parking lots, as well as surrounding the Lakewood Tank Farm. Historically, marshy soils and lake shores in the area would have supported growths of Alder (Alnus rhombifolia), Willow (Salix spp.), Rushes (Juncus spp.), Cottonwood (Populus trichocarpa), Bulrushes (Scirpus spp.), and Cat-tail (Typha spp.). To the southwest of the Project site, canyons and drainages within the higher elevations of Palos Verdes Hills are dominated by scrub brush and Valley and Coastal Live Oak (Quercus spp.). Cactus (Cholla, Prickly Pear), Toyon, Yucca, Coastal Sagebrush and Sugarbrush (Rhus Ovata) occur along arid slopes receiving more direct sun. The Project site is located within the Central Basin of the Coastal Plain of Los Angeles, an area which, prior to development, supported a wide variety of grasses (Deergrass, Giant Rye Grass, Pepper Grass), Buckwheat, Sagebrush and Chia and, from the historical period onward, localized groves of Eucalyptus and other non-indigenous trees and shrubs (Butler, 1974; Curtis, 1959; Bates, 1963).

4.9.1.1 Archaeological Context

The following summary of the prehistory of the Los Angeles Basin, which can be included within the broader, regional patterns of Southern California prehistory, is based on Byrd and Raab (2007), which is in turn based upon Erlandson and Colten's (1991) division of the Late Holocene into Early, Middle and Late subdivisions.

Pleistocene (Pre-9600 cal. B.C.)

Traditional models of California prehistory suggest that the state's first inhabitants, at times referred to as the 'Paleo-Indians', were highly mobile bands of large game hunters who ranged across North America during the terminal phases of the last Ice Age (Fagan, 2003; Moratto, 1984; Wallace, 1978). However, physical evidence for Paleo-Indian occupation of Southern California, particularly for coastal areas, remains scant. When the last Ice Age, known as the Wisconsin, began to wane around 10,000 to 8,000 cal. B.C., the resulting changes in climate necessitated shifts in subsistence strategy and settlement patterns, which included exploiting a wider range of plant and animal species and migrations to regions with more favorable conditions, such as the Southern California coast (Byrd and Raab, 2007).

Early Holocene (c. 9600 cal. B.C.–5600 cal. B.C.)

After the initial settlement of peoples from the interior regions, coastal groups began to adapt to marine environments and incorporated shellfish and saltwater fish into their diets, particularly after post-Pleistocene sea-level rise created estuaries and bays out of formerly perched areas. Radiocarbon evidence

shows occupation of the coastal region of Southern California occurred sometime between ca. 8000 and 7000 cal. B.C. (Byrd and Raab, 2007).

Middle Holocene (5600 cal. B.C.–1650 cal. B.C.)

The Middle Holocene has been traditionally seen as a time of transition. Across much of Central and Southern California, Millingstone cultures appeared around 6000 to 5000 cal. B.C. This adaptation focused on the collection and processing of small plant seeds and the hunting of a variety of small and medium-sized mammals. Typical reconstructions of Middle Holocene occupations on the mainland have emphasized sizeable semi-sedentary populations that were established around resource-rich coastal bays and estuaries.

Middle Holocene sites have been documented in inland settings, and evidence has emerged of geographically expansive trade networks and spheres of cultural interaction, linking Southern California with a vast region of the American West during the Middle Holocene (Byrd and Raab, 2007).

At some point during this period, resident groups were displaced as one or more waves of Uto-Aztecan-speaking peoples migrated from the Great Basin across Southern California, settling along the coast and eventually colonizing the southern Channel Islands (Kroeber, 1925).

Late Holocene (1650 cal. B.C.–cal. A.D. 1769)

The generally accepted models for this period indicate that the Late Holocene was a time of emergence for the cultural patterns and tribal groups that would later be observed by early Euro-American explorers and settlers (Byrd and Raab, 2007). Sometime after cal. A.D. 500, the bow and arrow appeared, replacing the throwing spear or atl-atl as the preferred instrument of hunting and warfare. In the interior regions, ceramics were adopted sometime after A.D. 1000.

Although marine resources remained extremely important during the late Holocene, hunter-gatherers in Southern California focused increasingly on smaller resources that generally occurred in greater amounts, often referred to as resource intensification. Late Holocene settlement patterns are characterized by comparatively large residential camps that were linked to numerous ephemeral satellite sites. Site types include major residential bases, residential camps, resource procurement areas, and limited activity sites (Byrd and Raab, 2007).

4.9.1.2 Ethnographic Context

The Project site is located within the ethnographic territory of the Tongva people. Prior to contact with Europeans, Tongva lands encompassed the greater Los Angeles Basin and three of the Channel Islands (San Clemente, San Nicholas, and Santa Catalina). On the mainland, Tongva territory reached as far as Topanga Creek and the San Gabriel Mountains to the north, Lytle Creek to the east, and Aliso Creek in the south (Bean and Smith, 1978; Kroeber, 1925). The Tongva are at times referred to as Gabrieleño or Fernandeño, which are Spanish terms used to refer to indigenous persons who were baptized at or residing within Mission San Gabriel (Gabrieleño) and Mission San Fernando (Fernandeño). It was to these missions that most native peoples living on the coastal plains and valleys of Southern California were taken.

The Tongva are believed to have migrated into Southern California from the Great Basin between 1,000 and 3,000 years ago. Tongva societal organization was patrilineal and centered around non-localized clans. The Tongva established large, permanent villages in the fertile lowlands along rivers and streams and along the coast, with smaller settlements spread throughout their territory (Bean and Smith, 1978).

The Tongva subsistence economy, like most indigenous cultures in California, was based on hunting and gathering. However, the richness and sheer variety of ecological resources that were available to the Tongva enabled them to surpass many other indigenous groups in terms of population size and material wealth. Vegetal and faunal resources, already abundant on the mainland in this part of California, were bolstered even further by an extensive array of marine resources along the coast and offshore islands. Predominant food sources included acorns, which were a staple, supplemented by sage seeds (Chia), roots and tubers, berries, yucca, deer, rabbit, waterfowl, reptiles, freshwater fish, and a host of marine species (Bean and Smith, 1975; Kroeber, 1925; McCawley, 1996). In addition, the Tongva's control of Santa Catalina Island, which contains a large source of high-quality soapstone or steatite, afforded them a pivotal role as crafters and distributors of this relatively uncommon and sought-after material.

The Tongva village closest to the Project site occupied an area near present-day 239th Street and Utility Street, and is referred to in ethnographic literature as Suangna, which means 'place of the skies'. Suangna served as the political center for a cluster of smaller villages and its chief was the political leader for these associated villages in addition to his own (Bean and Smith, 1975).

At the time of Spanish contact, the basis of Tongva religious life was the Chinigchinich cult, centered on the last of a series of heroic mythological figures. When the Spanish first arrived in Gabrieleño territory, they found that the belief in Chinigchinich had spread to neighboring non-Tongva groups such as the Luiseño, Ipai-Tipai, Cupeño, and Juaneño, and that the religious movement had at some point intertwined with a pre-existing toloache cult (Bean and Smith, 1975).

4.9.1.3 Historical Context

Contact and Mission Periods (A.D. 1542–1820)

The first European account of the area that would become the County of Los Angeles was by Portuguese navigator Juan Rodriguez Cabrillo, who led a Spanish expedition along the California coast in 1542. When Cabrillo first arrived in San Pedro Bay, the Tongva campfires along the coastline are said to have been so numerous that he was inspired to name the area Baya de los Fumos, or "Bay of the Smokes". Spain's presence in the region would be intermittent for the next 200 years (Chartkoff and Chartkoff, 1984).

Gaspar de Portolá led the first land expedition in 1769, accompanied by Fray Junípero Serra, marking the beginning of the establishment of California missions and subsequent European and Mexican occupation. The first of the missions to be established was Mission San Diego de Alcala in 1769, followed by 20 others between 1769 and 1822. The missions nearest the Project site are Mission San Gabriel Arcangel, founded in 1771 and located approximately 13.8 miles northeast, and Mission San Fernando Rey de Espana, founded in 1797 and located approximately 31.3 miles northwest.

On September 4, 1781, Alta California governor Felipe de Neve granted the first settlement in the region, Nuestra Senora La Reina de Los Angeles, or the Pueblo de Los Angeles, with a vast territory covering 28 square miles.

Rancho and Mexican Periods (A.D. 1820–1850)

The Rancho and Mexican Period was an era of extensive interior land grant development and exploration by American fur trappers west of the Sierra Nevada. In 1821, Mexico declared independence from Spain and a year later, California became a Mexican Territory. After the secularization of the missions in 1834, lands were gradually transferred to private ownership via a system of land grants (Hoover, 1990).

The Project site is located near lands encompassed by the former Rancho San Pedro, a land concession granted in 1784 by King Carlos III of Spain to Juan Jose Dominguez, a Spanish soldier who had accompanied the Portola expedition and later aided Father Junípero Serra with the founding of numerous missions throughout Alta California (Gillingham, 1961). Rancho San Pedro was originally 75,000 acres in size and included present-day Los Angeles harbor, San Pedro, the entire Palos Verdes peninsula, Torrance, Redondo Beach, Manhattan Beach, Carson, Compton, Gardena, and portions of Long Beach and Paramount. The Battle of Dominguez Rancho (1846), during the Mexican-American War, took place in an area adjacent to Rancho San Pedro (4.45 miles southwest of the Project site). Hostilities between the American and Mexican troops ended with the signing of the Treaty of Cahuenga on January 13, 1847 (Walker, 1999). President Polk signed the Treaty of Guadalupe Hidalgo in 1848, marking the formal transfer of the territory to the United States. California was recognized as a state in September 1850.

Americanization Period (A.D. 1850–present)

With the discovery of gold in 1848 at Sutter's Mill and the completion of the transcontinental railroad in 1869, thousands of settlers began immigrating to California. The County of Los Angeles was established on February 18, 1850, as one of 27 counties established in the months prior to California attaining statehood. Of the numerous ranchos extant in California at the start of the American Period, many were sold or otherwise acquired by American settlers and investors, with the clear majority being subdivided into agricultural parcels or towns. Throughout this time, Los Angeles expanded as a center of trade and agriculture.

During the late 1860s, several years of severe drought brought an end to large scale cattle-ranching in the area. The Los Angeles and San Pedro railroad was constructed in 1870 on land provided by Manuel Dominguez, prompting a new era of land development and competing railroad companies (Gillingham, 1961; Guinn, 1911; Hoyt, 1953; Dumke, 1944).

Presently, the Project site and surrounding area are highly urbanized with industrial, residential, and commercial land uses.

4.9.1.4 Cultural Resources within the Project Vicinity

Native American Outreach

The Project is subject to the provisions of Assembly Bill (AB) 52, which amends California Environmental Quality Act (CEQA) (PRC § 21080.3.1) to require lead agencies to consult with California Native American tribes and to consider the effects of a project on tribal cultural resources. Formal government-to-government tribal consultation pursuant to AB 52 is conducted by the City of Paramount with the Gabrieleño Band of Mission Indians - Kizh Nation.

4.9.1.5 Previous Environmental Review

The State CEQA Guidelines were amended in July 2015 to include evaluation of impacts on tribal cultural resources, and the CEQA Checklist has been amended since the December 2013 Final MND was prepared to specifically include tribal cultural resources.

This topic was not directly evaluated in the 2013 MND for the Original Renewable Fuels Project. The 2013 MND determined that no cultural or archaeological resources were likely to be discovered during excavation activities due to the previous disturbance and the limited degree of excavation that was required for the Original Renewable Fuels Project.

The 2013 MND determined that none of the existing facilities located within the refinery met the criteria for defining a historic resource. Furthermore, the Original Renewable Fuels Project would not affect any existing off-site resources listed on the National Register of those identified as being eligible for listing on the National Register. In addition, no cemeteries are located within the properties that surround the refinery. As a result, no significant adverse impacts to historical, cultural, or archaeological resources were associated with the Original Renewables Fuels Project.

4.9.2 Regulatory Setting

National Historic Preservation Act (54 U.S.C. Section 300101, et seq.)

Passed in 1966, the National Historic Preservation Act (NHPA) established a program for the preservation of historic properties, cultural resources, and ecological resources. Section 106 of the NHPA requires federal agencies to take into account the effects of their undertakings on historic properties, which are those listed or eligible for listing on the National Register of Historic Places (NRHP). Historic properties may be sites, buildings, structures, districts, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association. The law also established the Advisory Council on Historic Preservation (ACHP) and the State Historic Preservation Officer (SHPO) system to oversee Section 106 reviews and to administer other responsibilities for federal/state preservation. As amended in 1992, the law allows for a Tribal Historic Preservation Officer (THPO) to assume all or any part of the functions of the SHPO.

To be eligible for listing on the NRHP, a property must meet at least one of the following criteria:

a. Is associated with events that have made a significant contribution to the broad patterns of our history;

b. Is associated with the lives of persons significant in our past;

c. Embodies the distinctive characteristics of a type, period or method of construction, or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components may lack individual distinction; or

d. Has yielded, or may be likely to yield, information important in history or prehistory.

National Environmental Policy Act (42 USC Sections 4321 to 4347)

The National Environmental Policy Act (NEPA) was enacted in 1969 to (i) encourage harmony between people and the environment, (ii) promote efforts to prevent or eliminate damage to the environment, (iii) enrich the understanding of the ecological systems and natural resources of the US, and (iv) establish a Council on Environmental Quality (CEQ). NEPA requires federal agencies to assess the environmental effects of their proposed actions prior to making decisions. The environment is understood to include natural, cultural, and social values. NEPA is more inclusive of the evaluation of cultural resources than Section 106, as the evaluation is not focused on effects on historic properties.

American Indian Religious Freedom Act (42 U.S.C. 1996 and 1996a)

The American Indian Religious Freedom Act (AIRFA) was passed in 1978 and established a national policy to protect the rights of Native Americans and other indigenous groups to exercise their traditional religions by accessing traditional sites and using and possessing sacred objects during worship. Federal agencies issuing permits are required to comply with this act if Native Americans identify issues arising

from a proposed project regarding their right to exercise traditional religious practices, such as access to traditional worship and gathering places.

Archaeological Resources Protection Act (12 U.S.C. 470aa to 470mm)

Passed in 1979, the Archaeological Resources Protection Act (ARPA) was crafted in response to difficulties managing public lands and preventing looting of archaeological sites under the authority of the Antiquities Act of 1906. The ARPA provides for the protection of archaeological resources greater than 100 years old on federal land from vandalism and unauthorized collecting. Financial and incarceration penalties for convicted violators are substantially increased. The act also provides guidance on appropriate archaeological documentation and artifact curation. As amended, the ARPA requires federal departments to plan for and schedule archaeological surveys to account for resources located on their land. The ARPA also requires that archaeological investigations undertaken on federal lands be conducted under a permit.

Native American Graves Protection and Repatriation Act (25 U.S.C. 3001 to 3013)

Passed in 1990, the Native American Graves Protection and Repatriation Act (NAGPRA) provides for the protection and appropriate repatriation of Native American graves, funerary objects, and "objects of cultural patrimony" found on federal land. The act also establishes the procedures for determining the ownership of Native American human remains, funerary objects, and other sacred objects under federal jurisdiction, including those in museums. The act unequivocally establishes that Native American human remains, grave goods, sacred objects, and objects of cultural patrimony are the inalienable property of their descendants.

4.9.2.1 State Regulations

The Office of Historic Preservation (OHP) is the governmental agency primarily responsible for the statewide administration of the historic preservation program in California. The mission of the Office of Historic Preservation and the State Historical Resources Commission, in partnership with the people of California and governmental agencies, is to "preserve and enhance California's irreplaceable historic heritage as a matter of public interest so that its vital legacy of cultural, educational, recreational, aesthetic, economic, social, and environmental benefits will be maintained and enriched for present and future generations." The Office of Historic Preservation's responsibilities include:

- Identifying, evaluating, and registering historic properties;
- Ensuring compliance with federal and state regulatory obligations;
- Cooperating with traditional preservation partners while building new alliances with other community organizations and public agencies;
- Encouraging the adoption of economic incentives programs designed to benefit property owners; and
- Encouraging economic revitalization by promoting a historic preservation ethic through preservation education and public awareness and, most significantly, by demonstrating leadership and stewardship for historic preservation in California.

California Environmental Quality Act (PRC Section 21000, et seq.)

CEQA was created to extend the oversight and protection afforded by NEPA to projects under the jurisdiction of the State of California and local municipalities and agencies. CEQA requires state and local agencies to assess the environmental effects of proposed projects prior to making decisions.

CEQA Statute and Guidelines include procedures for identifying, analyzing, and disclosing potential adverse impacts to historical resources, which include all resources listed in or formally determined eligible for the National Register of Historic Places (NRHP), the California Register of Historical Resources (CRHR), or local registers. CEQA further defines a "historical resource" as a resource that meets any of the following criteria:

- A resource listed in, or determined eligible for listing in, the NRHP or CRHR per PRC Section 5024.1;
- A resource listed in a local register of historical resources, as defined in PRC Section 5020.1(k), unless the preponderance of evidence demonstrates that it is not historically or culturally significant;
- A resource identified as significant (i.e., rated 1-5) in a historical resource survey meeting the requirements of PRC Section 5024.1(g) (Department of Parks and Recreation Form [DPR] 523), unless the preponderance of evidence demonstrates that it is not historically or culturally significant; or

Any object, building, structure, site, area, place, record, or manuscript, which a lead agency determines to be historically significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military or cultural annals of California, provided the determination is supported by substantial evidence in light of the whole record. Generally, a resource is considered "historically significant" if it meets the criteria for listing on the CRHR (PRC Section 21084.1 and CEQA Guidelines Section 15064.5(a)).

The CRHR is a listing of State of California resources that are significant within the context of California's history, and includes all resources listed in or formally determined eligible for the NRHP. In addition, properties designated under municipal or county ordinances are also eligible for listing in the CRHR. A historic resource must be significant at the local, state, or national level under one or more of the following four criteria defined in the California Code of Regulations Title 14, Chapter 11.5, Section 4850:

- It is associated with events or patterns of events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States (Criterion 1);
- It is associated with the lives of persons important to local, California, or national history (Criterion 2);
- It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master, or possesses high artistic values (Criterion 3); or
- It has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California, or the nation (Criterion 4).

A cultural resource's significance must be demonstrated under one of the CRHR criterion described above, and it must retain its historic integrity. Cultural resources integrity is determined using the CRHR's seven aspects of integrity: location, design, setting, materials, workmanship, feeling, and association. The CRHR criteria are tied to CEQA, as any resource that meets the above criteria and retains its integrity is considered to be an historical resource under CEQA.

The Historical Landmarks and Records Commission (HLRC) is an advisory body established to consider and recommend to the Board of Supervisors local historical landmarks defined to be worthy of registration by the State of California Department of Parks and Recreation, either as "California Historical Landmarks" or as "Points of Historical Interest" and may consider and comment for the Board on applications relating to the NRHP. Criteria for designation, including significance and access and provision for maintenance, shall

be as specified in state law, including the California Public Resources Code, or in regulations and interpretations of the State Historical Resources Commission.

The following sections of California state law pertain to historical resources as treated under CEQA.

PRC Section 21083.2

This section of the PRC states that, if the lead agency determines the project may have a significant effect on an historical resource, as defined in PRC Section 21084.1, or a unique archaeological resource, as defined herein, an environmental impact report shall be prepared to assess those resources. Once assessed as such, non-historic and non-unique resources shall not be considered during the CEQA review process. If it can be demonstrated that a project will cause damage to a historical or unique archaeological resource, reasonable efforts should be taken to preserve the resource in place. If in-place preservation is not possible, the lead state agency may require mitigation measures. This PRC section provides guidance for appropriate avoidance treatments and mitigation measures, as well as limits on the cost of those actions.

A "unique archaeological resource" is defined in subsection (g) as an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, it has a high probability to meet one of the following criteria:

- Contains information needed to answer important scientific research questions, and that there is a demonstrable public interest in that information;
- Has a special and particular quality such as being the oldest or best example of its type; or
- Is directly associated with a scientifically recognized important prehistoric or historic event or person.

PRC Section 21084

This PRC section identifies guidelines to list classes of projects as exempt from CEQA review. Further it states that no project that may cause a substantial adverse change in the significance of a historical resource, as specified in Section 21084.1, shall be exempted from review.

PRC Section 21084.1

This section of the PRC equates a substantial adverse change in the significance of a historical resource with a significant effect on the environment. A "historical resource" is defined as any resource listed in, or determined to be eligible for listing in, the CRHR, the NRHP, or a local register of historical resources, as defined in PRC Section 5020.1(k). In addition, any resource deemed significant pursuant to criteria set forth in PRC Section 5024.1(g), is presumed to be historically or culturally significant for purposes of this section, unless the preponderance of the evidence demonstrates that the resource is not historically or culturally significant.

California Code of Regulations (CCR) Section 15064.5. Determining the Significance of Impacts on Archaeological and Historical Resources

This section of the California Code of Regulations (CCR) provides guidelines for the implementation of CEQA with respect to archaeological, paleontological, and historical resources. This section also provides examples of substantial adverse changes to cultural resources and mechanisms for avoiding or mitigating them. It also provides guidance on the procedures to follow upon the discovery of Native American human

remains and grave offerings or the unanticipated/accidental discovery of cultural resources during construction.

State Historical Resource Preservation Laws

The following sections of California state law concern cultural resources; their implementation is not contingent upon a CEQA review process.

Historical Resources

PRC Sections 5020 to 5024 and Section 5024.6. These sections of the PRC establish the State Historical Resources Commission and specify the respective responsibilities of the Commission and the SHPO (established under the federal NHPA). Types of historical resources and levels of significance are defined, as well. Further, Section 5024 requires state agencies to maintain an inventory of, and create a management plan for, all historical resources under their authority.

PRC Section 5024.1. This section of the PRC establishes the CRHR and defines the criteria by which resources may be assessed for listing. Certain properties previously listed on other registers are automatically included in the CRHR. Other properties, such as those recognized under the California Points of Historical Interest program, may be nominated for inclusion in the CRHR.

A resource, as either an individual property or a contributor to a historic district, may be listed in the CRHR if the State Historical Resources Commission determines that it meets one or more of the following criteria:

- It is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
- It is associated with the lives of persons important in our past;
- It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
- It has yielded, or may be likely to yield, information important in prehistory or history.

In addition, the CRHR includes the following:

- California properties formally determined eligible for, or listed in, the NRHP;
- State Historical Landmark No. 770 and all consecutively numbered state historical landmarks following No. 770. For state historical landmarks preceding No. 770, the office shall review their eligibility for the CRHR in accordance with procedures to be adopted by the Commission; or
- Points of historical interest that have been reviewed by the office and recommended for listing by the Commission for inclusion in the CRHR in accordance with criteria adopted by the Commission.

PRC Sections 6254(r) and 6254.10. These sections of the California Public Records Act of 1968 (codified in PRC Sections 6250-6270.7) were enacted to protect archaeological sites from unauthorized excavation, looting, or vandalism. Section 6254(r) explicitly authorizes government agencies to withhold information from the public relating to Native American graves, cemeteries, and sacred places maintained by the Native American Heritage Commission (NAHC) or any other agency. Section 6254.10 specifically exempts from disclosure requests for records that relate to archaeological site information and reports maintained by or in the possession of the Department of Parks and Recreation or any other local or state agency, including the records that an agency obtains through a consultation process with a Native American tribe.

California Penal Code Section 622.1/2. This section of the Penal Code declares that willfully injuring, disfiguring, defacing, or destroying objects of historic or archaeological interest or value located on public or private land is a misdemeanor with no specific punishment prescribed. Lawful landowners are specifically excluded.

California Penal Code, Section 623. This section of the Penal Code indicates that any person, other than the owner and without prior written permission of the owner, who intentionally and knowingly disturbs or alters any archaeological evidence of prior occupation in any cave or removes any material from a cave is guilty of a misdemeanor punishable by imprisonment in the county jail not exceeding one year, or by a fine not exceeding $1,000, or by both such imprisonment and fine. "Material" includes archaeological items including, but not limited to, petroglyphs, pictographs, basketry, human remains, tools, beads, pottery, projectile points, or remains of historical activities found in any cave.

Native American Historical, Cultural, and Sacred Sites

PRC Sections 5097.91 to 5097.97. These sections of the PRC establish the NAHC, whose duties include the inventory of places of religious or social significance to Native Americans and the identification of known graves and cemeteries of Native Americans. These regulations also require state and local agencies to cooperate with the NAHC in carrying out their duties with regard to Native American resources. Section 5097.97 specifically empowers the NAHC to conduct investigations with regard to potential irreparable damage to Native American sacred places and burial sites, or access to those, up to and including requesting legal action from the State Attorney General.

PRC Section 5097.98. This PRC section specifies procedures to be followed upon the discovery of Native American human remains, including the provision that the landowner ensure that activity with the potential to cause damage to the remains cease in the immediate vicinity of the discovery until the inspection and consultation process, described in the section, is complete. Any actions taken by the landowner to comply with this section and with the requests of the descendant(s) are exempt from the requirements of CEQA and the California Coastal Act of 1976.

PRC Sections 5097.99 and 5097.991. These sections of the PRC establish that the unlawful removal, collection, or possession of Native American artifacts or human remains taken from a Native American grave or cairn is a felony punishable by imprisonment in the state prison. Native American remains and associated grave artifacts need to be repatriated in accordance with California policy.

Health and Safety Code, Sections 7050.5 and 7052. Section 7050.5 defines procedures for the discovery and treatment of human remains. In the event of a discovery of human remains outside a dedicated cemetery, all ground disturbance must cease, and the county coroner must be notified. If the coroner determines, or has reason to believe, that the remains are those of a Native American, the coroner then must contact the NAHC by telephone within 24 hours. Section 7052 establishes a felony penalty for mutilating, disinterring, or otherwise disturbing human remains, except under the authority of law.

California NAGPRA (Health and Safety Code Sections 8010 to 8030). The California Native American Graves Protection and Repatriation Act of 2001 was enacted to provide state policy consistent with the federal NAGPRA of 1990. The law was written to ensure that all California Native American human remains and cultural materials are treated with dignity and respect. It extends policy coverage to California tribes that are not federally recognized but that are known to the NAHC. The act also establishes and defines the duties of a State Repatriation Oversight Commission and establishes penalties and enforcement procedures for use by the Commission.

Senate Bill 18: Tribal Consultation Guidelines

Passed in 2004, Senate Bill (SB) 18 requires local governments to meaningfully consult with tribal representatives concerning the potential impacts of proposed general plans, or amendments to general plans, on resources of significance to the tribe(s). SB 18 expands the consultation process to include tribes that are not federally recognized and acknowledges the need to better protect traditional tribal cultural places on both public and private lands. If any permits are required from a county or local municipality during the construction or operations of the Project, consultation under SB 18 may be required, insofar as the conditions of those permits vary from established general plans.

Assembly Bill 52: Tribal Cultural Resources

Passed in 2014, AB 52 was enacted to provide greater protection for tribal cultural resources and sacred sites and involvement of California Native American tribes (including non-federally recognized tribes) in the protection of those resources identified under existing law (PRC Sections 21073 and 21080.3.1(a)). This bill amends CEQA and establishes a new category of resources, called "tribal cultural resources," that are defined with reference to tribal cultural values in addition to scientific and archaeological values when determining impacts and mitigation (see Section 4.9.4). The bill requires timely and meaningful consultation under a new process between California Native American tribal governments and lead agencies. All projects being considered under CEQA must include such consultation, as specified in AB 52.

As amended by AB 52, CEQA recognizes that tribal cultural resources constitute a particular type of cultural or historical resources and form part of the environment. The law recognizes that California Native American tribes have special expertise in regard to their tribal history and practices, and that, therefore, affiliated tribal representatives should be consulted for environmental assessments to identify resources of significance to the tribes. AB 52 § 1(a)(9) also states that "a substantial adverse change to a tribal cultural resource has a significant effect on the environment."

As defined in PRC Section 21074 and further refined in CEQA Appendix G: Environmental Checklist Form,

(a) tribal cultural resources are either of the following:

- Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following:
    - Included in, or determined to be eligible for inclusion in, the CRHR;
    - Included in a local register of historical resources as defined in subdivision (k) of Section 5020.1;
- 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 (PRC Section 21704 (b)); or

(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) (PRC Section 21704 (c)).

4.9.2.2 Local Regulations

The Los Angeles County Board of Supervisors adopted the historic preservation ordinance on September 1, 2015. This ordinance is applicable only to the unincorporated territory of the County. The purpose of the historic preservation ordinance is to:

- Enhance and preserve the County's distinctive historic, architectural, and landscape characteristics that are part of the County's cultural, social, economic, political, and architectural history;
- Foster community pride in the beauty and noble accomplishments of the past as represented by the County's historic resources;
- Stabilize and improve property values in and around the County's historic resources, and enhance the aesthetic and visual character and environmental amenities of these historic resources;
- Recognize the County's historic resources as economic assets and encourage and promote the adaptive reuse of these historic resources;
- Further establish the County as a destination for tourists and as a desirable location for businesses; and to
- Specify significance criteria and procedures for the designation of landmarks and historic districts and provide for the ongoing preservation and maintenance of these landmarks and historic districts.

Los Angeles County Historical Landmarks and Records Commission

The Historical Landmarks and Records Commission (HLRC) is an advisory body established to consider and recommend to the Board of Supervisors local historical landmarks defined to be worthy of registration by the State of California Department of Parks and Recreation, either as "California Historical Landmarks" or as " Points of Historical Interest" and may consider and comment for the Board on applications relating to the NRHP. Criteria for designation, including significance and access and provision for maintenance, shall be as specified in state law, including the California Public Resources Code, or in regulations and interpretations of the State Historical Resources Commission.

City of Paramount General Plan

Resource Management Element

The Resource Management Element of the Paramount General Plan focuses on four key issue areas: cultural resources (historic and archaeological), ecological resources (plant and animal life), natural resources (air, water, and minerals), and open space resources used for recreation.

- *Resource Management Element Policy 19.* The City of Paramount will identify and preserve those sites/buildings that are important to the community for the benefit of the future generations that will reside or work in the City.

Cultural Resource Management. Should archaeological or paleontological resources be encountered during excavation and grading activities, all work would cease until appropriate salvage measures are established. Appendix K of the CEQA Guidelines will be followed for excavation monitoring and salvage work that may be necessary. Salvage and preservation efforts will be undertaken pursuant to Appendix K requirements outlined in CEQA.

4.9.3 Significance Thresholds

Significance criteria are based on the CEQA Guidelines Appendix G checklist. CEQA Appendix G provides these key questions to guide evaluation of impacts related to tribal cultural resources. Would the Project:

a. Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code § 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

    i. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or

    ii. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe;

b. Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5;

c. Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5; or

d. Disturb any human remains, including those interred outside of dedicated cemeteries?

