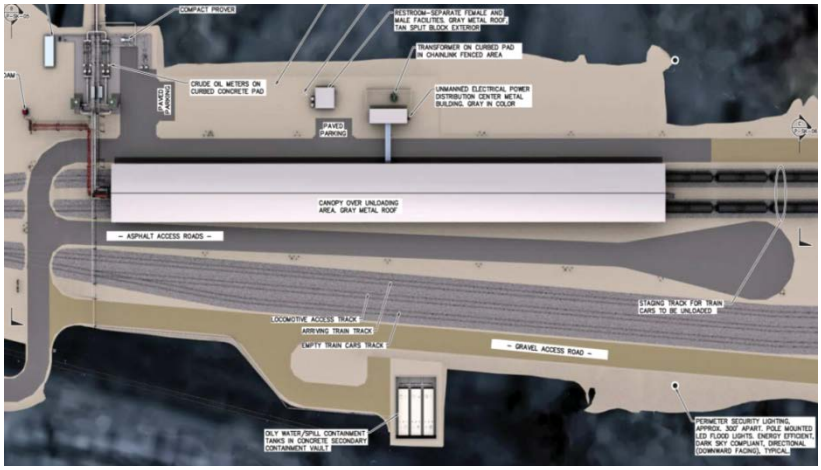
Phillips 66 Company Rail Spur Extension
And Crude Unloading Project
Final Environmental Impact Report
And
Vertical Coastal Access Project Assessment



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Volume I - Final EIR Main Document

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Volume II - Technical Appendices

The technical appendices are voluminous, and are therefore provided in electronic format only on the CD attached to the inside front cover of the EIR notebook.

Volume III - Response to Comments

Due to the volume of comments and associated responses, these documents have been provided in electronic format only on the CD attached to the inside cover of the EIR notebook. The response to comments CD contains following:

1. **How to Use the Response to Comments Files on the CD**
2. **Response to Comments Executive Summary**
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List of Abbreviations and Acronyms

°F	Degrees Farenheit
µg/m^3	Microgram Per Cubic Meter
AAR	American Association of Railroads
AB	Assembly Bill
ABS	Automatic Block Signal
ACM	Asbestos Containing Materials
ACHP	Advisory Council on Historic Preservation
AEP	Association of Environmental Professionals
AG	Agricultural
AGOF	Arroyo Grande Oil Field
AGP	Agricultural Policy
AIRFA	American Indian Religious Freedom Act
ANSI	American National Standards Institute
API	American Petroleum Institute
AR	Assembly Resolution
ARB	Air Resources Board
ARPA	Archaeological Resources Protection Act
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
ATCM	Air Toxics Control Measure
BACT	Best Available Control Technologies
BAU	Business As Usual
BETX	Benzene, Ethylbenzene, Toluene, and Xylenes
BLEVE	Boiling Liquid Expanding Vapor Explosion
BBL	Barrels (one barrel is 42 gallons)
BMP	Best Management Practices
BNSF	Burlington Northern Santa Fe Railroad
BOEMRE	Bureau of Ocean Energy Management, Regulation and Enforcement
BPD	Barrels Per Day
BPY	Barrels Per Year
BSA	Biological Study Area
CAAA	Clean Air Act Amendments
CadnaA	Computer Aided Noise Abatement
Cal Fire	California Department of Forestry and Fire Prevention
CalARP	California Accidental Release Prevention
CalEEMod	California Emissions Estimator Model
CalRecycle	Department of Resources Recycling and Recovery
CalTrans	California Department of Transportation
CAP	Clean Air Plan
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CAZ	Coastal Appealable Zone
CBC	California Building Code
CCA	California Coastal Act

CCAA	California Clean Air Act
CCBER	Cheadle Center for Biodiversity and Ecological Restoration
CCPS	Center for Chemical Process Safety
CCR	California Code of Regulations
CDC	California Department of Conservation
CDFA	California Department of Food and Agriculture
CDFW	California Department of Fish and Wildlife
CEC	California Energy Commission
CEMA	California Emergency Management Agency
CDMG	California Division of Mines and Geology
CDTSC	California Department of Toxic Substances Control
CDWR	California Department of Water Resources
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFC	California Fire Code
CFR	Code of Federal Regulations
CGS	California Geological Survey
CH_4	Methane
CHP	California Highway Patrol
CNDDB	California Natural Diversity Data Base
CNEL	Community Noise Equivalent Level
CNG	Compressed Natural Gas
CNPS	California Native Plant Society
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CO_{2e}	Carbon Dioxide Equivalent
COSE	Conservation and Open Space Element
CPUC	California Public Utilities Commission
CRCC	Coast Rail Coordinating Council
CRHR	California Register of Historical Resources
CSC	California Species of Special Concern
CSFM	California State Fire Marshal
CSRP	California State Rail Plan
CSWRCB	California State Water Resources Control Board
CTC	Centralized Traffic Control
CTP	California Transportation Plan
CUPA	Certified Unified Program Agencies
CWA	Clean Water Act
CWT	Hundred Weight
CZLUO	County's Coastal Zone Land Use Ordinance
dB	Decibel
dBA	A-Weighted Decibel
DBH	Diameters at Breast Height
DCS	Distributed Control System
DHRP	Dune Habitat Restoration Plan
DOC	Diesel Oxidation Catalyst

DOGGR	Division of Oil, Gas and Geothermal Resources
DOR	Division of Rail
DOT	United States Department of Transportation
DPF	Diesel Particulate Filters
DPM	Diesel Particulate Matter
DSR	Slow Order Delays
DTSC	Department of Toxic Substances Control
DWR	California Department of Water Resources
EIR	Environmental Impact Report
EPA	Environmental Protection Agency
ESA	Environmentally Sensitive Area
ESA	Endangered Species Act
ESHA	Environmentally Sensitive Habitat Area
EVA	Emergency Vehicle Access
EX	Energy or Extractive Resource Area
EX-1	Extractive Resource Area
FDC	Fire Department Connections
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
FH	Flood Hazard
FHWA	Federal Highway Administration
FMMP	Farmland Mapping and Monitoring Program
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
FTI	Freight Train Interference
G/BHP HR	Grams Per Brake Horsepower Hour
GDP	Gross Domestic Product
GHG	Green House Gases
GPM	Gallon-Per-Minute
GPM/FT^2	Gallons Per Minute Per Square Feet
GWP	Global Warming Potential
H_2S	Hydrogen Sulfide
HARP	Hotspots Analysis and Reporting Program
HC	Hydrocarbons
HCD	Housing and Community Development
HCP	Habitat Conservation Plans
HHI	Health Hazard Index
HRA	Health Risk Analysis
HSWA	Hazardous and Solid Waste Amendments
HTUA	High Treat Urban Area
Hz	Hertz
IESNA	Illuminating Engineering Society of North America
IND	Industrial
ISO	International Organization for Standards
ITP	Incidental Take Permit

IWMA	Integrated Waste Management Authority
KM	Kilometer
KVA	Key Viewing Areas
kW	Kilowatts
kW/m^2	Kilowatts Per Square Meter
LAUS	Los Angeles Union Station
LCC	Land Capability Classification
LCP	Local Coastal Plan
Ldn	Day-Night Average Level
Leq	Equivalent Continuous Sound Level
Lmax	Maximum Instantaneous Noise Level
Lmin	Minimum Instantaneous Noise Level
LNG	Liquefied Natural Gas
LOS	Level of Service
LPG	Liquefied Petroleum Gas
LSHS	Local Safety Hazard Sites
LUE	Land Use Element
M/S	Meters Per Second
MBTA	Migratory Bird Treaty Act of 1918
MCE	Maximum Credible Earthquake
MCL	Maximum Contamination Levels
MM/S	Millimeters Per Second
MMCRP	Mitigation Monitoring, Compliance, and Reporting Program
MMTCE	Million Metric Tons of Carbon Equivalent
MOC	Management of Change
MOU	Memorandum of Understanding
MPE	Maximum Probable Earthquake
MPH	Miles Per Hour
MRS	Marine Research Specialists
MS4	Municipal Separate Storm Sewer System
MSE	Mechanically Stabilized Earth
MT/yr	Metric Tons Per Year
$MTCO_2E$	Metric Tons of Carbon Dioxide Equivalent
MW-hrs	Megawatt Hours
N_2O	Nitrous Oxide
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NAHC	Native American Heritage Commission
NASS	National Agricultural Statistics Service
NCCP	Natural Community Conservation Plans
NEC	Northeast Corridor
NEPA	National Environmental Policy Act
NFPA	National Fire Protection Association
NGL	Natural Gas Liquids
NHPA	National Historic Preservation Act
NIST	National Institute of Standards and Technology

NO	Nitric Oxide
NO_X	Nitric Oxides
NO_2	Nitrogen Dioxide
NOA	Naturally Occurring Asbestos
NOAA	National Oceanic and Atmospheric Administration
NOP	Notice of Preparation
NMFS	National Marine Fisheries Service
NMMA	Nipomo Mesa Management Area
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NTSB	National Transportation Safety Board
OCS	Outer Continental Shelf
ODSRVA	Oceano Dunes State Vehicular Recreation Area
OEHHA	Office of Environmental Health Hazard Assessment
OGP	Oil & Gas Producers
OHV	Off-Highway Vehicle
OPR	Office of Planning and Research
OPS	Office of Pipeline Safety
OS	Open Space
OSG1	Open Space Goal
OSHA	Occupational Safety and Health Administration
OSPR	Office of Spill Prevention and Response
OPRP	Oil Spill Response Plan
OTP	On-Time Performance
PCC	Portland Cement Concrete
PCE	Passenger Car Equivalent
PDC	Power Distribution Center
PG&E	Pacific Gas and Electric Company
PGA	Peak Ground Acceleration
PHMSA	Pipeline and Hazardous Materials Safety Administration
PLC	Programmable Logic Controller
PM	Particulate Matter
PM_{10}	Suspended Particulate Matter (aerodynamic diameter of ≤10 microns)
$PM_{2.5}$	Suspended Particulate Matter (aerodynamic diameter of ≤2.5 microns)
PMI	Point of Maximum Impact
PMI	Positive Material Identification
POLB	Port of Long Beach
POS	Port of Seattle
PPB	Parts Per Billion
PPM	Parts Per Million
PRC	Public Resources Code
PRIIA	Passenger Rail Investment and Improvement Act of 2008
PTC	Permit to Construct

PTO	Permit to Operate
PUC	Public Utilities Commission
QRA	Quantitative Risk Assessment
RCRA	Resource Conservation and Recovery Act
REL	Reference Exposure Level
RISA	Rail Safety Improvement Act of 2008
ROC	Reactive Organic Compounds
ROG	Reactive Organic Gases
ROW	Right of Way
RS	Residential Suburban
REC	Recreational
RMP	Risk Management Plan
RMP	Risk Management Programs
RMS	Root Mean Square
ROG	Reactive Organic Gases
ROSB	Railroad Operations and Safety Branch
RTC	Rail Traffic Controller
RTE	Freight Trains Are Routing
RWQCB	Regional Water Quality Control Board
SAP	Sampling and Analysis Plan
SB	Senate Bill
SCADA	Supervisory Control and Data Acquisition
SCAQMD	South Coast Air Quality Management District
SCRRA	Southern California Railroad Authority
SCS	Sustainable Community Strategy
SDNRR	San Diego Northern Railroad
SDP	Service Development Plan
SF_6	Sulfur Hexafluoride
SLF	Sacred Lands File
SLOCAPCD	San Luis Obispo County Air Pollution Control District
SLOC	San Luis Obispo County
SLOCOG	San Luis Obispo Council of Governments
SMARA	Surface Mining and Reclamation Act of 1975
SMPS	Santa Maria Pump Station
SMR	Santa Maria Refinery
SO_2	Sulfur Dioxide
SOHP	State Office of Historic Preservation
SP	Service Population
SPCCP	Spill Prevention, Control and Countermeasure Plan
SRA	Sensitive Resource Areas
SRV	Sensitive Riparian Vegetation
SSURGO	Soil Survey Geographic
STC	Sound Transmission Class
SVRA	State Vehicle Recreational Area
SWMP	Solid Waste Management Plan
SWMP	Stormwater Management Program

SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	Toxic Air Contaminants
TAN	Total Acid Number
TDS	Total Dissolved Solids
TH	Terrestrial Habitat
TNM	Traffic Noise Model
TPY	Tons Per Year
TRB	Transportation Research Board
UDEQ	Utah Department of Environmental Quality
UFC	Uniform Fire Code
ULE	Upper Level Event
UPRR	Union Pacific Railroad
USDA	United States Department of Agriculture
USDOT	United States Department of Transportation
USFWS	United States Fish and Wildlife Service
USGC	United States Gulf Coast
USGS	United States Geologic Service
V/C	Volume to Capacity
Vs_{30}	Average Shear Wave Velocity in the Upper 30 Meters
VOC	Volatile Organic Compounds
WDR	Waste Discharge Requirements
WET	Wetlands

Executive Summary

This Final Environmental Impact Report (FEIR) has been prepared to address a proposed Rail Spur Extension and Crude Oil Unloading Facility (Rail Spur Project) that would be located at the Santa Maria Refinery (SMR) in Nipomo. The applicant for the Rail Spur Project is Philips 66 Company (Phillips 66) (the Applicant). The County of San Luis Obispo is the California Environmental Quality Act (CEQA) Lead Agency, and has prepared this Environmental Impact Report (EIR) for the project described herein.

The SMR property is located in the southwestern corner of San Luis Obispo County, approximately 1 mile southwest of State Route 1, and approximately 3.5 miles west of the community of Nipomo, in the South County Coastal and South County Inland planning areas. The location of the SMR property is shown in Figure ES-1.

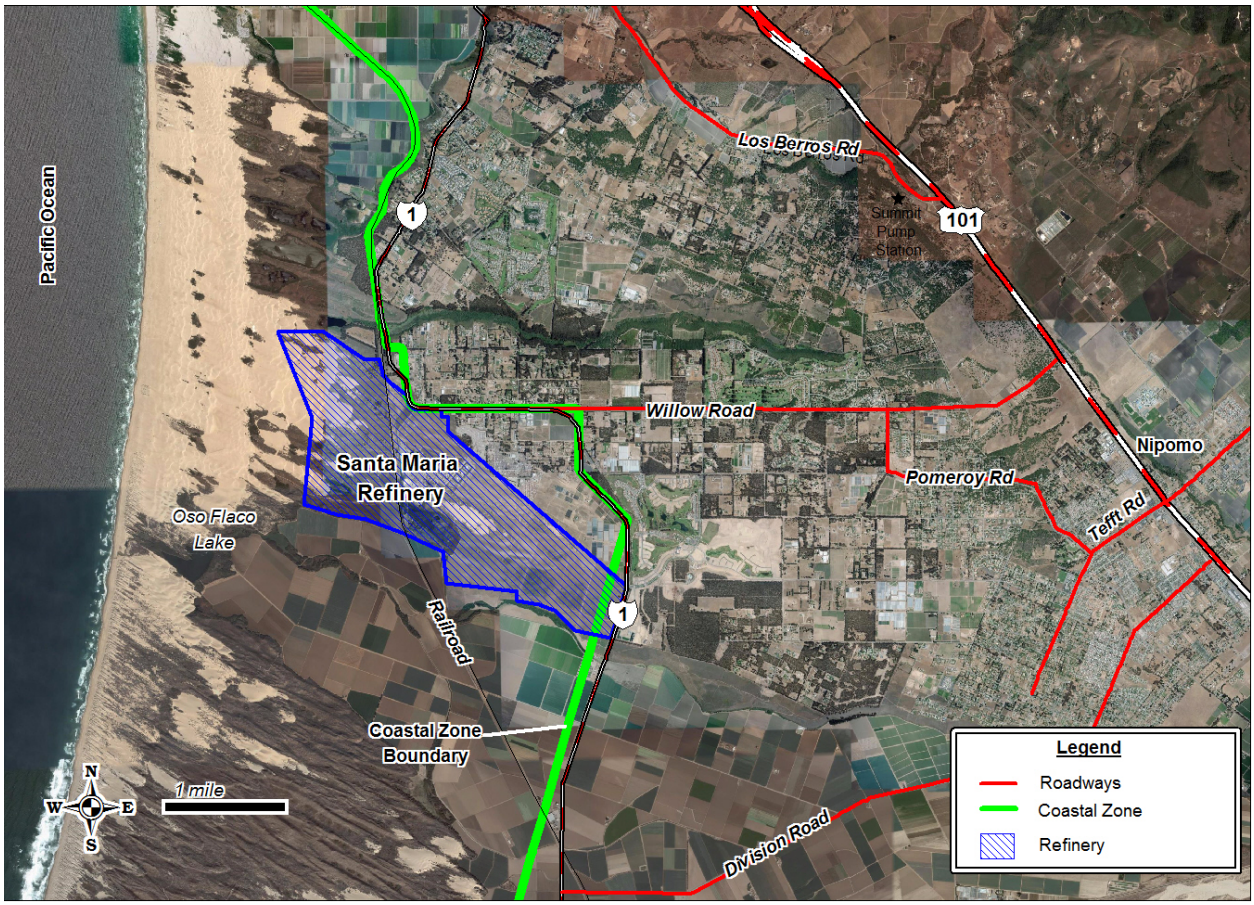
The FEIR also contains an environmental assessment of various coastal access options through the SMR site (Coastal Access Project). Phillips 66 was recently required to comply with Section 23.04.420 of the Coastal Zone Land Use Ordinance as a condition of approval of the Phillips 66 Throughput Increase Project (approved by the County Board of Supervisors in March 2013). The assessment of various coastal access options is being considered as a result of the Throughput Project and is not directly related to the Rail Spur Project. The coastal access assessment is discussed in more detail at the end of the Executive Summary.

This FEIR is an informational document that is being used by the general public and governmental agencies to review and evaluate the Rail Spur Project and potential impacts for various vertical coastal access options at the SMR site. The reader should not rely exclusively on the Executive Summary as the sole basis for judgment of the Projects. Specifically, the FEIR 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 Notice of Preparation (NOP) process that was used for the EIR, the reasons for issuing a revised Draft EIR, and the public comment period for the Revised Draft EIR;
- A brief description of the Rail Spur Project;
- A summary of key impacts and mitigation measures associated with the Rail Spur Project;
- A brief description of the alternatives evaluated throughout this FEIR for the Rail Spur Project;
- A summary of the Environmentally Superior Alternative for the Rail Spur Project; and
- A summary of the Vertical Coastal Access Project programmatic assessment.

Figure ES-1 Proposed Project Location



Note: While the UPRR tracks pass through the refinery property, Phillips 66 does not own the railroad right-of-way. This property is owned by UPRR.

Source: MRS 2013.

A set of Impact Summary Tables for the Rail Spur Project is provided after the Executive Summary. These tables summarize the impacts and mitigation measures for the Rail Spur Project. The Rail Spur Project impacts and mitigation measures are discussed in further detail in Section 4.0. The alternatives to the Rail Spur Project are discussed in Section 5.0. The Vertical Coastal Access Project assessment is provided in Section 9.

A. Introduction

The purpose of the Executive Summary is to provide the reader with a brief overview of the Rail Spur and Vertical Coastal Access Projects, the anticipated environmental effects, and the potential mitigation measures that could reduce the severity of the identified impacts. The reader should not, however, rely exclusively on the Executive Summary as the sole basis for judgment of the Projects.

In compliance with State CEQA Guidelines, the County, as the Lead Agency, prepared a NOP for the proposed projects and solicited comments through distribution of the NOP. A public scoping meeting was held in the community on July 29, 2013, to provide an opportunity for the

public to comment on the scope of the EIR. The NOP and comments received in response to the NOP were used to direct the scope of the analysis and the technical studies in this EIR. A copy of the NOP and the comments received are in Appendix I of the EIR.

In addition to the County, a number of other governmental agencies require a CEQA analysis of the Rail Spur Project in order to act on the Project. These agencies include the San Luis Obispo County Air Pollution Control District (SLOCAPCD), Cal Fire, California Department of Fish and Wildlife (CDFW), and Regional Water Quality Control Board (RWQCB).

In November 2013 a Draft EIR was issued for the Rail Spur Project with a 60-day comment period. The comment period for the Draft EIR closed on January 27, 2014. After reviewing the comments on the Draft EIR, the County decided that a revised Draft EIR should be recirculated for public comment. The decision to recirculate the entire EIR was primary based upon the need to expand the discussion of mainline UPRR impacts beyond the borders of San Luis Obispo County. Due to extensive revisions in various parts of the document, this Final EIR does not contain specific written responses to the comments received on the initial Draft EIR since the entire EIR was recirculated for public comment. All comments on the initial Draft EIR were reviewed, and the revised Draft EIR was modified to address comments that were applicable to the revised document (refer to CEQA Guidelines, Section 15088.5(f)(1)). Consistent with the CEQA Guidelines (15088.5.f), comments received on the initial Draft EIR have not been included with the FEIR and were not responded to as part of the recirculated Draft EIR.

The revised Draft EIR was released on October 10, 2014 for a 45-day public comment period. During the public comment period a public workshop was held on the revised Draft EIR to provide the public an opportunity to ask questions about the revised Draft EIR. Volume III of the FEIR contains a copy of the comment letters received on the revised Draft EIR and the responses to those comments. Due to the size of the response to comments, Volume III is provided in electronic format on the CD attached to the inside front cover of the FEIR. Revision marks are used throughout this FEIR to show where changes have been made to the revised Draft EIR. Places where the text has been revised are shown by solid vertical lines on the left margin of the page.

B. Rail Spur and Crude Unloading Facility Project Description

Phillips 66 is proposing to modify the existing rail spur currently on the southwest side of the SMR and to build and operate a crude oil rail unloading facility. The rail spur extension is proposed entirely on the SMR property and would be located east of the Union Pacific Railroad and the existing refinery facilities. The area of the Rail Spur Project is zoned for industrial use. Figure ES-2 shows the proposed location of the Rail Spur Project. The EIR has analyzed the Rail Spur Project to a permit (i.e., project specific) level of detail.

The project would include an eastward extension of the existing rail spur, a railcar crude oil unloading facility, and associated above-ground pipelines. Trains would deliver crude oil to the SMR for processing. The unloaded material would be transferred from the proposed unloading facility to existing crude-oil storage tanks via a new on-site above-ground pipeline.

Figure ES-2 Location of Proposed Rail Spur Project

Notes: Yellow line denotes the boundary of the SMR property.
While the UPRR tracks pass through the refinery property, Phillips 66 does not own the railroad right-of-way. This property is owned by UPRR.

Source: Arcadis 2013.