Generally, intact cultural and historic deposits are considered significant. Severely disturbed or mixed deposits often are not considered significant but may have educational value. Human remains and associated goods are accorded special consideration, even when fragmentary and are considered significant.

4.9.4 Project Impacts and Mitigation Measures

This section discusses the potential impacts of the Project with the significance thresholds outlined in CEQA Guidelines Appendix G above. Project-specific impacts include direct and indirect impacts. Direct impacts result from land modification directly and immediately caused by the construction, landscaping, operation, or maintenance of a facility. Indirect impacts also occur as a result of a specific project, but do not result from intentional ground disturbance. Common indirect impacts include erosion, unauthorized artifact collecting, and vandalism.

Impact #	Impact Description	Phase	Impact Classification
TC.1	The Project would not cause a substantial adverse change in the significance of a tribal cultural resource that is listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in PRC Section 5020.1(k), or one that is determined by the lead agency to be significant pursuant to criteria set forth in subdivision (c) of PRC Section 5024.1.	Construction	Class II

Generally, resources (buildings, structures, equipment) that are less than 50 years old are excluded from listing in the National Register of Historic Places unless they can be shown to be exceptionally important. No existing structures at the Paramount Refinery or Lakewood Tank Farm are listed or eligible for listing

in the California Register of Historical Resources or local register of historical resources, nor are they considered significant, as defined under PRC Section 5024.1(c). The Project modifications would remove refinery structures and units; however, the buildings, structures, and equipment do not meet the eligibility criteria (e.g., associated with historically important events or people, embodying distinctive characteristics of a type, period, or method of construction), and would not yield historically important information.

The potential for archaeological resources at the Project sites is low due to the character of subsurface soils (recent alluvium) and the fact that the entire refinery site has been previously graded and developed. Grading for the 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. No significant adverse impacts to tribal cultural resources are expected since no known resources are located within the existing refinery; furthermore, the previous grading and development of the site for industrial uses did not result in any archaeological findings. Therefore, the Project is not expected to result in significant impacts or cause substantial adverse change in the significance of a tribal cultural resource.

The Project modifications to the Lakewood Tank Farm would be located within the confines of the existing tank farm. The modifications would be limited to improvements and maintenance of the existing storage tanks. No structures would be demolished at the Lakewood Tank Farm, and no grading or trenching activities would be required. Therefore, no significant impacts to tribal cultural resources are expected at the Lakewood tank farm.

The Project involves a new connection to a Southern California Gas transmission line to provide natural gas for the new Hydrogen Generation Unit. The potential 3.7-mile natural gas pipeline would extend north from Lakewood Boulevard to Somerset Boulevard and would enter the refinery from the east on Somerset Boulevard (see Figure 2-5). The proposed pipeline would extend along an existing roadway and is therefore not likely to result in a significant adverse impact on tribal cultural resources. The Project would also require the addition of a service line sufficient for delivery of Project water demands (refer to Section 4.10.4). A tie-in to the reclaimed water distribution system is available along the southwest perimeter of the refinery (see Figure 2-7), so minimal construction would be required, and it is unlikely the service line would result in a significant impact on a tribal cultural resource.

Nonetheless, there is potential for intact tribal cultural or archaeological resources to be present at subsurface levels. For this reason, the Project site should be treated as potentially sensitive for tribal cultural resources. Mitigation measures TC-1a and TC-1b are required to reduce potentially significant impacts to unanticipated tribal cultural or archaeological resources.

Mitigation Measures

TC-1a ***Retain a Native American Monitor/Consultant:*** *The Project Applicant shall be required to retain and compensate for the services of a Tribal Monitor/Consultant who is both approved by the Gabrieleño Band of Mission Indians-Kizh Nation Tribal Government and is listed under the NAHC's Tribal Contact list for the area of the Project location. This list is provided by the NAHC. The Tribal Monitor/Consultant will only be present on-site during ground disturbing activities. Ground disturbing activities are defined by the Gabrieleño Band of Mission Indians-Kizh Nation as activities that may include, but are not limited to, pavement removal, potholing or auguring, grubbing, tree removals, boring, grading, excavation, drilling, and trenching, within the Project area. The Tribal Monitor/Consultant will complete daily monitoring logs that will provide descriptions of the day's activities, including construction activities, locations, soil, and any cultural materials identified. Work will be allowed to continue with monitoring provided by a qualified archaeologist if the Tribal*

Monitor/Consultant is unavailable and as approved by Tribal Government. The on-site monitoring shall end when the Project site grading and excavation activities are completed, or when the Tribal Representatives and Monitor/Consultant have indicated that the site has a low potential for impacting Tribal Cultural Resources.

TC-1b ***Unanticipated Discovery of Tribal Cultural or Archaeological Resources Procedures:*** *Upon discovery of any tribal cultural or archaeological resources, cease construction activities in the immediate vicinity of the find until the find can be assessed. All tribal cultural and archaeological resources unearthed by Project construction activities shall be evaluated by the qualified archaeologist and Tribal Monitor/Consultant approved by the Gabrieleño Band of Mission Indians-Kizh Nation. If the resources are Native American in origin, the Gabrieleño Band of Mission Indians-Kizh Nation shall coordinate with the landowner regarding treatment and curation of these resources. Typically, the Tribe will request preservation in place or recovery for educational purposes. Work may continue on other parts of the Project while evaluation and, if necessary, additional protective mitigation takes place (CEQA Guidelines Section15064.5 [f]). If a resource is determined by the qualified archaeologist to constitute a "historical resource" or "unique archaeological resource", time allotment and funding sufficient to allow for implementation of avoidance measures, or appropriate mitigation, must be available. The treatment plan established for the resources shall be in accordance with CEQA Guidelines Section 15064.5(f) for historical resources.*

Impacts Remaining After Mitigation

With implementation of the recommended mitigation measures (TC-1a and TC-1b), potential impacts for Impact TC.1 would be **less than significant with mitigation (Class II).**

Impact #	Impact Description	Phase	Impact Classification
TC.2	The Project would not cause a substantial adverse change in the significance of a historical or archaeological resource as defined in §15064.5.	Construction	Class II

As discussed above for Impact TC.1, no existing structures at the Paramount Refinery or Lakewood Tank Farm are considered architecturally, historically, or culturally significant, as defined under CEQA Guidelines §15064.5, i.e., no structures are eligible for listing in the California Register of Historical Resources or included in a local register of historic resources. The Project modifications would remove refinery structures and units; however, the buildings, structures, and equipment do not meet the eligibility criteria and would not yield historically important information.

The potential for historical or archaeological resources at the existing refinery is low due to previous grading of the entire refinery site. Grading for the 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. No grading would occur at the Lakewood Tank Farm. As discussed for Impact TC.1, the installation of the Project's proposed natural gas pipeline and service line for supply of reclaimed water are both unlikely to result in significant adverse impacts on historical or archaeological resources. Nonetheless, there is potential for intact historical or archaeological resources to be present at subsurface levels; therefore, impacts on historical or archaeological resources could be significant.

Mitigation Measures

With the implementation of mitigation measures TC-1a and TC-1b above, potential impacts for TC.2 would be **less than significant with mitigation (Class II).**

Impact #	Impact Description	Phase	Impact Classification
TC.3	The Project would not disturb any human remains, including those interred outside of dedicated cemeteries.	Construction	Class II

Environmental review for the Original Renewable Fuels Project determined that the Project site and adjacent areas have not been used for formal cemeteries. The potential for uncovering human remains is low because the entire Project site has been previously graded and developed. Grading for the 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. No significant adverse effects to human remains are expected since no known human remains are located within or near the existing refinery and due to the previous development of the site for industrial uses.

The proposed modifications to the Lakewood Tank Farm would be located within the confines of the existing tank farm. The modifications would be limited to improvements and maintenance of the existing storage tanks and no grading or trenching activities would be required. No archaeological resources have been detected at the tank farm site during past ground-disturbing activities. The site and areas adjacent to the tank farm have not been used for formal cemeteries. Therefore, the potential for uncovering human remains is low. Nonetheless, there is potential for intact remains at subsurface levels. Therefore, the Project's potential impact to human remains during construction could be significant.

Mitigation Measures

TC-3a ***Unanticipated Discovery of Human Remains Procedures:*** *Upon discovery of human remains, the tribal and/or archaeological monitor/consultant will immediately divert work at minimum of 150 feet and place an exclusion zone around the discovery location. The monitor/consultant(s) will then notify the Tribe, the qualified lead archaeologist, and the construction manager who will call the coroner. Health and Safety Code 7050.5 dictates that any discoveries of human skeletal material shall be immediately reported to the County Coroner and excavation halted until the coroner has determined the nature of the remains. If the coroner recognizes the human remains to be those of a Native American or has reason to believe that they are those of a Native American, he or she shall contact, by telephone within 24 hours, the Native American Heritage Commission (NAHC) and PRC 5097.98 shall be followed. The discovery is to be kept confidential and secure to prevent any further disturbance.*

Impacts Remaining After Mitigation

With implementation of the recommended mitigation measure (TC-3a), potential impacts for Impact TC.3 would be **less than significant with mitigation (Class II).**

4.9.5 Cumulative Effects

According to CEQA cultural resources include historic properties (standing buildings or structures), historical and prehistoric archaeological sites, paleontological resources, and human remains inside or out of designated cemeteries. Grading and ground disturbing activities can significantly impact these non-

renewable resources. Without mitigation, these resources would be destroyed through construction and urban expansion resulting in cumulative loss of cultural resources over time. However, applicable state and City laws and regulations, as discussed above, offer guidance for managing cultural resources, provide for preservation of significant natural and cultural resources, and direct mitigation through data recovery where avoidance is not possible.

The cumulative impact study area includes the area within two miles of the Project site in the City of Paramount (see Figure 3-1 in Section 3.0, Cumulative Projects). There are no known projects of a scale and in a location that could add to cumulative impacts to tribal cultural resources. Therefore, no cumulative effects are expected to occur as a result of this or other projects in the area that would include any type of excavation or construction. In the event that other projects in the surrounding areas could have any potential impacts, it is expected that those projects would be appropriately mitigated as described above and therefore, would not result in any cumulative impacts.

4.9.6 References

City of Paramount. 2007. Final Paramount General Plan. Adopted August 7, 2007. Available at: http://www.paramountcity.com/home/showdocument?id=2538

City of Paramount. 2013. Paramount Petroleum Alt-Air Renewable Fuels Project. Mitigated Negative Declaration and Initial Study, Conditional Use Permit (CUP) 757 and Zone Variance (ZV) 401. Adopted December 30, 2013 (PARA 059).

Padre Associates, Inc. 2018. Phase I Archaeological Survey. Prepared for Air Products and Chemicals, Inc.; November 2018.

4.10 Utilities and Service Systems

This section describes the environmental and regulatory setting for utilities and service systems in the vicinity of the Project. This section also describes the impacts on utilities and service systems that would result from implementation of the Project and mitigation measures that would reduce significant impacts, where feasible.

Changes from Draft SEIR

Since the Draft SEIR was released in December 2021, this section has the following changes incorporated into the Final SEIR:

- Updates to some numbers based on comments.

4.10.1 Environmental Setting

4.10.1.1 Wastewater

The County Sanitation Districts of Los Angeles County (LACSD) treats wastewater generated in the City of Paramount (City). Wastewater is collected and treated by the LACSD sewage system and sent to either the Joint Water Pollution Control Plant (JWPCP) or one of six satellite water reclamation plants (WRPs) as part of the Joint Outfall System (JOS). The wastewater is carried to the JWPCP, located in the City of Carson, which has a design capacity of 400 million gallons per day (mgd) and currently processes an average flow of 260 mgd and serves a population of approximately 3.5 million people.

The wastewater generated in the Paramount area is first conveyed to the Los Coyotes Water Reclamation Plant (Los Coyotes WRP), which is operated by the LACSD. The Los Coyotes WRP, located at the northwest junction of the San Gabriel River and Artesia Freeway, provides primary, secondary, and tertiary treatment. The Los Coyotes WRP has a design capacity of 37.5 mgd and serves a population of approximately 370,000 people. The Long Beach WRP has a design capacity of 25 mgd and serves a population of approximately 250,000 people. Wastewater exceeding the capacities of the upstream sewage treatment plants and all solids are diverted to the JWPCP for processing. Local sewer lines are maintained by the City of Paramount, while the district owns, operates, and maintains the large trunk sewers of the regional wastewater conveyance system.

The City is part of an integrated water recycling program that includes the cities in Los Angeles County as well as water districts, including the Metropolitan Water District (MWD). Wastewater destined for recycled water use undergoes tertiary treatment and is subsequently distributed or disposed of, as necessary. Wastewater too salty for use as recycled water is sent to the JWPCP where it undergoes secondary treatment and disinfection before being discharged to the ocean. The LACSD reports nearly 35,157 million gallons per year (108,000 acre feet per year [AFY]) of wastewater was treated to recycled water quality in 2020–2021. The water produced is used either as recycled water for industrial, landscape irrigation, or agricultural use, or for groundwater recharge.

The Paramount Refinery (refinery) generates process wastewater, treated sour water, and storm water. The refinery maintains on-site wastewater treatment equipment. Wastewater from the refinery is treated in a wastewater treatment system, which includes American Petroleum Institute (API) separators to remove oil and induced air floatation units for additional removal of oil and particulates. The treated process wastewater and treated sour water are discharged to the LACSD in accordance with the LACSD

Industrial Wastewater Discharge Permit discharge limits. The LACSD placed limitations on wastewater parameters including oil and grease, pH, temperature, heavy metals, organic compounds, and others. Wastewater that complies with the LACSD permit requirements is discharged to the sewer. Wastewater that does not comply is returned to the refinery for further treatment. In 2011, the refinery discharged 68 million gallons of treated wastewater to the LACSD.

Treated storm water is discharged to the Los Cerritos channel in accordance with National Pollutant Discharge Elimination System permit discharge limits.

Flood control and storm drainage in Paramount are the basic responsibility of the Los Angeles County Flood Control District. The City works closely with the district in making local drainage plans and improvements. Many sites in the City, including those that will undergo redevelopment, are paved, or otherwise covered with impervious surfaces.

4.10.1.2 Water Demand

The City of Paramount utilizes both potable and recycled water. The City obtains potable water from two sources: directly pumped groundwater and imported water purchased through the Central Basin Municipal Water District (CBMWD), who in turn receives the water through the Metropolitan Water District of Southern California (MWD) and the State Water Project (SWP). The City provided a total of 208 million gallons (6,396 AF) of water to a population of approximately 55,302 in 2015. The City obtains its groundwater from the Central Subbasin, one of four subbasins in the Coastal Plain of Los Angeles. The Central Subbasin, commonly referred to as the Central Basin, is an adjudicated Basin (1965) and the City is allotted 192 million gallons (5,883 AF) in pumping rights every year. The historical water use by the refinery is shown in Table 4.10.1. The refinery did not use reclaimed water except for minimal landscaping use.

Table 4.10.1 Refinery Historical Water Use

Year	2011	2014	2015	2018	2019
Water Use (gallons per year)	132,950,268	34,521,696	19,631,260	44,622,688	47,604,874
Water Use (gallons per day)	542,654	94,580	53,784	138,151	161,372
Water Use (acre-feet)	408	105.94	60.25	136.94	146.09

Source: Applicant 2021.

See Appendix G, Water Demand Assessment for details.

4.10.1.3 Electricity

Southern California Edison (SCE) provides service to approximately 15 million people in Southern California. SCE and Sempra Energy provide electricity upon demand to the City of Paramount, including the refinery. Table 4.10.2 presents the electricity purchases and electrical demand at the refinery from 2009 to 2012.

Table 4.10.2 Refinery Historical Electricity Use

Year	2009	2010	2011	2012	Average
Electricity Purchases (MWh)	24,568	10,413	11,977	13,438	15,099
Electrical Demand, MW	1.5	1.4	1.2	2.8	1.7

Source: City of Paramount 2013.

Electricity use in Los Angeles County over the last 10 years averaged approximately 68,568 gigawatt hours (GWh) per year and is summarized in Table 4.10.3. Residential electricity use accounted for approximately 30 percent of the electricity use and non-residential use accounted for approximately 70 percent. Southern California Edison's electricity is supplied by natural gas power plants, nuclear generation, large hydroelectric facilities, and renewable sources (e.g., wind, geothermal, biomass, and small hydroelectric power).

Table 4.10.3 Electricity Use in Los Angeles County

Year	Residential Use (GWh)	Non-Residential Use (GWh)	Total Electricity Use (GWh)
2019	19,563	46,556	66,119
2018	20,516	47,391	67,907
2017	20,663	47,993	68,657
2016	20,288	49,126	69,414
2015	20,433	49,100	69,532
2014	20,743	49,211	69,953
2013	20,611	47,762	68,373
2012	21,076	48,195	69,271
2011	20,065	48,133	68,197
2010	19,721	48,537	68,258
10-Yr Average	20,368	48,200	68,568

Source: California Energy Commission, Energy Reports 2019.

In addition to receiving electricity from SCE, the refinery historically generated electricity on-site in a 7.5-megawatt cogeneration unit.

4.10.1.4 Natural Gas

Table 4.10.4 presents the natural gas purchases at the refinery from 2009 to 2012. An existing Southern California Gas Company (SoCalGas) natural gas pipeline and new transmission line would supply natural gas to the refinery for operation of the Project.

Table 4.10.4 Refinery Historical Natural Gas Purchases

Year	2009	2010	2011	2012	Average
Natural Gas Purchases (mmscfd)	5.1	5.9	4.5	3.9	4.9

Note: mmscfd = million standard cubic feet per day.
Source: City of Paramount 2013.

4.10.1.5 Solid/Hazardous Waste

Solid Waste

Permit requirements, capacity, and surrounding land use are three of the dominant factors limiting the operations and life of landfills. Landfills are permitted by the local enforcement agencies with concurrence from California's Department of Resources Recycling and Recovery (CalRecycle). Local agencies establish the maximum amount of solid waste which can be received by a landfill each day and the operational life of a landfill. Landfills are operated by both public and private entities.

There are three primary classes of landfill sites permitted to receive varying severity of waste materials. Class I sites are facilities that can accept hazardous waste as well as municipal solid waste, construction

debris, and yard waste. Class II sites may receive certain designated waste along with municipal solid waste, construction debris, and yard waste. Class III sites can only accept non-hazardous waste, e.g., solid waste construction debris, wood and yard waste, and certain non-hazardous industrial waste.

The landfills and waste-to-energy facilities in Los Angeles County that commonly accept solid wastes are identified in Table 4.10.5. In 2019, waste generated in the City of Paramount was primarily taken to the Southeast Resource Recovery Facility (1,730 tons) and Sunshine Canyon Landfill (3,331 tons).

Table 4.10.5 Los Angeles County Landfills and Waste-to-Energy Facilities

Solid Waste Disposal Facilities	2019 Disposal Quantity (Tons)	Remaining Capacity (Tons)	Remaining Capacity (Years)
Antelope Valley Recycling and Disposal Facility	788,120	12,358,289	22
Calabasas Landfill	690,007	5,599,480	12
Chiquita Canyon Landfill	2,337,186	59,100,258	30
Commerce Refuse-to-Energy Facility	93,419[(2)]	--	--
Lancaster Landfill and Recycling Center	179,834	10,272,269	24
Southeast Resource Recovery Facility	186,127	--	--
Sunshine Canyon Landfill	2,306,608	68,036,429	20

Source: Los Angeles Almanac 2017; Los Angeles County DPW 2019.

Hazardous Waste

Hazardous material, as defined in 40 CFR 261.20 and 22 CCR Article 9, is disposed of in Class I landfills. California has enacted strict legislation for regulating Class I landfills. The California Health and Safety Code requires Class I landfills to be equipped with liners, a leachate collection and removal system, and a ground water monitoring system.

Hazardous waste generated at area facilities, which is not reused on-site, or recycled off-site, is disposed of at a licensed in-state hazardous waste disposal facility. There are three operating hazardous waste disposal facilities in California, but none are located within the Los Angeles County: The Kettleman Hills Hazardous Waste Facility in Kings County, the Buttonwillow Landfill in Kern County, and the Westmorland Chemical Waste Facility in Imperial County.

The Kettleman Hills Hazardous Waste Facility has been in operation for more than 30 years and is located on 1,600 acres in Kings County. The site is operated by Waste Management and is permitted to dispose of or treat and store hazardous waste from all over California. The facility accepts almost all solid, semi-solid, and liquid hazardous waste. However, the Kettleman Hills landfill is not permitted to accept biological agents or infectious wastes, regulated radioactive materials, or compressed gases and explosives.

The Kettleman Hill hazardous waste facility was permitted to increase its capacity by about five million cubic yards in May of 2014 (DTSC, 2019), therefore, the facility has a capacity of about five million cubic yards. Waste Management has also applied to the U.S. EPA to both renew and modify its existing permits to allow for the expansion of the landfill. The expansion would provide another 12–14 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 Resource Conservation and Recovery Act (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 in excess of 200 loads of waste per day. The permitted capacity at the Buttonwillow landfill is in excess of 10 million cubic yards. Clean Harbors is currently receiving waste and expected to continue to receive waste for an additional 70 years (Clean Harbors, 2015).

The Westmorland Chemical Waste Facility has been in operation since 1980 and is located on 640 acres in the city of Westmorland in Imperial County. The site is operated by Clean Harbors Environmental Services and is fully permitted to manage a wide variety of regulated materials including RCRA hazardous waste, Naturally Occurring Radioactive Material (NORM) waste from geothermal operations, Animal and Plant Health Inspection Service (APHIS) soils, and California-regulated waste materials. The facility has a design capacity of five million cubic yards and an annual receiving capacity of 440,000 cubic yards of waste.

Hazardous waste also can be transported to permitted facilities outside of California. The nearest out-of-state landfills are U.S. Ecology, Inc., located in Beatty, Nevada; Laidlaw Environmental Services located in Lake Point, Utah; Envirosafe Services, in Grandview, Idaho; Chemical Waste Management, Inc. in Arlington, Oregon; and Laidlaw Environmental Services in Deer Trail, Colorado.

4.10.1.6 Previous Environmental Review

The Original Renewable Fuels Project analyzed in the December 2013 Final Mitigated Negative Declaration (MND) determined that electricity and natural gas were provided by local utilities and that early coordination with these utility companies would ensure adequate and timely service to the Original Renewable Fuels Project. Both utilities provide service in the area. It was also determined that the existing telephone lines in the surrounding area would be unaffected by the Original Renewable Fuels Project. No new facilities would be needed and there would be no significant adverse impacts on power, natural gas services, or telecommunications systems.

The incremental increase in water demand associated with the Original Renewable Fuels Project was less than the demand when the refinery was in full operation. Therefore, water supply was expected to be available, and no new water supply infrastructure was expected. Potential impacts were determined to be less than significant.

The incremental increase in wastewater discharge from the Original Renewable Fuels Project was within the industrial discharge permit limit for the refinery. The peak effluent generation would not be any greater than that of the existing refinery. As a result, no new off-site facilities were required to treat the projected flows and the impacts were determined to be less than significant.

The Original Renewable Fuels Project contributed to two existing waste streams at the refinery: spent caustic and spent catalyst. The caustic scrubbing system is permitted as a backup for the refinery fuel gas treating system, so the use by the Original Renewable Fuels Project would not require an increase in capacity or generate more spent caustic than the refinery has generated in the past. There would be 650 tons per year of spent caustic sent for recycling; the spent catalyst would be changed out once a year and generate approximately 35 tons of waste that would also be sent for recycling. As a result, the potential impacts on landfills would be less than significant. The Original Renewable Fuels Project's operation was required to adhere to City and County ordinances with respect to waste reduction and recycling. Therefore, no significant adverse impacts related to state and local statutes governing solid waste were anticipated.

The 2013 MND included two mitigation measures for public services:

- The proposed improvements will be subject to review and approval by the Los Angeles County Fire Department to ensure that fire safety and fire prevention measures are incorporated into the project. In addition, the Fire Department will be required to review and approve any evacuation plan as well as the on-site circulation to ensure that emergency vehicles can easily access the refinery's parking area; and
- The Paramount Petroleum security personnel must ensure that all fire lanes remain open during the refinery's operation.

4.10.2 Regulatory Setting

This section summarizes federal, state, and local regulations related to utilities and service systems applicable to the Project.

4.10.2.1 Federal Regulations

Waste

The U.S. EPA is the primary federal agency charged with protecting human health from pollution and with safeguarding the natural environment: air, water, and land. Since 1970, Congress has enacted numerous environmental laws including the RCRA, CERCLA, and TSCA. 40 CFR, Part 258 Subtitle D of RCRA establishes minimum location standards for siting municipal solid waste landfills. Because California laws and regulations governing the approval of solid waste landfills meet the requirements of Subtitle D, the U.S. EPA delegated the enforcement responsibility to the State of California.

Hazardous material, as defined in 40 CFR Part 261.20 and 22 CCR Article 9, is required to be disposed of in Class I landfills. California has enacted strict legislation for regulating Class I landfills. The California Health and Safety Code requires Class I landfills to be equipped with liners, a leachate collection and removal system, and a ground water monitoring system.

RCRA gives the U.S. EPA the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste by "large-quantity generators" (1,000 kilograms/month or more). Under RCRA regulations, hazardous wastes must be tracked from the time of generation to the point of disposal. At a minimum, each generator of hazardous waste must register and obtain a hazardous waste activity identification number. If hazardous wastes are stored for more than 90 days or treated or disposed at a facility, any treatment, storage, or disposal unit must be permitted under RCRA. Additionally, all hazardous waste transporters are required to be permitted and must have an identification number. RCRA allows individual states to develop their own program for the regulation of hazardous waste as long as it is at least as stringent as RCRA. In California, the U.S. EPA has delegated RCRA enforcement to the State of California.

The Hazardous Materials Transportation Act (HMTA) is the federal legislation regulating the transportation of hazardous wastes. The primary regulatory authorities are the U.S. Department of Transportation (DOT), the Federal Highway Administration (FHWA), and the Federal Railroad Administration (FRA). The HMTA requires that carriers report accidental releases of hazardous materials to the Department of Transportation at the earliest practicable moment (49 CFR Subchapter C, Part 171).

4.10.2.2 State Regulations

Water/Wastewater

Environmental Protection Regulations

Regulations governing the environmental protection program of the California Geologic Energy Management Division (CalGEM) are provided for in Section 3106 of Division 3 of the Public Resources Code. The requirements of this subchapter cover aboveground and production facilities including sumps; channels; secondary containment; tank construction, maintenance, and testing; pipelines; disposal of oilfield wastes; maintenance and monitoring of production facilities, safety systems, and equipment; and site restoration.

Waste

California Green Building Standards Code (CCR, Title 24, Part 11 - CALGreen)

CALGreen is California's mandatory green building standards code. The California Building Standards Code has the authority to propose CALGreen standards for nonresidential structures that include, but are not limited to, new buildings or portions of new buildings, additions and alterations, and all occupancies where no other state agency has the authority to adopt green building standards applicable to those occupancies. CALGreen requires that projects recycle and/or salvage for reuse a minimum of 65 percent of the nonhazardous construction and demolition waste in accordance with Section 5.408.1.1, 5.408.1.2 or 5.408.1.1; or meet a local construction and demolition waste management ordinance, whichever is more stringent.

California Integrated Waste Management Act (AB 939)

The California Integrated Waste Management Act of 1989 (Assembly Bill [AB] 939) was enacted to reduce dependence on landfills as the primary means of solid waste disposal and to ensure an effective and coordinated approach to safe management of solid waste generated in California. AB 939 established a hierarchy of waste management practices that include: (1) source reduction; (2) recycling (or reuse) and composting; (3) transformation; and (4) environmentally safe transformation/land disposal. AB 939 required disposal of waste by local jurisdictions be cut by 25 percent by 1995 and by 50 percent by 2000.

AB 939 requires the preparation of a Countywide Integrated Waste Management Plan (CIWMP), including a Siting Element that demonstrates a remaining landfill disposal capacity of at least 15 years to serve all jurisdictions in the county. The Countywide Siting Elements includes a combination of strategies to demonstrate adequate capacity, that may include existing, proposed, and tentative landfills or expansion; increased diversion efforts; and the export of solid waste for disposal. A Source Reduction and Recycling Element (SRE), a Household Hazardous Waste Element, and Facility Element are also required as part of the CIWMP.

California Solid Waste Reuse and Recycling Act (CSWRRA, AB 2176).

In 1991, the California Solid Waste Reuse and Recycling Act (CSWRRA) was enacted to assist local jurisdictions in accomplishing the goals set for in AB 939. AB 2176 requires that any development projects that have submitted an application for a building permit must also include adequate and accessible areas for the collection and loading of recyclable materials.

Title 27, California Code of Regulations

CalRecycle (formerly known as the California Integrated Waste Management Board (CIWMB)) has numerous responsibilities in implementing the federal and state regulations summarized above. CalRecycle is the state agency responsible for permitting, enforcing and monitoring solid waste landfills, transfer stations, material recovery facilities (MRFs), and composting facilities within California. Permitted facilities are issued Solid Waste Facility Permits (SWFPs) by CalRecycle. CalRecycle also certifies and appoints Local Enforcement Agencies (LEAs), county or city agencies which monitor and enforce compliance with the provisions of SWFPs. CalRecycle is also responsible for monitoring implementation of AB 939 by the cities and counties.

Solid Waste Diversion Rule (AB 341)

In 2011, AB 341 (Chesbro), directed CalRecycle to develop and adopt regulations to mandate commercial recycling. In 2012, the final regulation was approved and a policy goal declared that not less than 75 percent of solid waste generated be source reduced, recycled, or composted by the year 2020.

Prohibition on Local Disposal Limits (AB 845)

AB 845 (Ma 2012) prohibits an ordinance enacted by a city or county from otherwise restricting or limiting the importation of solid waste into a privately owned solid waste facility in that city or county based on place of origin.

Organic State Laws (AB 1594 and 1826)

On September 28, 2014, Governor Brown signed two bills into law that are intended to substantially reduce the amount of organic waste that is disposed in California landfills. AB 1594 (Williams 2014) states that for the purposes of complying with the waste diversion mandates of AB 939, beginning January 1, 2020, the use of green waste will be considered disposal and not recycling. A jurisdiction must include information on how it intends to address compliance with the waste diversion mandates of AB 939, beginning August 1, 2018. Jurisdictions which are not able to comply with AB 939 will be required to identify and address barriers to recycling green material, if sufficient capacity at organics waste recycling facilities is not available. AB 1826 (Chesbro 2014) requires jurisdictions to implement an organic waste recycling program for business that would include outreach, education, and monitoring of affected businesses by January 1, 2016.