The proposed tracks and unloading facilities would be designed to accommodate unit trains and manifest trains. Unit trains consist of approximately 80 tank cars and associated locomotives and other supporting cars that stay together as one assembly fully dedicated to delivery of crude oil to the SMR. Manifest trains may have a variety of car types and cargos, other than crude oil, that are not fully dedicated as are unit trains. Manifest trains may deliver one or more cars to the refinery and then continue to other destinations to deliver other cargo.

The proposed rail spur lines would extend from the terminus of the current spur. The unloading facility would be located at the end of the existing coke storage area and along an existing internal refinery road.

Modification of the existing rail spur would include constructing five parallel tracks. Two tracks would surround an unloading rack and then would come together to form a common track that extends to the east of the loading area to allow for the entire train to be parked off of the mainline track and unloaded. Three additional tracks would extend the full length of the rail spur and run parallel to the unloading area.

The Rail Spur Project would involve unloading of up to five unit trains per week (or a combined total of five unit and manifest trains), with a 250 annual maximum number of trains. Trains would arrive from different oilfields and/or crude oil loading points depending on market economics and other factors. Trains could arrive at the Phillips 66 site from the north or the south. The refinery feedstock definition (meaning the materials that could be transported by train into the proposed facility) excludes gaseous feeds, natural gas liquids (NGL), liquefied petroleum gas (LPG), finished refined products, and Bakken crude oil (which is a light crude).

Phillips 66 has proposed to ship crude oil to the refinery in non-jacketed CPC-1232 tank cars (i.e., post October 1, 2011 tank cars). These cars have a capacity of approximately 31,808 gallons per car. Each car has a weight limit of 210,700 pounds of crude oil. Each tank car would be approximately 60 feet long. The total length of a unit train would be about 5,190 feet long (three locomotives at 90 feet, two buffer cars at 60 feet, and 80 tank cars at 60 feet).

In August 2011, the AAR Tank Car Committee adopted new industry construction specifications for tank cars and the CPC-1232 design became the standard for all tank cars built after October 2011.[1] The rail cars would be designed to meet DOT Packing Group I requirements, which is the highest rating. The tank cars would be equipped with half height head shields, double couplers, and all stainless steel valves. The relief valve would be a designed for high flow. All of the tanker cars servicing the SMR as part of either a unit or manifest train would be owned or leased by Phillips 66.

In a unit train configuration, each train would consist of three locomotives, two buffer cars, and 80 railcars each carrying between 26,076 and 28,105 gallons for a total of between 49,670 and 53,532 barrels of crude oil per unit train. The tank cars would be limited to this range of volume

[1] On May 1, 2015 the DOT issued their final rule covering enhanced tank car standards and operational controls for high-hazard flammable trains. New tank cars built after October 1, 2015 would be required to meet the new DOT-117 standard. All existing Non-Jacketed CPC-1232 tank cars in Packing Group I service (tank cars proposed for use by Applicant) would have to meet the DOT-117R standard by April 1, 2020. More information on these new standards are provide in Section 4.7, Hazards and Hazardous Materials.

(as opposed to the 31,808 gallons per car listed above) due to the estimated weight of the oil that would be delivered to the SMR. With the delivery of five unit trains per week the average daily delivery of crude oil would be between 35,478 and 38,237 barrels, which is less than the permitted capacity of the SMR with or without the throughput increase project.

Unit trains would arrive at the SMR, be unloaded and then leave the refinery. The total time each train is expected to be at the refinery would be between ten and twelve hours. However, this could vary depending upon when Union Pacific schedules the departure time for the train once it has been unloaded.

The Rail Spur Project would not affect the amount (throughput volume) of material processed at the refinery. Throughput levels at the refinery are capped by the County of San Luis Obispo Department of Planning and Building and by the SLOCAPCD. These throughput limits cannot be exceeded without a modification to existing land use and air permits, which would require additional environmental and public review. In addition, no crude oil or refined product would be transported out of the refinery by rail.

C. Union Pacific Railroad Mainline

The operation of unit and manifest trains to and from the SMR would be performed by Union Pacific Railroad (UPRR), on UPRR property, and on trains operated by UPRR employees. The movements of those trains to and from the Project Site may be preempted from local and state environmental regulations by federal law under the Interstate Commerce Commission Termination Act of 1995 and the Commerce Clause of the United States Constitution.

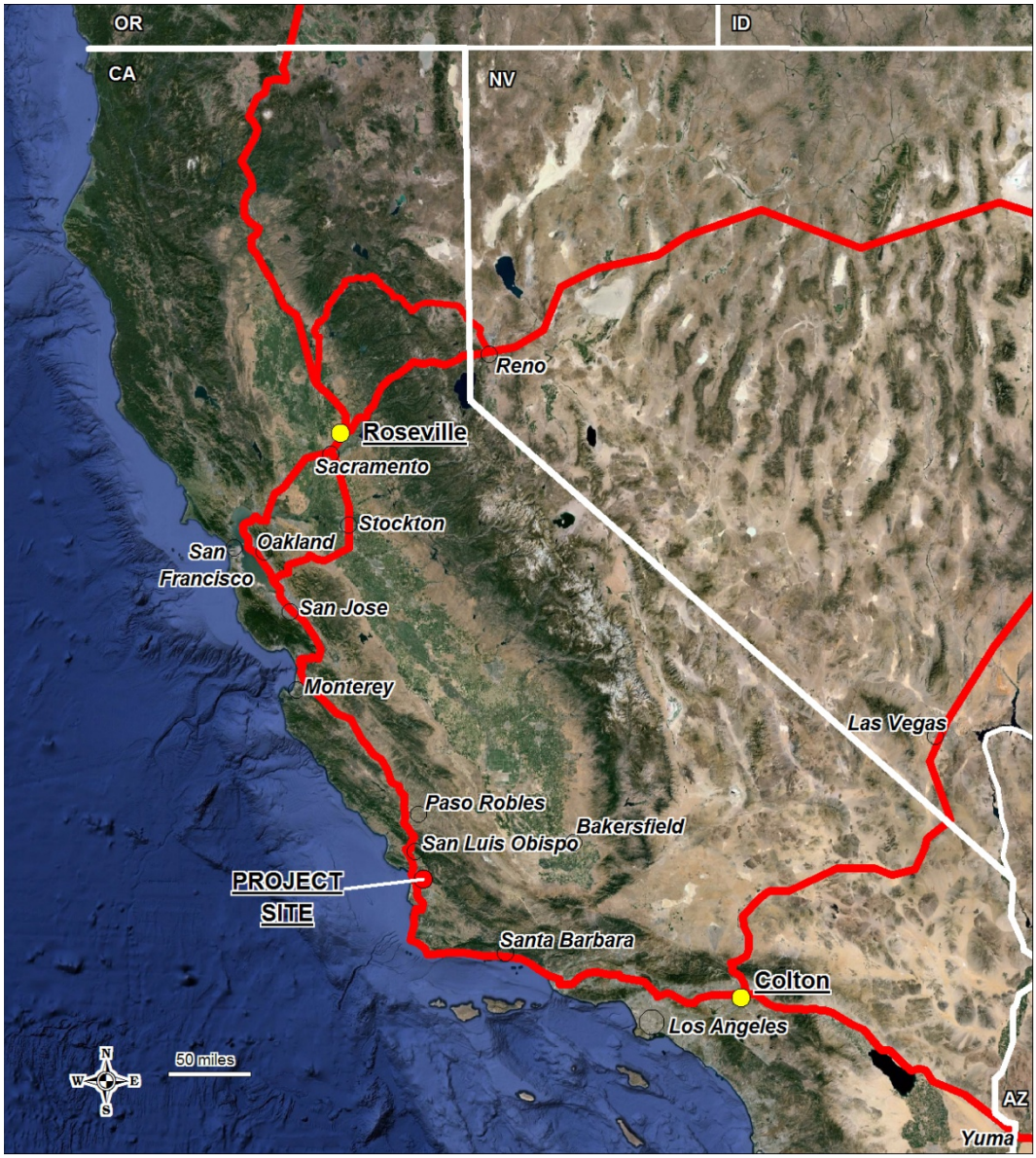
While the potential impacts of those train movements along the UPRR mainline are described in appropriate chapters of this EIR, the County as CEQA Lead Agency, and other state and local responsible agencies may be preempted from imposing mitigation measures, conditions or regulations on UPRR train movements on the mainline.

Trains could enter California at five different locations (one at the north end of the state from Oregon, two at the northeast from Nevada, one at the southeast from Nevada, and one at the south from Arizona). Depending upon the route taken by the train they could arrive at the Phillips 66 site from the north or the south. It is unknown what route UPRR would use to deliver the trains to the SMR. Figure ES-3 shows the main UPRR train routes in California that could be used to deliver crude to the SMR.

Coming from the north the routes merge at the UPRR Roseville Rail Yard. From the south the routes merge at the Colton Rail Yard. Given that the route the trains would travel to get to these two UPRR yards is speculative, the EIR has evaluated in more detail the impacts of trains traveling from these two UPRR yards to the SMR.

Beyond the two UPRR Yards, trains could travel any number of routes. Also, crude oil delivered to California by UPRR would generally pass through either of these two rail yards in route to the SMR.

Figure ES-3 Mainline Rail UPRR Routes to the Santa Maria Refinery



Source: Adapted by MRS from UPRR maps.

Depending upon the source of the crude oil, crude oil trains could use any portion of the UPRR network between Roseville/Colton and the source location for the crude oil. The exact route that would be taken would depend upon a number of factors, that could include the source of the crude oil, weather conditions, train traffic conditions, etc. Since the routes past Roseville and Colton are somewhat speculative, the EIR has discussed in a more qualitative nature the potential impacts of train traffic beyond these two rail yards.

D. Rail Spur Project Impacts and Mitigation Measures

In the Impact Summary Tables and throughout this EIR, impacts of the Rail Spur Project and alternatives have been classified using the categories Class I, II, III, and IV as described below.

- Class I – Significant impacts that cannot be mitigated to less than significant levels,
- Class II – Significant impacts that can be mitigated to less than significant levels,
- Class III – Less than significant impacts without mitigation, and
- Class IV – Beneficial impacts.

The term "significance" is used in these tables and throughout this EIR to characterize the magnitude of the projected impact. For the purposes of this EIR, 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 thresholds of significance established for the resource or issue area. These thresholds of significance are discussed by issue area in Section 4.0.

The impacts along with the identified mitigation measures for each Rail Spur Project impact are shown in the Impact Summary Tables, immediately following this Executive Summary. Each section of the Impact Summary Tables describes and classifies each impact, lists recommended mitigation, and states the level of impact after mitigation.

The remainder of this section presents a brief summary of the key impacts and mitigation measures for the Rail Spur Project. The reader should refer to the Impact Summary Tables and Section 4.0 of the EIR for a more detailed discussion of the impacts and associated mitigation measures for the Rail Spur Project.

Aesthetics and Visual Resources

There are no significant and unavoidable (Class I) impacts to aesthetics and visual resources associated with the Rail Spur Project.

The impacts on aesthetics and visual resources would be less than significant with mitigation (Class II). The eastern end of the proposed rail spur and the associated trains operating in the area would reduce the quality of the views of the open space as seen from a portion of State Route 1, the California Coastal Trail, the De Anza Trail, and other public areas east of State Route 1. Landscaping and the installation of a berm at the east end of the tracks would reduce these impacts to less than significant.

Lighting associated with the Rail Spur Project would create a new source of substantial light and glare which would adversely affect nighttime views in the area. Development of a lighting plan that requires lighting to be minimized and directed downward and the use of lights that are dark sky compliant would reduce this impact to less than significant levels. In addition, an air quality mitigation would limit train unloading to between 7 A.M. and 7 P.M., which would substantially reduce the amount of time the night lighting would need to be on.

Agricultural Resources

The Rail Spur Project could result in less than significant with mitigation (Class II) impacts to the productivity of adjacent farmlands due to construction activities. Dust, air emissions, and water runoff generated by the construction activities could produce a significant short-term impact and temporarily affect the productivity of row crops. Implementation of the fugitive dust and stormwater control mitigation measures identified in air quality and water resources would reduce these impacts to less than significant.

In the event of an oil spill at the SMR due to the unloading operations there could be impacts to agricultural crops on adjacent properties. These impacts could be direct oiling of the crops or due to impacts to surface or groundwater. These impacts at the SMR were found to be less than significant with mitigation. Implementation of the oil spill containment systems and Spill Prevention Control and Countermeasure Plan (SPCCP) would reduce this impact to less than significant levels.

If there is an oil spill along the UPRR mainline tracks there could be impacts to adjacent agricultural crops due to direct oiling, fire, or surface and groundwater impacts. These impacts were found to be significant and unavoidable (Class I) in the event that a spill occurs where it could impact agricultural resources. Only portions of the UPRR mainline track runs adjacent to agricultural operations. Mitigation measures identified for improving emergency response and oil spill cleanup would help to mitigate these impacts, but they would still remain significant and unavoidable (Class I). The County may be preempted by Federal law from requiring mitigation for operations on the UPRR mainline tracks (See Section H of the Executive Summary for more discussion on the preemption issue).

Air Quality

Construction impacts for the Rail Spur Project would be less than significant with mitigation (Class II). Construction emissions would exceed the daily and quarterly emission thresholds for ROG+NO_x and diesel particulate matter. Implementation of construction equipment controls for diesel particulate matter would reduce DPM to levels below the thresholds. Emissions of ROG+NO_x would remain above the daily and quarterly thresholds without offsite reductions or the staggering of the construction schedule. Staggering of the construction schedule to prevent rail spur construction from occurring at the same time as grading and soil transport would reduce the peak daily ROG+NOx to below the thresholds. Extending the grading and soil transport activities to 5 months, instead of 4, would reduce the quarterly ROG+NOx emissions to below the thresholds.

Operational pollutant emissions (i.e., NO_x, ROG, and DPM[2]) within San Luis Obispo County, which includes emissions at the SMR and the locomotive emissions along the mainline rail routes in San Luis Obispo County, were found to be significant and unavoidable (Class I) since they exceed the San Luis Obispo County Air Pollution Control District (SLOCAPCD) thresholds. The NO_x and ROG impacts can be reduced to a level of less than significant with the use of Tier 4 locomotives and the application of emission reduction credits. DPM impacts could be substantially reduced with the use of Tier 4 locomotives, but would remain significant. SLOCAPCD does not have an emission reduction credit program for DPM, so this mitigation

[2] NOx is nitrogen oxide, ROG is reactive organic compounds, and DPM is diesel particulate matter.

measure cannot apply to this pollutant. However, the County may be preempted by Federal law from requiring the use of Tier 4 locomotives or from requiring emission reduction credits for locomotive emissions that occur on the UPRR mainline tracks. (See Section G of the Executive Summary for more discussion on the preemption issue). If the County is preempted from applying mitigation to the locomotive emissions on the UPRR mainline, the NO_x and ROG emissions within San Luis Obispo County would remain significant and unavoidable (Class I). Regardless of the preemption issue, the NO_x and ROG emissions within the SMR can be mitigated through the use of emission reduction credits. However, the DPM emissions within the SMR and within San Luis Obispo County would remain significant and unavoidable (Class I).

Outside of San Luis Obispo County the locomotive emissions along the mainline rail routes would exceed most other air district thresholds. This impact can be reduced to less than significant with the use of Tier 4 locomotives and the application of emission reduction credits, which would make the impact less than significant with mitigation (Class II). However, the County may be preempted by Federal law from requiring the use of Tier 4 locomotives or from requiring emission reduction credits for locomotive emissions that occur on the UPRR mainline tracks. Also, some of the other air districts may not have emission reduction programs for these types of sources. If the County is preempted from applying mitigation to the locomotive emissions on the UPRR mainline, the impact would remain significant and unavoidable (Class I).

Air toxic emissions at the SMR would be significant and unavoidable (Class I) since the cancer risk over a 30-year exposure period would be greater than the 10 in a million threshold established by the SLOCAPCD. This cancer risk is driven mainly by diesel particulate emissions from the locomotives and the existing truck fleet that serves the Santa Maria Refinery. Use of Tier 4 locomotives, and cleaner trucks would reduce the cancer risk from the rail operations to less than significant. As stated above, the County may be preempted by Federal law from applying mitigation to the UPRR locomotives, and as such the cancer risk impacts would remain significant and unavoidable (Class I).

Air toxic emissions from the mainline rail operations would be significant and unavoidable (Class I) for areas along the mainline that are in close proximity to populated areas where there is a speed limit restriction on trains of less than 30 mph (when more emissions occur per length of rail due to the slower speeds). In these locations, the 30-year cancer risk would exceed the SLOCAPCD thresholds beyond the railroad right-of-way. 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 the City of San Luis Obispo, trains are limited to a speed of 25 miles per hour. In the City of Davis, there are stretches of track that are limited in speed to 10 mph.

Greenhouse gas (GHG) emissions within the State of California could be significant and unavoidable (Class I) since they would exceed the SLOCAPCD threshold for GHG emissions. This impact can be reduced to less than significant with the use of emission reduction credits. However, the County may be preempted by Federal law from mitigating the GHG emissions associated with the locomotives outside of the SMR property. (See Section G of the Executive Summary for more discussion on the preemption issue). Therefore, the impact remains significant and unavoidable (Class I).

Fugitive dust (PM_{10}) emissions from the project would be less than significant (Class III). Operation of the Rail Spur Project would generate low levels of fugitive dust, which are well below the SLOCAPCD thresholds.

Biological Resources

Most of the biological impacts would be associated with construction of the Rail Spur Project. Construction activities associated could result in impacts to habitat for listed and special status species and habitat for rare plants and animals. These impacts were found to be less than significant with mitigation (Class II). Some of the mitigation measures identified for these impacts include implementing a Sensitive Species Management Plan, a Dune Habitat Restoration Plan, conducting updated surveys of sensitive species habitats, and employing an independent biological monitor. With implementation of these measures the impacts to biological resources would be less than significant.

An oil spill at the SMR due to the unloading operations could result in impacts to biological resources. These impacts at the SMR were found to be less than significant with mitigation (Class II). Implementation of the oil spill containment systems and Spill Prevention Control and Countermeasure Plan (SPCCP) would reduce this impact to less than significant levels.

In the event of an oil spill along the UPRR mainline tracks there could be impacts to adjacent biological resources due to direct oiling, fire, or surface water impacts. These impacts were found to be significant and unavoidable (Class I) in the event that a spill impacted sensitive biological resources. Only portions of the UPRR mainline tracks run adjacent to sensitive biological areas. Mitigation measures identified for improving emergency response and oil spill cleanup would help to mitigate these impacts, but they would still remain significant and unavoidable (Class I). The County may be preempted by Federal law from requiring mitigation for operations on the UPRR mainline tracks (See Section H of the Executive Summary for more discussion on the preemption issue).

Cultural Resources

Impacts to cultural resources during construction were found to be less than significant with mitigation (Class II) include unanticipated disturbance to human remains due to construction activities. Mitigation measures for these impacts include developing a monitoring plan and halting area activities for expert assessment if resources are discovered.

In the event of an oil spill at the SMR due to the unloading operations there could be impacts to cultural resources associated with the cleanup operations. These impacts at the SMR were found to be less than significant with mitigation (Class II). Implementation of the oil spill containment systems and Spill Prevention Control and Countermeasure Plan (SPCCP) would reduce this impact to less than significant levels.

An oil spill along the UPRR mainline tracks would require cleanup activities that could impact cultural resources. These impacts were found to be significant and unavoidable (Class I) in the event that a spill occurred in an areas that had cultural resources. Only portions of the UPRR mainline tracks would have the potential to be in areas where cultural resources might be encountered during the cleanup activities. Mitigation measures identified for improving emergency response and oil spill cleanup would help to mitigate these impacts, but they would

still remain significant and unavoidable (Class I). The County may be preempted by Federal law from requiring mitigation for operations on the UPRR mainline tracks.

Geological Resources

There are no significant and unavoidable (Class I) impacts to geological resources associated with the Rail Spur Project.

Construction activities associated with the Rail Spur Project could result in erosion due to the grading activities. Seismically induced ground shaking could damage proposed structures and infrastructure, potentially resulting in loss of property, risk to human health and safety, and oil spills. These impacts were found to be less than significant with mitigation (Class II). Implementation of a Storm Water Pollution Prevention Plan (SWPPP) using Best Management Practices, and adequate design of the facilities to withstand anticipated horizontal and vertical ground acceleration in the Project area, based on the California Building Code would result in less than significant impacts.

Hazards and Hazardous Materials

The main hazards associated with the Rail Spur Project are potential accidents at the SMR and along the UPPR mainline that could result in oil spills, fires and explosions. At the SMR the hazard zones associated with these events would be limited to the SMR property and would not impact offsite areas. The hazards that could occur at the SMR would be limited to spills during the unloading operations and the pipeline. Given the low speed the trains would be moving at the SMR site (3 mph) it is unlikely that a tank car could be impacted enough to result in a spill. The estimated shell and head puncture velocity of the tank car design proposed for use by the Applicant are 8.3 and 10.3 miles per hour respectively. Therefore, the hazard impacts at the SMR were found to be less than significant (Class III).

For the UPRR mainline tracks a quantitative risk assessment (QRA) was conducted to determine the level of risk associated with the movement of trains from the SMR to the Roseville and Colton rail yards as well as to the California Border. The risk for the full length of all three of the routes evaluated was found to be significant (Class I) in the event of a release of crude oil that resulted in a fire or explosion in the vicinity of a populated area. This finding is based upon the risk along the entire length of the routes. The risk within any individual City or County would be less. The risk is primarily driven by the High Threat Urban Areas (HTUA - Los Angeles Area, Bay Area, and Sacramento) since these are the locations where fairly long stretches of track are in close proximity to heavily populated areas. Mitigation requiring the use of the safest tank car design that was part of the U.S. Department of Transportation (DOT) proposed rulemaking (This was the Option 1 design, See Section 4.7, Hazards and Hazardous Materials for a discussion of various tank car designs) for high-hazard flammable trains (HHFT) would substantially reduce the risk. Use of this tank car design would reduce the probability of an oil spill by about 74 percent.

On May 1, 2015 the DOT issued their final rule covering enhanced tank car standards and operational controls for high-hazard flammable trains. New tank cars built after October 1, 2015 would be required to meet the new DOT-117 standard. All existing Non-Jacketed CPC-1232 tank cars in Packing Group I service (tank cars proposed for use by Applicant) would have to meet the DOT-117R standard by April 1, 2020. The DOT-117 and DOT-117R standards are less

stringent than the safest tank car design identified in the proposed rule making. Use of DOT-117 tanker cars would reduce the probability of a release from a rail car by about 74% percent over the rail car design that is currently proposed by the Applicant. Use of the DOT-117R tanker cars would reduce the probability of a release from a rail car by about 66% percent over the rail car design that is currently proposed by the Applicant.