Conversion Technology (SB 498)

Governor Brown signed into law Senate Bill (SB) 498 (Lara) on September 28, 2014, that requires 50 percent diversion of solid waste, of which 10 percent can come from transformation or biomass conversion. State law formerly limited "biomass conversion" to only the controlled combustion of organic materials, such as wood, lawn, and garden clippings, agricultural waste, leaves, tree pruning, and non-recyclable producing electricity or heat. SB 498 expanded the definition of biomass conversion to include non-combustion thermal conversion technologies. By doing so, SB 498 allows for the cleaner and more efficient non-combustion conversion technologies to be used to convert biomass into fuels and products in addition to heat and/or electricity.

RCRA

Authority for the statewide administration and enforcement of RCRA rests with the California Environmental Protection Agency's (CalEPA) Department of Toxic Substances Control (DTSC). While the

DTSC has primary State responsibility in regulating the generation, transfer, storage, and disposal of hazardous materials, DTSC may further delegate enforcement authority to local jurisdictions. In addition, the DTSC is responsible and/or provides oversight for contamination cleanup and administers state-wide hazardous waste reduction programs. DTSC operates programs to accomplish the following: (1) deal with the aftermath of improper hazardous waste management by overseeing site cleanups; (2) prevent releases of hazardous waste by ensuring that those who generate, handle, transport, store, and dispose of wastes do so properly; and (3) evaluate soil, water, and air samples taken at sites. The DTSC conducts annual inspections of hazardous waste facilities. Other inspections can occur on an as-needed basis.

The Hazardous Waste Control Act (HWCA) created the State hazardous waste management program, which is similar to but more stringent than the federal RCRA program. The act is implemented by regulations contained in Title 26 of the California Code of Regulations (CCR), which describes the following required aspects for the proper management of hazardous waste: identification and classification; generation and transportation; design and permitting of recycling, treatment, storage, and disposal facilities; treatment standards; operation of facilities and staff training; and closure of facilities and liability requirements. These regulations list more than 800 materials that may be hazardous and establish criteria for identifying, packaging, and disposing of such waste. Under the HWCA and Title 26, the generator of hazardous waste must complete a manifest that accompanies the waste from generator to transporter to the ultimate disposal location. Copies of the manifest must be filed with DTSC.

Hazardous Waste Source Reduction and Management Review Act of 1989

The Act requires generators of 12,000 kilograms/year of typical/operational hazardous waste to conduct an evaluation of their waste streams every four years and to select and implement viable source reduction alternatives. This Act does not apply to non-typical hazardous waste (such as asbestos and polychlorinated biphenyls).

4.10.2.3 Local Regulations

City of Paramount General Plan

Public Facilities Element

The Public Facilities Element examines needs for public facilities in Paramount, identifies the existing status of these facilities, and proposes ways in which the facilities may be improved to better relate to the Community's needs. Facilities and services considered in this Element include water, sewage and flood control facilities, schools, libraries, and health care facilities.

Water

The City is served by the City of Paramount Water Department.

- *Public Facilities Element Policy 2.* The City of Paramount will provide water storage and delivery capacity to meet normal usage and fire requirements.

Waste Disposal

There are no active landfill facilities within Paramount. The City presently contracts primarily with a private company for the collection of solid waste in the City. The City is very proactive in meeting its waste diversion requirements as mandated by the State of California. Much of this diversion is realized through

the operation of the Paramount Recycling Facility. The following policies are relevant to solid waste collection:

- *Public Facilities Element Policy 5.* The City of Paramount will maintain economical and responsive solid waste collection and disposal services for its residents;
- *Public Facilities Element Policy 6.* The City of Paramount will require solid waste collection, disposal, and recycling techniques to be undertaken in such a manner so as to reduce noise and other adverse effects; and
- *Public Facilities Element Policy 7*. The City of Paramount will continue to implement its recycling and waste reduction programs as a means to comply with the AB 939 requirements.

Wastewater

The City's sewage lines discharge into the Los Angeles County Sanitation District Number 2 Trunk Facilities and flow to Los Angeles County Sanitation District Treatment Facilities. Wastewater from Paramount is treated at the District's Joint Water Pollution Control Plant. Currently, the treatment plant is not experiencing any capacity problems. The following policies address wastewater treatment and sewage issues.

- *Public Facilities Element Policy 8.* The City of Paramount will provide adequate sewage service to ensure that waste disposal practices are in accordance with policies and procedures of the Sanitation Districts of Los Angeles County.

4.10.3 Significance Thresholds

Appendix G of the California Environmental Quality Act (CEQA) Statute and Guidelines provides the following thresholds for determining the potential environmental impact of a proposed project on utilities and service systems. Would the Project:

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

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

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

d. Generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals; or

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

Section 4.10.4 discusses potential Project impacts in relation to these CEQA Appendix G thresholds.

4.10.4 Project Impacts and Mitigation Measures

4.10.4.1 Expanded Refinery Facilities

The Project would result in an increase in electricity, natural gas, and water use as well as an increase in wastewater and solid waste generation at the refinery over levels evaluated in the 2013 MND.

Impact #	Impact Description	Phase	Impact Classification
US.1	The Project would result in the construction of new or expanded water, wastewater treatment, electric power, and natural gas facilities, the construction of which could cause significant environmental effects. The Project would not result in the construction of expanded stormwater drainage or telecommunications facilities.	Construction or Operation	Class III

Water

Project impacts on water supply are discussed below under impact US.2.

Wastewater

Project impacts on wastewater treatment facilities are discussed below under impact US.3.

Electricity

The overall increase in electricity use associated with the Project modifications is estimated to be 29 MW (29,056.3 kW) which would be an increase over the historical use of between one to two (1–2) MW loads. To supply this additional requirement, power supplied by SCE would be upgraded and enhanced with a new on-site electrical substation, which would include new transformers to feed three new power distribution centers.

Table 4.10.6 Project Estimated Electricity Use (Normal Year)

Unit	Estimated Project Increase in Electricity Use (kW)
Renewable Fuels Unit A	1,640
Renewable Fuels Unit B	5,796
Pretreat Unit	4,214
Hydrogen Generation Unit	7,700
Propane Recovery Unit	2,120
Amine/Amine Regeneration	410
H2S Recovery Unit	825
Sour Water Stripper	150
New Wastewater Treatment Equipment	800
Tank Farm and Rail/Truck Unloading and Loading Racks	1,812
Support Utilities	3,590
Total Increase in Electricity Use:	**29,056**

Source: Applicant 2021.

As part of the Project modifications, the Hydrogen Generation Unit is expected to provide approximately 4 megawatts per hour (MWh). The remainder of the electricity is expected to be provided by SCE (29 MW or approximately 696 MW-hrs per day or 250 GW-hrs per year). This can be compared to the electricity use in Los Angeles County of 68,568 GW-hrs/year. Therefore, the total increase in electricity associated

with the Project modifications would be about 0.36 percent of the overall electricity use in Los Angeles County.

Although the Project would result in an increase in electricity use and the addition of electrical facilities at the refinery, SCE has indicated that supplying the additional electricity is within their ability to provide. Therefore, the increase in electricity associated with the Project modifications would be **less than significant (Class III).**

Natural Gas

Natural gas demand for the Project is expected to increase over previous use (see Table 4.10.4), primarily because it would be used as a raw material for the new Hydrogen Generation Unit. An estimated use of 28 million standard cubic feet per day of natural gas is expected to be required for the Project. The existing SoCalGas natural gas pipeline would be used to supply natural gas to the fuel gas system for the process units, boilers, flares, and incinerators. The new Hydrogen Generation Unit would require a separate supply pipeline. Under the Project, a new connection to a SoCalGas transmission line would be made to provide natural gas that would feed and fuel the Hydrogen Generation Unit.

The existing refinery fuel gas system includes two mix drums that receive fuel gas from the fuel gas system with natural gas from SoCalGas supplementing as needed. Similarly, under the Project, all renewable fuel gas remaining after propane recovery would be consumed by the process units, with natural gas supplementing the fuel gas mix drums as needed.

The potential pipeline route provided by SoCalGas to the refinery would be approximately 3.7 miles of new pipeline that would extend north from Lakewood Boulevard to Somerset Boulevard and enter the refinery from the east on Somerset Boulevard (see Figure 2-5). The new pipeline would require the installation of safety blowdown equipment at one location along the designated route.

Natural gas is delivered to the existing refinery by SoCalGas upon demand and would continue to do so in the future. The additional use of natural gas would assist in producing additional quantities of renewable fuels that meet the Low Carbon Fuel Standard. Early coordination with SoCalGas would ensure adequate and timely service to the Project.

Construction of the natural gas pipeline is expected to occur during the time that the Hydrogen Generation Unit is being constructed. Ministerial building and grading permits for the Project would be required from the City of Paramount and cities through which the new natural gas pipeline would be installed to assure that the Project complies with the California Building Code. Right-of-way permits are also expected to be required from local jurisdictions for the construction of the natural gas pipeline which may include Caltrans and the Cities of Paramount, Bellflower, Lakewood, and Long Beach. Natural gas impacts associated with the Project modifications would be **less than significant (Class III),** with compliance with required permits.

Telecommunications

The existing refinery currently has communication systems in place, including telephone and internet systems. The Project would not result in new or expanded telecommunication systems. Therefore, Project impacts on telecommunications would be **less than significant (Class III).**

4.10.4.2 Project Water Supply and Demand

Impact #	Impact Description	Phase	Impact Classification
US.2	The Project would not have sufficient water supplies available to serve the Project and reasonably foreseeable future development during normal, dry, and multiple dry years.	Operation	Class III

The Project modifications include the construction of several new units that would require additional water including the Pretreat Unit, and other units would require additional steam and cooling tower water. The estimated water use for the Project is outlined in Table 4.10.7.

Table 4.10.7 Estimated Water Use Following Project Completion

Water Use	Refinery Water Use
Potable Water (gpm)	200
Water for Steam (gpm)	576
Cooling Tower Water (gpm)	670
Water for Pretreat Unit (gpm)	108
Total Refinery Water Use (gpm)	1,554
Total Refinery Water Use (gallons per day)	2,237,760
Total Refinery Water Use (acre-feet/year)	2,506.6

Note: gpm = gallons per minute
Source: Applicant 2021.

Under CEQA Section 15155 "Water Supply Analysis; City or County Consultation with Water Agencies," any project which will demand in excess of, or equivalent to, the amount of water required by a 500 dwelling unit project will be classified as a "Water-Demand Project" and will necessitate the development of a Water Demand Assessment as described in Water Code Sections 10910 through 10915. The estimated water demand for 500 dwelling units is roughly 250,000 gallons per day. The projected demand for the refinery following completion of the Project, based on the rate shown in Table 4.10.7, would be 2,237,760 gallons per day (or 2,506.6 AFY). The Project is expected to result in a substantial increase in water demand over the previously evaluated incremental increase associated with the Project (23,760 gallons per day plus the existing refinery operations of 545,760 gallons per day for a total refinery water demand of 569,520 gallons per day). Therefore, the Project would exceed the CEQA threshold establishing the Project as a Water-Demand Project and, therefore, requiring the preparation of a Water Demand Assessment.

The Water Code places the responsibility for development of the Water Demand Assessment on the water supplier. In the case of the Project, the City of Paramount Water Department is ultimately responsible for the completion and viability of the assessment and the resulting Capital Outlay Plan. To meet the requirements of CEQA Section 15155, a Water Demand Assessment has been prepared for the Project (see Appendix G).

The City prepared an Urban Water Management Plan (UWMP) in 2015 in accordance with the California Water Code, §10610-10656 and §10608. However, the 2015 UWMP did not account for the water demand associated with the Project. Therefore, a Water Demand Assessment was prepared to fulfill the Water Code requirement, by detailing whether the City's total projected water supplies available during normal, single dry and multiple dry water years over a 20-year projection will meet the projected water demand. The water supply available for the 20-year projection was compared against the 20-year water demand projection, which included the refinery's water demand.

The City obtains potable water from two sources: directly pumped groundwater and imported water purchased through the CBMWD, who in turn receives the water through MWD as part of the State Water Project (SWP). In 2015, CBMWD (via the SWP) delivered 186 MG (572 AF) of water to the City for distribution. In addition to distributing potable water, the City also has a recycled water system that provided 110 MG (338 AF) of recycled water in 2015.

The Water Demand Assessment compared the total water supply and demand in Paramount for normal, single dry, and multiple dry years. As shown in Table 4.10.8, the total water supply available to the City, as estimated based on groundwater pumping and as provided in the MWD 2015 Urban Water Management Plan, is less than the total demand for all projected years. Table 4.10.8 shows the predicted water supply and demand in the City of Paramount for normal rainfall years.

Table 4.10.8 City of Paramount Water Supply and Demand Comparison (Normal Year) (1)

	2020	2025	2030	2035
Supply totals	2,578	2,587	2,587	2,587
Demand Totals (2)	3,393	3,455	3,509	3,516
Difference	-815	-868	-922	-929

(1) See Appendix G for details and for information on single dry and multiple dry years.
(2) Includes modifications from the Project.
Note: Units are in million gallons (MG).
Source: Applicant 2021.

As shown in the Water Demand Assessment (see Appendix G), the total water supply is insufficient to meet the total water demands during all projected normal, single dry, and multiple dry years, which includes the Project's projected water demand. The current allotment for groundwater pumping rights from the Central Basin is insufficient to meet the total water demand.

In 2008, the CBMWD introduced a Recycled Water Master Plan which identified areas for expansion for the entire CBMWD recycled water system. In total, the plan identified an additional 1,807 million gallons (55,479 AFY) of potential for recycled water use within the service areas of the CBMWD, San Gabriel Valley Municipal Water District, and the Upper San Gabriel Valley Municipal Water District. Of this potential additional water use, 1,147 AFY was identified as demand that could be supplied through the City's recycled water system. The program was implemented, and the recycled water system was expanded, such that the available recycled water is being consumed.

The CBMWD has reported to the City of Paramount that there is adequate pressure and sufficient recycled water supply contracted and available through the Los Angeles County Sanitation District and the Los Coyotes Water Reclamation Plant (WRP) to supply additional water to the Project. The Los Coyotes WRP produces approximately 6,000 AFY or 5.3 mgd that have previously been put to beneficial use. Sufficient capacity remains to meet the potential increase in water associated with the Project of approximately 2.0 mgd. Table 4.10.9 shows the Project's expected use of reclaimed water.

Table 4.10.9 Estimated Project Reclaimed Water Use

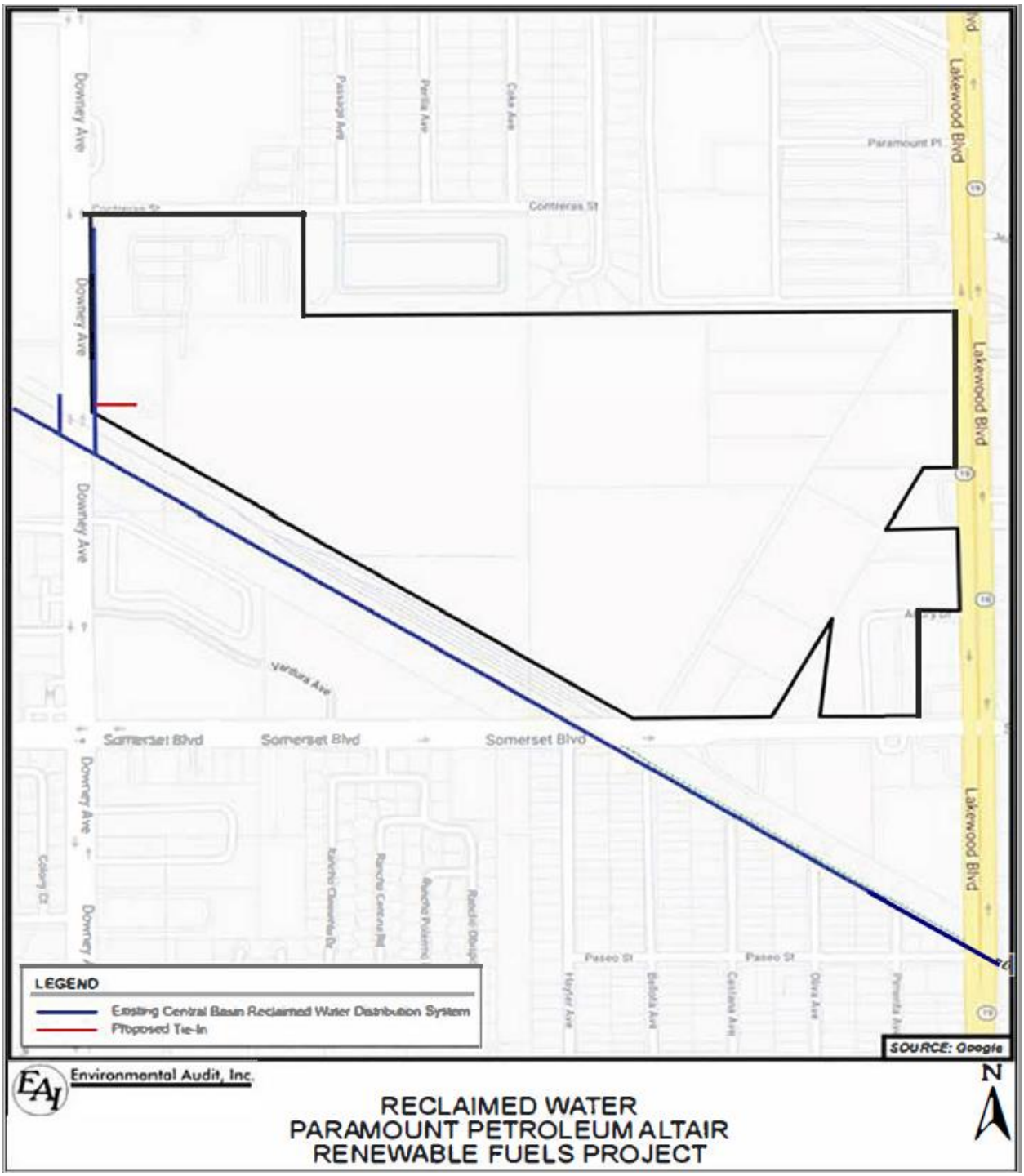
Water Use	Potable Water	Reclaimed Water
Potable Water (gpm)	200	0
Water for Steam (gpm)	0	576
Cooling Tower Water (gpm)	0	670
Water for Pretreat Unit (gpm)	0	108
Total Refinery Water Use (gpm)	200	1,354
Total Refinery Water Use (gallons per day)	288,000	1,949,760
Total Refinery Water Use (acre-feet/year)	322.6	2,184

Source: Applicant 2021.

The use of reclaimed water is expected to require the addition of a service line sufficient for delivery of Project water demands. A tie-in to the reclaimed water distribution system is readily available along the southwest perimeter of the refinery (near Downey Avenue and Somerset Boulevard; see Figure 4.10-1), so minimal construction would be required.

With the use of recycled water, the Project modifications are expected to have sufficient water supplies available to serve the Project in the reasonably foreseeable future during normal, dry, and multiple dry years. Further, Project modifications are not expected to result in new or expanded water treatment services (other than the addition of a service line) or any other significant impacts to water demand. The Water Demand Assessment shows that the City of Paramount has sufficient water supplies to provide the estimated 288,000 gpd of potable water. In addition, the CBMWD has sufficient reclaimed water available to provide the increased demand for reclaimed water of approximately 2 mgd (see Appendix G). Therefore, the addition of a service line for the delivery of reclaimed water will result in **less than significant (Class III)** impacts to water supplies.

Figure 4.10-1 Location of Reclaimed Water Tie-in



Source: Applicant 2021.

4.10.4.3 Wastewater Treatment

Impact #	Impact Description	Phase	Impact Classification
US.3	The Project would 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.	Operation	Class III

The Project includes the construction of several new units that would generate additional wastewater including the Pretreat Unit, wastewater treatment facilities to support the Pretreat Unit, a new Sour Water Stripper, and a new Hydrogen Generation Unit. Under the Project, the Pretreat Unit for the renewable fuel process would be constructed and would generate a wastewater stream with a higher biological oxygen demand than the current operation. For this reason, additional wastewater treatment facilities would be installed to augment the current wastewater treatment system. This may result in potentially significant environmental impacts.

The additional facilities would consist of solids and oil/aqueous phase separation with a gravity separator, and a dissolved gas flotation unit. Additional aerobic treatment would be installed, if needed. Both the gas flotation unit and biotreatment system would be enclosed and blanketed with renewable fuel gas or nitrogen to prevent emissions to the atmosphere or release of odors.

Separated solids from this unit would be collected and disposed at approved off-site disposal facilities. Separated renewable oils would be recycled to the processes as much as practical. Incompatible oily wastes would be disposed at approved off-site disposal facilities. Treated wastewater would be discharged to the LACSD industrial sewer.

In addition, the renewable fuels production process currently generates water that contains hydrogen sulfide and ammonia (sour water) that is treated by "stripping" the hydrogen sulfide and ammonia out of the water with steam. With additional production from the Project, sour water effluent would also increase. As part of the Project, additional sour water and ammonia recovery facilities (i.e., a sour water stripper) would be installed to handle this increased flow. Treated water would be discharged to the wastewater treatment system. Recovered aqueous ammonia would be used in on-site heater SCRs to reduce NOx pollutants, with any potential excess aqueous ammonia being sold.

All of these facilities would generate additional wastewater that would require treatment in the existing wastewater treatment plant (see Table 4.10.10). The estimated increase in wastewater discharge associated with the Project modifications is approximately 850,000 gallons per day (590 gpm), which is well above the wastewater discharge evaluated in the December 2013 Final MND.

Therefore, the Project modifications would increase the refinery's wastewater discharged, require additional wastewater treatment facilities, and require modifications to the wastewater discharge permit.

Table 4.10.10 Estimated Wastewater Discharge Following Project Completion

Source of Wastewater	Estimated Wastewater Discharge
Cooling Tower Blowdown (gpm)	191
Reject Reclaim Wastewater (gpm)	114
Stripped Sour Wastewater (gpm)	100
Pretreat Unit Wastewater (gpm)	130
Rail Car Condensate	42
Groundwater Recovery	10

Source of Wastewater	Estimated Wastewater Discharge
Total Wastewater Discharge (gpm)	587
Total Wastewater Discharge (gallons per day)	845,280

Source: Applicant 2021.

While the refinery has existing wastewater treatment equipment, the equipment would be modified to treat an increase in wastewater generated by the Project modifications. The installation of new treatment facilities must be reviewed and approved by the LACSD as part of modifications to the existing Industrial Wastewater Discharge Permit. The permit review includes review of the new equipment to assure it would provide sufficient treatment of the wastewater and be in compliance with wastewater discharge standards, as well as water quality standards. In addition, the permit review confirms that the LACSD sewer systems have sufficient capacity to transport and treat the additional wastewater. Therefore, the review and approval of the Industrial Wastewater Discharge Permit would be expected to provide sufficient assurance that the utility has sufficient resources to treat the wastewater, that wastewater treatment standards would be achieved, and that wastewater would be discharged within the permitted limitations of the refinery.

Assuming compliance with all applicable permit conditions, Project impacts on wastewater would be **less than significant (Class III)**.

4.10.4.4 Project Solid Waste Generation

Impact #	Impact Description	Phase	Impact Classification
US.4	The Project would not 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.	Construction or Operation	Class III

The modifications to the Project could result in an increase in solid and hazardous waste associated with contaminated soil, catalyst, caustic, and Pretreat solids. The Project modifications would result in an increase in solid and hazardous waste over what was evaluated in the December 2013 Final MND.

Construction Related Waste

Some structures associated with the existing refinery are expected to require demolition, e.g., portions of the Cogeneration Unit, existing loading racks, and storage tanks. Solid waste associated with demolition of these types of structures would largely generate metal debris that is expected to be recycled for metal content and would be expected to generate minimal solid waste.

Excavation and grading activities during construction could generate solid waste. Construction activities are expected to be required in portions of the refinery where historical soil contamination exists. Grading and recompacting activities would be required to install the concrete foundations for the new Pretreat and Hydrogen Generation Units, for example. The excavated soil would be reused on-site to the extent practicable, with any unusable soil appropriately classified and treated or disposed of in accordance with applicable regulations.

Where appropriate, the soil would be recycled if it is considered or classified as non-hazardous waste, or it can be disposed of at a landfill that accepts non-hazardous waste. Otherwise, the material would need to be disposed of at a hazardous waste facility (potential soil contamination is addressed in Section 4.4, Hazardous Materials and Risk of Upset). Most of the contaminated soils encountered during prior construction projects at the refinery were determined through testing to be nonhazardous wastes. The

refinery would determine an appropriate off-site processing method for any excavated soil that cannot be reused on-site.

Construction-related waste from demolition of refinery structures is expected to be recycled for metal content and not disposed of in landfills. Construction-related waste such as shipping packing materials, depending on the classification of the waste, would need to be disposed of at a Class II (industrial) or Class III (municipal) landfill. A Class II landfill can handle wastes that exhibit a level of contamination not considered hazardous, but that are required by the State of California to be managed for disposal to a permitted Class II landfill. For this reason, Class II landfills are specially designed with liners to reduce the risks of groundwater contamination from industrial wastes, also known as California regulated waste. Similarly, a Class III landfill can handle non-hazardous or municipal waste. Municipal waste is typically generated through day-to-day activities and does not present the hazardous characteristics of hazardous, industrial, or radioactive wastes.

There are active Class III landfills in Southern California, many of which have liners that can handle both Class II and Class III wastes. Construction wastes would be recycled or would be expected to be disposed at Sunshine Canyon landfill which has a remaining capacity of over 68 million tons (see Table 4.10.5), with sufficient capacity to operate for 20 years.

There are no hazardous waste landfills within the Southern California area. Construction (excavation) activities may encounter soil that through testing is determined to be a hazardous waste. If hazardous waste soil is encountered, it must be disposed of at a permitted hazardous waste disposal facility. One such facility in California is the Clean Harbors facility in Buttonwillow (Kern County) which has sufficient capacity (over 10 million cubic yards) to receive wastes for an estimated 70 years. Hazardous waste also can be transported to permitted facilities outside of California. The nearest out-of-state landfills are U.S. Ecology, Inc., located in Beatty, Nevada, and USPCI, Inc., in Murray, Utah.

The amount of solid or hazardous waste that may be generated during construction is expected to be well within the available landfill waste disposal capacity. A large volume of contaminated soil is not expected to be generated from construction activities. For these reasons, the construction impacts of the Project on solid and hazardous waste disposal facilities are expected to be less than significant.

Operational Activities

The Project is expected to result in an increase in waste associated with the use and regeneration of catalysts, use of carbon, and the new Pretreat Unit. The new Pretreat Unit is a commercial process developed specifically for the animal fat and vegetable oil industry. The overall process consists of a feed acid degumming section followed by continuous bleaching and filtration to yield a treated oil stream that is suitable feedstock for the Renewable Fuels Units. The Pretreat process would include an oil recovery unit to recover oil from the filtration process to minimize waste generation. The wastes that are expected to be generated by the Project are identified in Table 4.10.11.

The new and modified equipment associated with the Project would perform similar functions as the existing equipment and would use the same types of materials necessary to process renewable feedstocks into refined products. The Project includes modifications to Unit A and the construction of Unit B and the Hydrogen Generation Unit, and all of these units require the use of catalyst. Therefore, the Project would result in an increase in the use of catalyst and is expected to generate increased amounts of spent catalyst, as catalyst needs to be changed every one to three years. The catalysts contain rare metals, e.g., vanadium, that are typically recycled. Therefore, the catalysts are expected to be recycled for metal content because of the economic value.

The Project is expected to generate about eight tons of spent carbon each year. Spent carbon is sent back to the manufacturer for regeneration and is generally not disposed of in landfills. This waste stream is expected to continue to be recycled.

As part of the process, the Pretreat Unit is expected to generate approximately 106,000 pounds of spent clay per day or approximately 19,300 tons per year of non-hazardous solid wastes, of which approximately 4,825 tons per year would be recovered in an oil recovery unit, reducing the waste generated to 14,475 tons per year. By removing the oil, the wastes are expected to be a clay material that requires disposal at a Class II (industrial) or Class III (municipal) landfill. The waste would most likely be disposed at Sunshine Canyon landfill which has a remaining capacity of over 68 million tons, with sufficient capacity to operate for 20 years (see Table 4.10.5).

Table 4.10.11 Project Estimated Waste Generation

Waste Source	Type of Waste	Maximum Estimated Waste Generation (tons/year)	Average Estimated Waste Generation (tons/year)
Renewable Fuels Unit A	Spent Catalyst	192	112.4
Renewable Fuels Unit B Spent Catalyst	Spent Catalyst	583	345
Pretreat Unit	Spent Clay	19,300	19,300
Pretreat Unit	Oil Recovery (1)	(4,825)	(4,825)
Hydrogen Generation Unit	Spent Catalyst	234	73.4
Tank cleaning sludges	Tank Bottoms	44	14.2
Amine/Amine Regeneration	Spent Carbon	6.25	6.25
Hydrogen Sulfide Recovery Unit	Spent Carbon	2	2
New and existing Wastewater Treatment Equipment and tank cleaning	Wastewater and tank bottom sludges	225	225
SCR	Spent catalyst	9	2
Total Estimated Waste Generation:		**15,770**	**15,256**

(1) Waste reductions expected due to the installation of oil recovery to recovery oil and minimize waste generation.
Source: Applicant 2021.

The operation of storage tanks does not routinely generate non-hazardous or hazardous wastes. The Project has the potential to generate additional sludge during tank cleaning operations which occur once every 10 to 20 years. Periodically, for maintenance, storage tanks are currently emptied and cleaned, resulting in a sludge that generally requires treatment to recover useful product (oil), etc., and disposal (e.g., disposal at a hazardous waste or nonhazardous waste landfill, depending on the concentration of various constituents). The Project includes changes to the material stored in existing tanks. The Project could generate additional amounts of sludge wastes associated with periodic tank cleaning operations. The daily volume of waste generated during the periodic cleaning of the storage tanks is expected to be about the same as current operations because no change in the method for tank cleaning is proposed and no more than one storage tank would be cleaned at any time. It takes several days to several weeks to clean storage tanks, depending on the size and the material stored in the tanks. Reusable sludge, i.e., from the feed tanks may be returned to the pretreat system and be used as feedstock (i.e., recycled on-site). Other waste would be categorized when generated and disposed of off-site as needed.