However, the County may be preempted by Federal law from requiring mitigation for operations on the UPRR mainline tracks (See Section H of the Executive Summary for more discussion on the preemption issue). With or without the proposed mitigation, the impact to public safety would be significant and unavoidable (Class I).

The hazards analysis found that the return period (i.e., average incident rate) for a release of 100 gallons or more of oil from a train between the SMR and the Roseville or Colton rail yards was estimated to be between one every 46 years to once every 76 years depending upon the rail route used to get to the SMR. For the full routes within the State of California the return period for a release of 100 gallons or more of oil from a train was estimated to be between once every 30 years to once every 50 years depending upon the route taken. All of these estimates assume the applicant proposed tank cars, and that all 250 trains per year use the same route. These numbers represent a range of return periods for releases from the crude oil train within California. The actual figure likely would be a weighted average of several of these routes, and likely would vary each year.

Recreation

There are no significant and unavoidable (Class I) impacts to recreation associated with the Rail Spur Project. Impacts to recreational access were found to be less than significant (Class III) in the event of an oil spill along the UPRR mainline that impacted a recreational area. While spill cleanup activities could limit access to recreational areas, it would be temporary and would not result in permanent limits on access.

Noise and Vibration

There are no significant and unavoidable (Class I) impacts to noise and vibration associated with the Rail Spur Project.

Operation of the Rail Spur Project would generate noise in the area around the SMR due to the movement of trains during the unloading operations. These impacts were found to be less than significant with mitigation (Class II). The unloading of a unit train would be expected to take about 10 to 12 hours. This includes the time need to position the train, unload the tanker cars, reassemble the train, and depart the facility. Noise modeling done as part of the EIR determined that the County nighttime nose standards could be exceeded during the train positioning operations when locomotive are operating east of the unloading racks. This is the area closest to residential area.

The requirement for a Rail Unloading and Management Plan, and limits on the amount of time locomotives can operate at night east of the unloading racks should reduce the noise impacts to less than significant with mitigation (Class II). There is some level of uncertainty associated with the unloading timeline and the noise modeling. Therefore, a mitigation measure has been added that would require noise monitoring to assure that the rail unloading operations do not exceed the

County noise standards. In addition, an air quality mitigation would limit train unloading to between 7 A.M. and 7 P.M., which would serve to reduce the nighttime noise levels associated with the rail operations. There could still be some nighttime noise associated with trains arriving at the SMR. Under the air quality mitigation, trains that arrived at night would need to pull on to the SMR property and then would shutdown. This air quality mitigation measure would reduce the frequency and level of nighttime noise at the SMR.

Population and Housing

There are no significant and unavoidable (Class I) impacts to population and housing associated with the Rail Spur Project. Impacts to population and housing demand were found to be less than significant (Class III).

Public Services and Utilities

Operation of the Rail Spur Project could increase demand for fire protection and emergency response services at both the SMR and along the UPRR mainline tracks due to incidents such as oil spills, fires, or explosions. The impact to fire protection and emergency services was found to be less than significant with mitigation (Class II) at the SMR. As part of the Rail Spur Project fire protection and spill containment systems would be installed, and a new emergency access road would be constructed to the rail unloading site. Implementation of a Fire Protection Plan, Emergency Response Plan, Spill Prevention Control and Countermeasure Plan, training requirements for Cal Fire and other local mutual aid fire departments, and the SMR fire brigade would result in less than significant impacts.

The impact to fire protection and emergency services along the UPRR mainline was found to be significant (Class I) in the event of a fire or explosion. Many of the local emergency responders along the various mainline rail routes that could be used for transporting crude oil to the SMR lack adequate resources to respond to oil by rail accidents. Many of these first responders are in rural areas and have little or no funding for firefighters and rely on volunteer firefighters. Specifically, 40% of the fire fighters in California are volunteer firefighters, with many fire departments entirely staffed by volunteer firefighters. These departments lack the necessary capacity to support a hazmat team or to obtain training in the specialized areas of oil rail safety and flammable liquid, and their response time to significant oil by rail accident could be hours. In addition, some of these volunteer fire departments are in rural mountain areas were the rail lines traverse local safety hazard areas (LSHA), which historically have had a higher probability of train derailments.

Mitigation measures requiring training, drills, and notification for emergency responders along the mainline rail routes would help to mitigate these impacts, but would remain significant and unavoidable (Class I). The County may be preempted by Federal law from requiring mitigation for operations on the UPRR mainline tracks (See Section H of the Executive Summary for more discussion on the preemption issue).

Transportation and Circulation

There are no significant and unavoidable (Class I) impacts to transportation and circulation associated with the Rail Spur Project.

Minimal traffic would be generated during the operations of the Rail Spur Project. Traffic impacts during construction were found to be less than significant with mitigation (Class II). Trucks delivering construction materials to the SMR would be required to use Willow Road from the new interchange with Highway 101. Implementation of a Construction Traffic Management Plan would reduce the construction traffic impact to less than significant.

The EIR evaluated the impacts of the Rail Spur Project on passenger train on-time performance. Unit trains moving on the UPRR mainline tracks could potentially interfere with scheduled passenger trains. The EIR analysis found that impact to on-time performance of passenger train service from two additional trains per day (one coming to the SMR and one leaving the SMR) would be less than significant (Class III).

Water Resources

Construction and operational activities associated with the Rail Spur Project could degrade surface water and groundwater quality, which was found to be a less than significant with mitigation (Class II) impact. Implement a Storm Water Pollution Prevention Plan (SWPPP) using Best Management Practices, and an Oil Spill Contingency Plan would result in less than significant impacts.

Accidental oil spills at the SMR associated with the operation of the Rail Spur Project were found to be less than significant with mitigation (Class II). Oil spills could result from onsite pipelines, or other rail unloading equipment such as the unloading pumps and lines. Implementation of the oil spill containment systems and Spill Prevention Control and Countermeasure Plan (SPCCP) would reduce this impact to less than significant levels.

Accidental oil spills along the UPRR mainline tracks were found to be significant and unavoidable (Class I) in the event that a spill occurs where it could impact water resources. Only portions of the UPRR mainline track run adjacent to water resources. In the event of an oil spill along the UPRR mainline tracks there could be impacts to adjacent surface and groundwater. Mitigation measures identified for improving emergency response and oil spill cleanup would help to mitigate these impacts, but they would still remain significant and unavoidable (Class I). The County may be preempted by Federal law from requiring mitigation for operations on the UPRR mainline tracks (See Section H of the Executive Summary for more discussion on the preemption issue).

The Rail Spur Project would increase water demand by 250 gallons per day, or 0.3 AFY. The total SMR water demand would be 1,111.3 AFY, which would be less than the 1,550 AFY of water available for SMR use under the Court Stipulation. Therefore, water supply related impacts are considered less than significant (Class III).

E. Description of Project Alternatives

Alternatives to the Rail Spur Project have been developed per CEQA Guidelines Section 15126.6. The EIR has used an alternative screening analysis to select the alternatives evaluated in detail in the EIR. The screening analysis looked at alternative transportation modes such as

trucking, pipelines, and marine transport, alternative rail unloading sites, an alternative rail unloading facility configuration, shorter unit trains, and reduced train deliveries.

The screening analysis provides the detailed explanation of why some of the alternatives were rejected for further analysis and ensures that only potentially environmentally preferred alternatives are evaluated and compared in the EIR. Please see Section 5 of the EIR for a detailed discussion of the screened alternatives. The following are the alternatives that were selected as part of the screening analysis for more detailed review.

No Project Alternative

With the No Project Alternative no rail spur would be built and crude oil would not be delivered by train to the SMR. Crude oil deliveries to the SMR would continue to be via pipeline and truck. Trucks deliver crude oil to the Santa Maria Pump Station (SMPS), and the oil is then moved via pipeline to the SMR. In the past year the SMR has been receiving Canadian crude via Bakersfield. The crude is delivered to a rail unloading facility in Bakersfield and then loaded into trucks and delivered to the Santa Maria Pump Station, where it is moved via pipeline to the SMR.

Under the No Project Alternative, Phillips 66 could increase the delivery of North American crudes to the SMR by about 19,660 barrels per day, using the existing or approved rail and truck systems. This volume is based upon the current permit limit for truck unloading at the SMPS minus the existing truck unloading operations. Oil would be moved via rail to an existing rail unloading facility near Bakersfield or the Bay Area. The oil would then be loaded on to trucks and moved to the Santa Maria Pump Station. Exactly what terminals might be used would depend upon available capacity and economics, and it is likely that crude would be delivered to multiple terminals and then trucked to the SMPS. For rail unloading facilities in the Bakersfield area, the majority of the truck route would be along State Highway 166 in San Luis Obispo County. Movement of 19,660 barrels per day would require 2.5 crude oil unit trains per week and about 100 truck trips per day to the SMPS.

Loop Rail Unloading Configuration

With this alternative a large circular track would be constructed at the SMR for the delivery and unloading of unit trains. This would eliminate the need to uncouple the train into sections for unloading; however, the area needed for the tracks would be much larger. Trains would pull into the track and twenty cars would be unloaded. The train would then pull forward and the next twenty cars would be unloaded. This process would continue until all eighty cars had been unloaded. The train would then be prepared for departure from the facility. The unloading operations would be the same as described for the proposed unloading operations.

Reduce Train Deliveries

With this option the Rail Spur Project would be built and operated as proposed, but the SMR would receive only a maximum of three unit trains per week, with up to 150 trains per year, instead of the proposed five per week (250 trains per year). All of the construction and operational activities would be the same as the proposed project, which are discussed in Section 2 of the EIR.

F. Environmentally Superior Alternative

This section summarizes the advantages and disadvantages of each of the alternatives as compared to the Rail Spur Project. A more detailed comparison of the Rail Spur Project and the alternatives can be found in Section 5.4 of the EIR.

CEQA does not provide specific direction regarding the methodology of comparing alternatives to a proposed 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 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.

For the Rail Spur Project, the determination of the environmentally superior alternative is somewhat complicated by the preemption issue. The level and severity of a number of the mainline and locomotive impacts would vary depending upon whether mitigation can be applied to the Rail Spur Project or some of the Alternatives.

No Project Alternative

With the No Project Alternative, construction and operation of the Rail Spur Project would not occur. Since the No Project Alternative could occur without any new permits, mitigation measures could not be applied. Crude oil could move via train to an existing or approved rail facility and then via truck to the SMPS up to the SMPS permit limits, which could generate up to 2.5 train trips per week. If the County is preempted from requiring mitigation on the UPRR mainline and locomotives, the No Project Alternative would offer a number of environmental advantages since fewer trains could be used to move crude oil due to the existing permit limitations at the SMPS. Some of this advantage is offset by the additional truck transportation that would be needed with the No Project Alternative.

With fewer trains the level of public safety risk would be reduced but would likely remain significant and unavoidable (Class I). The trains would avoid the HUTAs of Los Angeles and the Bay Area since the trains would be routed to the San Joaquin Valley. However, they could pass through Sacramento (a HUTA), Davis, Stockton, Fresno, Bakersfield, etc.

Annual air and toxic emissions would be reduced with this alternative. However, the peak day emissions would increase due to the truck emissions. NO_x, ROG, and DPM emissions would remain significant and unavoidable (Class I). The significant and unavoidable (Class I) air toxic impact at the SMR would be eliminated, and the air toxic impacts at the Bakersfield rail facilities would be less than significant (Class III) since the sites are surrounded by agriculture and there are no sensitive receptors in close proximity to the facility. The air toxic impacts from mainline rail operations would remain significant and unavoidable (Class I). Annual GHG emissions would increase with the No Project Alternative due to the additional truck emissions and would remain significant and unavoidable (Class I).

The risk of impacting sensitive biological and water resources along the mainline rail would be reduced since the probability of a spill would decrease due to fewer annual trains. Some of this risk would be offset by the risk of a spill from trucks along State Highway 166. While the

maximum spill volume for trucks is lower, the accident rate for trucks is higher than for trains. The risk of impacting agricultural resources in the event of an oil spill would increase since more of the mainline rail route would be in close proximity to prime agricultural land in the San Joaquin Valley. The mainline rail spill impacts to agricultural, biological, and water resources would remain significant and unavoidable (Class I) for the No Project Alternative.

If the County is not preempted from applying mitigation to the mainline rail and locomotive, then almost all of the advantages of the No Project Alternative would be eliminated since no mitigation could be applied to the No Project Alternative. In this case, the Rail Spur Project would have a number of environmental advantages over the No Project Alternative due to the benefits of mitigation (the use of Tier 4 locomotives and air quality emission reduction credits).

The No Project Alternative would meet most of the basic objectives of the Rail Spur Project. However, it may not allow the SMR to operate at its permitted throughput capacity since less crude oil could be available to the refinery.

Loop Rail Unloading Configuration

This alternative would not reduce the impact classification of any of the impacts for the Rail Spur Project, and would not result in any new impacts that were not identified for the Rail Spur Project.

The alternative would reduce the air and toxic emissions of the rail operations at the SMR since less trains movements would be needed to unload the rail cars, however these impacts would remain significant and unavoidable (Class I). All of the other Class I impacts identified for the Proposed Project would remain the same for the No Project Alternative.

The Loop Rail Unloading Alternative would increase the severity of 17 Class II and Class III construction impacts identified for the Rail Spur Project, but would not change the classification of any of these impacts. The loop track configuration would require a larger area of disturbance and more cut and fill, which increases the severity of some of the air quality, agricultural, biological, cultural, and geological construction impacts. The Loop Rail Unloading Alternative would increase the severity of four Class II operational impacts identified for the Rail Spur Project, but would not change the classification of any of these impacts. The loop track configuration would require a change in topography of the site that would increase the severity of the visual impacts by increasing the overall visibility of the facility. This would also increase the potential for nighttime glare. With the loop configuration noise levels at some residential receptors would increase.

From an environmental standpoint, the slight reduction in operational air emissions at the SMR would be offset by the increase in severity of a large number of construction related impacts, and increased visual impacts. This would be the case regardless of whether the County is preempted from applying mitigation on the mainline rail and locomotives.

The Loop Configuration Alternative would meet most of the basic objective of the Rail Spur Project and would allow for delivery of the same amount of crude oil to the SMR as the proposed project.

Reduce Train Deliveries

All of the construction impacts would be the same as the Rail Spur Project. A reduction in crude oil deliveries (three train per week compared with five trains per week) to the SMR would reduce the severity of some of the operational impacts. Annual emissions of NO_x, ROG, DPM, and GHG would be reduced by about 40 percent since fewer trains would service the refinery. However, the peak day emissions would remain the same as the Proposed Project. Impacts associated with NO_x, ROG and DPM would remain significant and unavoidable (Class I), but would be reduced in severity.

The significant and unavoidable (Class I) cancer risk impact associated with unloading operations at the SMR would be reduced to less than significant with mitigation (Class II) with the Reduced Train Delivery Alternative. By limiting the unloading operations to between the hours of 7 A.M and 7 P.M., limiting locomotive idling to no more than 15 minutes, and requiring the existing SMR truck fleet to meet EPA 2010 emissions standards, in combination with the reduce number of annual train deliveries, the cancer risk can be reduced to less than 10 in a million, which is the SLOCAPCD threshold.

The severity of the cancer risk along the mainline rail routes would be reduced since the annual DPM emissions from the locomotives would be reduced by about 40%. However, these impacts would still remain significant and unavoidable (Class I).

With fewer trains serving the SMR the level of public safety risk would be reduced by about 40% but would still remain significant and unavoidable (Class I). Agricultural, biological, and water resource impacts from an oil spill along the mainline would remain significant and unavoidable (Class I), but the likelihood of an accident leading to a spill would be reduced since fewer trains would service the SMR on an annual basis.

The peak hour noise levels for this alternative would be same as for the proposed project, and noise levels would remain less than significant with mitigation (Class II). However, with fewer train delivers to SMR the frequency of the noise would be reduced by about 40 percent, which would serve to reduce the severity of the operational noise impact.

The visual impacts associated with nighttime lighting would be the same as for the proposed project when a train was present at the SMR. This impact was found to be less than significant with mitigation (Class II). However, with fewer train delivers to SMR the frequency of the nighttime lighting would be reduced by about 40 percent, which would serve to reduce the severity of the nighttime lighting impact.

The Reduce Train Delivery Alternative would not result in any new impacts not identified as part of the Rail Spur Project.

All of these reductions in operational impacts would result since fewer trains would be delivered to the SMR. Therefore, regardless of whether the County is preempted from implementing mitigation along the mainline rail routes and for the locomotives, the reduced rail delivery alternative would offer some environmental advantages over the proposed Rail Spur Project.

G. Vertical Coastal Access

As a condition of approval of the Phillips 66 Throughput Increase Project (approved by the County Board of Supervisors in February 2013), Phillips 66 was required to provide vertical public access from State Route 1 to their western property line to comply with the coastal access provisions of the CZLUO consistent with the standards of Section 23.04.420 of the Coastal Zone Land Use Ordinance, including provisions that a vertical right of access be provided for each mile of coastal frontage, unless that access would be inconsistent with public safety, military security needs or the protection of fragile coastal resources. The permit condition stated that construction of improvements associated with vertical public access (if required[3]) shall occur within 10 years of the effective date of the permit (including any required Coastal Development Permit to authorize such construction) or at the time of any subsequent use permit approved at the project site, whichever occurs first.

Therefore, if the Rail Spur Project is approved (presumably in less than 10 years), the Throughput Increase Project coastal accessway requirement would have to be met at that time to be consistent with the County's conditions on the Throughput Increase Project.

Phillips 66 submitted to the County a report that claimed coastal access at the SMR site was inconsistent with the requirements of Section 23.04.420 of the Coastal Zone Land Use Ordinance. Although the provision of coastal access is not integral to, and has independent utility from, the Rail Spur Project, the County determined that it was appropriate to include an independent analysis of the potential environmental impacts of the accessway to assist in determining if a vertical coastal accessway at the SMR would be consistent with the requirements of Section 23.04.420 of the Coastal Zone Land Use Ordinance.

The County determined that a programmatic assessment of various access options was the best way to provide information that would assist in making the determination of whether coastal access at the SMR site is consistent with the provision of Section 23.04.420 of the Coastal Zone Land Use Ordinance.

If the County finds that coastal access for this location is consistent with the requirements of Section 23.04.420 of the Coastal Zone Land Use Ordinance, then a formal application would need to be submitted that detailed the type and design of the proposed access. This application would be subject to additional environmental review and an appropriate environmental determination would be required prior to final approval. An additional Coastal Development Permit would also be required based on the location of coastal access and resources found in the vicinity of the final proposed alignment.

Section 9 of this EIR contains an assessment of the potential environmental impacts of various coastal access options for the SMR site. The information in the Section is summarized below.

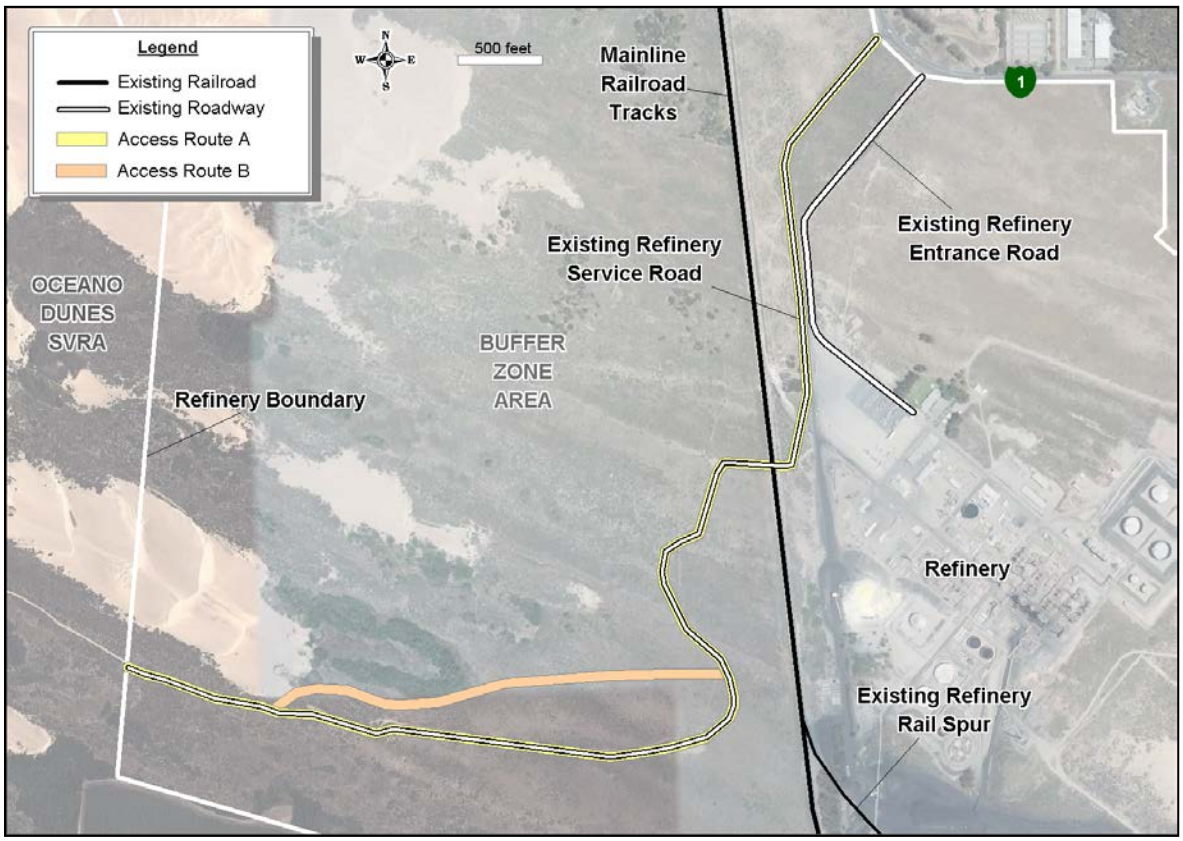
[3] Construction of the vertical costal access would only be required if the County finds that coastal access for this location is consistent with the requirements of Section 23.04.420 of the Coastal Zone Land Use Ordinance.

G.1 Vertical Coastal Access Project Description

The coastal access would be located in the southwestern corner of San Luis Obispo County, approximately one mile southwest of State Route 1, and approximately 3.5 miles west of the community of Nipomo, in the South County Coastal planning area.

The recently approved Throughput Increase Project at the SMR included a site-specific Conditions of Approval (COA) that required that the coastal access "*be located within or immediately adjacent to the existing maintenance road*". This access route alignment would follow an existing refinery truck entrance road from State Route 1 to a service road that is used by Phillips 66 to maintain an outfall pipeline. This is a practical alignment in that it follows the dune contours to provide a relatively gently sloping route, generally avoiding the steep unstable dune faces and the low-lying surface water features (e.g., Jack Lake, Lettuce Lake) and wetlands (dune slacks) throughout the area. This alignment would be approximately 2 miles in length from State Route 1 to the western SMR property line shared with the Oceano Dunes State Vehicle Recreation Area (ODSVRA). The location of the existing refinery service road is shown in Figure ES-4.

Figure ES-4 Coastal Access Route at the SMR Property



Source: Adapted from Arcadis 2013

At the outlet of the route alignment across the SMR property, the public users would reach the ODSVRA, and would be approximately 1.5 miles from the ocean. The location and design of the access across ODSVRA would ultimately have to be determined by the California Department of Parks and Recreation. Until the California Department of Parks and Recreation provided access from the SMR to the ocean, the coastal access trail would not be complete. While the existing service road goes to the beach through ODSVRA property, without control by the California Department of Parks and Recreation users could stray off the access road in to the large dune wetland area immediately west of the SMR property.

No formal design for coastal access has been developed by Phillips 66 or the County. As such, the conceptual designs were developed for various coastal access options that have been used to assess the range of environmental impacts that could occur with development of coastal access at the SMR. If and when a final design is developed for a coastal access additional environmental review may be required depending upon the type of access, and the extent of improvements that would be required. Three possible options for use of this service road and the adjacent area were identified, which included the following:

- Motor Vehicle, Bicycle, and Pedestrian Access,
- Bicycle and Pedestrian Access, and
- Docent Led Access for Pedestrians Only.

These three options were chosen since they represent the full range of intensity for the coastal access.

G.2 Summary of Vertical Coastal Access Assessment

The impacts identified in the coastal access assessment were based upon very limited conceptual designs, and therefore, represent potential impacts that could occur. The severity and significance of these impacts could change once detailed designs for each of the options were developed. However, the impact assessment can be used to gauge the type and possible extent of the impacts could occur with each of the coastal access options. A summary of the impacts for each of the options is provided below.

Motor Vehicle, Bicycle/Pedestrian Access

The motor vehicle coastal access would provide the highest intensity of public use, but would also have the greatest level of impacts on the environment. Construction of the motor vehicle access road could result in significant biological impacts to sensitive plant species including the Nipomo Mesa lupine, sensitive terrestrial and semi-aquatic wildlife species, and wetlands. Impacts to sensitive biological and cultural resources could also occur from users straying from the designated path into sensitive areas.

This option would likely require the construction of a separated-grade crossing of the Union Pacific railroad tracks. The most likely type of separated-grade crossing would be a vehicle overpass, which would likely have significant visual impacts since it would be a large structure that would be visible from the beach.

The motor vehicle coastal access would also have the greatest level of traffic impacts. It has been estimated that 3,579 peak daily vehicles could possibly use this coastal access road. To handle this level of traffic a signal would likely have to be installed at the intersection of State Route 1 and the SMR. In addition, other improvements may have to be made to State Route 1 such as turnout lanes.

Opening up a new access point for motor vehicles at the SMR has the potential to increase the level of PM_{10} emissions from sand at the southern end of the ODSVRA. While the overall baseline level of PM_{10} emissions would not be expected to increase, there could be an increase in the localized impacts in the area of the SMR. This might possibly be mitigated with the implementation of the Particulate Matter Reduction Plan (PMRP) that the State is currently preparing for the ODSVRA.

Bicycle/Pedestrian Access
The bicycle/pedestrian coastal access option would have the second lowest level of impacts on the environment. While the construction impacts of this option would be similar to the motor vehicle option, the intensity of public use would be substantially less. Construction of the bicycle/pedestrian access path could result in significant biological impacts to sensitive plant species including the Nipomo Mesa lupine, sensitive terrestrial and semi-aquatic wildlife species, and wetlands. Impacts to sensitive biological and cultural resources could also occur from users straying from the designated path into sensitive areas.

If a new parking lot would have to be built, there could be impacts to Nipomo Mesa lupine, which would be a significant biological impact. This option would likely require the construction of a separated-grade crossing of the Union Pacific railroad tracks. The most likely type of separated-grade crossing would be an elevated walkway.

Docent-Led Access
The docent-led coastal access option would have the lowest level of impacts on the environment. Minimal construction would be needed to implement this option. This option would have the lowest intensity of public use and access to the coastal trail would be supervised. However, this option would provide limited public access. If a new parking lot would have to be built, there could be impacts to Nipomo Mesa lupine, which would be a significant biological impact. It is also uncertain if a grade-separated crossing of the Union Pacific railroad tracks would be needed for this level of access. If the California Public Utilities Commission (CUPC) considers the docent-led access to be a public crossing, then it is possible that a grade-separated crossing could be required. This would increase some of the construction impacts associated with this option.

G.3 Key Issues Associated with the Vertical Coastal Access Project

Two key issues were identified for the Vertical Coastal Access Project. Each of these is discussed below.

Public Safety
The coastal access route evaluated in this assessment would pass within about 900 feet of the active refinery operations, and would parallel or use one of the two main access roads to the

SMR. Opening up a public access route in close proximity to an active refinery presents a number of public safety issues. In the event of an incident at the SMR members of the public would be at greater risk of being injured or killed. There is also the potential for interference with emergency response activities at the refinery in the event of an incident.

While these types of incidents at the SMR are extremely unlikely, typically it is prudent to maintain an adequate buffer between the active refinery operations and the general public. To avoid these public safety issues a quantitative risk assessment (QRA) should be conducted to determine the minimum distance from the SMR operations the coastal access route should be located.

Relationship to Ongoing ODSVRA Evaluations

Construction of the coastal access across the SMR property would be for access to the ODSVRA. This would be particularly true for the motor vehicle access. The question of the best manner and location for access and staging for ODSVRA has not been completely resolved. It is a complicated question, and one that is informed by a long and involved permitting history. The question of access and staging for the ODSVRA may be resolved in the relatively near future (including in relation to an upcoming Habitat Conservation Plan for ODSVRA, ongoing Californian Coastal Commission (CCC) condition compliance and review efforts pursuant to CSPR CDP 4-82-300, and State Parks' current CDP application associated with dust control) (CCC 2013).

Conditions included in CDPR's CDP issued by the CCC (CDP 4-82-300, as amended) for ODSVRA operations require CDPR to determine a permanent access and staging location for OHV activities that is the least environmentally damaging alternative and that incorporates all feasible mitigation measures. As a result, a number of studies have been conducted to examine potential alternative access routes into the ODSVRA. These studies have included a 1991 Environmental Impact Report for the ODSRVA Access Corridor Project, and a 2006 Alternative Access Study Oceano Dunes State Vehicle Recreation Area. Until the CDPR resolves the long standing issues associated with access and staging for the ODSVRA, the type of access for the SMR site is uncertain.

H. Known Areas of Controversy and Uncertainty

According to Section 15123 of the CEQA Guidelines, the EIR shall identify "areas of controversy known to the Lead Agency including issues raised by agencies and the public." A number of areas of controversy and uncertainty were raised during the preparation of the EIR. Each of these is briefly discussed below.

Assessment of Union Pacific Mainline Environmental Impacts

The operation of unit and manifest trains to and from the Rail Spur Project Site would be performed by UPRR, on UPRR property, and on trains operated by UPRR employees. The movements of those trains to and from the Project Site, while described and evaluated in the EIR, may be preempted from local and state environmental regulations by federal law under the Interstate Commerce Commission Termination Act of 1995.

While the potential impacts of those train's movements along the UPRR mainline are described and evaluated in appropriate Sections of this EIR and mitigation measures are proposed, the County, as CEQA Lead Agency, may be preempted from imposing mitigation measures, conditions or regulations to reduce or mitigate potential environmental impacts of UPRR train movements on the mainline. This could also include mitigation measures that impact the UPRR locomotives.

By contrast, all activities performed within the Rail Spur Project Site are not preempted by federal law since they would not occur on UPRR property and would not be operated by UPRR employees. The impacts of the activities that occur on the Rail Spur Project Site are described and evaluated in respective Sections of this EIR, and the County, as CEQA Lead Agency has the authority to impose mitigation measures, conditions or regulations to reduce or mitigate potential impacts within the Rail Spur Project Site. However, the County may be preempted from imposing mitigation measures that would impact the design of the UPRR locomotives, even when they are on the Rail Spur Project Site (i.e., use of Tier 4 locomotives).

Train Unloading Sequence and Time

There is some uncertainty in the estimated time that each of the train unloading steps would require at the SMR. The EIR preparers worked with Phillips 66 to develop a detailed breakdown of the unloading operations that looked at how the locomotive would move while at the SMR and how long each operation would take. The results of this analysis are presented in Section 2 of the EIR. Changes in this unloading sequence or associated times could affect the noise and air quality impacts. If the times are shorter then the impact levels could decrease. If times are longer then the impacts could increase. What has been analyzed in the EIR is a reasonable worst case in term of train speeds, uncoupling times and tanker car unloading times.

Fugitive Dust Emissions

Exeededences of fugitive dust standards has been an issue on the Nipomo Mesa. A study performed by the SLOCAPCD, the South County Phase 2 Particulate Study, evaluated whether impacts from off-road vehicle activities at the ODSVRA, the Phillips 66 Refinery coke piles, and adjacent agricultural fields were contributing to the particulate problems on the Nipomo Mesa. The ODSVRA is upwind of the Nipomo Mesa; the study data concludes that the ODSVRA is the major source of particulates on the Nipomo Mesa. The study indicates that off-road vehicle activity on the dunes is known to cause de-vegetation, destabilization of dune structure, and destruction of the natural crust on the dune surface. All of these increase the ability of winds to entrain sand particles from the dunes and carry them to the Nipomo Mesa, representing an indirect emissions impact from the off-road vehicles. The study concluded that off-road vehicle activity is the primary cause of the high PM levels measured on the Nipomo Mesa during episode days.

Impacts of the Rail Spur Project on fugitive dust emissions are discussed in Section 4.3, Air Quality and Greenhouse Gases. The Rail Spur Project would generate about 1.32 lbs per day of fugitive dust emissions (PM_{10}). This is well below the SLOCAPCD threshold of 25 pound per day.

Relationship between the Recently Approved SMR Throughput Project and the Rail Spur Project

A number of people have raised the issue that the Rail Spur Project is directly related to the recently approved SMR Throughput Increase Project, and should have been evaluated in the same CEQA document.

The Rail Spur Project would not affect the amount (throughput volume) of material processed at the refinery. Throughput levels at the refinery are capped by the County of San Luis Obispo and by the SLOCAPCD. The ability of the SMR to operate at the maximum approved throughput level is based on the existing infrastructure and is not dependent on, or related to, the Rail Spur Project. It has been asserted that the Throughput Increase Project could not be achieved without the Rail Spur Project. This assertion is based upon the assumption that without the proposed Rail Spur Project the SMR could not obtain adequate crude supplies. As shown in Table 2.7 of the EIR, the 2013 average throughput of the refinery was 41,635 barrels per day. The SMR has the requisite permits and ability to unload crude oil from trucks at the Santa Maria Pump Station (SMPS) where it is then moved via pipeline to the SMR. The current permitted limit on crude truck unloading at the SMPS is 26,000 barrels per day. As discussed in Section 5.1.1 (No Project Alternative), the current truck unloading rate at the SMPS is about 6,800 barrels per day. Therefore, an additional 19,200 barrels per day (26,000-6,800) could be shipped via truck to the SMPS for unloading and then moved via pipeline to the SMR. This additional 19,200 barrels of oil would increase the 2013 average daily throughput at the SMR to over 60,000 barrels per day, which is greater than the current permitted capacity of the refinery or the capacity of the refinery that would be allowed even under the Throughput Increase Project.

Additional oil could be brought in by truck to the SMPS from other sources such as the San Ardo field, fields in the San Joaquin Valley, as well as additional crude by rail via Kern County or the Bay Area. The 2012 crude production from northern onshore Santa Barbara and OCS was 67,100 barrels per day. All of these sources of crude could be available to the SMR for processing. Whether or not Phillips 66 is willing to pay the needed price to obtain these crudes is unknown and not a CEQA issue. CEQA does not require that the EIR identify all possible sources of crude for the SMR, but rather to demonstrate that adequate infrastructure exists to deliver crude to the refinery. The determination of crude source and method of delivery would be based upon economics and market forces.

There are also other potential sources of local crude that could be available in the future to the SMR. As discussed in Section 2.7 of the EIR, there are a number of onshore oil development projects in northern Santa Barbara County that are being proposed that if approved would utilize the SMR. In addition, the Arroyo Grande Oil Field (AGOF) has applied to the County of San Luis Obispo to increase production to 10,000 barrels per day. The County recently approved a project that would allow the oil from the AGOF to be moved via pipeline to the SMR (the oil production from the AGOF currently is trucked to the SMPS for delivery via pipeline to the SMR). If this project is approved it would increase the production from the AGOF by about 8,000 barrels per day.

Under CEQA, a “project” subject to environmental review must be the “whole of an action.” (CEQA Guidelines Section 15378(a).) This CEQA rule of analysis serves to assure that a large

project is not chopped up into many smaller ones, resulting in piecemealing or segmenting of environmental review and masking the full scope of project impacts. Put another way, "a narrow view of a project could result in…overlooking its cumulative impact by separately focusing on isolated parts of the whole." (*San Joaquin Raptor/Wildlife Rescue Center v. County of Stanislaus* (1994) 27 Cal. App.4th 713, 714.) Courts have determined that an EIR must include analysis of the environmental effects of a future action if: (1) it is a reasonably foreseeable consequence of the initial project; and (2) the future action will be significant in that it will likely change the scope or nature of the initial project or its environmental effects. This standard involves determining whether the EIR has left out of the environmental analysis a "crucial element" or "integral part" of the project, without which the project cannot go forward. (*National Parks & Conservation Ass'n v. County of Riverside* (1996) 42 Cal.App.4th 1505, 1519.) Where an action is not a crucial element of the project, but merely contributes to the same pool of cumulative impacts, the action may be included in the EIR's analysis of cumulative impacts instead.

Using this definition of piecemealing, the Throughput Increase Project is not dependent upon the Rail Spur Project since there is adequate crude supply for the SMR even without the Rail Spur Project. The project has "independent utility" under CEQA since the ability of the SMR to operate at the maximum approved throughput level is based on the existing infrastructure and currently available crude supply it is not dependent on the Rail Spur Project.

The point that Phillips 66 commissioned a number of studies for the Rail Spur Project prior to certification of the Throughput Project EIR is irrelevant. None of these studies were known by the County prior to submission of the Rail Spur Application, which occurred after the certification of the Throughput Increase EIR. The County determined as part of the Throughput Increase EIR that the project had "independent utility" based upon the discussion provided above.

Federal and State Regulations on Crude Oil by Rail

Traditionally, pipelines and oceangoing tankers have delivered the vast majority of crude to U.S. refineries, accounting for approximately 93% of total receipts (in barrels) in 2012. Although other modes of transportation—rail, barge, and truck—have accounted for a relatively minor portion of crude oil shipments, volumes have been rising very rapidly. The volume of crude oil carried by rail increased 423% between 2011 and 2012 (Congressional Research Service 2014). This increase in crude oil transportation by rail has resulted in a number of recent crude oil train derailments and releases. As of a result of these incidents, the Federal Government and the State of California have begun taking action to improve crude by rail safety.

The movement of crude on the mainline rail within the United States is regulated by the Federal Railroad Administration (FRA) and the Pipeline and Hazardous Materials Safety Administration (PHMSA), which are both part of DOT.

On May 1, 2015 the DOT issued their final rule covering enhanced tank car standards and operational controls for high-hazard flammable trains. The final rule defines certain trains transporting large volumes of flammable liquids[4] as "high-hazard flammable trains" (HHFT) and

[4] A flammable liquid having a flash point of not more than 141°F, or any material in a liquid phase with a flash point at or above 100°F, and would include crude oil.

regulates their operation in terms of speed restrictions, braking systems, and routing. The final rule also adopts safety improvements in tank car design standards, a sampling and classification program for unrefined petroleum-based products, and notification requirements. New tank cars built after October 1, 2015 would be required to meet the new DOT-117 standard. All existing Non-Jacketed CPC-1232 tank cars in Packing Group I service (tank cars proposed for use by Applicant) would have to meet the DOT-117R standard by April 1, 2020. These requirements are designed to lessen the frequency and consequences of train accidents/incidents (train accidents) involving certain trains transporting a large volume of flammable liquids. The rail industry, environmental groups and others have challenged various aspects of the final rule covering HHFT. Until these lawsuits are resolved the exact nature of the final rules are unknown. The EIR contains an evaluation of the safety and hazard impacts associated with the use of DOT-117 and DOT-177R rail cars (See Section 4.7, Hazards and Hazardous Materials, for more information on the Final DOT rule).

In August of 2014 the DOT issued an advanced notice of proposed rulemaking covering oil spill response plans for high-hazard flammable trains. The advanced notice of proposed rulemaking would set a lower threshold for when a comprehensive Oil Spill Response Plan (OSRP) is required for crude oil trains. Some of the thresholds that are suggested in the notice are 1,000,000 gallons or more per train (approximately 35 car loads), 20 or more car loads, or 42,000 gallons per train. The notice also discusses the possibility conducting training, drills, and equipment testing, and placing oil spill response equipment along rail road tracks.

This advanced notice of proposed rulemaking went out for a 90-day comment period. It is expected that the DOT will eventually issue a notice of proposed rulemaking and adopt some final regulation regarding oil spill response plans for high-hazard flammable trains.

In 2014, Governor Brown expanded California's oil spill prevention and response program to cover all statewide surface waters at risk of oil spills. This expansion provided funding for industry preparedness, spill response, and continued coordination with local, state and federal government along with industry and non-governmental organizations. Senate Bill 861 authorized the Office of Spill Prevention and Response (OSPR) with the statewide expansion and regulatory oversight. The changes would apply to railroads, pipelines, and oil well/production facilities. These facilities will be required to have oil spill contingency plans. The legislation also requires announced and unannounced drills to test response and cleanup operations, equipment, contingency plans, and procedures. All elements of the plan must be exercised at least one very three years. Operators of covered facilities must be able to demonstrate financial resources to pay for spill response and damages based upon a reasonable worst case spill volume.

The regulation requires a six and one-half cent per barrel tax on crude oil and petroleum products received at refineries or marine terminals within California to cover the cost of the expanded oil spill response program.

In October 2014, BNSF Railway and Union Pacific, joined by an industry trade group, sued the state, claiming that four federal laws governing rail transportation preempted California's SB 861. In June 2015 a federal judge dismissed the challenge agreeing that the law could not be challenged before it had been enforced. The ruling did not address the key question of whether federal laws preempt the California requirements.

The emergency regulations governing the development of oil spill contingency plans and financial responsibility for inland facilities, pipelines, refineries and railroads became effective September 3, 2015. Affected industry members have until January 1, 2016 to submit facility contingency plans and Certificates of Financial Responsibility. OSPR has issued Guidance and reference documents to assist plan holder with the creation of oils spill contingency plans.

It is likely that further challenges by the railroad to the requirements of SB 861 will occur. Full implementation of the final Federal regulations and SB 861 could affect the analysis and conclusions in this EIR.

Rail Spur Project
Impact Summary Tables

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Impacts That May Not Be Fully Mitigated To Less Than Significant 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 Measure	Residual Impact
AESTHETICS AND VISUAL RESOURCES (Section 4.1)				
None were identified				
AGRICULTURAL RESOURCES (Section 4.2)				
AR.5	The project could result in effects that impair adjacent agricultural uses along the UPRR mainline in the event of a derailment and/or spill, including the generation of contaminated air emissions, soil and water contamination, and increased risk of fire, which have the potential to adversely affect adjacent agricultural areas.	Operations	AR-5 Implement mitigation measures PS-4a through PS-4e and BIO-11.	Significant and Unavoidable
AIR QUALITY AND GREENHOUSE GASES (Section 4.3)				
AQ.2	Operational activities associated with the Rail Spur Project within SLOC (i.e., on the project site (SMR) and on the mainline within SLOC) would generate criteria pollutant emissions that exceed SLOCAPCD thresholds.	Operations	AQ-2a Prior to issuance of Notice to Proceed, the Applicant shall provide a mitigation, monitoring and reporting plan updated annually. The plan shall investigate methods for reducing the onsite and offsite emissions, both from fugitive components and from locomotives or from other SMR activities (such as the diesel pumps, trucks, and compressors to reduce DPM). In addition, locomotive emissions shall be mitigated to the extent feasible through contracting arrangements that require the use of Tier 4 locomotives or equivalent emission levels. The plan shall indicate that, on an annual basis, if emissions of ROG+NOx and DPM with the above mitigations still exceed the thresholds, as measured and confirmed by the SLOCAPCD, the Applicant shall secure SLOCAPCD-approved onsite and/or offsite emission reductions in ROG + NOx emissions or contribute to new or existing programs to ensure that project-related ROG + NOx emissions within SLO County do not exceed the SLOCAPCD thresholds. Coordination with the SLOCAPCD should begin at least six (6) months prior to issuance of the Notice to Proceed for the Project to allow time for refining calculations and for the SLOCAPCD to review and	Significant and Unavoidable

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Impacts That May Not Be Fully Mitigated To Less Than Significant 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 Measure		Residual Impact
				approve any required ROG+NOx emission reductions.	
			AQ-2b	Prior to issuance of Notice to Proceed, the Applicant shall implement a program, including training and procedures, to limit all locomotive onsite idling to no more than 15 consecutive minutes except when idling is required for safety purposes. Locomotive idling records shall be maintained and provided to the SLOCAPCD on an annual basis, along with training materials and training records.	
AQ.3	Operational activities of trains along the mainline rail route outside of SLOC associated with the Rail Spur Project would generate criteria pollutant emissions that exceed thresholds.	Operations	AQ-3	Prior to issuance of the Notice to Proceed, the Applicant shall provide a mitigation, monitoring and reporting plan. The plan shall investigate methods for reducing the locomotive emissions through contracting arrangements that require the use of Tier 4 locomotives or equivalent emission levels. The plan shall indicate that, on an annual basis, if the mainline rail emissions of ROG+NOx with the above mitigations still exceed the applicable Air District thresholds, the Applicant shall secure emission reductions in ROG + NOx emissions or contribute to new or existing programs within each applicable Air District, similar to the emission reduction program utilized by the SLOCAPCD, to ensure that the main line rail ROG + NOx emissions do not exceed the Air District thresholds for the life of the project. The Applicant shall provide documentation from each Air District to the San Luis Obispo County Planning and Building Department that emissions reductions have been secured for the life of the project prior to issuance of the Notice to Proceed.	Significant and Unavoidable
AQ.4	Operational activities at the Refinery associated with the Rail Spur Project would generate toxic emissions that exceed SLOCAPCD thresholds.	Operations	AQ-4a	Implement measures AQ-2a and AQ-2b.	Significant and Unavoidable
			AQ-4b	All trucks under contract to the SMR for moving coke and sulfur shall meet EPA 2010 model year NOx and PM emission requirements and a preference for the use of rail over trucks for the transportation of coke shall be implemented to the extent feasible in order to reduce offsite emissions. Annual truck trips associated with refinery operations and their associated model year and emissions shall be submitted to the SLOCAPCD annually.	
			AQ-4c	If mitigation measure AQ-2a (the use of Tier 4 locomotives only) is not implemented, then crude oil train unloading and switching activities at the SMR shall be limited to the period of 7 a.m. to 7 p.m. to reduce the emissions during periods of calm meteorological conditions. Reports shall be submitted to the County and APCD indicating the time of arrival, the start and end time of train switching break-apart and unloading and departure time. These time limits do not apply to pull-in of the unit trains from the mainline. When a unit train is pulled in between 7 p.m. and 7 a.m., the locomotives shall shut down until the allowed unloading time starting at 7 a.m. No switching or breaking apart of trains or any other locomotive activity is allowed between 7 p.m.	