While operation of the Project may generate solid or hazardous waste streams, those waste streams are not expected to exceed the disposal capacity of any landfills where the waste would likely be sent, or the

waste would be reused or recycled. Therefore, operation of the Project is not expected to generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure. The Project modifications would not interfere with the refinery's ability to comply with existing federal, state, and local regulations for solid and hazardous waste handling and disposal, or otherwise impair the attainment of solid waste reduction goals. Therefore, significant solid and hazardous waste impacts are not expected from construction and operation of the Project. Potential impacts for US.4 would be **less than significant (Class III).**

4.10.4.5 Compliance with Solid Waste Regulations

Impact #	Impact Description	Phase	Impact Classification
US.5	The Project would comply with federal, state, and local management and reduction statues and regulations related to solid waste.	Construction or Operation	Class III

While the Project modifications are expected to increase the amount of solid and hazardous waste generated by the refinery, the refinery would be required to adhere to federal, state, and local regulations with respect to waste handling, treatment, documentation, waste reduction and recycling, transportation, and ultimate disposal. As discussed under impact US.4, the Project modifications would not interfere with the refinery's ability to comply with existing federal, state, and local regulations for solid and hazardous waste handling and disposal. As a result, no significant adverse impacts related to state and local statutes governing solid waste are anticipated. Potential impacts for US.5 would be **less than significant (Class III).**

4.10.5 Cumulative Effects

As discussed in Section 3.1 of this SEIR, if the Project would not result in a Project-specific impact, then the Project could not contribute to any existing adverse cumulative impact that might exist. However, if a Project-specific impact was found to be significant and unavoidable in a specific issue area, then in most cases this would mean that the cumulative impacts would be significant and unavoidable. The Project would result in less than significant impacts to water supply, solid waste management and infrastructure, and wastewater treatment, stormwater drainage, electric power, natural gas, and telecommunications facilities. Therefore, the Project would not result in cumulatively significant impacts related to utilities and service systems in the Project area.

4.10.6 References

California Energy Commission. 2019. Energy Consumption by County. Available at https://ecdms.energy.ca.gov/elecbycounty.aspx

City of Paramount. 2007. Final Paramount General Plan. Adopted August 7, 2007. Available at: http://www.paramountcity.com/home/showdocument?id=2538

City of Paramount. 2013. Paramount Petroleum Alt-Air Renewable Fuels Project. Mitigated Negative Declaration and Initial Study, Conditional Use Permit (CUP) 757 and Zone Variance (ZV) 401. Adopted December 30, 2013 (PARA 059).

DTSC. 2019. DTSC Envirostor data base on Kettleman Hills Hazardous Waste Facility. https://www.envirostor.dtsc.ca.gov/public/hwmp_profile_report?global_id=CAT000646117&starttab= (accessed June 10, 2019).

Los Angeles Almanac. 2017. Solid Waste Disposal Los Angeles County, Active Solid Waste Disposal Facilities (Including Landfills). Available at: http://www.laalmanac.com/environment/ev04.php

Los Angeles County Department of Public Works. 2019. Disposal Reports. Available at: https://dpw.lacounty.gov/epd/swims/OnlineServices/reports.aspx

World Energy. 2021. Water Demand Assessment, World Energy Renewable Fuel Conversion. Prepared by Risk Management Professionals, Inc.; 2021.

4.11 Environmental Justice

The environmental justice section evaluates the ways in which the Project may disproportionately impact low-income and/or minority populations in the Project area.

Changes from Draft SEIR

Since the Draft SEIR was released in December 2021, this section has the following changes incorporated into the Final SEIR:

- Additional information on ongoing efforts by the City of Paramount.

4.11.1 Environmental Setting

4.11.1.1 Approach

This section analyzes the distributional patterns of high-minority and low-income populations on a regional basis and characterizes the distribution of such populations in the vicinity of the Project and within the region. This analysis focuses on whether the Project has the potential to disproportionately affect high-minority population(s) or low-income communities and thus create an adverse environmental justice impact. For the purposes of this analysis and as applied to tables and figures within this section, minority, minority population, low-income, low-income population, and disproportionately high and adverse effects are defined as follows:

Environmental justice guidance from the Council on Environmental Quality (CEQ) defines "minority persons" as "individuals who are members of the following population groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black (not of Hispanic origin); or Hispanic." Hispanic (or Latino) refers to an ethnicity, whereas American Indian, Alaskan Native, Asian, Pacific Islander, Black/African American and White, refer to racial categories. For this analysis, "minority" refers to people who are Hispanic/Latino of any race, as well as those who are non-Hispanic/Latino of a race other than White.

Minority Population means any readily identifiable groups of minority persons who live in geographic proximity, and if circumstances warrant, geographically dispersed/transient persons (such as migrant workers or Native Americans) who will be similarly affected by a proposed program, policy, or activity.

Low-Income means a household income at or below the United States Department of Health and Human Services poverty guidelines. CEQ environmental justice guidance also suggests that low-income populations be identified using the national poverty thresholds from the U.S. Census Bureau. This analysis uses data from the U.S. Census Bureau to identify the low-income population in the Project area.

Low-Income Population means any readily identifiable group of low-income persons who live in geographic proximity, and, if circumstances warrant, geographically dispersed/transient persons (such as migrant workers or Native Americans) who would be similarly affected by a proposed program, policy, or activity.

Disproportionately High and Adverse Effect on Minority and Low-Income Populations means an adverse effect that (1) is predominately borne by a minority population and/or a low-income population or (2) will be suffered by the minority population and/or low-income population and is appreciably more severe or greater in magnitude than the adverse effect that will be suffered by the non-minority population and/or non-low-income population.

4.11.1.2 Original Renewable Fuels Project

The Original Renewable Fuels Project allowed the Paramount Refinery (refinery) to convert up to 3,500 barrels per day (BPD) of non-edible vegetable oils and beef tallow into renewable fuels, including aviation (jet), diesel, naphtha (gasoline), and fuel gas. The Original Renewable Fuels Project involved the modification of certain existing refinery equipment, including the addition of new vessels and reactors, while continuing to operate the remainder of the 50,000 BPD crude oil refinery.

4.11.1.3 Project Area

The Project is being proposed to complete the refinery's conversion to manufacturing renewable fuels. Existing refinery equipment will be used to the extent possible and new equipment will be brought in as needed. Some existing refinery equipment will be eliminated in areas where new equipment will be installed. Several upgrades are being included that will improve efficiencies and reduce emissions throughout the operation. Upon completion, the renewable fuels units will process approximately 25,000 BPD and the processing of crude oil will be eliminated.

Because the City of Bellflower borders the refinery property to the east, both Paramount and Bellflower populations are considered in this section. According to the Southern California Association of Governments (SCAG), the cities of Paramount and Bellflower in 2017 had a combined population of 133,682; 39,626 housing units; and employment for 39,104. The combined population was 1.3 percent of Los Angeles County. Figures 4.11-1 and 4.11-2 provides a statistical summary of race population, housing, and income levels of Paramount and Bellflower as compared with Los Angeles County and the SCAG region. The SCAG region encompasses six counties (Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura) and 191 cities in an area covering more than 38,000 square miles.

U.S. Census Bureau

The U.S. Census Bureau provides data on poverty levels for California cities as compared to Los Angeles County and the State of California as a whole. Los Angeles County is used as a comparison population because it is considered representative of the general population that could be affected by the Project. Table 4.11.1 below provides a summary of the data for the years 2012 through 2019 and shows the percentage of persons living below the poverty level in the two cities as 13.2 percent as compared to 13.4 percent for Los Angeles County. State of California percentage of persons living below the poverty level was 11.8 percent for the same timeframe.

Table 4.11.1 Combined Statistical Summary for Paramount and Bellflower

Category	Paramount	Bellflower	Combined	Los Angeles County
Population	56,000	77,682	133,682	10,283,279
Minority %	93.4%	81.3%	86.4%	70.8%
Total Minority	52,304	63,155	115,459	7,280,562
Below Poverty Level	16.7%	10.7%	13.2%	13.4%
Total Poverty	9,352	8,312	17,664	1,377,959

Note: Sources listed in Figures 4.11-1 and 4.11-2.

The census block groups displayed in Figure 4.11-3 contain the census blocks in the Project vicinity that are within the hazard impact zones shown on Figure 4.4-5 as well as the census block groups located along the route for the Project's proposed natural gas pipeline (Figure 2-5). The hazards modeling (see Section 4.4, Hazards) indicated that Project hazard zones extend outside of the refinery boundary, and the Project would result in slightly smaller hazard zones than those associated with the baseline operations.

Table 4.11.2 presents data by census block group for minority and low-income populations in the Project vicinity and along the route for the Project's proposed natural gas pipeline. The census block groups analyzed for the Project have a lower minority percentage than Los Angeles County as a whole. However, there is a higher percentage of the population living below the poverty level in the Project area than in Los Angeles County as a whole.

Table 4.11.2 Refinery Area Statistical Summary – by Census Block Group

Category	Tract 553502 Block Group 1	Tract 553502 Block Group 2	Tract 553901 Block Group 2	Tract 5533 Block Group 2	Natural Gas Pipeline Block Groups–Combined	Natural Gas Pipeline Block Groups–Max Level	Los Angeles County
Population[1]	1,759	2,307	1,641	967	31,518	2,964	10,283,279
Minority %[2]	64.5%	52.7%	65.0%	58.2%	52.7% avg.	67.9%	70.8%
Total Minority	1,221	1,357	1,209	705	17,592	1,924	7,280,562
Below Poverty Level[3]	20.0%%	9.28%%	15.7%%	12.1%	7.42% avg.	25.0%	13.4%
Total Poverty	341	214	258	117	3,019	720	1,377,959

Notes: (1) Population estimates from 2019 American Community Survey 5-year estimates; Table ID: B01003.
(2) Population estimates from 2010 Decennial Census: Race (Total Races Tallied). Table ID: P6.
(3) Population estimates from 2019 American Community Survey: 5-year estimates; Table ID: B17021.
Source: U.S. Census Bureau.

CalEnviroScreen

The Office of Environmental Health Hazard Assessment (OEHHA) developed CalEnviroScreen as part of the California Environmental Protection Agency's (CalEPA) environmental justice program. CalEnviroScreen is a screening tool that evaluates the burden of pollution from multiple sources in California communities while accounting for potential vulnerability to the adverse effects of pollution. CalEnviroScreen ranks census tracts in California based on potential exposures to pollutants, adverse environmental conditions, socioeconomic factors, and prevalence of certain health conditions. Data used in the CalEnviroScreen model come from national and state sources. An area with a high score is one with a more vulnerable population that experiences a higher pollution burden. The 75—100th percentiles (top 25 percent) represent "disadvantaged communities" under Senate Bill (SB) 535.

Overall CalEnviroScreen scores are calculated from the scores for two groups of indicators: Pollution Burden and Population Characteristics. Pollution Burden Indicators include diesel particulate matter (DPM), toxic releases from facilities, hazardous waste generators, and impaired water bodies. Population Characteristics Indicators include biological traits, health status (such as asthma), and socioeconomic factors such as educational attainment, poverty, and linguistic isolation.

According to CalEnviroScreen 4.0, the Project's census tract (see Figure 4.11-5) is in the 88th percentile for pollution burden and the 71st percentile for population vulnerability, with an overall CalEnviroScreen score in the 85th percentile. This indicates that residents in the Project's census tract experience a pollution burden and population vulnerability worse than 85 percent of the State. The Project's census tract ranks high for particulate matter (PM) 2.5 (76th), toxic releases (79th), groundwater threats (79th), hazardous waste (77th), solid waste (81st), cardiovascular disease (75th), education (80th), and linguistic isolation (85th). Census Tract 554302, located along the natural gas pipeline route on the west side of Lakewood Blvd., (Figure 4.11-5), has the highest CalEnviroScreen 4.0 score of all census tracts included for analysis.

Census Tract 554302 is in the 86th percentile for pollution burden and the 82nd percentile for population vulnerability, with an overall CalEnviroScreen score in the 89th percentile. Census Tract 554302 ranks high for DPM (97th), toxic releases (83rd), traffic (94th), lead from housing (77th), groundwater threats (84th), hazardous waste (85th), low birth weight (88th), and housing burden (95th).

Figure 4.11-1 City of Paramount Statistical Summaries

2018 STATISTICAL SUMMARY

Category	Paramount	Los Angeles County	Paramount Relative to Los Angeles County*	SCAG Region
2018 Total Population	56,000	10,283,729	[0.5%]	19,145,421
2018 Population Density (Persons per Square Mile)	11,839	2,518	9,321	494
2018 Median Age (Years)	30.8	36.0	-5.2	35.8
2018 Hispanic	81.5%	48.4%	33.1%	46.5%
2018 Non-Hispanic White	4.9%	26.5%	-21.6%	31.4%
2018 Non-Hispanic Asian	2.9%	14.3%	-11.4%	12.8%
2018 Non-Hispanic Black	8.7%	7.9%	0.8%	6.3%
2018 Non-Hispanic American Indian or Alaska Native	0.3%	0.2%	0.1%	0.2%
2018 All Other Non-Hispanic	1.7%	2.7%	-1.0%	2.8%
2018 Number of Households	14,114	3,338,658	[0.4%]	6,132,938
2018 Average Household Size	3.9	3.0	0.9	3.1
2018 Median Household Income	$49,064	$61,015	-$11,951	$64,989
2018 Number of Housing Units	14,650	3,546,863	[0.4%]	6,629,879
2018 Homeownership Rate	38.9%	52.4%	-13.5%	52.4%
2018 Median Existing Home Sales Price	$355,000	$597,500	-$242,500	$561,000
2017 - 2018 Median Home Sales Price Change	7.6%	6.7%	0.9%	6.5%
2018 Drive Alone to Work	76.4%	73.7%	2.7%	75.8%
2018 Mean Travel Time to Work (minutes)	29.0	30.9	-1.9	30.2
2017 Number of Jobs	21,495	4,767,204	[0.5%]	8,465,304
2016 - 2017 Total Jobs Change	76	23,801	[0.3%]	76,197
2017 Average Salary per Job	$48,287	$66,037	-$17,750	$60,956
2018 K-12 Public School Student Enrollment	13,380	1,482,258	[0.9%]	2,975,283

Sources: U.S. Census American Community Survey, 2017; Nielsen Co.; California Department of Finance E-5, May 2018; CoreLogic/DataQuick; California Department of Education; and SCAG

* Numbers with [ ] represent Paramount's share of Los Angeles County. The unbracketed numbers represent the difference between Paramount and Los Angeles County.

Mapped jurisdictional boundaries are as of July 1, 2016 and are for visual purposes only. Report data, however, are updated according to their respective sources.

Southern California Association of Governments

Figure 4.11-2 City of Bellflower Statistical Summaries

2018 STATISTICAL SUMMARY

Category	Bellflower	Los Angeles County	Bellflower Relative to Los Angeles County*	SCAG Region
2018 Total Population	77,682	10,283,729	[0.8%]	19,145,421
2018 Population Density (Persons per Square Mile)	12,693	2,518	10,175	494
2018 Median Age (Years)	34.1	36.0	-1.9	35.8
2018 Hispanic	55.1%	48.4%	6.7%	46.5%
2018 Non-Hispanic White	16.4%	26.5%	-10.1%	31.4%
2018 Non-Hispanic Asian	13.2%	14.3%	-1.1%	12.8%
2018 Non-Hispanic Black	12.8%	7.9%	4.9%	6.3%
2018 Non-Hispanic American Indian or Alaska Native	0.2%	0.2%	0.0%	0.2%
2018 All Other Non-Hispanic	2.3%	2.7%	-0.4%	2.8%
2018 Number of Households	23,552	3,338,658	[0.7%]	6,132,938
2018 Average Household Size	3.3	3.0	0.2	3.1
2018 Median Household Income	$52,944	$61,015	-$8,071	$64,989
2018 Number of Housing Units	24,976	3,546,863	[0.7%]	6,629,879
2018 Homeownership Rate	40%	52.4%	-12.4%	52.4%
2018 Median Existing Home Sales Price	$510,000	$597,500	-$87,500	$561,000
2017 - 2018 Median Home Sales Price Change	7.4%	6.7%	0.7%	6.5%
2018 Drive Alone to Work	81.6%	73.7%	7.9%	75.8%
2018 Mean Travel Time to Work (minutes)	30.0	30.9	-0.9	30.2
2017 Number of Jobs	17,609	4,767,204	[0.4%]	8,465,304
2016 - 2017 Total Jobs Change	26	23,801	[0.1%]	76,197
2017 Average Salary per Job	$42,677	$66,037	-$23,360	$60,956
2018 K-12 Public School Student Enrollment	6,140	1,482,258	[0.4%]	2,975,283

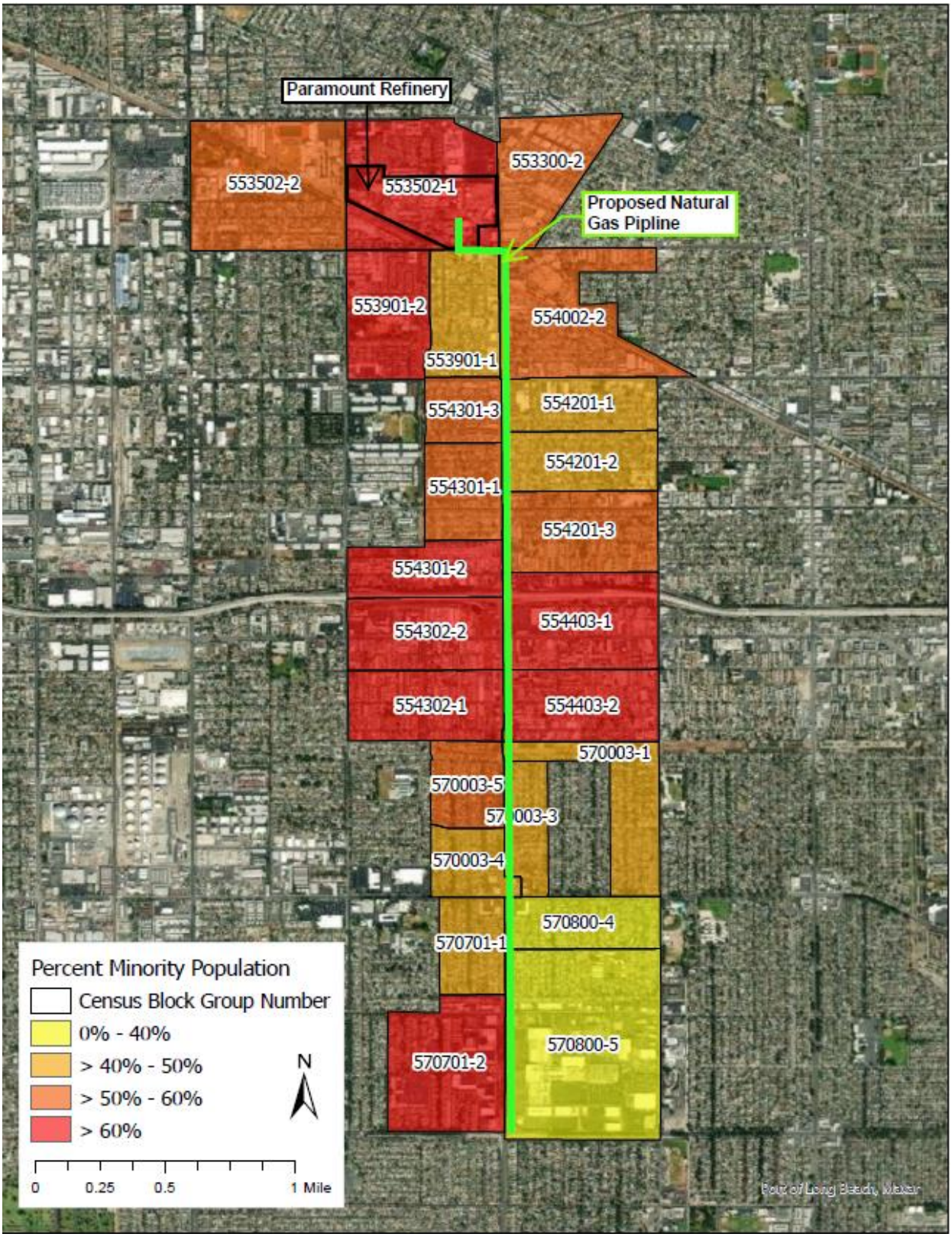
Sources: U.S. Census American Community Survey, 2017; Nielsen Co.; California Department of Finance E-5, May 2018; CoreLogic/DataQuick; California Department of Education; and SCAG

* Numbers with [ ] represent Bellflower's share of Los Angeles County. The unbracketed numbers represent the difference between Bellflower and Los Angeles County.

Mapped jurisdictional boundaries are as of July 1, 2016 and are for visual purposes only. Report data, however, are updated according to their respective sources.

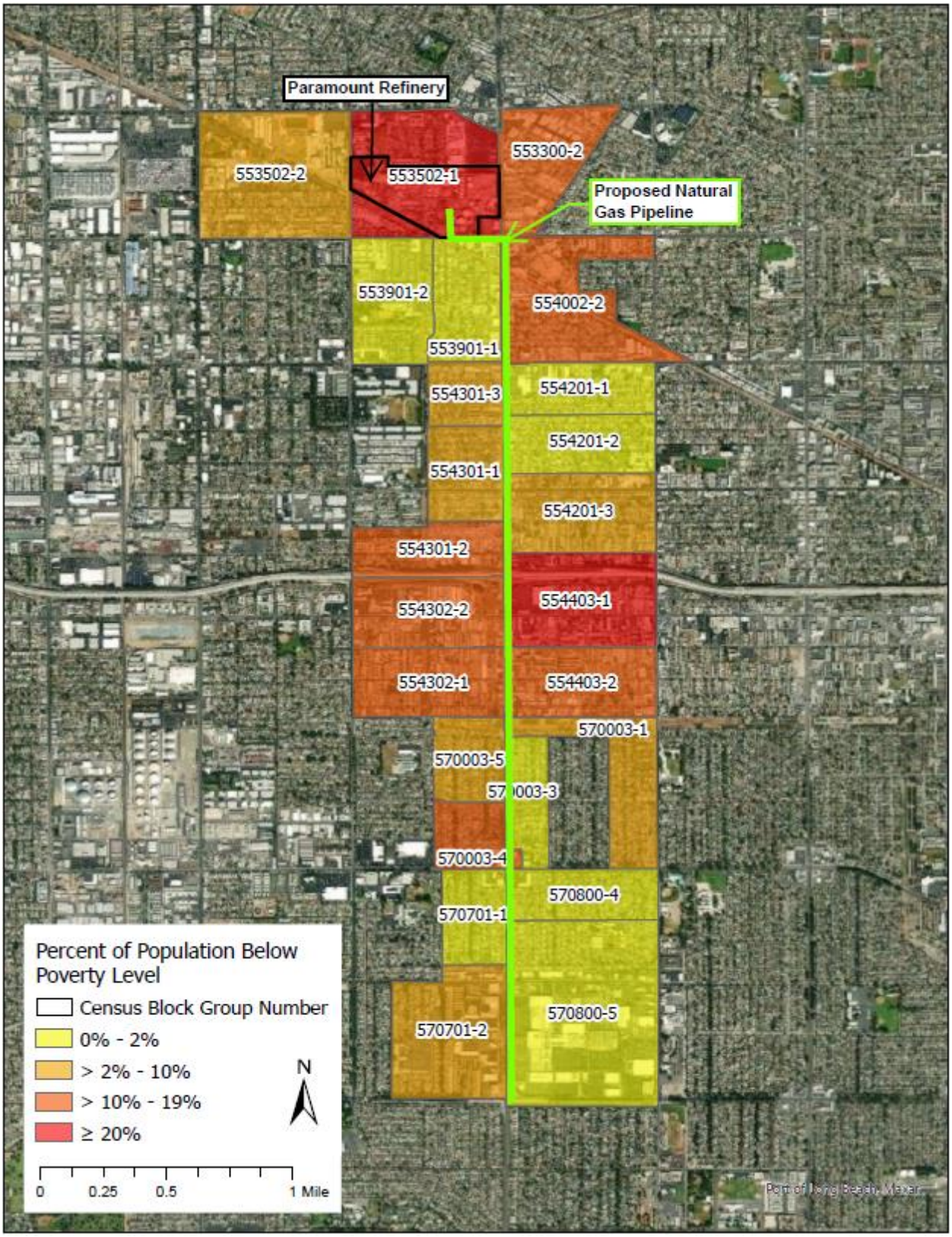
Southern California Association of Governments

Figure 4.11-3 Project Area Percent Minority Population by Census Block Group



Source: U.S. Census Bureau 2019.

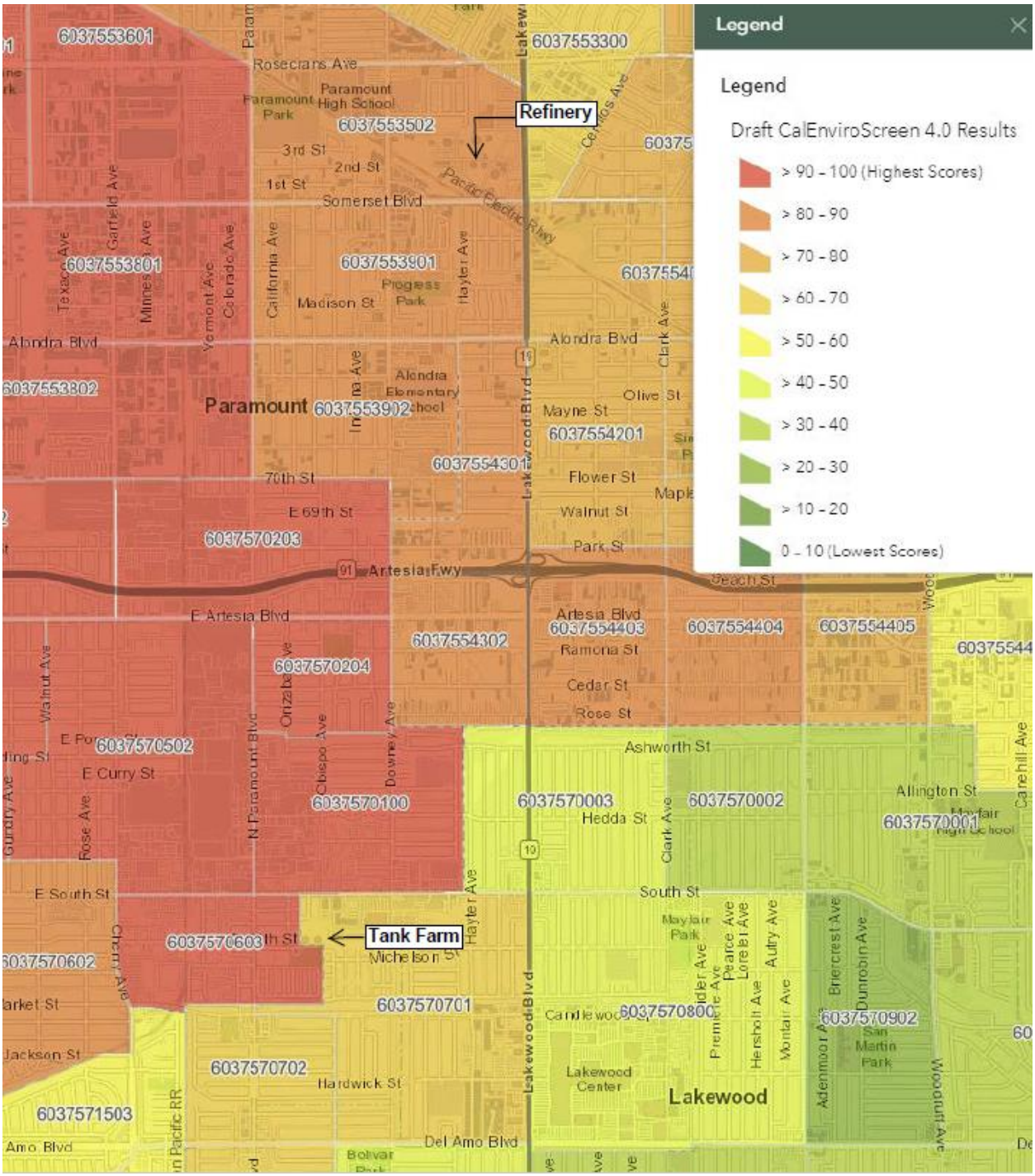
Figure 4.11-4 Project Area Percent of Population Below Poverty Level by Census Block Group



Source: U.S. Census Bureau 2019.

In accordance with SB 535, six of the 11 census tracts analyzed for this environmental justice section are designated as disadvantaged communities (Tracts 553502, 553901, 554002, 554301, 554302, and 554403) (OEHHA, 2021). The Lakewood Tank Farm is in the 70th percentile for CalEnviroScreen 4.0. Thus, the tank farm's census tract is not located within a disadvantaged community.

Figure 4.11-5 CalEnviroScreen 4.0 Map



Source: OEHHA 2021.

4.11.2 Regulatory Setting

4.11.2.1 Federal

On February 11, 1994, President Clinton issued the Executive Order on Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (Executive Order 12898), which was designed to focus attention on environmental and human health conditions in high minority populations and low-income communities and promote non-discrimination in programs and projects substantially affecting human health and the environment (The White House, 1994). The order requires the U.S. Environmental Protection Agency (EPA) and all other Federal agencies (as well as state agencies receiving federal funds) to develop strategies to address this issue. The agencies are required to identify and address any disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and or low-income populations.

In 1997, the EPA's Office of Environmental Justice released the Environmental Justice Implementation Plan, supplementing the EPA environmental justice strategy and providing a framework for developing specific plans and guidance for implementing Executive Order 12898. Federal agencies received a framework for the assessment of environmental justice in the EPA's Guidance for Incorporating Environmental Justice Concerns in EPA's National Environmental Policy Act (NEPA) Compliance Analysis in 1998. This approach emphasized the importance of selecting an analytical process appropriate to the unique circumstances of the potentially affected community.

4.11.2.2 State

While many state agencies have utilized the EPA's Environmental Justice Implementation Plan as a basis for the development of their own environmental justice strategies and policies, the majority of California State agencies do not have guidance for incorporating environmental justice impact assessment into the California Environmental Quality Act (CEQA) analysis which is not required. The California Air Resources Board (CARB), for example, has examined this issue and received advice from legal counsel in a memorandum entitled "CEQA and Environmental Justice." This memorandum states, in part, "For the reasons set forth below, we will conclude that CEQA can readily be adapted to the task of analyzing cumulative impacts/environmental justice whenever a public agency (including the Air Resources Board, the air pollution control districts, and general-purpose land use agencies) undertakes or permits a project or activity that may have a significant adverse impact on the physical environment. All public agencies in California are currently obliged to comply with the CEQA, and no further legislation would be needed to include an environmental justice analysis in the CEQA documents prepared for the discretionary actions public agencies undertake."