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Impacts That May Not Be Fully Mitigated To Less Than Significant 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 Measure		Residual Impact
				and 7 a.m. except for the minimum activity needed to move the unit train onto the SMR property.	
AQ.5	Operational activities of trains along the mainline rail route associated with the Rail Spur Project would generate toxic emissions that exceed thresholds.	Operations	AQ-5	Implement measure AQ-3.	Significant and Unavoidable
AQ.6	Operational activities associated with the Rail Spur Project would generate GHG emissions that exceed SLOCAPCD thresholds.	Operations	AQ-6	Prior to issuance of the Notice to Proceed, the Applicant shall provide a GHG mitigation, monitoring and reporting plan. The plan shall indicate that, on an annual basis, if GHG emissions exceed the thresholds, the Applicant shall provide GHG emission reduction credits for all of the project GHG emissions. Coordination with the San Luis Obispo Planning and Building Department should begin at least six (6) months prior to issuance of operational permits for the Project to allow time for refining calculations and for the San Luis Obispo Planning and Building to review and approve the emission reduction credits.	Significant and Unavoidable
BIOLOGICAL RESOURCES (Section 4.4)					
BIO.11	Crude oil transportation along the UPRR mainline could result in a crude oil spill that impacts sensitive plant and wildlife species and wetlands.	Operations	BIO-11	The Applicant's contract with UPRR, shall include a provision to provide that UPRR has an Oil Spill Contingency Plan in place for all mainline rail routes in California that could be used for transporting crude oil to the SMR. The Oil Spill Contingency Plan shall at a minimum include the following: 1. A set of notification procedures that includes a list of immediate contacts to call in the event of a threatened or actual spill. This shall include a rated oil spill response organization, the California Office of Emergency Services, California Department of Fish and Wildlife, Oil Spill Prevention and Response, and appropriate local emergency responders. 2. Identification of the resources that could be at risk from an oil spill equal to 20% of the train volume. The resources that shall be identified in the plan, and shown on route maps, include but are not limited to the following: a. Habitat types, shoreline types, and associated wildlife resources in those locations;	Significant and Unavoidable

CLASS I Impacts – Rail Spur Project

Impacts That May Not Be Fully Mitigated To Less Than Significant 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 Measure	Residual Impact
			b. The presence of state or federally-listed rare, threatened or endangered species; c. The presence of aquatic resources including state fish, invertebrates, and plants including important spawning, migratory, nursery and foraging areas; d. The presence of terrestrial animal and plant resources; e. The presence of migratory and resident state bird and mammal migration routes, and breeding, nursery, stopover, haul-out, and population concentration areas by season; f. The presence of commercial and recreational fisheries including aquaculture sites, kelp leases and other harvest areas. g. Public beaches, parks, marinas, boat ramps and diving areas; h. Industrial and drinking water intakes, power plants, salt pond intakes, and important underwater structures; i. Areas of known historical and archaeological sites (but not their specific description or location); j. Areas of cultural or economic significance to Native Americans (but not their specific description or location). k. A description of the response strategies to protect the identified site and resources at risk. l. A list of available oil spill response equipment and staging locations along the mainline tracks and shall include. m. A program for oil spill training of response staff and a requirement for annual oil spill drillings. 3. The oil spill contingency plan must be able to demonstrate that response resources are adequate for containment and recovery of 20% of the train's volume within 24 hours. In addition, within six hours of the spill the response resources shall be adequate for containment and recovery of 50% of the spill, and 75% of the spill within 12 hours. The Applicant's contract with UPRR, shall include provision that UPRR's Oil Spill Contingency Plan shall be reviewed and approved by California Department of Fish and	

CLASS I Impacts – Rail Spur Project

Impacts That May Not Be Fully Mitigated To Less Than Significant 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 Measure		Residual Impact
				Wildlife, Office of Spill Prevention and Response prior to delivery of crude oil by rail to the Santa Maria Refinery. In addition, the Applicant's contract with UPRR, shall include provisions to provide a copy of UPRR's Oil Spill Contingency Plan to all first response agencies along the mainline rail routes in California that could be used by trains carrying crude oil to the Santa Maria Refinery for the life of the project. Only first response agencies that are able to receive security sensitive information as identified pursuant to Section 15.5 of Part 15 of Title 49 of the Code of Federal Regulations, shall be provided this information.	
CULTURAL RESOURCES (Section 4.5)					
CR.6	Train traffic associated with the importation of crude oil to the project site could result in a derailment or a material spill, which could result in the disturbance and destruction of cultural resources along the mainline routes.	Operations	CR-6	As part of the Applicant's contract with UPRR, it shall require that a qualified archaeologist, architectural historian, and paleontologist who meet the Secretary of the Interior's Professional Qualification Standards prepare an Emergency Contingency and Treatment Plan for Cultural and Historic Resources along the rail routes in California that could be used to transport crude oil to the SMR. The treatment plan shall include, but not be limited to, the following components: a. Protocols for determining the cultural resources regulatory setting of the incident site; b. Provide various methodologies for identifying cultural resources, as needed, within the incident site (e.g., California Historical Resources Information System records search, agency contact, field survey); and c. If cultural resources are present, identify measures for their avoidance, protection, and treatment. The Treatment Plan shall be in place prior to delivery of crude by rail to the Santa Maria Refinery.	Significant and Unavoidable
GEOLOGICAL RESOURCES (Section 4.6)					
None were identified					
HAZARDS AND HAZARDOUS MATERIALS (Section 4.7)					
HM.2	The potential for a crude oil unit train derailment would increase the risk to the	Operations	HM-2a	Only rail cars designed to FRA, July 23, 2014 Proposed Rulemaking Option 1: PHMSA and FRA Designed Tank Car as listed in Table 4.7.6, shall be allowed to unload crude oil at the Santa Maria Refinery.	Significant and Unavoidable

CLASS I Impacts – Rail Spur Project

Impacts That May Not Be Fully Mitigated To Less Than Significant 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 Measure		Residual Impact
	public in the vicinity of the UPRR right-of-way.		HM-2b	For crude oil shipments via rail to the SMR a rail transportation route analysis shall be conducted annually. The rail transportation route analysis shall be prepared following the requirements in 49 CFR 172.820. The route with the lowest level of safety and security risk shall be used to transport the crude oil to the Santa Maria Refinery.	
			HM-2c	The Applicant's contract with UPRR, shall include a provision to require that Positive Train Control (PTC) be in place for all mainline rail routes in California that could be used for transporting crude oil to the SMR.	
			HM-2d	The refinery shall not accept or unload at the rail unloading facility any crude oil or petroleum product with an API Gravity of 30 ^{o} or greater.	
				Implement mitigation measures PS-4a through PS4e.	
LAND USE AND RECREATION (Section 4.8)					
None were identified					
NOISE AND VIBRATION (Section 4.9)					
None were identified					
POPULATION AND HOUSING (Section 4.10)					
None were identified					
PUBLIC SERVICES AND UTILITIES (Section 4.11)					
PS.4	Operations of the crude oil train on the mainline UPRR tracks would increase demand for fire protection and emergency response services along the rail routes.	Operations	PS-4a	The Applicant shall provide advanced notice of all crude oil shipments to the Santa Maria Refinery, and quarterly hazardous commodity flow information documents to all first response agencies along the mainline rail routes within California that could be used by trains carrying crude oil to the Santa Maria Refinery for the life of the project. Only first response agencies that are able to receive security sensitive information as identified pursuant to Section 15.5 of Part 15 of Title 49 of the Code of Federal Regulations, shall be provided this information. The plan for providing notice to first response agencies shall be in place and verified by the County Department of Planning and Building prior to delivery of crude by rail to the Santa Maria Refinery.	Significant and Unavoidable
			PS-4b	Only rail cars designed to FRA, July 23, 2014 Proposed Rulemaking Option 1: PHMSA and FRA Designed Tank Car shall be allowed to unload crude oil at the Santa Maria Refinery.	
			PS-4c	The Applicant shall provide annual funding for first response agencies along the mainline rail routes within California that could be used by the trains carrying crude oil to the Santa Maria	

CLASS I Impacts – Rail Spur Project

Impacts That May Not Be Fully Mitigated To Less Than Significant 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 Measure		Residual Impact
				Refinery to attend certified offsite training for emergency responders to railcar emergencies, such as the 40 hour course offered by Security and Emergency Response Training Center Railroad Incident Coordination and Safety (RICS) meeting Department of Homeland security, NIIMS, OSHA 29CFR 1910.120 compliance. The Applicant shall fund a minimum of 20 annual slots per year for the life of the project. The plan for funding the emergency response training shall be in place and verified by the Cal Fire/County Fire prior to delivery of crude by rail to the Santa Maria Refinery.	
			PS-4d	As part of the Applicant's contract with UPRR, it shall require annual emergency responses scenario/field based training including Emergency Operations Center Training activations with local emergency response agencies along the mainline rail routes within California that could be used by the crude oil trains traveling to the Santa Maria Refinery for the life of the project. A total of four training sessions shall be conducted per year at various locations along the rail routes. This contract provision shall be in place and verified by the Cal Fire/County Fire prior to delivery of crude by rail to the Santa Maria Refinery.	
			PS-4e	As part of the Applicant's contract with UPRR, it shall require that all first response agencies along the mainline rail routes within California that could be used by trains carrying crude oil traveling to the Santa Maria Refinery be provided with a contact number that can provide real-time information in the event of an oil train derailment or accident. The information that would need to be provided would include, but not be limited to crude oil shipping papers that detail the type of crude oil, and information that can assist in the safe containment and removal of any crude oil spill. This contract provision shall be in place and verified by the Cal Fire/County Fire prior to delivery of crude by rail to the Santa Maria Refinery.	
TRANSPORTATION AND CIRCULATION (Section 4.12)					
None were identified					
WATER RESOURCES (Section 4.13)					
WR.3	A rupture or leak from a rail car on the UPRR mainline track could substantially degrade surface water and groundwater quality.	Operations	WR-3	Implement mitigation measures BIO-11 and PS-4a through PS-4e.	Significant and Unavoidable

CLASS II Impacts – Rail Spur Project

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 #	Impact Description	Phase	Mitigation Measures	Residual Impact
AESTHETICS AND VISUAL RESOURCES (Section 4.1)				
AV.1	The eastern extension of the proposed rail spur and its associated trains would reduce quality views of the open space as seen from portions of State Route 1, the California Coastal Trail, the De Anza Trail, and other public areas east of State Route 1, resulting in a potentially significant impact.	Construction and Operations	AV-1a Prior to issuance of grading and construction permits, the applicant shall submit a revised site-grading plan to the Department of Planning and Building for review and approval showing the following: a. An earthen berm shall be constructed around the eastern perimeter of the rail spur. The berm shall be a minimum of 10 feet tall and a maximum of 20 feet tall above the existing grade and as shown on the Berm Location Concept Map shown below (Figure 4.1-11) for the purpose of reducing views of the rail spur and trains from State Route 1 and the California Coastal Trail / De Anza Trail. b. The berm shall be designed and constructed to appear as a natural dune landform and shall have gradually undulated horizontal and vertical dimensions (consistent with Policy 5: Landform Alterations). c. No other existing landforms which would provide visual screening of the facility shall be used as source of borrow material for the required berm. d. The berm shall be revegetated with native grasses and shrubs to match the surrounding natural landcover and plant community. No disturbance shall occur outside of the identified area of disturbance shown on the site-grading plan. AV-1b Prior to issuance of grading and construction permits, the applicant shall submit a revised site-grading plan to the Department of Planning and Building for review and approval showing the following: a. All new cut and fill slopes shall include slope-rounding and landform grading techniques to avoid an engineered appearance (consistent with Policy 5: Landform Alterations). AV-1c Prior to issuance of grading and construction permits, the applicant shall submit a Habitat / Landscape Revegetation Plan to the Department of Planning and Building for review and approval showing the following: a. All new slopes shall be revegetated with native grasses and shrubs to match the surrounding natural landcover and plant community.	Less than significant with mitigation

CLASS II Impacts – Rail Spur Project

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 #	Impact Description	Phase	Mitigation Measures	Residual Impact
AV.2	The expanded industrial use and visibility of the rail spur and associated trains on the existing open space would cause the project to be more noticeable as seen from public viewpoints on State Route 1, the California Coastal Trail, the De Anza Trail, and other public areas east of State Route 1. This effect on the existing visual character would be inconsistent with the County of San Luis Obispo visual policy goals, resulting in a potentially significant impact.	Construction and Operations	AV-2 Implementation of mitigation measures AV-1a through AV-1c required for Impact AV.1 would also reduce potential impacts to existing visual character and quality of the site and its surroundings.	Less than significant with mitigation
AV.3	The project would create a new source of substantial light and glare which would adversely affect nighttime views in the area.	Operations	AV-3a Prior to issuance of grading and construction permits, the applicant shall submit a comprehensive lighting plan to the Department of Planning and Building for review and approval showing the following: a. The Lighting Plan shall be based on a photometric study prepared by a qualified engineer who is an active member of the Illuminating Engineering Society of North America (IESNA). b. The Lighting Plan shall be prepared by a qualified engineer who is an active member of the IESNA using guidance and best practices endorsed by the International Dark Sky Association. c. The applicant shall provide the specific technical data and performance criteria required by the applicable safety policy used as the basis for the Lighting Plan.	Less than significant with mitigation

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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 #	Impact Description	Phase	Mitigation Measures	Residual Impact
			d. As part of the Lighting Plan, illumination levels shall be the minimum required by the specifically defined public safety policy and ordinances. e. As part of the Lighting Plan, direct views of all lighting sources shall be directed downward and shielded from view from public roads. f. As part of the Lighting Plan, lights shall be designed and constructed to reduce illumination of the adjacent slopes and dunes where applicable. g. As part of the Lighting Plan, no lights shall be placed east of any portion of the screening berm required in mitigation measure AV-1a. h. As part of the Lighting Plan, lighting for all rail spur perimeter fencing shall be equipped with motion sensors for activation rather than left on continuously. AV-3b Within six months following completion of construction, a Lighting Evaluation Report shall be submitted to the Department of Planning and Building for review and approval. The purpose of the Lighting Evaluation Report shall be to assess and correct any unexpected or residual lighting impacts following project completion. The report shall be prepared by a by a qualified engineer who is an active member of the IESNA who was not associated with the preparation of the Lighting Plan described in mitigation measure AV-3a. Preparation of the Lighting Evaluation Report shall be by a qualified engineer retained by the County of San Luis Obispo and funded by the project applicant. The Lighting Evaluation Report shall include the following at a minimum: a. A comprehensive assessment of the lighting resulting from the rail spur project and project operations as seen from State Route 1, Oso Flaco Road, the California Coastal Trail, De Anza Trail and public viewing areas to the east. The Lighting Evaluation Report shall assess the completed project during a variety of operational conditions including all typical procedures such as unloading, moving of trains, multiple trains present, etc. The Report shall evaluate and identify where, if any unexpected light impacts occur, such as but not limited to reflection off trains, adjacent landforms, buildings, unexpected sources, etc. b. The Lighting Evaluation Report shall make specific recommendations to reduce the effects of any unexpected or excessive residual lighting impacts identified in the report. Recommendations may include but not be limited to: repositioning lights, lowering heights, increasing sizes of cut-off shields, reducing types of luminaires, reducing	

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Impacts That Can Be Mitigated To Less Than Significant Levels

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Impact #	Impact Description	Phase	Mitigation Measures	Residual Impact
			wattage, and modifying operational procedures. AV-3c Existing Facility and Operations Lighting Evaluation. Prior to issuance of grading and construction permits, the applicant shall submit a comprehensive evaluation of the existing refinery facility and operations lighting to the Department of Planning and Building for review and approval showing the following: a. The Existing Facility and Operations Lighting Evaluation shall be prepared by a qualified engineer who is an active member of the Illuminating Engineering Society of North America (IESNA). b. The Existing Facility and Operations Lighting Evaluation shall assess the sources and levels of all existing lighting associated with the refinery operations, and shall determine if any lighting levels exceeds the minimum required by applicable County of San Luis Obispo, state and federal safety regulations. c. If lighting levels exceed the applicable regulations, the Existing Facility and Operations Lighting Evaluation shall make specific recommendations to reduce the lighting levels to the minimum required. The Existing Facility and Operations Lighting Evaluation shall also identify and make recommendations to eliminate visibility of all point source lighting as seen from public roadways. The project applicant shall implement all recommendations made by the Lighting Evaluation Report and required by the Department of Planning and Building.	
AV.4	Visibility of headlights and other operational and safety lights from trains on the rail spur would create a new source of light and glare which would adversely affect nighttime views in the area.	Operations	AV-4 Implementation of mitigation measures AV-1a through AV-1c required for Impact AV.1 and mitigation measure AV-3b required for Impact AV.3 would also reduce potential impacts caused by trains operating on the rail spur.	Less than significant with mitigation

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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 #	Impact Description	Phase	Mitigation Measures	Residual Impact
AGRICULTURAL RESOURCES (Section 4.2)				
AR.3	The project could result in effects that impair adjacent agricultural uses, including the generation of dust and contaminated air emissions, soil and water contamination, use of water within the Santa Maria Groundwater Basin, the spread of noxious weeds, and increased risk of fire or oil spills, which have the potential to adversely affect adjacent agricultural areas.	Construction and Operations	AR-3 Implement WR-1, WR-2; AQ-1f, and BIO-9.	Less than significant with mitigation
AIR QUALITY AND GREENHOUSE GASES (Section 4.3)				
AQ.1	Construction activities associated with the Rail Spur project would generate criteria pollutant emissions that exceed SLOCAPCD thresholds.	Construction	AQ-1a Prior to issuance of grading and construction permits, and throughout project construction, as applicable, the Applicant shall implement the following construction emission reduction measures: a. Properly maintain all construction equipment according to manufacturer's specifications; b. Fuel all off-road and portable diesel powered equipment with CARB-certified motor vehicle diesel fuel (non-taxed version suitable for use off-road); c. Applicant shall include the following, in addition to complying with state Off-Road Regulations, in order to reduce peak daily/quarter ROG+NOx emissions: 1) Use CARB Tier 4 certified diesel construction equipment off-road heavy-duty diesel engines and 2) Stagger the construction schedule to prevent peak day/quarter emissions from exceeding the threshold (for example, no site preparation during grading and soil transport); d. Use CARB 2010 or cleaner certified on-road heavy-duty diesel trucks to the extent	Less than significant with mitigation

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Impacts That Can Be Mitigated To Less Than Significant Levels

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Impact #	Impact Description	Phase	Mitigation Measures	Residual Impact
			feasible and comply with state On-Road Regulations; e. If construction or trucking companies that are awarded the bid or are subcontractors for the project do not have equipment to meet the above two measures, the impacts from the dirtier equipment shall be addressed through SLOCAPCD approved off-site or other mitigation measures; f. All on- and off-road diesel equipment shall not idle for more than 5 minutes. Signs shall be posted in the designated queuing areas and job sites to remind drivers and operators of the 5 minute idling limit; g. Diesel idling within 1,000 feet of sensitive receptors is not permitted (Sensitive receptors are defined in the SLOCAPCD Handbook as people that have an increased sensitivity to air pollution or environmental contaminants. Sensitive receptor locations include schools, parks and playgrounds, day care centers, nursing homes, hospitals, and residential dwelling units); h. Staging and queuing areas shall not be located within 1,000 feet of sensitive receptors; i. Equipment shall be electrified when feasible; j. Substitute gasoline-powered or diesel hybrids in place of diesel-powered equipment, where feasible; and k. Use alternatively fueled construction equipment on-site where feasible, such as compressed natural gas (CNG), liquefied natural gas (LNG), propane, or biodiesel. AQ-1b Prior to issuance of grading and construction permit, the Applicant shall ensure SLOCAPCD regulations that prohibit developmental burning of vegetative material within San Luis Obispo County are followed for the life of the project. AQ-1c Prior to issuance of grading and construction permit, the Applicant shall ensure that portable equipment and engines 50 horsepower or greater, used during grading and construction activities must have a California portable equipment registration (issued by the ARB) or a SLOCAPCD permit. Proof of registration must be provided to the SLOCAPCD prior to the start of grading or construction or a permit secured from the SLOCAPCD prior to the start of grading or construction. The following list is as a guide to equipment and operations that may have permitting requirements, but it is not exclusive:	

CLASS II Impacts – Rail Spur Project

Impacts That Can Be Mitigated To Less Than Significant Levels

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Impact #	Impact Description	Phase	Mitigation Measures	Residual Impact
			a. Power screens, conveyors, diesel engines, and/or crushers; b. Portable generators and equipment with 50-horsepower or greater engines; c. Internal combustion engines; d. Unconfined abrasive blasting operations; e. Concrete batch plants; f. Rock and pavement crushing; g. Tub grinders; and h. Trommel screens. AQ-1d Prior to issuance of grading and construction permit, the Applicant shall ensure that all grading and construction equipment greater than 100 bhp be equipped with CARB Level 3 diesel particulate filters (DPF), or equivalent, to achieve an 85 percent reduction in diesel particulate emissions from an uncontrolled engine. If CARB verified Level 3 DPFs cannot be secured for all of the equipment greater than 100 hp then the applicant will offset the added DPM with measures including but not limited to schedule modifications, implementation of no idling requirement, or other applicable measures providing a total reduction equivalent to an 85 percent reduction from uncontrolled engines as approved by the SLOCAPCD. AQ-1e Prior to issuance of grading and construction permits, or during construction, if emissions of ROG+NOx with the above mitigations still exceed the thresholds, the Applicant shall secure SLOCAPCD-approved onsite or off-site reductions in ROG + NOx emissions to ensure that ROG + NOx emissions do not exceed the SLOCAPCD quarterly thresholds. Coordination with the SLOCAPCD should begin at least six (6) months prior to issuance of grading and/or construction permits for the Project to allow time for refining calculations and for the SLOCAPCD to review and approve the Construction Activity Management Plan (CAMP) and on-site or off-site mitigation approach. AQ-1f Prior to issuance of applicable grading permit, the Applicant shall prepare a Dust Control Plan to be approved by the APCD and County Health and include requirements in the SLOCAPCD CEQA Handbook identified as fugitive dust mitigation measures and shall include a combination of the following, as approved by the SLOCAPCD and County	

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Impacts That Can Be Mitigated To Less Than Significant Levels

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Impact #	Impact Description	Phase	Mitigation Measures	Residual Impact
			Health: a. Reduce the amount of the disturbed area where possible. b. Use of water trucks or sprinkler systems in sufficient quantities to prevent airborne dust from leaving the site. An adequate water supply source must be identified. Increased watering frequency would be required whenever wind speeds exceed 15 mph. Reclaimed (non-potable) water should be used whenever possible. c. All dirt stockpile areas should be sprayed daily as needed, covered, or a SLOCAPCD-approved alternative method will be used. (90 percent reduction from no dust control). d. Permanent dust control measures identified in the approved Project revegetation and landscape plans should be implemented as soon as possible following completion of any soil disturbing activities and shall use native species that have been shown to reduce particulate emissions to the extent feasible. e. Exposed ground areas that will be reworked at dates greater than one month after initial grading should be sown with a fast-germinating non-invasive grass seed and watered until vegetation is established. f. All disturbed soil areas not subject to revegetation should be stabilized using approved chemical soil binders, jute netting, or other methods approved in advance by the SLOCAPCD. g. All roadways, driveways, etc. to be paved should be completed as soon as possible. In addition, equipment pads should be laid as soon as possible after grading unless seeding or soil binders are used. h. Vehicle speed for all construction vehicles shall not exceed 15 mph on any unpaved surface at the construction site. i. All trucks hauling dirt, sand, soil, or other loose materials are to be covered or should maintain at least 2 feet of freeboard (minimum vertical distance between top of load and top of trailer) in accordance with CVC Section 23114. j. Install wheel washers where vehicles enter and exit unpaved roads onto streets, or wash off trucks and equipment leaving the site.	