California Bureau of Environmental Justice

The Bureau of Environmental Justice was established by Attorney General Xavier Becerra on February 22, 2018 (Becerra served as the Attorney General of California from January 2017 until March 2021; Rob Bonta is the current Attorney General). The Bureau of Environmental Justice's mission is to protect people and communities that endure a disproportionate share of environmental pollution and public health hazards.

The Bureau of Environmental Justice focuses on:

- Ensuring compliance with CEQA and land use planning laws;

- Penalizing and preventing illegal discharge to air and water from facilities located in communities already burdened disproportionately with pollution;
- Eliminating or reducing exposure to lead and other toxins in the environment and consumer products;
- Remediating contaminated drinking water; and
- Challenging the Federal Government's actions that repeal or reduce public health and environmental protections.

State Departments, Boards and Agencies also refer numerous enforcement matters impacting environmental justice communities to the Attorney General. For example, the CARB refers numerous instances of violations of diesel truck and passenger vehicle emissions rules to the Attorney General for enforcement. Another example is the State Water Resources Control Board and Regional Boards which call upon the Attorney General's Office to bring enforcement actions when they have evidence of unlawful contamination of water resources (DOJ, 2021).

California State Lands Commission

The California State Lands Commission (CSLC) has developed and adopted an Environmental Justice Policy to ensure equity and fairness in its own processes and procedures. The CSLC adopted an Environmental Justice Policy and Implementation Plan in December 2018 to ensure "Environmental Justice is an essential consideration in the Commission's processes, decisions and programs and that all people who live in California have a meaningful way to participate in these activities." The policy stresses equitable treatment of all members of the public and commits to consider environmental justice in its processes, decision making, and regulatory affairs, and the policy is implemented, in part, through identification of, and communication with, relevant populations that could be adversely and disproportionately impacted by CSLC projects or programs, and by ensuring that a range of reasonable alternatives is identified that would minimize or eliminate environmental impacts affecting such populations (CSLC, 2018).

Senate Bill 535

Disadvantaged communities in California are specifically targeted for investment of proceeds from the State's Cap-and-Trade Program. These investments are aimed at improving public health, quality of life and economic opportunity in California's most burdened communities at the same time reducing pollution that causes climate change.

Authorized by the California Global Warming Solutions Act of 2006 (Assembly Bill [AB] 32), the Cap-and-Trade Program is one of several strategies that California uses to reduce greenhouse gas emissions that cause climate change. The funds must be used for programs that further reduce emissions of greenhouse gases.

In 2012, the Legislature passed SB 535 (de Leon), directing that 25 percent of the proceeds from the Greenhouse Gas Reduction Fund go to projects that provide a benefit to disadvantaged communities. The legislation gave CalEPA responsibility for identifying those communities. In 2016, the Legislature passed AB 1550 (Gomez), which now requires that 25 percent of proceeds from the fund be spent on projects located in disadvantaged communities.

Following a series of public workshops in February 2017, CalEPA released its list of disadvantaged communities for the purpose of SB 535 in April 2017. To inform its decision, CalEPA used the CalEnviroScreen 3.0 results (OEHHA, 2017).

Senate Bill 1000

SB 1000 (2016) requires every California city and county that contains a disadvantaged community to address environmental justice in their General Plan. This includes identifying policies to reduce the unique or compounded health risks in environmental justice communities, prioritizing programs that address the needs of these communities, and promoting community engagement in decision-making processes. The latest City of Paramount General Plan (2007) does not address environmental justice.

The Attorney General is actively working to ensure local governments comply with SB 1000 by submitting numerous comment letters in an effort to promote effective environmental justice planning at the local level. More information about SB 1000 and a complete list of the Attorney General's SB 1000 comment letters can be found at: https://oag.ca.gov/environment/sb1000 (DOJ, 2021).

Assembly Bill 617

In 2017, Assembly Member Cristina Garcia authored AB 617 to address air pollution impacts in environmental justice communities. This program requires local air districts and the state Air Resources Board to reduce air pollution in these most impacted communities. Some additional state bills provided new funding to support this program. This funding helps to reduce air pollution by changing out older trucks and other equipment for newer, cleaner technologies.

The Project site is not located within one of the designated communities of the AB 617 program. The Southeast Los Angeles (SELA) community is the AB 617 designated community nearest to the Project site (approximately 5,000 feet to the northwest). The community includes the cities of South Gate, Bell Gardens, Cudahy, and Huntington Park, and the unincorporated Los Angeles County neighborhoods of Florence-Firestone and Walnut Park.

Community Emissions Reduction Plan

The Community Emissions Reduction Plan (CERP) provides a blueprint for achieving air pollution emission and exposure reductions to address the SELA community's highest air quality priorities. The CERP outlines goals and actions by the Community Steering Committee (CSC), the South Coast Air Quality Management District (AQMD), and the CARB to reduce air pollution in the SELA community. Beginning in 2021, the plan will be implemented over several years, during which South Coast AQMD staff will track its progress and provide periodic updates to the community. The SELA CERP includes actions, such as developing and enforcing regulations, providing incentives to accelerate the adoption of cleaner technologies, and conducting outreach to provide useful information to support the public in making informed choices (South Coast AQMD, 2020).

4.11.2.3 Local

City of Paramount

City is also undertaking the process to include an Environmental Justice Element to the Housing Element to comply with SB 1000 and SB 244.

4.11.3 Significance Thresholds

A conflict with the CSLC's Environmental Justice Policy would occur if the Project would:

- Have the potential to disproportionately affect minority and low-income populations at levels exceeding the corresponding median for the County in which the Project is located; or
- Result in a substantial, disproportionate decrease in the employment and economic base of minority and low-income populations residing in the County and immediately surrounding cities.

4.11.4 Project Impacts and Mitigation Measures

Impact #	Impact Description	Phase	Impact Classification
EJ.1	The Project would disproportionately affect minority and low-income populations at levels exceeding the corresponding median for the County in which the Project is located.	Construction or Operation	Significant

As shown in the combined cities of Paramount and Bellflower Statistical Summaries (see Table 4.11.1), the estimated minority population in the cities of Paramount and Bellflower is 86.4 percent which is higher than the minority population percentage (70.8 percent) of Los Angeles County as a whole. However, the census block groups adjacent to the refinery and along the proposed natural gas pipeline route (Figure 4.11-3) have an estimated minority percentage less than the minority percentage of Los Angeles County as a whole (see Table 4.11.2). Census Tract 554403 Block Group 2 has the highest total number of minorities (1,924 individuals), while Tract 570701 Block Group 2 has the population with the highest minority percentage (67.9 percent).

The estimated population with income below the poverty level in the combined cities is 13.2 percent which is less than the percentage of the population below the poverty level for Los Angeles County (13.4 percent). However, Census Tract 554403 Block Group 2, which has the highest total number of minorities, has a higher percentage of the population (19.0 percent) living below the poverty level than the combined cities or Los Angeles County. Tract 570003 Block Group 4 also has a higher percentage of the population living below poverty than either the combined cities or County as a whole (13.9 percent). Of the census tracts analyzed for the Project, Tract 554403 Block Group 1 has the highest total number of individuals living below the poverty level (720 individuals) as well as the highest percentage of the population living below the poverty level (25 percent). Therefore, the Project would have a significant impact on minority and low-income communities in the Project area.

The Project is designed to support the State Greenhouse Gas (GHG) emission reduction goals and is expected to regionally reduce GHG emissions by eliminating the processing of crude oil. Additionally, although renewable diesel is processed similarly to petroleum diesel, which makes it chemically the same as petroleum diesel, it burns more completely. CalEPA found that renewable diesel has about 30 percent less PM and 10 percent less nitrogen oxides (NOx) emissions than ultra-low-sulfur diesel (CalEPA, 2015). In addition, renewable diesel does not contain benzene, which becomes an airborne carcinogen when burned in petroleum diesel.

Although combustion of renewable diesel releases fewer emissions than petroleum diesel, the Project would still result in significant and unavoidable impacts to minority and low-income populations in the Project area. These significant impacts are associated with air quality, transportation of hazardous materials, and noise. Therefore, the Project would result in a significant environmental justice impact. Section 4.2.4 contains the following mitigation measures for Project air quality Class I and Class II impacts:

- MM-AQ-1a: Construction Management Program. The Applicant shall maintain a Construction Management Program for the Project that shall, at a minimum, incorporate the mitigation measures and Best Management Practices AQ-1a-1 through AQ-1a-12;
- MM-AQ-2a: Newer Trucks. The Applicant shall require that all contracts with trucking companies for the use of heavy-duty trucks specify the required use of 2017 model year trucks or newer in order to reduce NOx emissions;
- MM-AQ-2b: NOx Reduction Program. The Applicant shall implement a plan to fund NOx reduction measures in the community both locally and regionally; and
- MM-AQ-5a: Recordkeeping. The facility operator shall monitor and maintain records on: 1) the fuel usage (standard cubic feet of gas) and the Higher Heating Values (Btu/scf), on an annual basis, for each of the equipment utilizing gaseous fuels; 2) the truck trips and associated destinations/sources of trucks; 3) train deliveries and number of rail cars; and 4) any other metrics required to estimate emissions associated with this SEIR.

Section 4.4, Hazardous Materials and Risk of Upset, identified a Class I impact associated with the Project transportation of materials by truck, rail, marine barge, and pipeline and reasonably foreseeable upset and accident conditions involving a release. No additional mitigation is required beyond regulatory requirements detailed in Section 4.4.2.

Section 4.7.4 contains the following mitigation measures for Project noise Class I and Class II impacts:

- MM-N-1a: Daytime Limits. The Applicant shall perform construction activities only during the daytime hours between the hours of 7:00 a.m. and 8:00 p.m.;
- MM-N-1b: Noise Monitoring and Management Plan. The Applicant shall produce a Noise Monitoring and Management Plan for Project construction;
- MM-N-2a: Noise Assessment. The Applicant shall provide a detailed noise assessment prior to permit issuance;
- MM-N-2b: Noise Monitoring and Management Plan. The Applicant shall submit to the City a Noise Monitoring and Management Plan that outlines procedures for regular noise monitoring or refinery operations and procedures for minimizing noise to nearby residential areas; and
- MM-N-2c: Railroad Noise Reduction Measures. The Applicant shall work with the railroad operator to ensure that train operations along the 1-mile connection to the mainline tracks, including rail car deliveries and pick-ups, are limited to daytime hours only between 9 a.m. and 6 p.m. weekdays and 10 a.m. and 6 p.m. on Saturdays. No activity on Sundays is allowed.

Impacts Remaining After Mitigation

The level of significance after mitigation is expected to remain above the significance threshold for regional and localized air quality impacts and will remain significant for impacts related to the transportation of hazardous materials. Project impacts to environmental justice would remain **significant and unavoidable.**

Impact #	Impact Description	Phase	Impact Classification
EJ.2	The Project would not result in a substantial, disproportionate decrease in the employment and economic base of minority and low-income populations residing in the County and immediately surrounding cities.	Construction or Operation	Less than Significant

The Project would not result in a significant decrease of jobs at the refinery, and additional industrial support jobs will increase in the area. Therefore, the Project will result in an increase in the employment and economic base of minority and low-income populations residing in the County and immediately surrounding cities. Therefore, the Project would not result in a significant adverse impact to minority or low-income populations residing in the County. Potential impacts for EJ.2 would be **less than significant.**

4.11.5 Cumulative Effects

The Project would not result in a substantial, disproportionate decrease in the employment and economic base of minority and low-income populations residing in the County and immediately surrounding cities. However, the Project would result in significant and unavoidable impacts associated with air quality, the transportation of hazardous materials, and noise which would disproportionately affect minority and low-income populations in the Project area at levels exceeding the corresponding median for the County and surrounding cities. Therefore, the Project may cumulatively contribute to potential environmental justice impacts resulting from other projects in the Project area. Cumulative projects associated with air quality, hazardous materials, and noise are discussed in sections 4.2.5, 4.4.5, and 4.7.5 respectively. See Section 3.0 of this SEIR for a full discussion of cumulative projects in the Project area.

4.11.6 References

CalEPA. 2015. Multimedia Working Group, Multimedia Evaluation of Renewable Diesel; May 2015. https://ww2.arb.ca.gov/sites/default/files/2018-08/Renewable_Diesel_Multimedia_Evaluation_5-21-15.pdf.

CSLC. 2018. Environmental Justice Policy & Implementation Blueprint; December 2018.

DOJ. 2021. California Department of Justice (DOJ) Office of the Attorney General (OAG): Environmental Justice; 2021. https://oag.ca.gov/environment/justice

OEHHA. 2017. SB 535 Disadvantaged Communities; June 2017. https://oehha.ca.gov/calenviroscreen/sb535

OEHHA. 2021. CalEnviroScreen; 2021. https://oehha.ca.gov/calenviroscreen

South Coast AQMD. 2020. Southeast Los Angeles Community Emissions Reduction Plan; December 2020.

The White House. 1994. Executive Order 12898: Environmental Justice in Minority Populations and Low-Income Populations; February 11, 1994.

U.S. Census Bureau. 2010. Race (Total Races Tallied). Decennial Census; 2010.

U.S. Census Bureau. 2019. Poverty Status of Individuals in the Past 12 Months by Living Arrangement. American Community Survey; 2019.

U.S. Census Bureau. 2019. Total Population. American Community Survey; 2019. U.S. Census Bureau. 2019.

4.12 Other Issue Areas Found to Have Less Than Significant Impacts

This section discusses the environmental issue areas found to have less than significant impacts due to construction and operation of the Project. The following issue areas are discussed: Agriculture and Forestry Resources, Biological Resources, Energy Resources, Geology Processes/Geological Hazards, Mineral Resources, Population and Housing, Public Services, Recreation, and Wildfire. These issue areas do not warrant a detailed discussion based upon the nature of the Project and/or its location.

4.12.1 Agriculture and Forestry Resources

Previous Environmental Review: The Paramount Refinery (refinery) is located in an urban area; the applicable Somerset Ranch Area Plan does not contemplate any agricultural land uses within the refinery site or adjacent parcels, and none currently exist. The Somerset Ranch Area Plan designation does not include any forest land and does not include forest land preservation. Furthermore, no loss or conversion of existing forest land or farmland would result from the Original Renewable Fuels Project's implementation. The previous environmental review concluded that no agricultural activities, farmland, or forest lands are located within the refinery, and no land within the refinery is subject to a Williamson Act Contract. Therefore, it was determined that the Original Project would have no impact to agricultural land, farmland, or forestland.

Proposed Project Modifications: The existing refinery and tank farm are located within an urbanized, industrial area and are zoned for industrial uses. No agricultural activities are located within the Project sites. The Project would not involve the conversion of any agricultural land or farmland to an urban use and would not result in any impacts on farmlands. No forest lands are located within or adjacent to the City of Paramount (City) or the Project site. As a result, the Project would not cause the loss or conversion of forest land to non-forest use, nor would the Project cause the rezoning of forest land or timber resources.

As a result, the currently proposed modifications would not alter the conclusions from the December 2013 MND with respect to farmland, agricultural land, or forest land. Therefore, the Project would not result in an impact to agriculture and forestry resources and does not warrant further discussion.

4.12.2 Biological Resources

Previous Environmental Review: The December 2013 MND conducted a review of the California's Natural Diversity Database (CNDDB) and determined that no sensitive habitats or protected plant and animal species are located within the refinery property or within adjacent parcels. There are no native or natural wetland and/ or riparian habitats found within the refinery site. As a result, no impacts on any candidate, sensitive or special status species would result from the Original Project, and there would be no impact on natural or riparian habitats or protected wetlands.

No natural open space areas are located within the refinery or surrounding areas that would potentially serve as an animal migration corridor. No trees were located within the southern portion of the refinery where the Original Renewable Fuels Project would be constructed; therefore, the Original Project would not conflict with any local policies or tree preservation ordinances. In addition. the Original Project was not located within an area governed by a habitat conservation or community conservation plan. As a result, no adverse impacts on local, regional, or state habitat conservation plans would result from the Original Project's implementation. Therefore, it was determined that the Original Project would have no impact on biological resources.

Proposed Project Modifications: Both the refinery and Lakewood Tank Farm are fully developed, and no native vegetation exists within the confines of either the refinery or Lakewood Tank Farm that supports wildlife or migratory species. The CNDDB shows that no sensitive habitats, such as protected wetlands or riparian habitats, or protected plant or animal species are located within the confines of the existing refinery or adjacent parcels.

Landscape trees are located in areas surrounding the boundaries of the existing refinery, mostly along the entrance from Downey Boulevard and the adjacent parking lots, as well as surrounding the Lakewood Tank Farm. These trees could provide a roosting area for migratory birds; however, these trees would not be removed or impacted as part of the proposed modifications. Further, trees within the Project site are not protected by tree preservation policies or ordinances.

There is no adopted habitat conservation plan that applies to the refinery or Lakewood Tank Farm property as no native habitat exists within the refinery or tank farm. As a result, there would be no impact on adopted conservation plans, and the currently proposed modifications would not alter the conclusions from the December 2013 MND. Therefore, the Project would not result in significant adverse impacts on biological resources and does not warrant further discussion.

4.12.3 Energy Resources

Previous Environmental Review: The December 2013 Final MND evaluated impacts to power and natural gas facilities under Utilities and Service Systems. The December 2013 Final MND determined that Southern California Edison and Sempra Energy provide service upon demand and early coordination with these utility companies would ensure adequate and timely service to the Original Renewable Fuels Project. Both utilities currently provide service in the area. Thus, no significant adverse impacts on power and natural gas services would result from implementation of the Original Renewable Fuels Project.

Proposed Project Modifications: The Project modifications would continue the Original Renewable Fuels Project started in 2013 to manufacture renewable fuels in compliance with CARB's Low Carbon Fuel Standard (Title 17, California Code of Regulations, Sections 95480-95490), which aims to reduce greenhouse gas emissions by reducing the carbon intensity of transportation fuels used in California by at least 10 percent by 2020.

The Project modifications would require an estimated additional 29 megawatts of electricity. The Project would also generate some electricity onsite. An estimated maximum increase of 28 million standard cubic feet per day of natural gas is expected to be required for the Project, the majority of which would be used in the new Hydrogen Generation Unit. The additional use of natural gas would assist the refinery in producing additional quantities of renewable fuels that meet the Low Carbon Fuel Standard. Therefore, the Project would not use non-renewable resources in a wasteful or inefficient manner, and the Project would not conflict with adopted energy conservation plans or standards. As a result, the Project would not alter the conclusions from the December 2013 Final MND with respect to energy (as evaluated in utility and service system impacts section), and the Project would have a less than significant impact.

4.12.4 Geology Processes/Geological Hazards

4.12.4.1 Earthquake, Liquefaction, and Landslide Hazards

Previous Environmental Review: The December 2013 MND determined that no active faults are known to exist in the City of Paramount. Furthermore, no areas of the City are included within an Alquist-Priolo Special Studies Zone. As a result, no surface rupture impacts were anticipated to impact the refinery site.

The refinery is located within an area where there is an elevated risk of liquefaction. The degree of ground-shaking is dependent on the location of the earthquake epicenter, the earthquake's intensity, and a number of other variables. The degree of impact is not different from that anticipated for the surrounding areas.

Proposed Project Modifications: The Project modifications would continue the Original Renewable Fuels Project started in 2013 to manufacture renewable fuels and convert the existing refinery into a renewable fuels production facility. As stated in the 2013 MND, no areas of the City are included within an Alquist-Priolo Special Studies Zone. Further, the Lakewood Tank Farm is also not located with an Alquist-Priolo zone. As a result, no surface rupture impacts are anticipated to impact the Project sites.

The Cities of Paramount and Lakewood are located within a seismically active region. The most significant potential geologic hazards at the existing refinery and tank farm are estimated to be seismic shaking and liquefaction from future earthquakes generated by active or potentially active faults in the region, including the Whittier-Elsinore, San Andreas, Newport-Inglewood, Norwalk, and Elysian Park.

Based on the historical record, it is highly probable that earthquakes will affect the Los Angeles region in the future. Research shows that damaging earthquakes will occur on or near recognized faults which show evidence of recent geologic activity. There is the potential for damage in the event of an earthquake. The hazards of a release during an earthquake are addressed in Section 4.4, Hazardous Materials and Risk of Upset.

The design of the Project facilities would be required to comply with the California Building Code requirements since the proposed modifications would be located in a seismically active area. The California Building Code is considered to be a standard safeguard against major structural failures and loss of life. The code requires structures that 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. The California Building Code bases seismic design on minimum lateral seismic forces (ground shaking). The California Building Code requirements operate on the principle that providing appropriate foundations, among other aspects, helps to protect buildings from failure during earthquakes. The basic formulas used for the California Building Code seismic design require determination of the seismic zone and site coefficient, which represent the foundation conditions at the site.

The new equipment at the refinery would require building permits, as applicable, for all new structures associated with the Project modifications from the City of Paramount. The refinery must receive approval of all building plans and building permits to assure compliance with the latest Building Code adopted by the City of Paramount prior to commencing construction activities. The issuance of building permits from the local authority would assure compliance with the California Building Code requirements which include requirements for building within seismic hazard zones. No new equipment is expected at the Lakewood Tank Farm. No significant adverse impacts from seismic hazards are expected since new equipment would be required to comply with the California Building Code.

The proposed modifications would not alter the exposure of people or property to geological hazards such as earthquakes, landslides, mudslides, ground failure, or other natural hazards beyond the current setting. Therefore, no impacts associated with substantial exposure of people or structures to the risk of loss, injury, or death involving the rupture of an earthquake fault, seismic ground shaking, liquefaction or landslides are expected to result from the Project.

4.12.4.2 Loss of Topsoil

Previous Environmental Review: The 2013 MND determined that limited excavation would be required. Given the developed character of the refinery and limited area of disturbance, no significant adverse impacts related to substantial soil erosion or loss of topsoil were anticipated.

Proposed Project Modifications: Grading for the 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. No grading or soil disturbance is expected at the Lakewood Tank Farm. Stormwater in the operating portions of the existing refinery and tank farm are contained on-site and would not result in erosion. Due to the limited grading and excavation, the proposed modifications are not expected to result in substantial soil erosion or loss of topsoil. Therefore, the Project would not alter the conclusions from the 2013 MND with respect to erosion and loss of topsoil, and there would be no significant impact.

4.12.4.3 Unstable or Expansive Soil

Previous Environmental Review: The December 2013 MND determined that the topography underlying the refinery is essentially flat and, as a result, no slope failure or landslide would be associated with the project. As indicated previously, the refinery site is located within an area that may be subject to potential liquefaction risk. No significant new grading is anticipated, and the excavation would be limited. As a result, no impacts due to potential unstable soils were anticipated.

The 2013 MND determined that the soils that underlie the refinery site belong to the Hanford Soil Association and do not represent a constraint to development according to the U.S. Department of Agriculture. The site is level, no new grading is anticipated, and excavation would be limited. As a result, no expansive soil impacts were anticipated.

Proposed Project Modifications: The issuance of building permits from the local authority would assure compliance with the California Building Code requirements which include requirements for building within seismic hazard zones, including liquefaction risks. No significant adverse impacts from unstable soils are expected since the Project modifications would be required to comply with the California Building Code. No grading or new structures would be required at the Lakewood Tank Farm. As a result, the proposed modifications would not alter the conclusions from the 2013 MND with respect to unstable or expansive soils, including liquefaction. Therefore, there would be a less than significant impact.

4.12.4.4 Septic Tanks/Alternative Wastewater Disposal

Previous Environmental Review: The December 2013 MND determined that no septic tanks would be used as part of the Original Renewable Fuels Project's implementation. As a result, no impacts associated with the use of septic tanks were anticipated.

Proposed Project Modifications: The existing refinery discharges wastewater to the local sewer system under an Industrial Wastewater Discharge Permit, and the wastewater generated by the Project would be treated in the existing and the additional wastewater treatment systems proposed for the Project (see Section 4.10 for further details). Neither the existing refinery nor the proposed modifications would use septic tanks or alternative wastewater disposal systems. The modifications to the Lakewood Tank Farm would not result in any additional wastewater generation. As a result, the currently proposed modifications would not alter the conclusions from the December 2013 MND with respect to the use of septic tanks or alternative disposal systems. Therefore, no significant impacts on soils from alternative wastewater disposal systems are expected.

4.12.4.5 Paleontological Resources

Previous Environmental Review: The December 2013 MND evaluated the potential paleontological resource impacts under Cultural Resources. The 2013 MND determined that the potential for paleontological resources in the area is low due to the character of subsurface soils (recent alluvium) and the amount of disturbance associated with the previous development within the refinery. Because of the relatively limited excavation, the nature of the alluvial soils, and the disturbed character of the soils, no significant impacts on paleontological resources were anticipated.

Proposed Project Modifications: As discussed above, the potential for paleontological resources is low due to the character of subsurface soils (recent alluvium) and the fact that the entire existing refinery site has been previously graded and developed. Grading for the 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. No significant adverse impacts on paleontological resources are expected since no known paleontological resources are located within the existing refinery and because of the previous grading and development of the site for industrial uses. No grading, trenching or other ground disturbance would be required at the Lakewood Tank Farm. Therefore, be no impact on paleontological or archaeological resources are expected. Therefore, the Project would not result in significant adverse impacts related to paleontological resources and does not warrant further discussion.

4.12.5 Mineral Resources

Previous Environmental Review: The December 2013 MND determined that the refinery site does not contain sand, gravel, mineral, timber resources, or active oil wells. The refinery is not located in an area with active mineral extraction activities. A review of the California Division of Oil and Gas field records indicates that no abandoned oil wells are located within the refinery's boundaries. The resources and materials used during construction would not include any materials that are considered rare or unique. As a result, no significant adverse impacts on available mineral and energy resources were anticipated.

Proposed Project Modifications: As noted above, the Project sites do not contain any known mineral resources including sand, gravel, timber resources, or oil or natural gas reserves. Therefore, the Project would not result in an impact on the availability of a locally important mineral source and does not warrant further discussion.

4.12.6 Population and Housing

Previous Environmental Review: The December 2013 MND determined that the Original Renewable Fuels Project would not result in any change in the population, housing, or employment projects that would exceed the adopted employment and population projection for the City. No housing units would be affected by the Original Project, and no displacement of residents would occur. In recent years, the refinery has experienced a reduction in the number of persons employed at the refinery. The potential increased employment associated with the Original Project would be more than off-set by the number of jobs that were eliminated in recent years. As a result, no significant adverse impacts related to population or housing displacement would were expected.

Proposed Project Modifications: Construction of the Project would take place over a period of approximately 22 months. At the peak of construction, approximately 1312 temporary construction jobs would be created by the Project. Because of the large size of the construction work force available in the southern California area, the temporary construction jobs are expected to be filled from the existing regional labor pool. Because the Project modifications would occur within an existing refinery located in

a highly urbanized area, no additional housing would be necessary to accommodate the labor force needed during construction; therefore, no existing housing would be displaced.

No significant change in the workforce is expected for the operation of the Project and no increase in workers would be expected at the Lakewood Tank Farm. The Project would not result in any change in the population, housing, or employment projections that would exceed the adopted employment and population projection for the City. In recent years, the existing refinery has experienced a reduction in the number of persons employed at the refinery. The potential increased employment associated with the proposed modifications would be more than off-set by the number of jobs that were eliminated in recent years. Therefore, the Project would not result in an impact to population or housing and does not warrant further discussion.

4.12.7 Public Services

4.12.7.1 Fire

Previous Environmental Review: The December 2013 MND determined that the refinery is served by two fire stations: Station 31, located at 7521 East Somerset Boulevard; and Station 57, located at 5720 Gardendale Street in South Gate. Two reportable fire incidents occurred at the refinery between 2005 and 2009. To minimize the potential for future fire incidents, two mitigation measures were imposed:

- The proposed improvements would be subject to review and approval by the Los Angeles County Fire Department to ensure that fire safety and fire prevention measures are incorporated into the project. In addition, the Fire Department would be required to review and approve any evacuation plan as well as the on-site circulation to ensure that emergency vehicles can easily access the refinery's parking area; and
- The Paramount Petroleum security personnel must ensure that all fire lanes remain open during the refinery's operation.

The mitigation measures were deemed to reduce the potential impacts on fire services to less than significant.

Proposed Project Modifications: The existing refinery currently maintains personnel and equipment on-site for fire suppression efforts and posts fire emergency procedures. There are fire hydrants along Lakewood and Somerset Boulevards, and Downey Avenue which provide additional fire water flow in the event of an emergency. The refinery would continue to operate needed fire protection services. It is not expected that the Project modifications would require an increase in the level of fire protection service needed to protect and serve the refinery, because there would be no new flammable materials stored on-site. The proposed modifications would result in the use of vegetable oil derivatives and animal fat and the elimination of the use of crude oil, reducing potential fire risks. The refinery conducts annual fire drills and is subject to annual inspections by the Fire Department and these would continue under the Project.

The Lakewood Tank Farm also maintains protection services appropriate for storage tanks, with fire hydrants located adjacent to the site. The closest fire station to the tank farm is Los Angeles County Fire Department Station 45 (1.3 miles southwest), located at 4020 Candlewood Street, Lakewood, CA 90712. The next closest fire station is Long Beach Fire Department Station 12 (2.3 miles southwest), located at 1199 Artesia Boulevard, Long Beach, CA 90805. The modifications to the Lakewood Tank Farm would include the maintenance and repair of the existing tanks, which would not be expected to result in an increase in fire hazards or increase the need for fire protection services.

Construction activities are not expected to result in an increased need for fire services as operations, from a fire standpoint, would be very similar to historical operations (see Section 4.4, Hazards). Construction activities include safeguards, monitoring for hazards with equipment designed to detect sources of flammable gases and vapors, written procedures, training, and authorization for equipment used on-site.

The refinery Emergency Response Team (ERT) currently has 35 members and is comprised of Operations, Maintenance, Pipeline and support staff. The ERT completes 6 training exercises per year. Some topics include: Foam Trailer, Fire Truck, SCBA and Turnout Gear, HAZWOPER (Level A Suits), CPR, Tabletop Drill, and Fire Water Pumps.

The plant has two electric fire water pumps, one diesel fire water pump, one natural gas fire water pump, and one jockey pump which maintains 150 psig on the fire water loop. Each tank containing Jet/Diesel/Naphtha/Gasoline is equipped with a foam chamber. The ERT has the option to use a Foam Trailer (750-gallon foam capacity) or a Fire Truck (rated at 1250 gpm with 1000-gallon foam capacity) to respond to emergencies.

On-site fire training exercises with the City Fire Department staff are conducted. The Project would not increase the requirements for additional or altered fire protection. Firefighting and emergency response personnel and equipment would continue to be maintained and operated at the refinery. Therefore, no impacts on fire protection services are anticipated.