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Impacts That Can Be Mitigated To Less Than Significant Levels

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Impact #	Impact Description	Phase	Mitigation Measures	Residual Impact
			k. Sweep streets at the end of each day if visible soil material is carried onto adjacent paved roads. Water sweepers with reclaimed water should be used where feasible l. Apply water every 3 hours to disturbed areas within the construction site in order to achieve a 61 percent reduction in particulate emissions. In addition, when drought conditions are present, fugitive dust control measures need to be modified by utilizing soil binders or other equivalent measures, to conserve water resources while still providing the necessary emission reductions. m. In support of APCD standard fugitive dust mitigation measures, the applicant shall designate a Visible Emission Evaluation certified person or persons to monitor the fugitive dust emissions and enhance the implementation of the measures as necessary to minimize nuisance violations from dust complaints (Rule 402) and to reduce visible emissions below the APCD's Rule 401 requirement that opacity not exceed 20% for greater than 3 minutes in any 60 minute period. Their duties shall include holidays and weekend periods when work may not be in progress. The name and telephone number of the designated monitor shall be provided to the SLOCAPCD Compliance Division and the Department of Planning and Building prior to the start of any grading, earthwork, or demolition. n. All PM10 mitigation measures required shall be shown on grading and building plans. o. Between June 1 and November 30, when Valley Fever rates of infection are the highest, additional dust suppression measures (such as additional water or the application of additional soil stabilizer) will be implemented prior to and immediately following ground disturbing activities if wind speeds exceed 15 miles per hour (mph) or temperatures exceed 95 degrees Fahrenheit for three consecutive days. The additional dust suppression will continue until winds are 10 mph or lower and outdoor air temperatures are below 90 degrees for at least two consecutive days. The additional dust suppression measures will be incorporated into the Final Dust Control Plan. The Plan will be submitted to the County for review and approval. p. The primary project construction contractor will prepare and implement a worker training program that describes potential health hazards associated with Valley Fever, common symptoms, proper safety procedures to minimize health hazards, and notification procedures if suspected work-related symptoms are identified during construction. The worker training program will identify safety measures to be	

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Impact #	Impact Description	Phase	Mitigation Measures	Residual Impact
			implemented by construction contractors during construction. Safety measures will include: 1) Providing HEPA-filtered air-conditioned enclosed cabs on heavy equipment. 2) Train workers on proper use of cabs, such as turning on air conditioning prior to using the equipment. 3) Providing communication methods, such as two-way radios, for use by workers in enclosed cabs. 4) Providing personal protective equipment (PPE), such as half-mask and/or full-mask respirators equipped with particulate filtration, to workers active in dusty work areas. 5) Providing separate, clean eating areas with hand washing facilities for construction workers. 6) Cleaning equipment, vehicles, and other items before they are moved offsite to other work locations. 7) Providing training for construction workers so they can recognize the symptoms of Valley Fever and promptly report suspected symptoms of work related Valley Fever to a supervisor. 8) Directing workers that exhibit Valley Fever symptoms to immediately seek a medical evaluation. q. Construction activities that will generate dust shall be limited to periods when good air quality is forecasted to the maximum extent feasible. The 6 day forecast for the CDF forecast zone shall be utilized as available from the APCD website, slocleanair.org. This information should be used by all on-site workers to plan construction activities for days when the air quality is forecast to be good. AQ-1g Prior to issuance of applicable grading permit, the Applicant shall submit a geologic evaluation under the CARB ATCM for Construction, Grading, Quarrying, and Surface Mining Operations, to determine if Naturally Occurring Asbestos (NOA) is present within the area that will be disturbed. NOA has been identified as a toxic air contaminant by the CARB. If NOA is not present, an exemption request must be filed with the SLOCAPCD. If NOA is found at the site, the Applicant must 1) comply with all requirements outlined in the Asbestos ATCM. This may include development of an Asbestos Dust Mitigation Plan and an Asbestos Health and Safety Program for approval by the SLOCAPCD; and 2) conduct a geological evaluation prior to any grading. Technical Appendix 4.4 of the SLOCAPCD CEQA Handbook includes a map of zones throughout the County where NOA has been found. More information on NOA is available at http://www.slocleanair.org/business/asbestos.php. AQ-1h Prior to issuance of demolition permits, if required, the Applicant shall comply with asbestos containing material (ACM) requirements. Demolition activities can have potential negative air quality impacts, including issues surrounding proper handling, demolition, and	

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Impact #	Impact Description	Phase	Mitigation Measures		Residual Impact
				disposal of ACM. ACM could be encountered during demolition or remodeling of existing buildings. Asbestos can also be found in utility pipes and pipelines (transite pipes or insulation on pipes). If utility pipelines are scheduled for removal or relocation or a building(s) is proposed to be removed or renovated, various regulatory requirements may apply, including the requirements stipulated in the National Emission Standard for Hazardous Air Pollutants (40CFR61, Subpart M - asbestos NESHAP). These requirements include but are not limited to: (1) notification to the SLOCAPCD; (2) an asbestos survey conducted by a Certified Asbestos Inspector; and (3) applicable removal and disposal requirements of identified ACM. More information on asbestos is available at http://www.slocleanair.org/business/asbestos.php.
			AQ-1i	Should hydrocarbon contaminated soil be encountered during construction activities, the SLOCAPCD must be notified as soon as possible and no later than 48 hours after affected material is discovered to determine if an SLOCAPCD Permit will be required. In addition, the following measures shall be implemented immediately after contaminated soil is discovered: 1) Covers on storage piles shall be maintained in place at all times in areas not actively involved in soil addition or removal; 2) Contaminated soil shall be covered with at least six inches of packed uncontaminated soil or other TPH –non-permeable barrier such as plastic tarp. No headspace shall be allowed where vapors could accumulate; 3) Covered piles shall be designed in such a way to eliminate erosion due to wind or water. No openings in the covers are permitted; 4) During soil excavation, odors shall not be evident to such a degree as to cause a public nuisance; and, 5) Clean soil must be segregated from contaminated soil. The notification and permitting determination requirements shall be directed to the SLOCAPCD Enforcement Division.
AQ.7	Operational activities associated with the Rail Spur Project could generate odors.	Operations	AQ-7	Prior to issuance of Notice to Proceed, the Applicant shall ensure that any new odor sources be added to the existing Refinery Odor Control Plan and submitted to the SLOCAPCD for review and approval before the start of construction. Mitigation shall include carbon canisters on all vacuum trucks, arrival and pre-departure inspection of all rail cars for fugitive leaks, monitoring of rail car top vents during unloading, and methods to reduce and eliminate odors associated with maintenance activities. Monitoring of odors from the rail facility and the other portions of the SMR potentially affected by a change in crude oil slate, shall be included in the Plan and shall be conducted by an independent third party monitor, retained by the County of San Luis Obispo Department of Planning, for the first three months of operation during each unit train visit. The APCD shall be notified of monitoring and unit train activity. Monitoring activities can be reduced, in coordination and agreement	Less than significant with mitigation

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Impacts That Can Be Mitigated To Less Than Significant Levels

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Impact #	Impact Description	Phase	Mitigation Measures	Residual Impact
			with the APCD, after the facility startup if odors are not determined to affect areas offsite. In addition to monitoring, the amended Odor Control Plan shall also detail control measures and/or operating procedures that will be implemented to reduce odor impacts if odors are a concern. The Plan shall also include an implementation schedule for incorporating additional measures if needed. The Plan measures shall include leak detection (if not already implemented), lower leak detection and repair threshold limits (to 100 ppm), increased component monitoring frequency (monthly), component replacement with lower leak levels and improved vapor control systems and these measures shall be discussed in the Odor Control Plan.	
AQ.8	Cumulative criteria pollutant and GHG emissions at the SMR could exceed SLOCAPCD thresholds.	Operations	AQ-8 Prior to issuance of the Notice to Proceed, the Applicant shall provide a GHG mitigation, monitoring and reporting plan. The plan shall investigate methods to bring the Rail Spur Project GHG emissions at the refinery to zero for the entire project each year. The plan shall indicate that, on an annual basis, if after all onsite mitigations are implemented, the GHG emissions from the Rail Spur Project still exceed zero, then SLOCAPCD-approved off-site mitigation will be required. Methods could include the contracting arrangement that increases the use of more efficient locomotives, or through other, onsite measures. Coordination with the SLOCAPCD should begin at least six (6) months prior to issuance of operational permits for the Project to allow time for refining calculations and for the SLOCAPCD to review and approve the mitigation approach.	Less than significant with mitigation
BIOLOGICAL RESOURCES (Section 4.4)				
BIO.1	Proposed construction of the Rail Spur Project has the potential to impact Nipomo Mesa lupine, a state and federally endangered plant species.	Construction	BIO-1 Prior to initiation of project activities, a floristic survey shall be conducted within the Rail Spur Project area in accordance with the California Department of Fish and Wildlife (CDFW) Protocol for surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities (2009) and the Guidelines for Conducting and Reporting Botanical Inventories for Federally listed, Proposed, and Candidate Species (USFWS 2000). The survey shall specifically focus on the presence/absence of Nipomo Mesa lupine and, if normal rainfall conditions are present during the survey, the findings would be only valid for a period of two years. The floristic survey shall be conducted during a blooming period with normal rainfall. A 'normal' rainfall period is equivalent to the monthly or annual average of precipitation over a 30 year time period for the area. The results of this survey shall be submitted to the County, United States Fish and Wildlife Service, and California Department of Fish and	Less than significant with mitigation

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Impact #	Impact Description	Phase	Mitigation Measures		Residual Impact
				Wildlife within 30 days of completing the survey. If 'normal' rainfall conditions have occurred prior to the initiation of the survey, and the results of this survey effort determine that Nipomo Mesa lupine is absent from the Rail Spur Project area, no further mitigation for this species shall be required at this time. Because it is well documented that Nipomo Mesa lupine may occur as a result of site disturbance, floristic surveys shall be conducted on an annual basis until there is no further disturbance to the native soil as a result of construction activities. Should Nipomo Mesa lupine be identified during construction, or if Nipomo Mesa lupine is identified prior to the initiation of activities during 'normal' rainfall conditions, the project shall avoid the individual or population to the extent feasible. If avoidance is not feasible then the applicant would be required by law to coordinate with California Department of Fish and Wildlife to acquire a 2081 Incidental Take Permit for this species and comply with any conditions imposed by that permit. At a minimum, the applicant shall implement BIO-5a (Dune Habitat Restoration Plan) and include Conservation Measures to establish and monitor Nipomo Mesa lupine population(s) within the identified on-site mitigation area at a ratio of 3:1 for individuals. The mitigation area for Nipomo Mesa lupine may overlap with the mitigation area for sensitive community impacts, which shall be protected from any grazing activities in perpetuity.	
BIO.2	Proposed construction of the Rail Spur and associated Emergency Vehicle Access route would result in the removal of plant species considered to be rare by the California Native Plant Society.	Construction	BIO-2	Prior to project activities, the total number of California spineflower (Mucronea californica), sand almond (Prunus fasciculata var. punctata), Blochman's groundsel (Senecio blochmaniae), Blochman's leafy daisy (Erigeron blochmaniae), and dune larkspur (Delphinium parryi ssp. blochmaniae) shall be accurately estimated during the implementation of BIO-1. These population estimates shall be utilized as the basis for the in-kind replacement of these species described in Mitigation Measure BIO-5e. Should any additional populations of sensitive plant species that are considered rare by the California Native Plant Society (and not formally listed under the Endangered Species Act) be identified during the implementation of BIO-1 that were not previously observed in 2013, these species will also be replaced in-kind as part of the Dune Habitat Restoration Program and replacement success would be held to the same performance standards.	Less than significant with mitigation
BIO.3	Proposed construction and operational activities could result in disturbance and mortality	Construction and Operations	BIO-3	Prior to issuance of grading and construction permits, a qualified wildlife biologist shall prepare a Sensitive Species Management Plan, which outlines the procedures and protocols for capturing and relocating sensitive animal species including coast horned lizard and silvery legless lizard during all phases of grading. This plan shall be approved by the	Less than significant with mitigation

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Impacts That Can Be Mitigated To Less Than Significant Levels

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Impact #	Impact Description	Phase	Mitigation Measures	Residual Impact
	to common ground-dwelling wildlife and sensitive ground-dwelling animal species.		County and California Department of Fish and Wildlife. Implementation of the Plan is required where impacts to sensitive animal species and their habitats are unavoidable and located within a minimum of 100 feet of the Disturbance Area (or greater as determined by the California Department of Fish and Wildlife). Within 30 days prior to mobilization, grading or construction, a qualified wildlife biologist shall conduct a pre-construction survey of the area of impact to determine the presence of sensitive wildlife species. Individuals will be searched and captured using techniques appropriate to the species of concern and approved by the appropriate resource agencies. All captured individuals will be released as soon as possible into nearby suitable habitat that has been previously identified by the qualified wildlife biologist in consultation with the County and California Department of Fish and Wildlife. The size or age-class, location of capture, and the relocation site shall be recorded for each individual relocated from the site.	
BIO.4	Proposed construction activities could result in disturbance of American badger, potentially including mortality.	Construction	BIO-4 At a minimum, the following measures shall be incorporated in the Sensitive Species Management Plan: 1. Prior to grading activities, a County-approved biologist shall conduct a survey to identify whether badgers are using any portion of the site near the area in which disturbance is proposed. The survey shall be conducted no less than 14 days and no more than 30 days prior to construction. The survey shall cover the boundaries of proposed disturbance and 100 feet beyond, including all access roads, and shall examine both old and new dens. If potential badgers dens are found, they shall be inspected to determine whether they are occupied by badgers. Occupation of the den shall be determined by one or more of the following methods: a. Use of a fiber-optic scope to examine the den to the end: b. Partially obstruct the den entrance with sticks, grass, and leaves for three consecutive nights and examine for signs that animals are entering or leaving the den; c. Dust the den entrance with a fine layer of dust or tracking medium for three consecutive nights and examine the following mornings for tracks. 2. Inactive dens within construction areas shall be excavated by hand with a shovel to prevent re-use of dens during construction.	Less than significant with mitigation

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			3. If badgers are found in dens between August and January, a qualified biologist shall establish a 50 foot diameter exclusion zone around the entrance. To avoid disturbance and the possibility of direct take of badgers, no construction, grading, or staging of equipment shall be conducted within the buffer area until the biologist has determined that the badger(s) have vacated the den. 4. If badgers are found in dens between February and July, nursing young may be present. Therefore, a County-approved biologist shall establish a 200-foot diameter buffer around the den. No construction, grading, or staging of equipment shall be conducted within the buffer area until the biologist has determined that the badgers have vacated the den.	
BIO.5	Proposed construction of the Rail Spur Project could result in a permanent impact to approximately 20.88 acres of vegetation types that are considered sensitive communities by the California Department of Fish and Wildlife following the National Vegetation Classification.	Construction	BIO-5a Prior to issuance of any grading permits, the applicant shall retain a qualified biologist and/or botanist acceptable to the County to prepare a Dune Habitat Restoration Plan (DHRP) for review and approval by the County in consultation with the California Department of Fish and Wildlife (CDFW) and the United States Fish and Wildlife Service (USFWS). The DHRP shall be signed by the retained qualified biologist and/or botanist and shall detail the methods for restoring or enhancing a minimum of 41.76 acres (2:1 for permanent impacts) of vegetation types considered to be sensitive communities by CDFW, with an emphasis on restoring known rare plant associations found within the BSA and those associations considered locally rare to the Guadalupe-Nipomo Dunes. The restoration area(s) shall be located within the Phillips 66 property boundary and protected from any grazing activity. The DHRP shall focus on restoring and enhancing sensitive communities, known rare plant associations, and species of locally rare plant associations, by removing invasive species (iceplant, veldt grass, and other invasive species) and planting appropriate native species, including but not limited to: mock heather, purple nightshade, Blochman's ragwort, Blochman's leafy daisy, California spineflower, sand almond and suffrutescent wallflower. Should Nipomo Mesa lupine be identified within the Rail Spur Project area as a result of BIO-1, and avoidance of this species is not feasible, the DHRP shall also include methods of restoring and enhancing Nipomo Mesa lupine at a ratio of 3:1 for permanent impacts to individuals. Regardless of whether Nipomo Mesa lupine is identified on-site as part of BIO-1, the DHRP shall also focus on restoring and enhancing sensitive communities and rare plant associations immediately adjacent to known Nipomo Mesa lupine populations in order to promote expansion of the existing population.	Less than significant with mitigation

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Impact #	Impact Description	Phase	Mitigation Measures	Residual Impact
			At a minimum, the DHRP shall include the following elements: a. Identification of locations, amounts, size and types of plants to be replanted, as well as any other necessary components (e.g., temporary irrigation, amendments, etc.) to ensure successful reestablishment. b. Provide for a native seed collection effort prior to ground disturbing activities. Collection of native seed shall be propagated by a County-approved contractor. Plants shall include but not be limited to California Native Plant Society (CNPS) listed plant species that may be affected. c. Quantification of impact based on "as-built plans" and quantification of mitigation areas such that the replacement criteria are met (2:1 acreage ratio, or 3:1 for Nipomo Mesa lupine individuals). d. A program schedule and success criteria for a minimum five year monitoring and reporting program that is structured to ensure the success of the DHRP. e. Provide for the in-kind replacement of the following sensitive species that occur within the Rail Spur Project area, which may include: California spineflower (Mucronea californica), sand almond (Prunus fasciculata var. punctata), Blochman's groundsel (Senecio blochmaniae), Blochman's leafy daisy (Erigeron blochmaniae) and dune larkspur (Delphinium parryi ssp. blochmaniae). Should Nipomo Mesa lupine be identified onsite, in-kind replacement of this species shall also be included. Individuals that are removed or damaged shall be replaced in-kind at a 3:1 ratio (based on square feet cover) within the designated restoration area with 100% success in 5 years. f. Identification of access and methods of materials transport to the restoration area, including personnel, vehicles, tools, plants, irrigation equipment, water, and all other similar supplies. Access shall not result in new or additional impacts to habitat and special-status species. g. The required Dune Habitat Restoration Program shall incorporate an invasive species control program and be implemented by qualified personnel to ensure that the invasive species control program does not result in any additional impacts to Nipomo Mesa lupine, or other rare species.	

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Impact #	Impact Description	Phase	Mitigation Measures	Residual Impact
			h. The restoration area shall be protected in perpetuity by an easement. The easement shall either be an open space easement, or a conservation easement if required by the California Department of Fish and Wildlife and United States Fish and Wildlife Service, or if chosen by the Applicant. The easement shall be in a form approved by County Counsel and CDFW and/or USFWS if required by those agencies. i. Upon successful completion of the Dune Habitat Restoration Program and subsequent approval by the permitting resource agencies, the applicant shall consider providing non-profit organizations such as California Native Plant Society and The Land Conservancy with long term access to the restoration site for the purposes of education, and long-term maintenance of the restoration site. Long-term maintenance activities would only occur if permitted by the applicant, and would require coordination with California Department of Fish and Wildlife and United States Fish and Wildlife Service. Access to the site is not guaranteed as a result of this measure. Funding for any future long-term maintenance activities shall be facilitated by the non-profit organization. BIO-5b Prior to initiation of construction, the applicant shall retain a qualified biologist or botanist acceptable to the County to supervise the implementation of the DHRP. The qualified biologist or botanist shall supervise plant salvage and/or seed collection (prior to construction), plant propagation, site preparation, implementation timing, species selected for planting, planting installation, maintenance, monitoring, and reporting of the restoration efforts. The qualified biologist or botanist shall prepare and submit four annual reports and one final monitoring report to the County for review and approval in consultation with California Department of Fish and Wildlife and United States Fish and Wildlife Service.. The annual and final monitoring reports shall include discussions of the restoration activities, project photographs, an assessment of success criteria attainment, and any remediation actions that may have been required in order to achieve the success criteria. BIO-5c Prior to issuance of grading and construction permits, the applicant shall define and clearly mark construction zone boundaries adjacent to known sensitive species occurrences with high visibility construction fencing, and shall mark groups of individual plants located within potential disturbance areas with highly visible flagging or fencing. BIO-5d Prior to construction (within 48 hours), the applicant's retained biologist or botanist shall provide instruction to construction personnel regarding avoidance of sensitive habitats and special-status plants located in the vicinities of areas experiencing ground disturbance. The	

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Impact #	Impact Description	Phase	Mitigation Measures	Residual Impact
			training shall include presentation of photos of sensitive plant species and habitat, summary of regulations and conditions applicable to protection of the species, identification of areas where removal of the species is permitted pursuant to the final conditions of approval and DHRP, and any ramifications for non-compliance. BIO-5e During construction, where disturbance to sensitive habitat and sensitive plant species is unavoidable (and permitted by the County upon approval of the project), the top four inches of surface material shall be salvaged and stockpiled for restoration use in consultation with the County, California Department of Fish and Wildlife and United States Fish and Wildlife Service. Existing native vegetation shall also be removed and included as mulch in order to capture any existing native seed material. The salvaged material shall be used as the finish layer on fill slopes and other disturbed areas that will not require regular vegetation maintenance. BIO-5f During construction, the use of heavy equipment shall be restricted to within the identified work areas throughout the duration of construction activities and all construction personnel shall be advised of the importance of limiting ground disturbance and construction activities to within the identified work areas. A full-time biological monitor shall monitor shall map any populations or individual sensitive species that may bloom within, or directly adjacent to, areas of ground disturbance. Should Nipomo Mesa lupine be identified at any time during construction, the species shall be completely avoided and the County shall be contacted immediately. If avoidance is not feasible, or the species was inadvertently impacted during construction before identification by the biological monitor, the County and the applicant shall coordinate directly with the California Department of Fish and Wildlife and United States Fish and Wildlife Service. At a minimum, the impacts to any sensitive plant species shall be mitigated though implementation of BIO-5a.	
BIO.6	Proposed construction of the Rail Spur Project has the potential to impact individual specimens of coast live oak of 5-inch DBH or greater.	Construction	BIO-6a At the time of application for grading and/or construction permits, the applicant shall prepare an Oak Tree Inventory, Avoidance, and Protection Plan as outlined herein. The plan shall be reviewed by a County-approved arborist prior to approval of grading and/or construction permits, and shall include the following items: a. Construction plans shall clearly delineate all trees within 50 feet of areas where soil disturbance would occur, and shall show which trees are to be impacted, and which trees are to remain unharmed. All inventoried trees shall be shown on maps. The species, diameter at breast height, location, and condition of these trees shall be	Less than significant with mitigation

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Impact #	Impact Description	Phase	Mitigation Measures	Residual Impact
			documented in data tables. b. Prior to any grading or grubbing, all trees that are within fifty feet of construction or grading activities shall be marked for protection and their root zone shall be fenced. The outer edge of the tree root zone to be fenced shall be outside of the canopy 1/2 again the distance as measured between the tree trunk and outer edge of the canopy (i.e., 1-1/2 times the distance from the trunk to the drip line of the tree), unless otherwise shown on the approved construction plans. c. Prior to any grading or grubbing, a certified arborist shall be retained by the applicant to identify at risk limbs and perform all necessary trimming of oak tree limbs that could be damaged by project activities. Pruning shall be conducted as needed along all access roads and construction areas, including paved portions of County roads used for project equipment access. All pruning shall be conducted prior to construction equipment passage to minimize the potential for inadvertent damage to oak tree limbs. Removal of larger lower branches should be minimized to 1) avoid making tree top heavy and more susceptible to "blow-overs", 2) reduce having larger limb cuts that take longer to heal and are much more susceptible to disease and infestation, 3) retain wildlife habitat values associated with the lower branches, 4) retain shade to keep summer temperatures cooler and 5) retain the natural shape of the tree. The certified arborist shall document all pruning impacts in a report submitted to the County San Luis Obispo. d. A certified arborist shall be retained by the applicant to supervise all construction activities in areas containing oak trees in order to minimize disturbance to identified trees and their root zones wherever possible. The certified arborist will document all construction-related impacts to oak trees in an "as-built" report submitted to the County San Luis Obispo. e. Immediately following submittal of the oak tree impact "as-built" report to the County San Luis Obispo, the applicant shall implement mitigation for all identified pruning and construction-related oak impacts per current County San Luis Obispo ratios and methods for oak tree mitigation and replacement. County oak tree replacement standards require a project proponent to prepare and implement an oak tree replacement plan. The plan shall provide for the in-kind replacement, at a 4:1 ratio, of all oak trees removed as a result of the project. In addition, the plan must provide for the in-kind planting, at a 2:1 ratio, of all oak trees impacted but not removed. The	

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Impact #	Impact Description	Phase	Mitigation Measures	Residual Impact
			replacement trees must be monitored for seven years after planting. BIO-6b Upon application for grading and construction permits, the applicant shall submit an Oak Tree Replacement, Monitoring, and Conservation Plan to the County Department of Planning and Building. The Plan shall include the following: a. The County-approved arborist shall provide or submit approval of an oak tree replacement plan at a minimum 4:1 ratio for oak trees removed and a minimum replacement ration of 2:1 ratio for oak trees impacted (i.e., disturbance within the root zone area). b. Replacement oak trees shall be from regionally or locally collected seed stock grown in vertical tubes or deep one-gallon tree pots. Four-foot diameter shelters shall be placed over each oak tree to protect it from deer and other herbivores, and shall consist of 54-inch tall welded wire cattle panels (or equivalent material) and be staked using T-posts. Wire mesh baskets, at least two feet in diameter and two feet deep, shall be use below ground. Planting during the warmest, driest months (June through September) shall be avoided. The plan shall provide a species-specific planting schedule. If planting occurs outside this time period, an irrigation plan shall be submitted prior to permit issuance and implemented upon approval by the county. c. Replacement oak trees shall be planted no closer than 20 feet on center and shall average no more than four planted per 2,000 square feet. Trees shall be planted in random and clustered patterns to create a natural appearance. As feasible, replacement trees shall be planted in a natural setting on the north side of and at the canopy/dripline edge of existing mature native oak trees (if present); on north-facing slopes; within drainage swales (except when riparian habitat present); where topsoil is present; and away from continuously wet areas (e.g., lawns, irrigated areas, etc). Replanting areas shall be either in native topsoil or areas where native topsoil has been reapplied. A seasonally timed maintenance program, which includes regular weeding (hand removal at a minimum of once early fall and once early spring within at least a three-foot radius from the tree or installation of a staked "weed mat" or weed-free mulch) and a temporary watering program, shall be developed for all oak tree planting areas. A qualified arborist/botanist shall be retained to monitor the acquisition, installation, and maintenance of all oak trees to be replaced. Replacement trees shall be monitored and maintained by a qualified arborist/botanist for at least seven years or until the trees	

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Impact #	Impact Description	Phase	Mitigation Measures	Residual Impact
			have successfully established as determined by the County Environmental Coordinator. Annual monitoring reports will be prepared by a qualified arborist/botanist and submitted to the County by October 15 each year. d. The restored area shall be at a minimum equal in size to the area of oak habitat lost or disturbed.	
BIO.7	A rupture or leak from, pipelines, rails cars, or other facility related infrastructure during operation of the Rail Spur Project has potential to impact surrounding onsite sensitive habitats.	Operations	BIO-7 Prior to issuance of grading and construction permits, the existing Santa Maria Refinery Spill Prevention, Control and Countermeasure Plan (SPCCP) shall be amended and submitted for review and approval to the County Planning and Building Department and the California Department of Fish and Wildlife, Office of Spill Prevention and Response . The Plan shall address protection of sensitive biological resources and revegetation of any areas disturbed during an oil spill or cleanup activities. The Plan shall incorporate, at a minimum, the following: a. An estimate of the worst case spill volume associated with the rail unloading operations. b. A description of the spill containment equipment for the facility that clearly demonstrates that the worst case spill can be contained within the rail facility boundaries. c. A description of the operating procedures for the rail unloading facilities that sever to prevent an oil spill. d. Measures taken to assure that the crude oil pipeline shall be designed such that any spill from the pipeline shall drain back to rail unloading area or shall otherwise be contained within the access roadway. e. Provide a list of onsite oil spill response equipment that is adequate to handle the worst case spill volume. f. Identify training requirement for oil spill response personnel, which includes annual spill drills. g. Identification and communication protocols and agreements for responsible parties tasked with emergency response, cleanup, and rehabilitation efforts of any wildlife species and habitat that may be impacted.	Less than significant with mitigation

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Impact #	Impact Description	Phase	Mitigation Measures		Residual Impact
				h. Identification of known sensitive resources within any area that may be impacted by a potential oil spill or cleanup activities, and identification of staging areas and predetermined access and egress routes that pose little or no threat to sensitive biological resources. i. Identification of oil spill cost recovery procedures for state and local government agencies. j. Specific measures to avoid impacts to native vegetation and wildlife habitats, plant and animal species, and environmentally sensitive habitat areas during oil spill response and cleanup operations. For Rail Spur construction and operation, the Plan shall specifically address measures to 1) prevent oil spills from entering the adjacent property which includes a tributary to Oso Flaco Creek, and 2) in case a spill does enter any of these water features, shall include measures to prevent a spill from reaching the waters of Oso Flaco Lake. The plan shall describe the worst case scenario for maximum oil spill volume. k. When habitat disturbance cannot be avoided, the Plan shall provide protocol and methodologies for removing contaminated vegetation from sensitive areas. Low-impact site-specific techniques such as hand-cutting contaminated vegetation, hand raking, and shoveling of contaminated soils shall be specified to remove spilled material from particularly sensitive wildlife habitats. l. When habitat disturbance cannot be avoided, the Plan shall provide stipulations for development and implementation of site-specific habitat restoration plans and to restore native plant communities to pre-spill conditions. Procedures for timely re-establishment of vegetation that replicates the habitats disturbed (or, in the case of disturbed habitats dominated by non-native species, replaces them with suitable native species) shall also be included.	
BIO.8	Proposed construction and operational activities could result in disturbance and mortality to nesting migratory bird species and	Construction and Operations	BIO-8a	Prior to and during construction, the applicant shall avoid disturbance of bird breeding and nesting activities if construction activities are scheduled to occur during the typical bird nesting season (February 15 and September 1). A qualified biologist shall also be retained to conduct a pre-construction survey on a weekly basis throughout the breeding season only during construction for the purpose of identifying potential bird nesting activity. Should construction continue to occur beyond September 1, a qualified biologist shall conduct a bi-	Less than significant with mitigation

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Impact #	Impact Description	Phase	Mitigation Measures	Residual Impact
	overwintering burrowing owl.		weekly survey during the wintering season for overwintering use by burrowing owl. If no nesting activities or overwintering burrowing owl are detected within the proposed work area, noise-producing construction activities may proceed and no further mitigation is required. If nesting activity or overwintering burrowing owl are detected during pre-construction nesting surveys or at any time during the monitoring of construction activities, the following shall occur: a. Work activities within 300 feet (500 feet if raptors) shall be delayed. CDFW and/or USFWS shall be contacted to determine the appropriate biological buffer distance around active nest sites. b. Construction activities will be prohibited within the buffer zone until a biologist determines that the young birds have fledged and left the nest, or overwintering burrowing owl is no longer utilizing the burrow. The results of the surveys shall be immediately submitted to the CDFW and the County, demonstrating compliance with the Migratory Bird Treaty Act of 1918. c. If destruction of occupied burrows is unavoidable during the non-breeding season, or if burrowing owls must be translocated during the non-breeding season, a Burrowing Owl Exclusion Plan shall be developed by a qualified biologist following the guidance of the CDFW Staff Report on Burrowing Owl Mitigation (2012). BIO-8b To mitigate for the loss of burrowing owl habitat, a minimum of 26.5 acres of suitable burrowing owl foraging and nesting habitat shall be provided in perpetuity through an easement prior to any project construction activities. If feasible, the protected lands shall occur within the boundaries of the Phillips 66 property or lands immediately adjacent to any known burrow site. At a minimum, the mitigation lands shall include similar vegetative attributes as the impact area, be of sufficiently large acreage and include the presence of fossorial mammals. Mitigation lands for burrowing owl may overlap with lands which are designated for restoration under the Dune Habitat Restoration Plan. Should there be any overlap, neither mitigation effort should negatively affect the goals and success criteria of the other. The location of the protected lands shall be determined in coordination with CDFW.	
BIO.9	Proposed construction activities could result in disturbance and the	Construction	BIO-9 Prior to issuance of grading and construction permits, the following measures shall be included on applicable plan sheets and the Dune Habitat Restoration Plan: a. During construction, the applicant will make all reasonable efforts to limit the use of	Less than significant with

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Impact #	Impact Description	Phase	Mitigation Measures	Residual Impact
	introduction or spread of invasive plant species.		imported soils for fill. Soils currently existing on-site should be used for fill material. If the use of imported fill material is necessary, the imported material must be obtained from a source that is known to be free is invasive plant species; or the material must consist of purchased clean material such as crushed aggregate, sorted rock, or similar. b. During construction, the contractor shall stockpile topsoil and redeposit the stockpiled soil within disturbed areas onsite after construction of the Rail Spur is complete, or transport the topsoil to a certified landfill or other allowable location for disposal if soil cannot be used within disturbed areas onsite. c. All erosion control materials including straw bales, straw wattles, or mulch used on-site must be free of invasive species seed. d. The required Dune Habitat Restoration Program shall incorporate an invasive species control program.	mitigation
CULTURAL RESOURCES (Section 4.5)				
CR.1	Grading and excavation associated with the construction of the emergency vehicle access road (EVA) could result in the disturbance and destruction of a portion of CA-SLO-1190.	Construction (EVA)	CR-1a Prior to issuance of grading and construction permits, the Applicant shall submit plans showing a modified road alignment for the Emergency Vehicle Access (EVA) road to the Department of Planning and Building for review and approval. Grading and construction of the EVA shall avoid all ground disturbing activities within the previously identified boundary of CA-SLO-1190. The plans shall note the boundaries of the site as an Environmentally Sensitive Area (ESA) and shall include a 50-foot buffer around the ESA. No grading, storage of materials or equipment, or use of equipment shall occur within the ESA. CR-1b Prior to issuance of grading and construction permits, the Applicant shall submit an Archaeological Monitoring Plan to the Department of Planning and Building for review and approval. The plan shall include, at minimum: a. List of personnel involved in the monitoring activities including a Native American monitor; b. Clear identification of what portions of the project area in relation to CA-SLO-1190 shall be monitored; c. Description of how the monitoring shall occur;	Less than significant with mitigation

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Impact #	Impact Description	Phase	Mitigation Measures	Residual Impact
			d. Description of monitoring frequency; e. Description of resources expected to be encountered; f. Description of circumstances that would result in the "work diversion," in the case of discovery, at the project site; g. Description of procedures for diverting work on the site and notification procedures; and h. Description of monitoring reporting procedures. CR-1c A County approved archaeological monitor shall be present during all ground disturbing construction activities within intact native soil (i.e., undisturbed soils) within 300 feet of the previously identified boundary of CA-SLO-1190, and as noted in the approved Archaeological Monitoring Plan. CR-1d Upon completion of all monitoring and mitigation activities required by CR-1 through CR-5, and prior to final inspection or occupancy, whichever occurs first, the Applicant shall submit to the Department of Planning and Building a report summarizing all monitoring and mitigation activities and confirming that all recommended mitigation measures have been met.	
CR.2	Grading and excavation associated with the project could result in the disturbance and destruction of unknown subsurface archeological resources.	Construction	CR-2a Prior to any grading or construction, contractors involved in grading and grubbing activities shall receive training from a County-qualified archeologist. The training shall address the following issues: a. Review the types of archaeological artifacts that may be uncovered; b. Provide examples of common archaeological artifacts to examine; c. Review what makes an archaeological resource significant to archaeologists and local native Americans; d. Describe procedures for notifying involved or interested parties in case of a new discovery; e. Describe reporting requirements and responsibilities of construction personnel; f. Review procedures that shall be used to record, evaluate, and mitigate new discoveries;	Less than significant with mitigation

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Impact #	Impact Description	Phase	Mitigation Measures	Residual Impact
			g. Describe procedures that would be followed in the case of discovery of disturbed as well as intact human burials and burial-associated artifacts; and h. Employees completing this training shall be given a special helmet sticker or card to show they have completed the training, where the sticker/card shall be kept with them at all times while at the work site. CR-2b Prior to issuance of grading and construction permits, the Applicant shall submit an Archaeological Monitoring Plan to the Department of Planning and Building for review and approval. The plan shall include, at minimum: a. List of personnel involved in the monitoring activities including a Native American monitor; b. Description of how the monitoring shall occur; c. Description of monitoring frequency; d. Description of circumstances that would result in the "work diversion," in the case of discovery, at the project site; e. Description of procedures for diverting work on the site and notification procedures; and f. Description of monitoring reporting procedures. CR-2c A County approved archaeological monitor shall be present during all ground disturbing construction activities within intact native soil (i.e., undisturbed soils) as noted in the approved Archaeological Monitoring Plan.	
CR.3	Unanticipated disturbance to human remains due to construction.	Construction	CR-3 If human remains are exposed during construction, the Applicant shall notify the County Environmental Coordinator immediately and comply with State Health and Safety Code Section 7050.5, which states that no further disturbance shall occur until the County Coroner has been notified and can make the necessary findings as to origin and disposition of the remains pursuant to Public Resources Code 5097.98. Construction shall halt in the area of the discovery of human remains, the area shall be protected, and consultation and treatment shall occur as prescribed by law.	Less than significant with mitigation
CR.5	Unanticipated	Construction	CR-5 If any paleontological resources are encountered during ground-disturbing activities,	Less than

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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 #	Impact Description	Phase	Mitigation Measures	Residual Impact
	disturbance to paleontological resources.		activities in the immediate area of the find shall be halted and the discovery assessed. A qualified paleontologist shall be retained to evaluate the discovery and recommend appropriate treatment options pursuant to guidelines developed by the Society of Vertebrate Paleontology. A paleontological resource impact mitigation program for treatment of the resources shall be developed and implemented if paleontological resources are encountered.	significant with mitigation
GEOLOGICAL RESOURCES (Section 4.6)				
GR.1	Seismically induced ground shaking could damage proposed structures and infrastructure, potentially resulting in loss of property, risk to human health and safety, and oil spills.	Construction and Operations	GR-1a At the time of application for grading and construction permits, the proposed rail spur, unloading facility, and oil pipeline infrastructure shall be designed and constructed to withstand anticipated horizontal and vertical ground acceleration in the Project area, based on the California Building Code. The calculated design base ground motion for project components shall consider the soil type, potential for liquefaction, and the most current and applicable seismic attenuation methods that are available. GR-1b At the time of application for construction permits, all surface facilities and equipment shall have suitable foundations and anchoring design, surface restraints, and moment-limiting supports to withstand seismically induced groundshaking. GR-1c A Registered Civil Engineer and Certified Engineering Geologist shall complete an updated geotechnical investigation specific to the proposed rail spur and oil pipeline site, as previous on-site geotechnical investigations were completed in other areas of the refinery. All geotechnical recommendations provided in the report shall be followed during grading and construction at the Project Site. The updated geotechnical evaluation shall include, but not be limited to, an estimation of both vertical and horizontal anticipated peak ground accelerations, as well as an updated liquefaction analysis. GR-1d The geotechnical report shall be completed prior to completion of the final Project design and shall be submitted to the County of San Luis Obispo Building Division for review and approval. The Project design must conform to the recommendations within the updated geotechnical evaluation. The geotechnical recommendations would likely include, but not be limited, to the following: a. Proposed structures shall be designed and constructed to withstand anticipated horizontal and vertical ground acceleration in the Project area, based on the California Building Code. b. Proposed structures shall be designed and constructed to withstand the effects of	Less than significant with mitigation

CLASS II Impacts – Rail Spur Project

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 #	Impact Description	Phase	Mitigation Measures	Residual Impact
			liquefaction, as applicable, based on the California Building Code. c. The Project Site shall be cleared of unsuitable materials and graded to provide a firm base for compacted fill, as applicable. Ground surfaces to receive compacted fill shall be prepared by removing organics, rubble, debris, existing disturbed fill, artificial fill, unconsolidated materials, and soft or disturbed soils. Removal of unconsolidated materials would likely include several feet of overexcavation. d. All fill material shall be placed in uniform lifts not exceeding 8 inches in its loose state and compacted to a minimum of 90 percent relative compaction, as determined by the latest ASTM Test Designation D-1557. e. Due to the low cohesion of the onsite soils (i.e., dune sands), the potential need for mechanical stabilization of fill slopes shall be evaluated and implemented, as applicable, to attain the acceptable factors of safety for stability. Mechanical stabilization may include Mechanically Stabilized Earth (MSE), which includes use of engineered geogrids placed at 2-foot vertical spacing within fill slopes. Cut slopes may similarly require construction of overlying stability fills, using MSE. f. Surface runoff shall be directed away from slopes and foundations and collected in lined ditches or drainage swales, via non-erodible engineered drainage devices. Fill slopes and stability fills, as applicable, shall be provided with subsurface drainage for stability. GR-1e At the time of application for grading and construction permits, all proposed slope, building pad, and rail track bed construction shall be properly engineered, with fill placed in accordance with requirements of the current County of San Luis Obispo Building and Construction Ordinance (Title 19 of the San Luis Obispo County Code), and California Building Code. GR-1f During construction, the proposed aboveground oil pipeline shall be anchored to prevent pipeline movement, as determined by a California Registered Civil Engineer, in accordance with California Building Code, San Luis Obispo County requirements, and the American Public Works Association Greenbook. GR-1g At the time of application for construction permits, the facilities and equipment, including spill containment vaults and Project-related pipelines, shall be designed for predicted, site-	