4.12.7.2 Police

Previous Environmental Review: Law enforcement services in the City of Paramount are contracted through the Los Angeles County Sheriff's Department. The City is served by the Lakewood Station at 5130 Clark Avenue in Lakewood and by a substation located near the intersection of Paramount and Somerset Boulevards in Paramount. Emergency response times are approximately three minutes throughout the City. The Original Renewable Fuels Project would be located within the refinery, and no public access to this area is permitted. The refinery also maintains 24-hour security. As a result, no impacts on law enforcement services were anticipated.

Proposed Project Modifications: Entry and exit at the existing refinery are currently monitored and no additional or altered police protection is expected. The refinery is an existing industrial facility with a 24-hour security force for people and property currently in place. The Lakewood Tank Farm is also fenced, and entry is limited to authorized workers. The closest police station is Lakewood Sheriff Department (3.1 miles south) located at 5130 Clark Avenue, Lakewood, CA 90712. The next closest police station is Long Beach Police - North Division (2.6 miles southwest) located at 4891 Atlantic Avenue, Long Beach, CA 90807. Since the existing refinery and tank farm already have security measures in place, the Project is not expected to adversely impact the local police department.

4.12.7.3 Schools

Previous Environmental Review: The Original Renewable Fuels Project did not involve any development and/or uses that could potentially affect school enrollments. Since no significant increase in employment is directly attributable to the Original Project, no change in school enrollments would occur. As a result, no significant adverse impacts on schools were anticipated.

Proposed Project Modifications: Construction activities would not involve the relocation of individuals, impact housing, or change the distribution of the population. Since construction workers would likely be drawn from the existing employment pool in Southern California, it is unlikely that construction worker children would need to change schools; therefore, no new schools would need to be built. In recent years,

the existing refinery has experienced a reduction in the number of persons employed at the refinery. The potential increased employment associated with the Project modifications would be more than off-set by the number of jobs that were eliminated in recent years. As a result, the Project would not alter existing, or require additional schools. Therefore, no impact on schools is anticipated and the issue does not warrant further discussion.

4.12.7.4 Other Public Services

Previous Environmental Review: The 2013 MND determined that no new government services would be necessary to service the refinery. As a result, no significant adverse impacts were anticipated.

Proposed Project Modifications: No new government services are expected to be required to serve the Project modifications. Therefore, the Project would not result in an impact to public services and does not warrant further discussion.

4.12.8 Recreation

Previous Environmental Review: The 2013 MND determined that the City of Paramount operates six public parks devoted to active recreation. No parks or related recreational facilities are located adjacent to the refinery. In addition, the project would not result in any development that would potentially increase the demand for public park facilities and services. As a result, no significant adverse impacts were anticipated.

Proposed Project Modifications: The Project modifications would not include recreational facilities or increase the demand for neighborhood or regional parks, or other recreational facilities in the area since the Project is not expected to increase the local population. At its peak, construction of the Project modifications would require approximately 1312 workers, drawn from the local population so there would be no additional use of local parks or other recreational opportunities. In recent years, the refinery has experienced a reduction in the number of persons employed at the refinery. The potential increased employment associated with the proposed modifications would be more than off-set by the number of jobs that were eliminated in recent years. Therefore, the Project would not be expected to impact existing neighborhood and regional parks, or other recreational facilities.

It should be noted that the Lakewood Tank Farm is located adjacent to Davenport Park in Lakewood. As discussed above, the Project would not be expected to result in the increased use or require the expansion of recreational facilities, including Davenport Park. Therefore, the Project would not result in significant adverse impacts on recreation and does not warrant further discussion.

4.12.9 Wildfire

The State CEQA Guidelines were amended in July 2015 and the CEQA Checklist has been amended since the December 2013 MND was prepared to specifically include a separate section on wildfire impacts. Nonetheless, the potential for wildfires were addressed in the December 2013 MND under Hazards.

Previous Environmental Review: The 2013 MND determined that the area surrounding the refinery is developed and there were no areas containing natural vegetation that could lead to a wildfire. As a result, there were no impacts associated with potential wildfires from off-site locations.

Proposed Project Modifications: The proposed modifications would not increase the existing risk of fire hazards in areas with flammable brush, grass, or trees. The Project would not expose people or structures to wildland fires. Further, the existing refinery is not located in an area where residences are intermixed

with wildlands. No substantial or native vegetation exists within the operational portions of the existing refinery. Therefore, the Project would not result in an impact to people or structures due to fire hazards from wildland fires and does not warrant further discussion.

4.12.10 References

City of Paramount. 2013. Mitigated Negative Declaration and Initial Study, Conditional Use Permit (CUP) 757 and Zone Variance (ZV), Paramount Petroleum Alt Air Project. Adopted December 30, 2013; Revised per Addendum May 14, 2014. (PARA 059).

5.0 Environmental Analysis and Comparison of Alternatives

CEQA Guidelines Section 15126.6 requires an Environmental Impact Report (EIR) to describe a reasonable range of alternatives to a project or to the location of a project which could feasibly attain its basic objectives and evaluate the comparative merits of the alternatives. This section discusses a range of alternatives to the Project, including the "No Project Alternative".

Specifically, CEQA Guidelines Section 15126.6 requires a description of:

> *"...a range of reasonable alternatives to the project, or to the location of a project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project and evaluate the comparative merits of the alternatives*"; and

Alternatives carried forward for analysis:

> "*...shall be limited to ones that would avoid or substantially lessen any of the significant effects of the project*" and would attain the basic project objectives.

The EIR must explain the rationale for selecting the alternatives to be discussed, identify those that were not considered because they were infeasible, and briefly explain why any alternatives were rejected. An EIR is not required to consider alternatives that are not feasible. The "environmentally superior" alternative to the Project must be identified and discussed. If the environmentally superior alternative is the No Project Alternative, the EIR must identify an additional "environmentally superior" choice among the other Project alternatives.

Alternatives must meet most of the Project objectives, including addressing the "underlying purpose of the project" [CEQA Guidelines 15124]. In addition, an EIR should not exclude an alternative from detailed consideration merely because it would impede to some degree the attainment of the Project objectives. An EIR should define the alternative analysis around a reasonable definition of "underlying purpose" and need not study alternatives that cannot achieve that basic goal.

In defining feasibility of alternatives, and pursuant to the CEQA Guidelines, the following considerations were taken into account: site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries (projects with a regionally significant impact should consider the regional context), and whether the proponent can reasonably acquire, control or otherwise have access to the alternative site (or the site is already owned by the proponent) [CEQA Guidelines Section 15126.6(f)(1)].

A variety of alternatives to the Project were considered to determine alternatives which might produce fewer significant impacts or reduce the severity of those significant impacts compared to the Project, including the No Project Alternative. Potential alternatives were considered and assessed by applying the following criteria:

- Feasibility (capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors (CEQA Guidelines Section15364);
- Ability to avoid or substantially lessen any of the potentially significant impacts of the Project; and
- Ability to attain most of the basic objectives of the Project.

While advantages or disadvantages of each alternative might not be readily apparent, any alternative that has the potential for reducing impacts was analyzed for all environmental issue areas.

This section is organized as follows:

- **Section 5.1:** Comparison Methodology
- **Section 5.2:** Project Objectives
- **Section 5.3:** Alternatives Description and Analysis
- **Section 5.4:** Alternative Comparison Summary
- **Section 5.5:** Environmentally Superior Alternative Discussion

5.1 Comparison Methodology

CEQA does not provide specific direction regarding the methodology for comparing alternatives. Each project must be evaluated for the issues and impacts that are most important, which will vary depending on the project type and the environmental setting. Issue areas that are generally given more weight when comparing alternatives are longer-term impacts (e.g., operational air quality and risk of upset) while short-term impacts (e.g., construction-related impacts) or those that can be easily mitigated to less than significant levels are generally given less weight. For this Project, the analysis in Section 4 concluded that significant and unavoidable impact would occur for the topics of air quality and hazards and hazardous materials; all other issue areas were concluded to have impacts that were either less than significant with mitigation or less than significant.

The comparison of alternatives is designed to satisfy the requirements of CEQA Guidelines Section 15126.6(d) which states:

> *"The EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project. A matrix displaying the major characteristics and significant environmental effects of each alternative may be used to summarize the comparison. 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."*

In accordance with CEQA Guidelines Section 15126.6(d) as presented above, this SEIR provides information about each alternative to allow evaluation, analysis, and comparison with the Project. If the environmentally superior alternative is the No Project Alternative, CEQA requires identification of an environmentally superior alternative from among the other alternatives [CEQA Guidelines Section 15126.6(e)(2)].

The following methodology was used to compare alternatives in this SEIR:

- **Identification of Alternatives and Determination of Environmental Impacts.** A range of alternatives were identified and considered for this alternative's analysis. Those alternatives were then considered to determine if they were able to reduce the level of impact in each issue area which presents significant impacts or generates significant impacts in any issue area. The environmental impacts of the alternatives are discussed below as appropriate for each alternative. The discussion provides as detailed an analysis as merited based on the feasibility of the alternative and the level of impact it could generate. The environmental impacts of the Project are identified in Section 4.

- **Comparison of Project with Alternatives.** Section 5.3 presents a comparison of the impacts that could occur with the Project and the selected alternatives.
- **Identification of the Environmentally Superior Alternative.** Based upon the analysis conducted as part of the Project, the environmentally superior alternative is selected as required by CEQA in Section 5.4.

5.2 Project Objectives

The objectives of the Project as defined by the applicant are included here for reference in this analysis:

Objectives

1. Reduce dependency on fossil fuels (both foreign and domestic);
2. Provide fuels that meet the requirements of CARB's Low Carbon Fuel Standard (Title 17, CCR Sections 95480-95490) to reduce the carbon intensity of transportation fuels in California;
3. Supply fuels that reduce individual truck and airplane emissions;
4. Convert the Paramount Refinery (refinery) to a 100 percent renewable fuels production facility by eliminating the refining of crude oil at the refinery, while protecting high quality jobs;
5. Repurpose existing refinery equipment, to the extent feasible, to minimize construction activities;
6. Phase construction activities to increase the production of renewable fuels as soon as possible (i.e., modifications to Unit A would commence immediately after receipt of permits prior to completion of construction of other Project elements);
7. Increase the variety of raw materials that can be used to manufacture renewable fuels from technical grade tallows and vegetable oils, to also include lower grade fats, greases and oils;
8. Continue use of renewable fuel gases to operate the refinery's heaters and boilers;
9. Recycle hydrogen sulfide produced on-site to minimize the purchase and truck transport of sulfiding agent to the site; and
10. Produce hydrogen on-site for the production of renewable fuels at the refinery.

5.3 Alternatives Description and Analysis

In accordance with CEQA Guidelines Section 15126.6(d), this section describes the alternatives considered and analyzes the environmental impacts of each alternative, in order to provide enough detail and substantial evidence to allow for a comparison with the Project.

The significant and unavoidable impacts (characterized as Class I impacts) for the Project were identified for the topics of air quality and hazards and hazardous materials.

The significant and unavoidable (Class I) impacts to air quality are related to 1) the transportation of refinery feedstock to the refinery and finished product from the refinery via truck and rail, which will replace the historical transportation of feedstock and product by pipeline; and 2) significant and unavoidable impacts (Class I) were also identified associated with air emissions during construction.

The hazards and hazardous materials Class I impacts are related to 1) the transportation of natural gas via pipeline into the refinery in sufficient quantities to reform into hydrogen; and 2) the marine transportation of feedstocks through the Los Angeles port. No additional or increased hazards were identified with the operation of the refinery under the Project.

Alternatives to the Project were developed in order to attempt to reduce the level or severity of these potentially significant and unavoidable Class I impacts, with other issue areas being examined as part of the alternatives analysis to ensure that the alternatives do not generate any additional significant impacts for other issue areas. If needed, additional mitigation measures may be applied to the alternatives to mitigate significant impacts. If an alternative is identified as infeasible or cannot satisfy most of the project objectives, the alternative will not be considered in the environmentally superior alternative analysis. A summary of the alternatives examined are presented in Table 5.1 along with whether the alternative is evaluated in the discussion of the environmentally superior alternative (ESA).

Table 5.1 Alternatives Reviewed

Alternative	Evaluated in the ESA Discussion?
1 - No Project Alternative	Yes
2 - Reduced Refinery Throughput Production	No
3 - Reduced Hydrogen Plant	No
4 - Relocated Refinery	No
5 - Relocated Hydrogen Plant	No
6 - Relocated Natural Gas Pipeline Route	Yes
7 - Pipeline Transportation of Refinery Products	Yes
8 - Hydrogen Generation Methods	No

Each alternative is discussed below.

5.3.1 Alternatives Eliminated from Consideration

The following alternatives were eliminated from consideration based on feasibility or the inability to obtain most of the Project objectives.

5.3.1.1 Reduced Refinery Throughput Alternative (2)

The Reduced Refinery Throughput Alternative would reduce the operating capacity of the Project from 25,000 BPD operations. By reducing the operating capacity of the refinery, the amount of feedstock needed and associated product movements by truck and rail would also be reduced, thereby resulting in fewer air emissions associated with those activities when compared to the Project. In order to eliminate the significant and unavoidable Class I impacts associated with air quality emissions from trucks and other transportation sources, the refinery capacity increase would have to be reduced by approximately 90 percent, which would reduce the throughput of the refinery down to a level of about 5,500 to 6,000 BPD.

At a 90 percent reduced capacity, the requirements for hydrogen at this operating level could be achieved with a smaller hydrogen plant operating with the existing natural gas feed rate that is currently supplied to the refinery by existing natural gas pipeline connections. Historically, the peak natural gas usage at the refinery has been 5.9 mmscfd. Under the Reduced Refinery Throughput Alternative about 4 to 5 mmscfd of natural gas would be needed to produce about 11 mmscfd of hydrogen per day. Since the natural gas could be supplied by the existing natural gas connection, it would no longer be necessary to install the natural gas pipeline proposed as part of the Project thereby eliminating the significant and unavoidable Class I impact in hazards for operation of the new natural gas pipeline.

The hydrogen could also be supplied from the hydrogen pipeline connection to the Carson Air Products Hydrogen Plant such that no new hydrogen plant would need to be installed. However, as discussed under the No Project Alternative, this would require the long-term use of the hydrogen pipeline for the foreseeable future and could therefore produce a significant and unavoidable Class I impact associated with the long-term use of the hydrogen pipeline. It may also require the hydrogen pipeline to operate at

a higher pressure, thereby increasing the hazards of the hydrogen pipeline over those associated with the Project.

Aesthetic impacts associated with lighting could still occur under this alternative. Therefore, mitigation measures associated with impact A.4 would still be applicable.

Impacts associated with air quality would be fewer than the Project but would still occur. Mitigation measures associated with impacts AQ.1 (construction), AQ.2 (operations), and AQ.5 would still be applicable.

Noise levels associated with the refinery would most likely be reduced over the Project under this alternative as the refinery would be operating at a substantially lower level. However, mitigation measures associated with impacts N.1 (construction) and N.2 (operations) would still be applicable as noise levels would be anticipated to increase associated with construction and operations.

Traffic levels would be substantially reduced under this alternative relative to the Project. However, there would still be some increase in traffic and therefore mitigation measures associated with impacts T.1 and T.3 would still be applicable.

Because some construction and therefore potential impacts to tribal cultural resources could still occur under this alternative, mitigations measures associated with impacts TC.1, TC.2 and TC.3 would still be applicable.

Wastewater would still be generated under this alternative, and compliance with all applicable permit conditions would still be required.

Other issue areas would have similar impacts under this alternative compared to the Project.

While the Reduced Refinery Alternative would have fewer impacts, the level of the project modifications needed to the refinery operations in order to have less than significant air quality and hazards impacts would be substantial and similar to the refinery operations under the No Project Alternative. As a result of the substantial capacity reduction, the Reduced Refinery Alternative would not achieve the objectives of the Project to 1) further reduce dependency on fossil fuels (both foreign and domestic) – objective 1; 2) to reduce the carbon intensity of transportation fuels in California – objective 2; and 3) to reduce individual truck and airplane emissions by providing lower emission fuels – objective 3. This alternative has therefore not been retained for consideration in the environmentally superior alternative discussion below.

5.3.1.2 Reduced Hydrogen Plant Alternative (3)

In order to address the concerns related to the impacts from the natural gas pipeline, which produce a significant and unavoidable Class I impact in hazards, this alternative analyzes the possibility of reducing the capacity of the hydrogen plant in order to more closely meet the needs of the Project refinery. The Applicant has indicated that the hydrogen plant would be sized larger than what may be needed to supply only the refinery, on the order of 75 mmscfd of hydrogen, whereas the Project is estimated to need a minimum of about 50 mmscfd of hydrogen. Therefore, there is the potential for excess hydrogen to be produced. This additional capacity has been incorporated into the design due to the uncertainties associated with the hydrogen demands of the feedstocks and to give the refinery flexibility. If there is any excess hydrogen (up to 25 mmscfd excess depending on the feedstock types and hydrogen demands, or about 58,000 kg/day), it could be sent to other end-users through the hydrogen pipeline to the Carson Air Products Hydrogen Plant, and from there on to refineries or transportation needs through the existing hydrogen pipeline network in the southern area of Los Angeles. However, the Applicant indicates that this

is not a part of the Project, and this type of long-term pipeline use was not incorporated into the Air Products Carson EIR project.

Under this alternative, the hydrogen plant would be designed smaller, to more closely match the potential needs of the refinery, which could allow for a smaller natural gas pipeline and therefore reduce the severity of the hazard zones.

While the Project's production of excess hydrogen may provide benefits for the hydrogen market in Southern California, the location of hydrogen plants directly affects the infrastructure needs of an area. Hydrogen is currently made from natural gas in Los Angeles and therefore substantial natural gas connections are required and, subsequently, substantial hydrogen pipeline connections are also needed.

Whether the Paramount Refinery is the best location for a hydrogen plant that supplies users throughout Los Angeles is outside the scope of this analysis; however, reducing the size of the hydrogen plant would correspondingly reduce the requirements at the refinery for natural gas. The hydrogen plant could be sized to correspond to only the capacity needed for the Project, with no excess capacity or feedstock flexibility, or the hydrogen plant could be sized even smaller and allow for the transportation of hydrogen by the pipeline network to the refinery to continue to make up for the shortfall.

A hydrogen plant sized to feed only the minimum needs of the Project could be reduced from about 75 mmscfd hydrogen to about 50 mmscfd hydrogen. This would reduce the natural gas needs from about 28 mmscfd to 18 mmscfd per day. This reduction in natural gas needs would allow for a reduced sized new natural gas pipeline, from 16 inches to about 12 inches. This would reduce the size of the impact hazard zones associated with the off-site natural gas pipeline by about 20 percent, thereby reducing the severity of the significant and unavoidable Class I impact in hazards. However, even with the reduction in pipeline size and volume, the impact would remain a significant and unavoidable Class I impact (see impact HM.3 in Section 4.4, Hazards).

By utilizing the existing natural gas pipeline along with a reduced size hydrogen plant, the size of the new natural gas pipeline could be reduced even further. The historical use of natural gas at the refinery has been as high as 5.9 mmscfd. Using this natural gas pipeline along with a 10-inch natural gas pipeline could supply the hydrogen plant needed for only the Project.

In combination with 7 mmscfd of hydrogen from the hydrogen pipeline (the estimated capacity of the Carson Air Products hydrogen pipeline), the size of the new natural gas pipeline could be reduced even further, to about 8-10 inches, thereby reducing the size of the hazard zones by 50 percent over the Project and reducing the severity of the significant and unavoidable Class I impact in hazards. However, the impact would remain a significant and unavoidable Class I impact. As discussed under the No Project Alternative, this would require the use of the hydrogen pipeline for the foreseeable future and would therefore potentially produce a significant and unavoidable Class I impact associated with the long-term change of use of the hydrogen pipeline identified under the City of Carson Pipeline Project. The long-term availability of excess hydrogen from the Carson Air Products Plant to supply this Project is also not known and is speculative.

Aesthetic impacts associated with lighting could still occur under this alternative. Therefore, mitigation measures associated with impact A.4 would still be applicable.

Impacts associated with air quality would be the same as the Project as the same amount of hydrogen would be used, just possibly sourced from other locations. Mitigation measures associated with impacts AQ.1 (construction), AQ.2 (operations), and AQ.5 would still be applicable.

Noise levels associated with the refinery would be similar to the Project under this alternative as the hydrogen plant and associated equipment would still be installed at the refinery, although with a smaller hydrogen plant, noise levels would be incrementally lower but would still increase. Mitigation measures associated with impacts N.1 (construction) and N.2 (operations) would still be applicable as noise levels would be anticipated to increase associated with construction and operations.

Traffic levels would be the same as the Project. There would still be an increase in traffic and therefore mitigation measures associated with impacts T.1 and T.3 would still be applicable.

Because construction would still occur and therefore potential impacts to tribal cultural resources would still occur under this alternative, mitigations measures associated with impacts TC.1, TC.2 and TC.3 would still be applicable.

Wastewater would still be generated under this alternative, and compliance with all applicable permit conditions would still be required.

Other issue areas would have similar impacts under this alternative as under the Project.

A reduction in the size of the hydrogen plant, and the potential combination with the existing natural gas pipeline, could reduce the severity of the significant and unavoidable Class I impact. However, there is substantial uncertainty associated with the hydrogen demand associated with a range of feedstocks (as renewable fuels is a relatively new area for refineries) and this alternative could substantially limit the feedstocks available to the Project, thereby not achieving some of the Project objectives (Objectives 1-3 related to supplying renewable fuels and reducing emissions, if the refinery operations are limited by not sufficient hydrogen availability). The existing natural gas pipeline is also proposed to be utilized for combustion heaters and other uses at the refinery under the Project and may therefore not be 100 percent available. The use of the existing hydrogen pipeline under this Alternative could also result in the need for the long-term use of the existing hydrogen pipeline, generating a significant and unavoidable impact as discussed above, if additional hydrogen is needed. Therefore, this alternative has been eliminated for consideration in the environmentally superior alternatives discussion below.

5.3.1.3 Relocated Refinery Alternative (4)

CEQA requires that an EIR shall describe a range of reasonable alternatives to the project, or to the location of the project [CEQA Guidelines Section 15126]. In order to provide full disclosure to the decision makes and to satisfy the CEQA Guidelines requirements for alternative locations discussions, this alternative have been included. Utilizing another location for the Project would be a challenging alternative. The Project involves the continuation of an existing project at the Paramount Refinery, converting the refinery's extensive array of existing equipment arrangements, rail connections, natural gas pipeline connections, product pipelines, electrical connections, and a range of other refinery related components. Developing an entirely new refinery in some other location would require a substantial movement of materials and connections and would render the Project infeasible. The refinery products, such as gasoline, diesel and jet fuel, are used within the Los Angeles area and moving the refinery away from the urban areas would require additional transportation of refinery products.

Relocating the Project to another refinery in the region may allow for benefits in terms of natural gas connections. However, as many aspects of the Project infrastructure have already been developed at the Paramount Refinery location associated with the Original Renewable Fuels Project, this infrastructure would have to be re-developed at another location, increasing construction related emissions and transportation requirements, which would be essentially infeasible for the Project.

Impacts associated with air quality under this alternative would be greater than the Project as an entire refinery would have to be built in some other location, or substantially more infrastructure would need to be developed. Mitigation measures associated with impacts AQ.1 (construction), AQ.2 (operations), and AQ.5 would still be applicable.

Noise levels associated with the refinery would be the similar to the Project under this alternative as the hydrogen plant and associated equipment would still be installed at some other location. Mitigation measures associated with impacts N.1 (construction) and N.2 (operations) would still be applicable as noise levels would be anticipated at the other location associated with construction and operations.

Traffic levels would be the same as the Project. There would still be an increase in traffic yet as different intersections/areas would be affected, mitigation measures associated with impacts T.1 and T.3 would most likely no longer be applicable. Additional traffic issues in other areas are possible but would be speculative.

Because some construction and therefore potential impacts to tribal cultural resources could still occur under this alternative, mitigations measures associated with impacts TC.1, TC.2 and TC.3 would still be applicable.

Wastewater would still be generated under this alternative, and compliance with all applicable permit conditions would still be required.

Other issue areas such as land use, aesthetics, or water quality issues may arise depending on the selected location. These impacts would be speculative.

The refinery has been in the City of Paramount since the 1930s. Historical aerials show that in the 1950s, there were no residential areas located close to the refinery (Historical Aerials, 2021) and that these residential uses were developed between 1954 and 1963. While there would be advantages to having the refinery located in non-urban areas where residences would not be located near to noise, air quality and other industry-related issues, materials would still need to be moved to and from the refinery, such as the natural gas. Even if relocating the refinery were feasible, it would not necessarily eliminate or reduce the significant and unavoidable impacts. Therefore, this alternative has been rejected as infeasible and eliminated from further consideration.

5.3.1.4 Relocated Hydrogen Plant Alternative (5)

As discussed earlier under the Reduced Hydrogen Plant Alternative, the movement of natural gas to the refinery for hydrogen production produces significant and unavoidable Class I impacts in hazards. A relocation of only the hydrogen plant to a different location might reduce the need for transportation of natural gas, thereby eliminating or reducing the severity of the significant and unavoidable Class I impact in hazards. The relocated hydrogen plant could be located in an area with already existing natural gas infrastructure, such as at the existing Air Products Carson Hydrogen Plant or a refinery in the southern area of Los Angeles, and this could therefore eliminate the need to install a natural gas pipeline. The existing hydrogen pipeline might then be used to transport hydrogen to the refinery.

Under this alternative, the Project would still have the need for hydrogen, and it would still need to be transported to the refinery in order to produce renewable fuels. Hydrogen could be transported to the refinery through the Carson to Paramount hydrogen pipeline, but the current operating limits of the hydrogen pipeline would limit the amount of hydrogen that could be delivered to the refinery. In order to provide sufficient hydrogen, the operating pressure of the hydrogen pipeline would need to be increased to at least 260 psig, which would allow for maybe 30-50 mmscfd of hydrogen to be transported. However,

this would increase the hazards associated with the pipelines over the Project levels, which are already considered significant.

Aesthetic impacts associated with lighting could still occur under this alternative as some modifications would still occur at the Paramount Refinery. Therefore, mitigation measures associated with impact A.4 would still be applicable.

Impacts associated with air quality would most likely increase over the Project as additional construction needs would occur at a location separate from the Paramount Refinery. Mitigation measures associated with impacts AQ.1 (construction), AQ.2 (operations), and AQ.5 would still be applicable.

Noise levels associated with the refinery would be somewhat less than the Project under this alternative as the hydrogen plant would not be installed at the refinery. Mitigation measures associated with impacts N.1 (construction) and N.2 (operations) would still be applicable as noise levels would be anticipated to increase associated with construction and operations.

Traffic levels would be the same as the Project. There would still be an increase in traffic and therefore mitigation measures associated with impacts T.1 and T.3 would still be applicable.

Because some construction and therefore potential impacts to tribal cultural resources would still occur under this alternative, mitigations measures associated with impacts TC.1, TC.2 and TC.3 would still be applicable.

Wastewater would still be generated under this alternative, and compliance with all applicable permit conditions would still be required.

Other issue areas would have similar impacts under this alternative as under the Project.

The objectives of the Project are to increase production of renewable fuels (objective 1). Hazards of the hydrogen pipeline would increase under this alternative, yet there would also be a reduction in hazards with the elimination of the natural gas pipeline. The ability of other locations to secure permits and land areas sufficient to install a hydrogen plant are also somewhat speculative.

Since this alternative would not necessarily reduce the hazards associated with pipelines, and the development of permits and land acquisition is speculative, it has been eliminated from further consideration.

5.3.1.5 Hydrogen Generation Methods Alternative (8)

The most common form of hydrogen production is steam methane reforming (SMR), where the hydrogen in natural gas (methane - CH_4) is removed from the carbon using heat, high pressure steam and a catalyst to produce pure hydrogen and carbon dioxide (CO_2). This process requires large amounts of natural gas both for the SMR process and to produce heat. The Project requires the installation of a natural gas pipeline from an existing natural gas transmission pipeline system to be installed in order to satisfy the large demand for natural gas by the SMR process. This natural gas pipeline introduces a significant and unavoidable Class I impact.

There are other methods for producing hydrogen other than the use of an SMR. According to the Department of Energy (DOE, Office of Energy Efficiency & Renewable Energy, 2021), there are other methods for producing hydrogen that do not require large amounts of methane and could therefore negate the need for installing a natural gas pipeline. These include the following:

- Biomass Gasification;

- Biomass-Derived Liquid Reforming;
- Biomass Microbial Conversion;
- Coal Gasification;
- Thermochemical Water Splitting;
- Photoelectrochemical Water Splitting;
- Photobiological; and
- Electrolysis.

Each of these is discussed below.

Biomass is a renewable organic resource, and includes agriculture crop residues, forest residues, special crops grown specifically for energy use, organic municipal solid waste, and animal wastes. This renewable resource can be used to produce hydrogen, along with other byproducts, by gasification, liquefaction or microbial conversion. Gasification is a process that converts organic or fossil-based carbonaceous materials at high temperatures (>700°C), without combustion, with a controlled amount of oxygen and/or steam into carbon monoxide, hydrogen, and carbon dioxide. The carbon monoxide then reacts with water to form carbon dioxide and more hydrogen via a water-gas shift reaction (similar to the SMR process discussed above). Adsorbers or special membranes can separate the hydrogen from this gas stream. Liquids derived from biomass resources can also be reformed to produce hydrogen in a process similar to natural gas reforming. Microbial biomass conversion processes take advantage of the ability of microorganisms to consume and digest biomass and release hydrogen. The DOE indicates that biomass gasification and liquefaction are mature technology pathways, and microbial biomass conversion is a mid- to long-term technology pathway (meaning, it is still under research and development). However, biomass-based hydrogen production would require very large amounts of biomass be transported to the refinery, large amounts of space for processing and conversion and would not be feasible for the refinery location in order to generate the large amounts of hydrogen needed for the Project.

Under coal gasification, hydrogen is produced by first reacting coal with oxygen and steam under high pressures and temperatures to form synthesis gas, a mixture consisting primarily of carbon monoxide and hydrogen. However, there is no coal located at the refinery site, coal is most likely not allowed to be used in California as a fuel due to air quality regulations and coal would have to be transported large distances in order to be utilized. This would require large amounts of space and coal gasification is therefore not feasible for the Project.

Thermochemical water splitting uses high temperatures - from concentrated solar power or from the waste heat of nuclear power reactions or power generating facilities - and chemical reactions to produce hydrogen and oxygen from water. The DOE considers this technology a “long-term technology pathway” and is not readily available commercially at this time. It would also require large amounts of waste heat, or direct heat generated from natural gas combustion, for example, that would be substantially less efficient than SMR for the production of hydrogen and is not considered feasible for the Project.

In photoelectrochemical (PEC) water splitting, hydrogen is produced from water using sunlight and specialized semiconductors called photoelectrochemical materials, which use light energy to directly dissociate water molecules into hydrogen and oxygen. The PEC water splitting process uses semiconductor materials to convert solar energy directly to chemical energy in the form of hydrogen. The semiconductor materials used in the PEC process are similar to those used in photovoltaic solar electricity generation, but for PEC applications the semiconductor is immersed in a water-based electrolyte, where

sunlight energizes the water-splitting process. The DOE considers this technology a "long-term technology pathway" and is not readily available commercially at this time. In addition, it would require very large amounts of space for the panels and would not be feasible for the Project site or the Project.

The photobiological hydrogen production process uses microorganisms and sunlight to turn water, and sometimes organic matter, into hydrogen. The DOE indicates this is a longer-term technology pathway in the early stages of research and would therefore not be applicable or feasible for the Project.

Electrolysis is the process of using electricity to split water into hydrogen and oxygen. Like fuel cells, electrolysis consists of an anode and a cathode separated by an electrolyte. This technology is established and could be used to generate hydrogen. The DOE has undertaken case-studies of different hydrogen product arrangements. Two DOE case studies, using two different technologies for grid-based hydrogen production from electrolysis (solid oxide electrolysis and polymer electrolyte membrane electrolysis), for a 50,000 kg/day facility (or about 21 mmscfd, a little less than half of that required for the Project), give an indication of the electrical and water requirements for a similar arrangement at the refinery. For the Project, an electrolysis system would need to be installed that consumed between 195–307 MW of electricity and 103 – 163 million gallons of water per year, depending on the technology selected.

For water use, the Project proposes increasing water use from a 2011 use of 133 million gallons per year to 817 million gallons per year. The electrolysis alternative would increase that amount, but this increase appears feasible based on the large increase already proposed for the Project (this alternative would add 24 percent to the Project increased water demand).

For electrical use, historically the refinery has a demand of about 2 MW. The Project proposed hydrogen generation plant would add substantially to the electrical requirements, up to about 28 MW demand. However, the ability to provide more than 10x that amount of electricity for the production of hydrogen through electrolysis under this alternative is speculative and considerable infrastructure would be required in order to deliver that quantity of electricity to the refinery, including high voltage and power systems deliverable to the site, which may not be deliverable to the area. As it is, the Project is proposing installation of additional electrical capabilities in order to handle the additional loads. The installation of a power plant at the site large enough to generate up to 307 MW is a large power plant, similar in size to one of the Units at the LA DWP Scattergood Power Plant (DWP, 2021) and would require the same natural gas infrastructure as this alternative is trying to avoid. The spacing needs to produce this much electricity from alternative power means, such as solar, would require over 2,000 acres (SBC, 2014), much more than is available at the refinery. Therefore, this alternative has been eliminated from further consideration.

5.3.2 Alternatives Evaluated in the ESA

The following alternatives were retained for consideration in the environmentally superior alternative discussion.

5.3.2.1 No Project Alternative (1)

Under the No Project Alternative, the Project would not proceed. If disapproval of the Project would result in predictable actions by others, such as the proposal for another project, CEQA requires that the No Project impacts should be discussed [CEQA Guidelines Section 15126.6(e)(3)(B)]. Under the No Project Alternative, the Lead Agency should analyze what would reasonably be expected to occur in the foreseeable future if the Project were not approved [CEQA Guidelines Section 15126.6(e)(3)(C)].

AltAir is currently operating as a 3,500 BPD renewable fuel facility pursuant to permits issued based on the CEQA analysis conducted in an MND from 2013 and subsequent CEQA addendums (see Table 1.2).

With the No Project Alternative, no new equipment would be installed, and no existing equipment would be modified; the refinery may continue to receive renewable feedstock, refine 3,500 BPD of feedstock, and transport renewable transportation fuels throughout the Los Angeles area. Or, the refinery could utilize existing permits and return the refinery to a crude oil refinery. As a crude oil refinery, the resulting impacts could extend over a range depending on the extent to which the refinery operate. Since 2003, the refinery has operated as high as about 45,000 BPD. Between 2008–2011, the refinery operated closer to 20,000 BPD crude oil, with a substantial reduction in crude oil processing since 2012.

Significant and unavoidable Class I impacts related to increased air quality impacts associated with the Project transportation of feedstocks and products would depend on the extent of refinery operations with crude oil under the No Project Alternative. Air emissions for the refinery operating close to 40,000 BPD of crude oil could be higher than the Project. Air emissions for the refinery operating similar to 2011 crude throughputs or more recent levels would provide a reduction in the air emissions over the Project. Construction air quality impacts would also not occur as no construction would take place.

The natural gas pipeline would not be installed under the No Project Alternative and therefore significant and unavoidable Class I impacts related to hazards along the natural gas pipeline route would not occur.

Hydrogen would continue to be required by the refinery for continued operations. While the refinery has historically received liquid hydrogen by truck, hydrogen is now delivered to the refinery by pipeline from the City of Carson Air Products Hydrogen Plant. Therefore, under the No Project Alternative, the existing hydrogen pipeline, which was previously analyzed in an EIR for the City of Carson (Carson, 2020), would continue to be operated for the foreseeable future. In the Carson Hydrogen Pipeline EIR, the hydrogen pipeline was identified to have a significant and unavoidable Class I impact in risk of upset which occurs as long as the pipeline continues to provide hydrogen to the refinery. That impact would occur only during the time that the pipeline would supply hydrogen to the refinery and would cease once this Project's hydrogen plant was operational, or would operate only infrequently when this Projects hydrogen plant is down for maintenance. Under the No Project Alternative, the hydrogen plant would never be built so the hydrogen pipeline would continue to operate continuously into the foreseeable future. Under the No Project Alternative, this long-term continuous operation of the hydrogen pipeline would continue and would be a significant and unavoidable Class I impact.

While the No Project Alternative would reduce impacts, the No Project Alternative would not achieve the following objectives of the Project to 1) further reduce dependency on fossil fuels (both foreign and domestic) – objective 1; 2) to reduce the carbon intensity of transportation fuels in California – objective 2; and 3) to reduce individual truck and airplane emissions by providing lower emission fuels – objective 3. As required by CEQA, this alternative has been retained for consideration in the environmentally superior alternatives discussion below.

5.3.2.2 Relocated Natural Gas Pipeline Route Alternative (6)

There are a number of natural gas transmission pipelines in Los Angeles, as shown in Figure 5-1. None of them are located in close proximity to the Paramount Refinery. A substantial amount of natural gas is needed to produce enough hydrogen for the Project. The Project proposes a 3.7-mile natural gas pipeline south from the refinery along Lakewood Blvd to the natural gas transmission pipeline on Del Amo Blvd. Alternative natural gas pipeline routes are possible, including:

- Along Somerset Blvd to the west to Atlantic Ave (2.7 miles);
- To the north-west along the Pacific Electric Right-of-Way and freight ROW and along the I-105 and I-710 interchange at Atlantic Ave (2.5 miles); and

- To the south-east along the Pacific Electric Right-of-Way and freight ROW to Del Amo Ave (6.0 miles);

Due to the high levels of natural gas needed for the hydrogen plant, a connection to a gas transmission pipeline would be needed.

All of the alternative routes listed above would require passing through highly urban areas. The advantage of the first two alternative routes is that they would be shorter, and those that pass along the right-of-way (third route) would also not require the installation of the pipeline in city streets, with the associated traffic congestion issues. However, all of the routes would require the use of the same sized pipelines and therefore would produce the significant and unavoidable hazard impacts as the Project natural gas pipeline would, except that a shorter pipeline route would expose fewer neighborhoods to the increased hazards of the natural gas pipeline and would therefore reduce the severity of the significant and unavoidable impact in hazards. The advantage of a shorter installation route is that fewer areas would be exposed to the hazards, even though they would still be in higher density urban areas.

Aesthetic impacts associated with lighting could still occur under this alternative. Therefore, mitigation measures associated with impact A.4 would still be applicable.

For air quality impacts, the peak day emissions associated with pipeline installation would be the same as the Project as the same equipment would be utilized to install the pipeline under this alternative as under the Project (total emissions would be reduced with a shorter pipeline). Construction impacts associated with air quality would be the same as the Project and mitigation measures associated with impact AQ.1 would still be applicable. Operations would be the same as the Project and mitigation measures associated with impact AQ.2 would still be applicable. The mitigation measure associated with impact AQ.5 would still be applicable.

Noise levels associated with the refinery would be the same as the Project under this alternative. Mitigation measures associated with impacts N.1 (construction) and N.2 (operations) would still be applicable.

Traffic levels would be the same as the Project. There would still be an increase in traffic and therefore mitigation measures associated with impacts T.1 and T.3 would still be applicable.

Because some construction and therefore potential impacts to tribal cultural resources would still occur under this alternative, mitigations measures associated with impacts TC.1, TC.2 and TC.3 would still be applicable.

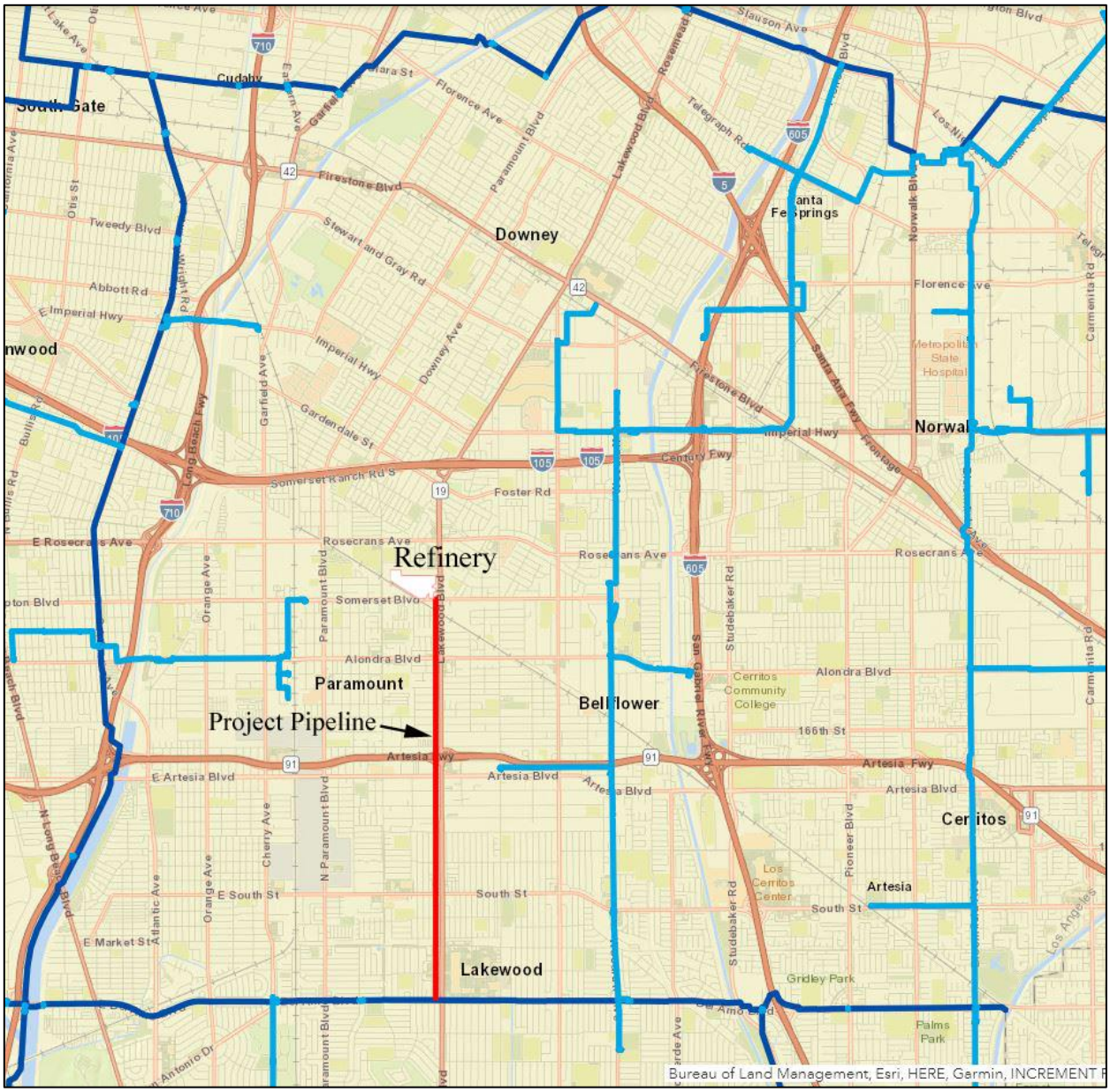
Wastewater would still be generated under this alternative, and compliance with all applicable permit conditions would still be required.

Other issue areas would have similar impacts under this alternative as under the Project.

There are potential issues with the acquiring of permits and rights-of-ways to utilize these alternative pipeline routes and these are therefore speculative. The Pacific Electric Right-of-Way and freight ROW, for example, has plans for use by LA Metro and its availability for the installation of a natural gas pipeline is speculative.

However, since this alternative could reduce the severity of the significant and unavoidable Class I hazards impact from a natural gas pipeline, and would meet the Project objectives, it has been retained for analysis in the environmentally superior discussion below.

Figure 5-1 Project Vicinity Natural Gas Pipelines



Notes: Dark blue = gas transmission pipelines, light blue = high pressure distribution lines.
Source: PHMSA Gas Transmission Pipeline Interactive Viewer, 2021.
https://www.arcgis.com/apps/webappviewer/index.html?id=c85ced1227af4c8aae9b19d677969335

5.3.2.3 Pipeline Transportation of Refinery Products Alternative (7)

Historically, the movement of refinery feedstocks and products occurred by truck and rail and would continue to do so under the Project but at increased levels, which would cause a significant increase in air emissions and a significant and unavoidable Class I impact in air quality. Although some material, including jet fuels and diesel, may be transported by pipeline, transferring this material movement to pipeline under this alternative to the maximum extent feasible (limited by pipeline scheduling of the common carrier pipeline and available inventory capacity at either end) could reduce the severity of the air quality impact associated with truck and rail transportation when compared to the Project.

The Applicant has indicated that a 60-day average limit for the number of trucks to 300, which would prevent the peak number of 540 trucks from occurring on a consistent basis, is feasible. The peak day would remain the same, but given that truck traffic is dictated by market conditions, would restrict emissions over the average period.

Historically, the transportation of refinery products (gasoline, diesel fuel and jet fuel) has primarily occurred via pipeline, with about 88 percent of products being shipped by pipeline in 2011. The location and product-specific destinations of renewable fuels (limited locations for deliveries, limits on mixing with other, conventional fuels, and market-driven limits on availability) has resulted in the transportation of these types of refinery products by truck and rail instead of pipeline. Pipeline transportation generally requires mixing the fuels with conventional fuels.

In addition, historically the transportation of refinery feedstock (crude oil) to the refinery has been via pipeline through an extensive network of pipelines extending into Central California. However, as tallow is a solid and must be heated to be a liquid and it is utilized in substantially smaller quantities than the crude oil for the Southern California markets, there are no pipelines for tallow, and it must be transported by rail and truck to the refinery. Some feedstocks are also transported by ship to the Los Angeles/Long Beach Harbors as part of the Project and would then be transferred to trucks and transported to the refinery. Normally, for Los Angeles area refineries, feedstocks such as crude oil being delivered by ship would be transferred to the refineries by pipeline. However, since pipeline delivery of tallow/vegetable oils is not feasible because they cannot share a pipeline with crude oil and there are no dedicated vegetable oil pipelines, feedstocks from ships and delivered via the ports must be transported by truck.

The Paramount Refinery has historically transferred products such as jet fuel via a network of pipelines to a number of destinations: to the Lakewood Tank Farm and then on to the Kinder Morgan system centered in Carson, California, which then transfers the product to end-users such as Los Angeles Airport (LAX) for jet fuel; or directly to end-users; or to other locations depending on the product. There is an extensive network of product pipelines in the Los Angeles area (see Figure 5-2 for all product pipelines and Figure 5-3 for World Energy pipelines). Historically, there has not been sufficient quantities of renewable fuels to utilize the product pipeline system as market factors target the deliveries of renewable fuels to end-users specializing in renewable fuels, and significant dilution of the renewable fuels dilutes their market value.

However, with the substantial quantity of renewable fuels proposed to be produced as part of the Project, there is the possibility that some of the product pipeline network, at least through the Lakewood Tank Farm and on to LAX and Kinder Morgan, could be utilized fully and thereby reduce the severity of the significant and unavoidable Class I air quality impacts associated with air emissions from trucking. The exact amount of reduction would be an estimate, but for example a 25 percent use of pipelines instead of trucks for products would reduce air emissions (NOx) by 13 percent. This would reduce the severity of the significant and unavoidable Class I impact. Mitigation measures associated with impacts AQ.1 (construction), AQ.2 (operations), and AQ.5 would still be applicable.

Other issues areas could also experience fewer impacts under this alternative. For example, transportation would be reduced as fewer trucks would be visiting the refinery, thereby reducing congestion around the refinery. Transportation was not identified as a significant and unavoidable Class I impact, but as a significant but mitigable Class II impact due to hazards associated with truck movements into and out of the refinery. This Class II impact could be further reduced with this alternative. Mitigation measures related to impacts T.1 and T.3 would still be applicable.

Impacts related to the hazards of truck transportation of hazardous materials would be reduced as fewer trucks would be utilized under this alternative but would be replaced by pipeline transportation of

products. Each of these would present hazards to the community and are identified in Section 4.4, Hazards.

Aesthetic impacts associated with lighting could still occur under this alternative. Therefore, mitigation measures associated with impact A.4 would still be applicable.

Noise levels associated with the refinery would be the same as the Project under this alternative. Mitigation measures associated with impacts N.1 (construction) and N.2 (operations) would still be applicable.

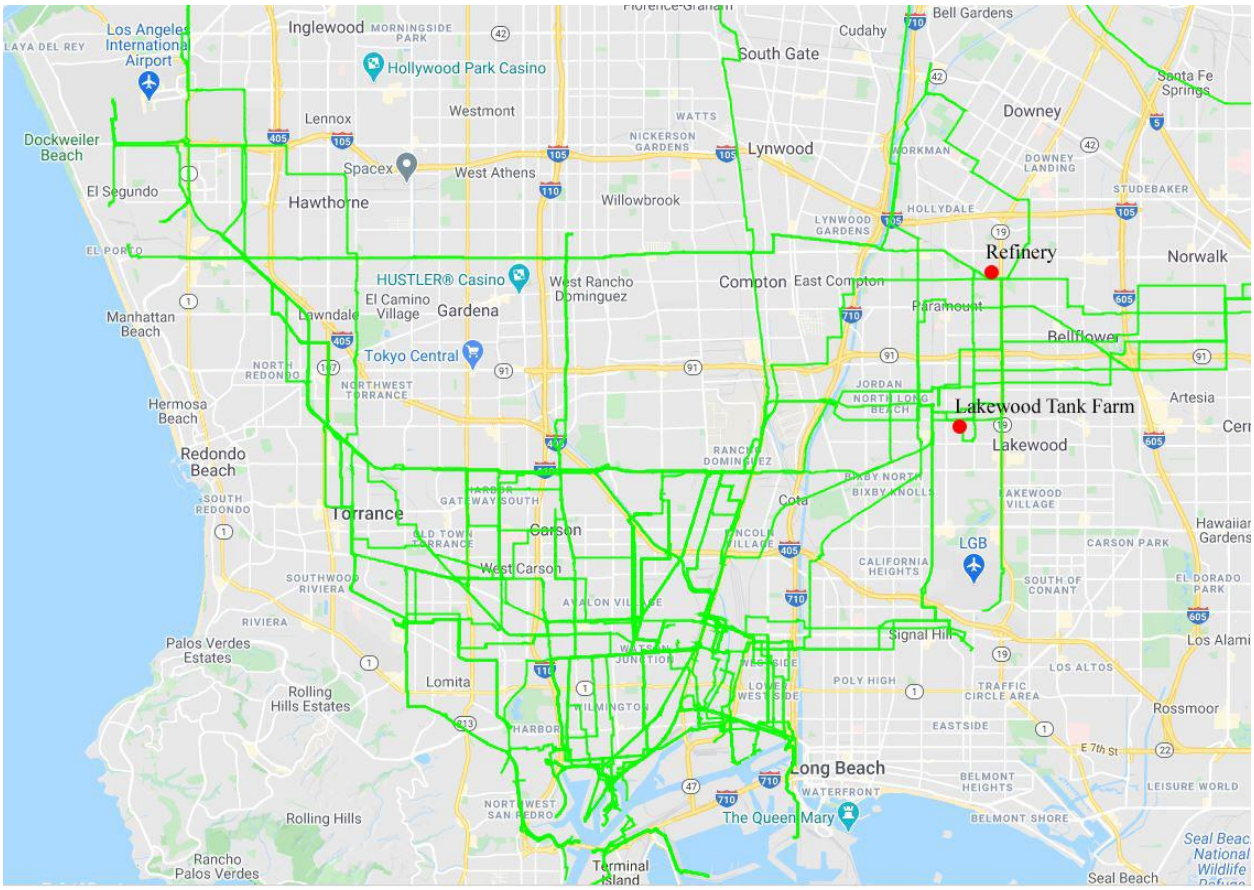
Because some construction and therefore potential impacts to tribal cultural resources would still occur under this alternative, mitigations measures associated with impacts TC.1, TC.2 and TC.3 would still be applicable.

Wastewater would still be generated under this alternative, and compliance with all applicable permit conditions would still be required.

Other issue areas would have similar impacts under this alternative as under the Project.

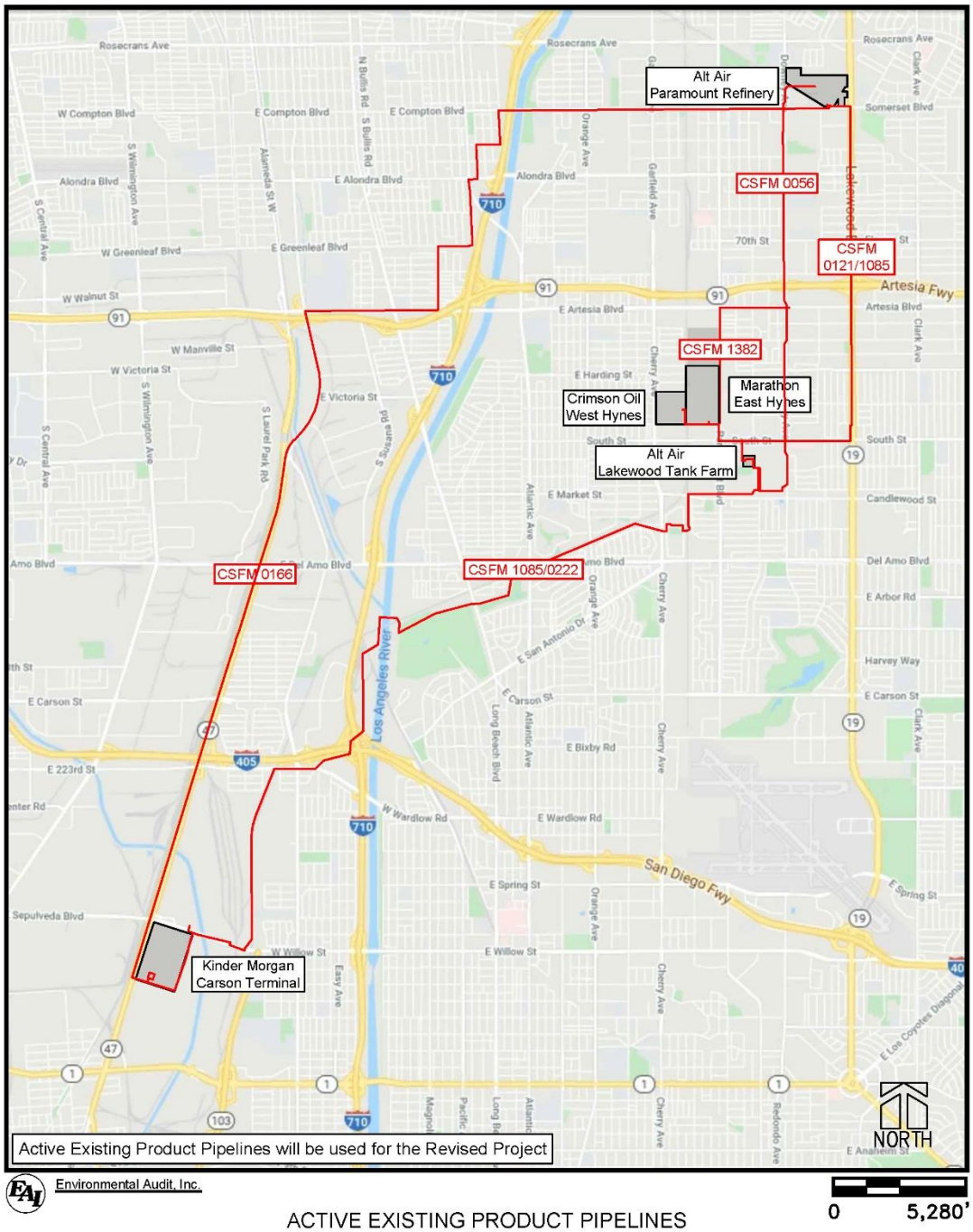
Since this alternative could provide reductions in the severity of impacts, and would continue to meet the Project objectives, this alternative has been retained for discussion in the environmentally superior alternative below.

Figure 5-2 Los Angeles Area Product Pipelines



Note: Green lines = product pipelines
Source: PHMSA NPMS 2021. https://pvnpms.phmsa.dot.gov/PublicViewer/

Figure 5-3 Paramount Refinery Product Pipelines



Source: Applicant 2021.

5.4 Alternative Comparison Summary

Alternatives for the relocated gas pipeline and the pipeline transportation of refinery products have been carried forward for use in the ESA analysis. Table 5.2 provides a comparison of each of the alternatives to

the Project for each of the pertinent issue areas based on the discussion above. Section 5.4 summarizes this comparison and discusses the Environmentally Superior Alternative.

Table 5.2 Alternatives Comparison

Issue Area	Proposed Project	No Project	Relocated Natural Gas Pipeline Route	Pipeline Transportation of Refinery Products
Aesthetics	Class II	Class III	Class II	Class II
Air Quality	Class I	Class I or III	Class I	Class I ↓[1]
Climate Change and GHG	Class III and IV	Class III	Class III and IV	Class III and IV
Hazardous Materials	Class I	Class I	Class I ↓[2]	Class I
Hydrology and Water Quality	Class III	Class III	Class III	Class III
Land Use	Class III	Class III	Class III	Class III
Noise and Vibration	Class I	Class III	Class I	Class I
Transportation	Class II	Class III	Class II	Class II ↓[3]
Tribal Cultural Resources	Class II	Class III	Class II	Class II
Utilities and Service Systems	Class III	Class III	Class III	Class III
Other	Class III	Class III	Class III	Class III

Notes: ↓ = decrease in severity, ↑ = increase in severity
Class I – significant and unavoidable, Class II – significant but mitigable, Class II – less than significant.
1 – a reduction in severity occurs in air quality due to the reduction in truck and rail use and associated reduction in air emissions.
2 – a reduction in severity occurs due to alternative routes being shorter and exposing fewer areas to increased hazards.
3 – a reduction in severity occurs because fewer trucks would be required to access the refinery and impact area roadways.

5.5 Environmentally Superior Alternative Discussion

This section summarizes the environmental advantages and disadvantages associated with the Project and the alternatives evaluated above. Based upon this discussion, the environmentally superior alternative is selected as required by CEQA. The CEQA Guidelines Section 15126.6(e)(2), state that if the environmentally superior alternative is the No Project Alternative, then the next most environmentally preferred alternative from among the other alternatives must also be identified.

CEQA does not provide specific direction regarding the methodology of comparing alternatives and the Project. Each project must be evaluated for the issues and impacts that are most important; this will vary depending on the project type and the environmental setting. Issue areas with significant and unavoidable (Class I) long-term impacts are generally given more weight in comparing alternatives. Impacts that are short-term (e.g., construction-related impacts) or those that can be mitigated to less than significant levels are generally considered to be less important.

The advantages and disadvantages of each of the alternatives not eliminated above are discussed below compared to the Project.

No Project Alternative: The No Project Alternative would most likely involve the continuation of the Original Renewable Fuels Project at the Paramount Refinery at the level of 3,500 BPD and the conversion of the refinery back to a crude oil refinery with a potential range of impacts depending on the level of crude oil production. The No Project Alternative would eliminate the construction-related air quality impacts associated with the Project's refinery conversion. The operational air quality significant and unavoidable impacts would be eliminated if the refinery operates similar to 2011 levels or more recent levels as fewer trips would be required to transport the lower volumes of renewable fuels, or, under the crude oil refinery scenario, more feedstocks and products could be transported by pipeline, thereby

reducing air emissions. If the refinery were to operate at higher levels, the air emissions could increase under the No Project Alternative scenario.

The hazards impacts would also be reduced as the natural gas pipeline would not be installed. However, the hydrogen pipeline would operate on a long-term basis as the hydrogen generation unit proposed as part of the Project would no longer be installed. This long-term operation of the hydrogen pipeline would be a potentially significant and unavoidable Class I impact.

Other issues areas that were identified as less than significant with mitigation (aesthetics, transportation, and tribal cultural resources) would be less than significant. In addition, impacts that were identified as less than significant (climate change, hydrology, land use, utilities, and other issue areas) would continue to be less than significant.

Since the impacts of the No Project Alternative could be either less or more than the Project depending on how the refinery is operated, and under the No Project Alternative the beneficial impact associated with GHG emissions would be eliminated, it is not selected as the environmentally superior alternative. In addition, the No Project Alternative would not achieve any of the Project objectives.

Relocated Natural Gas Pipeline Route: The relocated natural gas pipeline route alternative provides advantages over the Project in that it potentially provides a shorter route to a natural gas transmission pipeline connection, thereby reducing the severity of a significant and unavoidable Class I impact in hazards as fewer people would be exposed to the hazards. All other issue areas would have identical impacts to the Project and the Project objectives would all be achieved. There are uncertainties associated with this alternative as the permits and ROW requirements remain somewhat speculative and negotiations with the Gas Company have not been initiated for other routes. However, in the absence of those uncertainties, this alternative appears feasible and could reduce the severity of the significant and unavoidable Class I impact in hazards.

Pipeline Transportation of Refinery Products: The pipeline transportation of refinery products would reduce the impacts of some issue areas, specifically the severity of the significant and unavoidable Class I impact associated with air quality during operations due to the reduction in truck use. The Applicant has indicated that the movement of some products by pipeline would be feasible as they already have access to some of these pipeline resources and historically have moved refinery products via these pipelines. This CEQA document has examined the worst-case movement of materials by primarily truck and rail. However, increasing the movements of materials by pipeline to the extent feasible could reduce air impacts. Because this alternative would provide a reduction in the severity of a significant and unavoidable Class I impact, and would achieve all of the Project objectives, it has been selected as the environmentally preferred alternative.

Least Toxic Alternative: The South Coast AQMD has a policy which directs CEQA analysis to identify the least toxic alternative. South Coast AQMD's policy document Environmental Justice Program Enhancements for FY 2002–03, Enhancement II-1 requires the identification of a feasible project alternative with the lowest air toxics emissions. While this Project is not under the jurisdiction of the South Coast AQMD as lead agency, this discussion is provided here for full disclosure purposes. Toxic emissions from the Project are assessed using the health risk analysis approach (using HARP2 model) as well as examining health risks from trains and trucks in-transit. None of the health risks are determined to produce levels that exceed the health risk thresholds. However, the selected environmentally superior alternative of maximum pipeline transportation of refinery products would reduce DPM emissions from trucks and rail and would provide some advantages in terms of toxic emissions.

5.6 References

Carson. 2020. Air Products Hydrogen Pipeline Project, City of Carson Project Case CUP 1089-18, State Clearinghouse No. SCH 2020059038 https://ci.carson.ca.us/communitydevelopment/HydrogenGas.aspx

DOE. 2021. Office of Energy Efficiency & Renewable Energy, https://www.energy.gov/eere/fuelcells/hydrogen-and-fuel-cell-technologies-office

Historical Aerials. 2021. Web site access 4/2021, https://www.historicaerials.com/viewer

LADWP. 2021. LADWP Begins Rebuilding Scattergood Power Plant, https://www.ladwpnews.com/ladwp-begins-rebuilding-scattergood-power-plant-to-eliminate-ocean-water-cooling-reduce-emissions-and-improve-reliability-project-marks-continued-progress-towards-clean-energy-future-for-los-angeles/

PHMSA. 2021. Gas Transmission Pipeline Interactive Viewer, https://www.arcgis.com/apps/webappviewer/index.html?id=c85ced1227af4c8aae9b19d677969335

PHMSA NPMS. 2021. https://pvnpms.phmsa.dot.gov/PublicViewer/

SBC. 2014. Santa Barbara County, Cuyama Solar Facility and Comprehensive Plan/Land Use Development Code Amendments Project, September 2014 https://cosantabarbara.app.box.com/s/o9fp2865sykaqn98s0702plaa96xj7t5/folder/74200906388

6.0 Other CEQA Related Requirements

This section of the Subsequent Environmental Impact Report (SEIR) addresses other California Environmental Quality Act (CEQA) related requirements. These include the following (1) identification of significant environmental effects which cannot be avoid if the Project is implemented, and (2) evaluation of the Project's related growth-inducing effects. The following sections evaluate the Project considering these requirements. The last part of this section identifies the issue areas where impacts were found to be less than significant as part of the scoping process.

6.1 Significant Environmental Effects Which Cannot be Avoided if the Project is Implemented

6.1.1 Air Quality

- **Impact AQ.1:** The Project would generate emissions during construction that could exceed the applicable South Coast AQMD air quality significance thresholds.

  Available Mitigation

  - ***AQ-1a: Construction Management Program***

- **Impact AQ.2:** Operational emissions could exceed the applicable South Coast AQMD air quality significance thresholds.

  Available Mitigation

  - ***AQ-2a: Newer Trucks***
  - ***AQ-2b: NOx Reduction Program***

6.1.2 Hazardous Materials/Risk of Upset

- **Impact HM.3:** The Project transportation of materials by truck, rail, marine barge, and pipeline could create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.

  Available Mitigation

  - No additional requirements beyond regulatory requirements detailed in Section 4.4.2.

6.1.3 Noise and Vibration

- **Impact N-2:** Operation: The Project would result in the generation of an increase in ambient noise levels in the vicinity of the Project.

  Available Mitigation

  - ***N-2a: Noise Assessment***
  - ***N-2b: Noise Monitoring and Management Plan***
  - ***N-2c: Railroad Noise Reduction Measures***

6.1.4 Environmental Justice

- **Impact EJ.1:** The Project would disproportionately affect minority and low-income populations at levels exceeding the corresponding median for the County in which the Project is located.

  Available Mitigation

  - Mitigation measures AQ-1a, AQ-2a, AQ-2b, AQ-5a, N-1a, N-1b, N-2a, N-2b, and N-2c, as well as the regulatory requirements detailed in Section 4.4.2 would be applicable to this impact.

6.2 Growth Inducement

Section 15126.2(d) of the CEQA Guidelines requires that EIRs provide a discussion of the growth-inducing impacts of the project. Growth-inducing impacts could be caused by projects that foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Growth-inducing impacts can also be caused by removing obstacles to population growth such as an expansion of a wastewater treatment plant. Growth-inducing impacts can result from population increases that require the construction of new community services facilities.

In general terms, a project may induce spatial, economic, or population growth in a geographic area if it meets any of these four criteria:

- Removal of an impediment to growth (e.g., establishment of an essential public service or the provisions of new access to an area);
- Economic expansion or growth (e.g., changes in revenue base, employment expansion);
- Establishment of a precedent-setting action (e.g., an innovation, a change in zoning or general plan amendment approval); or
- Development or encroachment in an isolated area or one adjacent to open space (being different from an "infill" type of project).

Should a project meet any one of the above listed criteria, it can be considered growth inducing. The impacts of the Project are evaluated below with regard to these four growth-inducing criteria.

6.2.1 Removal of an Impediment to Growth

The Project would not result in the establishment of an essential public service, nor would it provide new access to a previously inaccessible area. The Project would not be responsible for, nor contribute to, the expansion of utility services into a previously unserved area or an under-served area. The Project intends to use reclaimed water from the Central Basin Water District. A tie-in to the reclaimed water distribution system is readily available along the southwest perimeter of the Paramount Refinery (refinery) (see Figure 4.10-1). The Project is not expected to result in new or expanded water treatment services (other than the addition of a service line). The Project would require the installation of new wastewater treatment facilities to treat the increase in wastewater generated from the Project, which must be reviewed and approved by the Los Angeles County Sanitation District (LASCD) as part of modifications to the existing Industrial Waste Discharge Permit. Assuming compliance with the modified permit, this would not result in the removal of an impediment to growth.

The Project modifications would result in an increase in electricity use. Electrical power would be provided in part by the new Hydrogen Generation Unit, and the remainder would continue to be provided by Southern California Edison (SCE). To supply the Project's additional requirement, power supplied by SCE

would be upgraded and enhanced with a new on-site electrical substation, which would include new transformers to feed three new power distribution centers. The Project would not result in new or expanded electrical utilities outside of the existing refinery. As a result, the Project would not cause significant growth inducement under this criterion.

6.2.2 Economic Expansion or Growth

Economic growth is evaluated to the extent that it would relate directly or indirectly to a physical impact on the environment. Economic growth could occur in the area during construction of the Project. At the peak of construction, approximately 1312 temporary construction jobs would be created by the Project. The construction would take place over a period of approximately 22 months, which could produce some short-term economic growth. Because of the large size of the construction work force available in the Southern California area, the 1312 temporary construction jobs are expected to be filled from the existing regional labor pool. Therefore, no growth in hotel services would be expected to occur as a result of the Project.

The number of refinery workers is expected to be less than peak employment in 2011. The current renewable fuels operation has been in continuous production since January of 2016. Under the Project, the remainder of the 50,000 barrels per day (BPD) crude oil refinery would be converted into a 25,000 BPD renewable fuels production facility. The refinery conversion would eliminate the refining of crude oil and support the use of renewable jet fuel, diesel, gasoline, and propane. AltAir currently supplies renewable gasoline, diesel, and jet fuel to fleet services such as UPS, United Airlines, Boeing, the Department of Defense, and several California municipalities and school systems.

6.2.3 Precedent-Setting Action

The purpose of the Project is to complete the conversion of the refinery to manufacturing only renewable fuels. The Project would convert the remainder of the 50,000 BPD crude oil refinery into a 25,000 BPD renewable fuels production facility.

The Project is expected to require up to 50 railcars per day of feedstock, blend materials and products. Renewable jet fuel can be transferred from the refinery via truck or via existing pipeline to the Lakewood Tank Farm. The final blended product will be transferred via pipeline to tankage in Carson, California, where it will be delivered via other pipelines to Los Angeles International Airport. AltAir currently supplies renewable gasoline, diesel, and jet fuel to fleet services such as UPS, United Airlines, Boeing, the Department of Defense, and several California municipalities and school systems.

The Project would not result in a change in zoning or general plan amendment approval. The Project would require an amendment to the Conditional Use Permit and a zone variance for equipment that exceeds 55 feet. Neither of these actions are considered precedent-setting actions, defined as any act, decision, or case that serves as a guide or justification for subsequent situations). Therefore, the Project would not be a precedent setting action that would create significant growth-inducing impacts.

6.2.4 Development of Open Space

Development of open space is considered growth inducing when it encroaches upon urban-rural interfaces or in isolated localities. The Project modifications would be located on lands zoned for industrial uses; the existing refinery is zoned for heavy manufacturing, and the Lakewood Tank Farm is zoned for light manufacturing. The Project would involve a new connection to a Southern California Gas transmission line to provide natural gas for the new Hydrogen Generation Unit. The potential 3.7-mile

pipeline would extend north from Lakewood Boulevard to Somerset Boulevard and would enter the refinery from the east on Somerset Boulevard. The proposed pipeline would extend along an existing roadway and would therefore not result in the development of open space.

Construction of the natural gas pipeline is expected to occur during the time that the Hydrogen Generation Unit is being constructed. Ministerial building and grading permits for the Project would be required from the City of Paramount and cities through which the new natural gas pipeline would be installed to assure that the Project complies with the California Building Code. Right-of-way permits are also expected to be required from local jurisdictions for the construction of the natural gas pipeline which may include Caltrans and the cities of Paramount, Bellflower, Lakewood, and Long Beach. Natural gas impacts associated with the Project modifications would be less than significant, assuming compliance with required permits.

6.3 Effects Found Not to be Significant

As discussed in Section 1.0, Introduction, the City of Paramount, as lead agency under CEQA, determined that an SEIR would be required as part of the permitting process for the Project. In compliance with CEQA Guidelines, the City solicited public and agency input through distribution of a Notice of Preparation (NOP) and conducted an independent analysis of possible project impacts. Sections 4.1 through 4.11 provide an analysis of the Project for those issues areas that were anticipated to have possible significant impacts. Section 4.12 provides a discussion of the following issue areas where the scoping process determined no significant impacts would occur:

- Agriculture and Forestry Resources;
- Biological Resources;
- Energy;
- Geology Processes/Geological Hazards;
- Mineral Resources;
- Population and Housing;
- Public Services;
- Recreation; and
- Wildfire.

6.4 Known Areas of Controversy

CEQA requires that an EIR discuss areas of controversy known to the Lead Agency including issues raised by agencies and the public [CEQA Guidelines Section 15123 (b)(2)]. Comments received on the NOP were from agencies, including California Department of Transportation Comments, City of Bellflower Comments, Los Angeles County Sanitation Districts Comments, and South Coast Air Quality Management District Comments. All of these were procedural in nature and not controversial. There are no other known controversies related to the Project.

7.0 Mitigation Monitoring and Reporting Program

This section provides the Mitigation Monitoring and Reporting Program (MMRP) for the Project. The City of Paramount (City), as the California Environmental Quality Act (CEQA) Lead Agency, would have the responsibility of ensuring that implementation of required mitigation as identified in this Subsequent Environmental Impact Report (SEIR) occurs as intended if the Project (or an alternative) is approved. As the Applicant and Project proponent, World Energy would be responsible for implementing all applicable measures, including the adopted mitigation measures and conditions of Project approval, as well as conditions imposed in any permits or regulations administered by other responsible agencies.

The MMRP for the Project (or alternative) establishes the approach to implementing the mitigation measures identified in this SEIR. If the Project is approved and the MMRP described below is adopted by the City, a detailed Environmental Quality Assurance Program (EQAP) would be developed, as described in Section 7.2 below. The EQAP would describe compliance monitoring roles and responsibilities and would be the mechanism whereby the City would implement the MMRP.

Table 7.1 summarizes the Project impacts and mitigation measures. Table 7.2, along with the full text of the mitigation measures themselves (see Sections 4.1-4.11), are central elements of the MMRP. Monitoring of compliance with the specified mitigation measures would be implemented throughout construction and operations.

Table 7.1 Summary of Project Impacts and Mitigation Measures

Issue Area	Impact	Description	Class*	Mitigation Measures
Aesthetics	A.1	Scenic Vistas	III	
	A.2	Scenic Resources	III	
	A.3	Visual Character/Quality	III	
	A.4	Lighting	II	Light Shielding
Air Quality	**AQ.1**	**Construction**	**I**	Construction Management Program
	AQ.2	**Operations**	**I**	Newer Trucks NOx Reduction Program
	AQ.3	Toxics	III	
	AQ.4	Odors	III	
	AQ.5	Rules and Policies	II	Recordkeeping
Climate Change GHG	GHG.1	GHG Emissions	III	
	GHG.2	Plans	IV	
Hazardous Materials	HM.1	Routine Operations	III	
	HM.2	Upsets	III	
	HM.3	**Pipeline**	**I**	None
	HM.4	Schools	III	
	HM.5	Site Contamination	III	
	HM.6	Airports	III	
	HM.7	Emergency Response	III	
	HM.8	Wildland Fires	III	
Hydrology and Water Quality	WQ.1	Standards	III	
	WQ.2	Groundwater Supplies	III	
	WQ.3	Drainage Patterns	III	
	WQ.4	Pollutants	III	
	WQ.5	Control Plans	III	
Land Use and Planning	LU.1	Create Divisions	III	
	LU.2	Policy Conflict	III	

Issue Area	Impact	Description	Class*	Mitigation Measures
Noise and Vibration	N.1	Pipeline and Refinery Construction *Daytime construction not significant*	II	Daytime limits Noise Monitoring and Management Plan
	N.2	**Operations: Rail Connection** *Refinery operations not significant*	**I**	Noise Assessment Noise Monitoring and Management Plan Railroad Noise Reduction Measures
	N.3	Vibration	III	
	N.4	Airport Noise Conflicts	III	
Transportation and Circulation	T.1	Policy Conflicts	II	Lakewood Blvd. Restriping
	T.2	VMT	III	
	T.3	Traffic Hazards	II	Traffic Management Plan
	T.4	Emergency Access	III	
Tribal Cultural Resources	TC.1	Tribal Resources	II	Monitoring, Procedures
	TC.2	Tribal Resources Specifics	II	Monitoring, Procedures
	TC.3	Human Remains	II	Procedures
Utilities and Service Systems	US.1	New Resource	III	
	US.2	Water Supplies	III	
	US.3	Wastewater	III	
	US.4	Solid Waste	III	
	US.5	Solid Waste Regs	III	
Other	All	Ag, Bio, Energy, Geo, Mineral, Housing, Public Services, Recreation, Wildfire	III	

* Class I = Significant and Unavoidable; Class II = Less than Significant with Mitigation; Class III = Less than Significant; Class IV = Beneficial.

7.1 Authority for the Mitigation Monitoring and Reporting Program

As the Lead Agency under the CEQA, the City of Paramount is required to adopt a program for monitoring and reporting on the implementation of mitigation measures if the Project or an alternative is approved. The MMRP would be used to ensure that the adopted mitigation measures are implemented as defined in this SEIR. This Lead Agency responsibility originates in Public Resources Code Section 21081.6(a) (Findings) and the CEQA Guidelines Sections 15091(d) (Findings) and 15097 (Mitigation Monitoring or Reporting).

7.2 Organization of the EQAP

If the Project (or an alternative) is approved, the City would compile the Final MMRP and include it in the agency decision documents, as adopted. The EQAP serves as a self-contained guide for implementing the MMRP throughout Project construction and operations. The EQAP shall be prepared according to procedures established by the City of Paramount Planning Department, paid for by the Applicant, and submitted for review and approval by the City Planning Department. The EQAP shall include the following:

- All conditions and mitigation measures imposed on this Project and the impacts they are mitigating separated by issue area;
- A plan for coordination and implementation of all measures and any additional plans and programs required therein;

- A description of all measures the Applicant will take to assure compliance, including field monitoring, data collection, management and coordination of all field personnel and feedback to field personnel and affected agencies;
- A contractor to carry out the EQAP shall be selected by the City Planning Division. The contractor(s) will be under contract and responsible to the City, with all costs to be funded by the Applicant. The EQAP contractor shall appoint at least one On-site Environmental Coordinator (OEC) responsible for overall monitoring, but shall employ as many qualified specialists as necessary, as determined by the Planning Department, to oversee specific mitigation areas. In addition, the OEC has the authority and ability to ensure compliance with all Project conditions and to stop work in an emergency; and
- Contractor feedback responsibilities shall include status reports (as specified in EQAP) to be prepared throughout the construction and operation of the Project. These shall include status of development, status of conditions, incidents of non-compliance and their results and any other pertinent or requested data.

The EQAP shall also provide for any appropriate procedures not specified in the conditions of approval to be carried out if they are necessary to avoid environmental impacts.

7.3 Mitigation Compliance Responsibility

The responsibility for implementing adopted mitigation measures rests with the Applicant, unless otherwise specified in the measure, for the life of the Project. As Lead Agency under the CEQA, the City of Paramount is responsible for monitoring an approved project to ensure that required mitigation measures are implemented. The purpose of the MMRP is to document that the mitigation measures required by the City are implemented and that mitigated environmental impacts are reduced to the level identified in the SEIR.

When a mitigation measure requires that a study or plan be developed during the design or pre-construction phase of the Project, the Applicant must submit the final study or plan to the City for review and approval. Any study or plan that requires approval of the City must allow time for adequate review.

7.4 General Monitoring Procedures

7.4.1 Environmental Monitors and County Inspectors

Various permit conditions of approval and plan requirements will require implementation (1) prior to the start of construction (such as Project final design review and plan development), and (2) during construction and operations. The City and its EQAP contractor are responsible for integrating the mitigation monitoring procedures into the construction and operation processes in coordination with the Applicant for City issued permits. To oversee the monitoring procedures and to ensure success, the assigned EQAP OEC(s) must be on-site during construction activity having the potential to create a significant environmental impact or other impact for which mitigation is required. Likewise, the EQAP OEC(s) and agency Inspectors will be on-site to ensure compliance with their respective authorities during construction and operations.

7.4.2 Operations and Construction Personnel

A key element in the success of mitigation and mitigation monitoring is the full cooperation of Project personnel and supervisors, during both construction and operations. Successful implementation of many

of the mitigation measures requires specific actions and behaviors on the part of the supervisors or crews working for the Applicant on the Project. To ensure success, the following actions would be taken:

- Specific procedures to be followed by construction and operations contractor companies engaged to do their respective work would be written into their contracts with the Applicant. Procedures to be followed by construction and operations personnel would be written into an agreement that all construction and operation personnel would be asked to sign, denoting consent to the procedures regardless if Applicant staff or contractor;
- A Worker Environmental Awareness Program would be conducted to inform and train construction and operations personnel about the requirements of the monitoring program (as detailed in the EQAP). The OEC(s) would verify that each crew member received the required training; and
- A written summary of mitigation monitoring procedures would be provided to construction and operations supervisors for all mitigation measures requiring their respective attention.

7.4.3 General Reporting Procedures

A checklist will be developed and maintained by the City EQAP contractor to track all mitigation measure requirements, including timing. The EQAP OEC(s) will note any problems that may occur and take appropriate action to rectify the problems. Consolidated reports will be prepared by the City EQAP OEC(s) documenting construction activities, compliance activities observed across issue areas, notification of compliance issues by the Applicant, any issues and their resolution, and photographs of relevant activities and conditions. These reports would be generated on an as needed basis based upon the activities that are occurring.

The Applicant is to provide the City with written reports of the Project, which shall include progress of construction, resulting impacts, mitigation implemented, and all other noteworthy elements of the Project. These reports would be generated on an as needed basis based upon the activities that are occurring and based upon the reporting schedule provided in the EQAP.

The public is allowed access to records and reports used to track the monitoring program. Monitoring records and reports will be made available for public inspection by the City or its designee on request.

7.5 Mitigation Monitoring and Reporting Program Table

The following table presents the monitoring and reporting program requirements for the mitigation measures identified in the environmental analysis section of this SEIR (see Section 4), by issue area.

Table 7.2 Mitigation Monitoring and Reporting Program

MM #	MM Title	Monitoring/ Reporting Action	Timing & Method of Verification	City Responsibility	Applicant Responsibilities
Aesthetics and Visual Resources (Section 4.1)					
A-4a	Light Shielding	Provide appropriate light shielding for any new lighting equipment.	Prior to and during construction and operation.	City review and approval. City monitors compliance.	Provide light shielding for new lighting equipment. Submit the plan for lighting to the Chief Building Official for review and approval prior to the issuance of permits.
Air Quality (Section 4.2)					
AQ-1a	Construction Management Program	Maintain a Construction Management Program for the Project that shall incorporate the mitigation measures and Best Management Practices AQ-1a-1 through AQ-1a-12.	During construction.	City of Paramount and the City of Bellflower (as applicable for construction activities located within the City of Bellflower) monitor compliance.	Maintain a Construction Management Program for the Project that shall incorporate the mitigation measures and Best Management Practices AQ-1a-1 through AQ-1a-12.
AQ-2a	Newer Trucks	The Applicant shall require that all contracts with trucking companies specify the required use of 2017 model year trucks or newer in order to reduce NOx emissions.	During operation.	City monitors compliance.	Require that all contracts with trucking companies specify the required use of 2017 model year trucks or newer in order to reduce NOx emissions.
AQ-2b	NOx Reduction Program	The Applicant shall provide the NOx Reduction Program Plan to reduce NOx emissions.	During construction and operation.	City of Paramount, School District and the City of Bellflower review and approval. City of Paramount, School District and the City of Bellflower monitor compliance.	Develop the plan and implement measures in the community to reduce regional and local emissions.
AQ-5a	Recordkeeping	Monitor and maintain records on fuel usage, Higher Heating Values, data on truck and rail trips, and other metrics required	During operation.	City and South Coast AQMD monitor compliance.	Monitor and maintain records on fuel usage, Higher Heating Values, data on truck and rail trips, and other metrics required to estimate

Table 7.2 Mitigation Monitoring and Reporting Program

MM #	MM Title	Monitoring/ Reporting Action	Timing & Method of Verification	City Responsibility	Applicant Responsibilities
		to estimate emissions on an annual basis.			emissions on an annual basis for at least three years.
Hazardous Materials and Risk of Upset (Section 4.4)					
HM-Cum1	Coordination with LA Metro	Coordinate with LA Metro on the Project and WSAB project construction prior to any permit issuance. Provide communications and evidence of coordination with LA Metro prior to any permit issuance.	Prior to and during construction.	City review and approval. City staff to monitor implementation.	Coordinate with LA Metro on the Project and WSAB project construction prior to any permit issuance. Obtain clearance from LA Metro prior to any permit issuance.
Noise and Vibration (Section 4.7)					
N-1a	Daytime Limits	Perform construction activities only during the daytime hours between the hours of 7:00 a.m. and 8:00 p.m..	During construction.	City monitors compliance.	Perform construction activities only between the hours of 7:00 a.m. and 8:00 p.m. Place signage with the restriction at the construction site.
N-1b	Noise Monitoring and Management Plan	Produce a Noise Monitoring and Management Plan for Project construction.	Prior to and during construction.	City review of the Noise Monitoring and Management Plan. City monitors compliance.	Produce a Noise Monitoring and Management Plan for construction.
N-2a	Noise Assessment	Provide a detailed noise assessment.	Prior to operations.	City monitors compliance. School District to also review noise assessment prior to permit issuance.	Provide a detailed noise assessment indicating that Project operational noise will not exceed a 3 dBA increase at the areas to the north of the refinery.
N-2b	Noise Monitoring and Management Plan	Submit to the City a Noise Monitoring and Management Plan that outlines procedures for	Prior to operations.	City review and approval of the Noise Monitoring and Management Plan. School District to also	Submit to the City a Noise Monitoring and Management Plan prior to permit issuance. Conduct monitoring within

Table 7.2 Mitigation Monitoring and Reporting Program

MM #	MM Title	Monitoring/ Reporting Action	Timing & Method of Verification	City Responsibility	Applicant Responsibilities
		regular noise monitoring of refinery operations and procedures for minimizing noise to nearby residential areas.		review noise monitoring plan prior to permit issuance. City review of noise monitoring results.	one month of operations commencing and report results to City.
N-2c	Railroad Noise Reduction Measures	Ensure implementation of limited train operations to daytime hours.	During operation.	City monitors compliance.	Work with railroad operator to implement limited train operations along the 1-mile connection.
Transportation and Circulation (Section 4.8)					
T-1a	Lakewood Blvd. Restriping	Provide funding and coordination to the cities of Paramount and Bellflower to restripe the Lakewood Blvd. southbound lane to have a dedicated right turn lane on to Somerset Blvd.	Prior to construction.	City of Paramount and City of Bellflower monitor compliance.	Provide funding and coordination to the cities of Paramount and Bellflower to restripe the Lakewood Blvd. southbound lane to have a dedicated right turn lane on to Somerset Blvd.
T-3a	Traffic Management Plan	Prepare and implement Construction and Operations Traffic Management Plan.	Prior to and during construction and operation.	City of Paramount and City of Bellflower monitor compliance.	Prepare and implement Construction and Operations Traffic Management Plan.
Tribal Cultural Resources (Section 4.9)					
TC-1a	Retain a Native American Monitor/Consultant	Retain an approved tribal monitor/ consultant, or qualified archaeologist if the tribal monitor is unavailable, on-site during ground disturbing construction to complete daily monitoring logs.	During construction.	City monitors compliance.	Retain and compensate for the services of a tribal monitor/consultant, or qualified archaeologist if the tribal monitor is unavailable, for the duration of ground disturbing construction activities.
TC-1b	Unanticipated Discovery of Tribal Cultural or	Cease work in the vicinity of the find until find is assessed by archaeologist and tribal monitor. Follow	During construction.	City monitors compliance.	Cease work in the vicinity of the find until find is assessed by archaeologist and tribal

Table 7.2 Mitigation Monitoring and Reporting Program

MM #	MM Title	Monitoring/ Reporting Action	Timing & Method of Verification	City Responsibility	Applicant Responsibilities
	Archaeological Resources Procedures	CEQA Guidelines Section 15064.5(f) if required.			monitor. Comply with any additional mitigation.
TC-3a	Unanticipated Discovery of Human Remains Procedures	Divert work. Notify the Tribe, the qualified lead archaeologist, the construction manager, and the County Coroner.	During construction.	City monitors compliance.	Divert work and establish exclusion zone around discovery location. Report to County Coroner. Follow PRC 5097.98 if required.

8.0 List of Preparers and Contacts

This Subsequent Environmental Impact Report (SEIR) was prepared by the City of Paramount (City) Planning Department staff, with assistance from MRS Environmental, Inc. under contract to the City. Substantial information was also provided by the Applicant. Information provided by the Applicant was reviewed by the City prior to inclusion in the SEIR.

The Applicant and their consultants were not directly involved in the preparation of the environmental analyses in the SEIR but did review of the portion of Section 2.0 covering the Project Description. The Applicant also provided several technical studies as part of their application. These studies were all peer reviewed by the City and their consultants, and many of the studies were updated by the Applicant based upon the City peer review. The Applicant also provided additional technical information in response to information requests by the City during the preparation of the SEIR. The Appendices provide the final technical reports submitted by the Applicant.

The City's Planning Department also coordinated with the South Coast Air Quality Management District (South Coast AQMD) on the air quality and climate change/greenhouse gas sections of the SEIR.

The following persons associated with the City's Planning Department were directly involved in preparing the SEIR:

John Carver, Planning Director
Rafael Casillas, City Engineer
Bill Pagett, City Engineer
Farhad Iranitalab, Traffic Engineer, Willdan Engineering

The following persons were contacted in preparing this SEIR, in addition to those listed above:

Jillian Wong, South Coast Air Quality Management District
Barbara Radlein, South Coast Air Quality Management District
Michael Krause, South Coast Air Quality Management District
Bhaskar Chandan, South Coast Air Quality Management District
Alina Mullins, South Coast Air Quality Management District
Ryan Banuelos, South Coast Air Quality Management District
Yan Yang, South Coast Air Quality Management District
Patrick Lee, South Coast Air Quality Management District
Irene Kim, South Coast Air Quality Management District
Thomas Lee, South Coast Air Quality Management District
Tran Vo, South Coast Air Quality Management District
Steve Tsumura, South Coast Air Quality Management District
Lijin Sun, South Coast Air Quality Management District
Colleen Paine, South Coast Air Quality Management District
Andy Salas, Gabrieleño Band of Mission Indians - Kizh Nation
Jerry Stock, City of Bellflower
Bill Pagett, City of Bellflower
Phil Wang, City of Bellflower
Len Gorecki, City of Bellflower

MRS Environmental, Inc. staff and subcontractors involved in the preparation of the SEIR included the following:

Table 8.1 List of SEIR Preparers and Responsibilities

Company (Affiliation)	Key Contributors	Responsibilities
MRS Environmental, Inc. (Prime Contractor)	John Peirson, Jr., B.A. Chemical Engineering	Hazardous Materials and Risk of Upset
	Gregory Chittick, B.S., M.S. Mechanical Engineering	Project Alternatives Project Description Air Quality Climate Change/Greenhouse Gas Emissions Hazardous Materials and Risk of Upset Noise and Vibration Traffic
	Luis Perez, B.A., M.A. Project Management	EIR Project Manager Executive Summary Other CEQA Related Requirements Mitigation Monitoring and Reporting Program
	Dean Dusette, B.A. Geography	Air Quality Land Use and Planning
	Nicole Trezza, B.S. Environmental Studies	Executive Summary Introduction and Project Description Cumulative Projects Aesthetics and Visual Resources Hydrology and Water Quality Land Use and Planning Tribal Cultural Resources Utilities and Service Systems Environmental Justice Other Issue Areas
Central Coast Transportation Consulting	Joe Fernandez, PE, AICP	Transportation and Circulation