CLASS II Impacts – Rail Spur Project

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 #	Impact Description	Phase	Mitigation Measures	Residual Impact
			specific seismic loading in accordance with applicable codes, including the California Building Code. GR-1h The Applicant shall cease rail car unloading and pipeline oil conveyance following any perceptible (i.e., felt by humans) seismic event and inspect all project-related facilities, equipment, and pipelines for damage prior to restarting operations. GR-1i Consistent with California Building Code Section 3401.2, all project-related facilities, equipment, and pipelines shall be maintained in conformance with the California Building Code edition under which it was installed. Annual inspections shall be completed by a California Registered Civil Engineer to verify that project components have not been damaged or compromised by seismic induced ground shaking, corrosion, soil erosion, soil settlement, or other geologic hazards.	
GR.2	Project grading would result in changes in topography, potentially unstable slopes, and potential increased erosion.	Construction and Operations	GR-2 During construction and operations, the Applicant shall implement a Storm Water Pollution Prevention Plan using Best Management Practices and monitor and maintain stormwater pollution control facilities identified in the Storm Water Pollution Prevention Plan, in a manner consistent with the provisions of the Federal Water Pollution Control Act (National Pollutant Discharge Elimination System Program). Stormwater management protection measures and wet weather measures shall be designed by a California registered, Qualified Storm Water Pollution Prevention Plan Developer. In addition, a California registered, Qualified Storm Water Pollution Prevention Plan Practitioner shall oversee and monitor construction and operational Best Management Practices and stormwater management, in accordance with the State General Construction Permit and the Central Coast Regional Water Quality Control Board. Conventional measures typically recommended by the State Water Resource Board and the California Department of Transportation include the following: a. Implement permanent erosion and sediment control measures: – Minimize grading, clearing, and grubbing to preserve existing vegetation; – Use mulches and hydroseed, free of invasive plants, to protect exposed soils; – Use geotextiles and mats to stabilize soils; – Use drainage swales and dissipation devices; and – Use erosion control measures outlined in the California Stormwater Quality Association Best Management Practice Handbook. b. Implement temporary Best Management Practice mitigation measures:	Less than significant with mitigation

CLASS II Impacts – Rail Spur Project

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 #	Impact Description	Phase	Mitigation Measures	Residual Impact
			– Use silt fences, sandbags, and straw wattles; – Use temporary sediment basins and check dams; and – Use temporary Best Management Practices outlined in the California Stormwater Quality Association Best Management Practice Handbook. c. Implement tracking control Best Management Practices to reduce tracking sediment offsite. – Use stabilized construction entrance and exit with steel shakers; – Use tire wash areas; and – Use tracking control Best Management Practices outlined in the California Stormwater Quality Association Best Management Practice Handbook. Personnel at the site shall be trained in equipment use and containment and cleanup of an oil spill. Dry cleanup methods, such as absorbents, shall be used on paved and impermeable surfaces. Spills in dirt areas shall be immediately contained with an earthen dike and the contaminated soil shall be dug up and discarded in accordance with local and state regulations.	
GR.3	Expansive soils, if present, could damage proposed foundations.	Construction	GR-3 Implement Mitigation Measure GR-1c to confirm the absence of expansive soil.	Less than significant with mitigation
HAZARDS AND HAZARDOUS MATERIALS (Section 4.7)				
None were identified				
LAND USE AND RECREATION (Section 4.8)				
None were identified				
NOISE AND VIBRATION (Section 4.9)				
N.1	Construction activities would generate noise that could exceed San Luis Obispo thresholds.	Construction	N-1 The Applicant shall ensure that all construction activity at the Project Site is limited to the hours of 7:00 A.M. to 9:00 P.M., Monday through Friday, and 8:00 A.M. to 5:00 P.M. on Saturdays and Sundays. This restriction shall be a note placed on all construction plans.	Less than significant with mitigation
N.2	Operational activities would generate noise	Operations	N-2a Prior to issuance of the Notice to Proceed, the Applicant shall develop for review and approved by the County Department of Building and Planning a Rail Unloading and	Less than significant

CLASS II Impacts – Rail Spur Project

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 #	Impact Description	Phase	Mitigation Measures	Residual Impact
	levels that exceed San Luis Obispo thresholds.		Management Plan that addresses procedures to minimize noise levels at the rail spur, including but not limited to the following: 1) All locomotives operating to the east of the unloading rack area between the hours of 10 P.M. and 7 A.M. shall be limited to a combined total of 100 locomotive-minutes (e.g. 2 locomotives for 50 minutes each or 1 locomotive for 100 minutes, etc. including switching and idling); 2) Arriving trains that enter the refinery between the hours of 10 P.M. and 7 A.M. and are not being immediately unloaded shall shutdown all locomotives once the train is on the refinery property; 3) No horns, annunciators or other signaling devices are allowed unless it is an emergency. If horns and annunciators are needed for worker safety, then warning devices shall be developed, to CPUC standards, to alert the safety of plant personnel when trains are in motion without an audible warning device; 4) No horns are to be used on the mainline siding track adjacent to the refinery unless it is an emergency; 5) Any trains repairs shall be conducted only between the hours of 7 A.M. and 7 P.M.; and (6) The Plan shall include a copy of the agreement between the Applicant and UPRR demonstrating the two parties have entered into a legally binding contractual arrangement ensuring implementation of the above requirements. N-2b Prior to issuance of the Notice to Proceed, the Applicant shall provide to the County Department of Planning and Building evidence that each unloading pump and associated electric motor can achieve a noise level no greater than 71 dBA at 50 feet, including the installation of pump enclosures, or similar devices if necessary. N-2c Prior to issuance of the Notice to Proceed, the Applicant shall submit to the County Department of Planning and Building for review and approval a Noise Monitoring Plan that outlines procedures for regular noise monitoring of the operational aspect of the Rail Spur facility. The Plan shall specify at a minimum the duration and location of monitoring activities with and without trains present at the SMR site. The monitoring locations shall include at least one location within 100 to 200 feet of the unloading activities and a monitoring location located at the property line of the nearest noise-sensitive receptor. The noise monitoring shall be conducted within one month of rail spur operations commencing. The results of the monitoring shall be reported to the County 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 Rail Unloading and Management Plan with additional mitigation measures that would reduce noise levels below County thresholds. Additional mitigation could include, but not be limited to, additional limits on the times of unloading activities.	with mitigation

CLASS II Impacts – Rail Spur Project

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 #	Impact Description	Phase	Mitigation Measures		Residual Impact
POPULATION AND HOUSING (Section 4.10)					
None were identified					
PUBLIC SERVICES AND UTILITIES (Section 4.11)					
PS.3	The Rail Spur Project would increase demand for fire protection and emergency response services at the SMR.	Operations	PS-3a	Prior to issuance of construction permits, the Applicant shall submit to Cal Fire/County Fire for review and approval a final Fire Protection Plan for the Rail Spur Project that meets all the applicable requirements of API, NFPA, UFC, and Cal Fire/County Fire.	Less than significant with mitigation
			PS-3b	Prior to notice to proceed for the rail unloading facility, the Applicant shall update the SMR Emergency Response Plan to include the rail unloading facilities and operations.	
			PS-3c	Prior to notice to proceed for the rail unloading facility, the Applicant shall update the existing SMR Spill Prevention Control and Countermeasure Plan to include the rail unloading facilities and operations.	
			PS-3d	Prior to notice to proceed for the rail unloading facilities, the Applicant shall assure that the existing SMR fire brigade meets all the requirements outlined in Occupational Safety and Health Administration 29 CFR 1910.156, and NFPA 600 & 1081.	
			PS-3e	Prior to issuance of grading permits, the Applicant shall have an executed operational Memorandum of Understanding (MOU) (now called the Operating Plan) with Cal Fire/County Fire that includes fire brigade staffing/training requirements and Cal Fire/County Fire funding requirements. This MOU shall be reviewed and updated annually by Cal Fire and the Applicant.	
			PS-3f	Prior to issuance of grading permits, the Applicant shall have an agreement to reimburse Cal Fire/County Fire for time spent by a qualified fire inspector to conduct the annual fire inspections at the SMR including all structures, and support facilities consistent with Cal Fire/County Fire's authority and jurisdiction. The Applicant shall reimburse all costs associated with travel time, inspections, inspection training, and documentation completion. The reimbursement rate shall be according to the most recent fee schedule adopted by the San Luis County Board of Supervisors.	
			PS-3g	Prior to issuance of grading permits, the Applicant shall have an agreement to reimburse Cal Fire/County Fire for offsite training for emergency responders to railcar emergencies, such as the 40 hour course offered by Security and Emergency Response Training Center Railroad Incident Coordination and Safety (RICS) meeting Department of Homeland	

CLASS II Impacts – Rail Spur Project

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 #	Impact Description	Phase	Mitigation Measures	Residual Impact
			security, NIIMS, OSHA 29CFR 1910.120 compliance. Initial training shall be two members of the Interagency Hazardous materials Response Team, two members of the interagency Urban Search and Rescue Team, and two members annually from Cal Fire/County Fire or fire districts in San Luis Obispo that have automatic aid agreements with Cal Fire/County Fire for a total of six slots per year for the life of the project. PS-3h Prior to issuance of grading permits, the Applicant shall have an agreement to reimburse Cal Fire/County Fire for Fire Chief Officer attendance such as the 40 hour course offered by Security and Emergency Response Training Center; Leadership & Management of Surface Transportation Incidents. Funding shall be for two Fire Chief Officers annually for the life of the project. PS-3i Prior to issuance of grading permits, the Applicant shall have an agreement with Cal Fire/County Fire to conduct annual emergency response scenario/field based training including Emergency Operations Center Training activations with the Applicant, Cal Fire/County Fire, UPRR, and other San Luis Obispo County First response agencies that have mutual aid agreements with Cal Fire/County Fire. These annual emergency response drills shall occur for the life of the project.	
TRAFFIC AND CIRCULATION (Section 4.12)				
TR.1	Traffic associated with the construction phase of the Rail Spur Project could impact traffic on roadways in the Project vicinity due to construction traffic.	Construction	TR-1 Prior to issuance of grading permits, the Applicant shall develop a Construction Traffic Management Plan for review and approval by the County Public Works Department and CalTrans. The plans shall include at least the following items: a. A scheduling plan showing operational schedules to minimize traffic congestion during peak hours. The plan shall limit project related traffic to and from the refinery during the peak AM and PM hours. This plan shall note the schedule for completing various construction activities, and to the extent feasible avoid an overlap of the construction of the rail spur/unloading area and pipeline construction. The plan shall show the hours of operation to minimize traffic congestion during peak hours. b. Willow Road shall be use for truck deliveries to and from the refinery. c. Monitoring program for street surface conditions so that damage or debris resulting from construction of the Project can be identified and corrected by the Applicant. d. A traffic control plan showing proposed temporary traffic control measures, if any.	Less than significant with mitigation

CLASS II Impacts – Rail Spur Project

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 #	Impact Description	Phase	Mitigation Measures	Residual Impact
			e. A delivery schedule for construction materials, including an evaluation of the feasibility of transporting construction materials to the site by rail.	
WATER RESOURCES (Section 4.13)				
WR.1	Project grading and construction could degrade surface water and groundwater quality.	Construction	WR-1 During construction, oil and other chemical spills shall be contained and cleaned according to measures outlined in the California Stormwater Quality Association Best Management Practice Handbook. Best Management Practices would likely include, but not be limited, to the following: a. Ensure minor spill containment and clean up equipment is readily available in areas of demolition, construction, and operations. b. Store petroleum products in covered areas with secondary containment dikes. c. If vehicle maintenance and fueling occur onsite, use a designated area and/or secondary containment, located away from drainage courses, to prevent the run-on of storm water and the runoff of spills. d. Regularly inspect onsite vehicles and equipment for leaks, and repair immediately. e. Always use secondary containment, such as a drain pan or drop cloth, to catch spills or leaks when removing or changing fluids. f. Use absorbent materials on small spills.	Less than significant with mitigation
WR.2	A rupture or leak from the tanker rail cars, unloading facility, or oil pipeline during operation of the Rail Spur Project could substantially degrade surface water and groundwater quality.	Operations	WR-2 Prior to the County's issuance of a Notice to Proceed, the existing Santa Maria Refinery Spill Prevention Control and Countermeasure Plan (SPCCP) shall be amended to reflect operation of the rail car unloading facility and associated oil pipeline. See mitigation measure BIO-7 for the detailed SPCCP requirements for the rail unloading operations.	Less than significant with mitigation

CLASS III Impacts – Rail Spur Project
Adverse but Not Significant Impacts

Impact #	Impact Description	Phase	Mitigation Measures	Residual Impact
AESTHETICS AND VISUAL RESOURCES (Section 4.1)				
None were identified				
AGRICULTURAL RESOURCES (Section 4.2)				
AR.2	The Rail Spur Project would result in the permanent conversion of approximately 22.3 acres of Farmland of Statewide Importance, based on soil classifications in the COSE, to non-agricultural use.	Construction and Operations	No mitigation measures would be necessary because the potential impact would be less than significant. The potential for adverse impacts to on-site agricultural soils and farmlands would further be minimized by implementation of measures proposed to reduce risks of erosion, sedimentation, stormwater runoff, and hazardous material contamination. Refer to mitigation proposed in Sections 4.6, Geological Resources, 4.7, Hazards and Hazardous Materials, and 4.13, Water Resources.	Less than significant
AIR QUALITY AND GREENHOUSE GASES (Section 4.3)				
None were identified				
BIOLOGICAL RESOURCES (Section 4.4)				
BIO.10	Long term air quality impacts could result in impacts to known overwintering monarch butterfly habitat located approximately one-mile east of the Rail Spur Project.	Operations	No mitigation is required since the impact is less than significant.	Less than significant
BIO.12	Crude oil transportation along the UPRR mainline could result impacts to wildlife in the vicinity of the mainline.	Operations	No mitigation is required since the impact is less than significant.	Less than significant
CULTURAL RESOURCES (Section 4.5)				
None were identified				
GEOLOGICAL RESOURCES (Section 4.6)				
GR.4	The Project could potentially preclude the future extraction of	Construction and Operations	No mitigation is required since the impact is less than significant.	Less than significant

CLASS III Impacts – Rail Spur Project
Adverse but Not Significant Impacts

Impact #	Impact Description	Phase	Mitigation Measures	Residual Impact
	valuable mineral resources.			
HAZARDS AND HAZARDOUS MATERIALS (Section 4.7)				
HM.1	The proposed rail spur unloading facility would increase the risk of an oil spill, fires and explosions at the refinery and on the project site that could impact the public.	Operations	No mitigation measures are required since the impacts are less than significant. However, implementation of mitigation measures PS-3a through PS-3i for fire protection and emergency response would serve to further reduce the onsite hazards associated with the Rail Spur Project.	Less than significant
HM.3	A change in crude slate from rail deliveries could increase hazards at the refinery that would impact the public.	Operations	No mitigation is required since the impact is less than significant.	Less than significant
LAND USE AND RECREATION (Section 4.8)				
REC.1	The Rail Spur Project would increase use or demand for parks and recreational opportunities.	Construction and Operations	No mitigation is required since the impact is less than significant.	Less than significant
REC.2	The Rail Spur Project would affect access to existing trails, parks or recreational opportunities.	Construction and Operations	Implementation of mitigation measures BIO-11 and PS-4a through PS-4e would serve to further reduce any potential impact on access to recreational areas from an oil spill.	Less than significant
NOISE AND VIBRATION (Section 4.9)				
N.3	Operational activities along the UPRR mainline tracks would generate transportation related noise levels that exceed San Luis Obispo thresholds.	Operations	No mitigation is required since the impact is less than significant.	Less than significant

CLASS III Impacts – Rail Spur Project
Adverse but Not Significant Impacts

Impact #	Impact Description	Phase	Mitigation Measures	Residual Impact
N.4	Operational activities would produce vibration levels that exceed San Luis Obispo thresholds.	Operations	No mitigation is required since the impact is less than significant.	Less than significant
POPULATION AND HOUSING (Section 4.10)				
P/H.1	The Project would induce substantial population growth in the area.	Construction and Operations	No mitigation is required since the impact is less than significant.	Less than significant
P/H.2	The project would increase the transfer of hazardous substances through residential areas, potentially resulting in the indirect displacement of people.	Construction and Operations	No mitigation is required since the impact is less than significant.	Less than significant
P/H.3	The project would generate temporary and permanent employment needs, which could result in the need for new housing in the project vicinity.	Construction and Operations	No mitigation is required since the impact is less than significant.	Less than significant
PUBLIC SERVICES AND UTILITIES (Section 4.11)				
PS.1	The Rail Spur Project would generate solid waste requiring disposal at landfills.	Construction and Operations	PS-1 Prior to issuance of grading permits, the Applicant shall submit a Solid Waste Management Plan (SWMP) for approval by San Luis Obispo County to maintain a diversion rate of at least 50 percent of construction waste from reaching the landfill. The SWMP shall consist of information regarding, but not limited to: a. The name and contact information of who will be responsible for implementing the recycling plan; b. A brief description of the Project wastes to be generated, including types and estimated quantities of each material to be salvaged, reused, or recycled during the construction phase of this Project; c. Waste sorting/recycling and/or collection areas shall be clearly indicated on the Site	Less than significant

CLASS III Impacts – Rail Spur Project
Adverse but Not Significant Impacts

Impact #	Impact Description	Phase	Mitigation Measures	Residual Impact
			Map; d. A description of the means of transportation and destination of recyclable materials and waste, and a description of where recyclable materials and waste will be sorted (whether materials will be site-separated and hauled to designated recycling or landfill facilities, or whether mixed materials will be removed from the site to be processed at a mixed waste sorting facility); e. The name of the landfill(s) where trash will be disposed of and a projected amount of material that will be landfilled; f. A description of meetings to be held between Applicant and contractor to ensure compliance with the recycling plan; g. A contingency plan shall identify an alternate location to recycle and/or stockpile construction debris in the event of local recycling facilities becoming unable to accept material (for example: all local recycling facilities reaching the maximum tons per day due to a time period of unusually large volume); h. Disposal information including quantity of material landfilled, which landfill was used, total landfill tipping fees paid, and copies of weight tickets, manifests, receipts, and invoices; i. Recycling information including quantity of material recycled, receiving party, and copies of weight tickets, manifests, receipts, and invoices; and j. Reuse and salvage information including quantities of salvage materials, storage locations if they are to be used on-site, or receiving party if resold/used off-site.	
PS.2	The Rail Spur Project would potentially impact electricity supplies.	Operations	No mitigation measures are necessary since the impacts on electrical utilities would be less than significant.	Less than significant
PS.5	The Rail Spur Project would increase demand for police services at the SMR.	Operations	PS-5 Prior to notice to proceed for the rail unloading facility, the Applicant shall update their existing Security Plan to include the Rail Spur Project.	Less than significant
TRANSPORTATION AND CIRCULATION (Section 4.12)				
TR.2	Traffic associated with operation of the Rail Spur Project could	Operations	No mitigation measures are required since the impact would be less than significant.	Less than significant

CLASS III Impacts – Rail Spur Project
Adverse but Not Significant Impacts

Impact #	Impact Description	Phase	Mitigation Measures	Residual Impact
	impact traffic on roadways in the Project vicinity due to increased traffic.			
TR.3	Crude oil trains servicing the SMR could cause traffic delays in the vicinity of at-grade crossing.	Operations	No mitigation measures are required since the impact would be less than significant.	Less than significant
TR.4	Increased rail traffic on Union Pacific main rail lines could impact the performance of the public rail transit facilities.	Operations	No mitigation measures are required since the impact would be less than significant. However, a mitigation measure is recommended that would further reduce potential impacts to passenger train on time performance. TR-4 The Applicant shall work with UPRR to schedule unit trains serving the Santa Maria Refinery so that they do not interfere with passenger trains traveling the Coast Rail Route.	Less than significant
WATER RESOURCES (Section 4.13)				
WR.4	Project operations would result in an increase in the amount of stormwater runoff at the site.	Operations	No mitigation measures are required since the impact would be less than significant.	Less than significant
WR.5	The Project would not involve activities within the 100-year flood plain.	Construction and Operations	No mitigation measures are required since the impact would be less than significant.	Less than significant
WR.6	The Project would potentially change the quantity or movement of available ground water or adversely affect a community water service provider.	Construction and Operations	WR-6 If possible, the Applicant shall use recycled water for construction and operational activities to reduce impacts to local groundwater supplies. Recycled water could be generated onsite and/or secured via truck transport or water pipeline from the South San Luis Obispo County Sanitation District.	Less than significant

Significant and Unavoidable Cumulative Impacts

Impacts That May Not Be Fully Mitigated To Less Than Significant 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)

Issue Area	Description of Impact	Project Specific Mitigation Measures	
Agricultural Resources	Cumulative crude by rail projects could result in effects that impair adjacent agricultural uses along the UPRR mainline routes in the event of an oil spill.	AR-5	Implement mitigation measures PS-4a through PS-4e and BIO-11.
Air Quality and Greenhouse Gases	Construction and operational activities associated with the cumulative projects would generate criteria pollutant emissions in SLOC that exceed SLOCAPCD thresholds.	AQ-2a	Prior to issuance of Notice to Proceed, the Applicant shall provide a mitigation, monitoring and reporting plan updated annually. The plan shall investigate methods for reducing the onsite and offsite emissions, both from fugitive components and from locomotives or from other SMR activities (such as the diesel pumps, trucks, and compressors to reduce DPM). In addition, locomotive emissions shall be mitigated to the extent feasible through contracting arrangements that require the use of Tier 4 locomotives or equivalent emission levels. The plan shall indicate that, on an annual basis, if emissions of ROG+NOx and DPM with the above mitigations still exceed the thresholds, as measured and confirmed by the SLOCAPCD, the Applicant shall secure SLOCAPCD-approved onsite and/or offsite emission reductions in ROG + NOx emissions or contribute to new or existing programs to ensure that project-related ROG + NOx emissions within SLO County do not exceed the SLOCAPCD thresholds. Coordination with the SLOCAPCD should begin at least six (6) months prior to issuance of the Notice to Proceed for the Project to allow time for refining calculations and for the SLOCAPCD to review and approve any required ROG+NOx emission reductions.
		AQ-2b	Prior to issuance of Notice to Proceed, the Applicant shall implement a program, including training and procedures, to limit all locomotive onsite idling to no more than 15 consecutive minutes except when idling is required for safety purposes. Locomotive idling records shall be maintained and provided to the SLOCAPCD on an annual basis, along with training materials and training records.
Air Quality and Greenhouse Gases	Operational activities of cumulative crude by rail trains along the mainline rail routes outside of SLOC would generate criteria pollutant emissions that exceed thresholds.	AQ-3	Prior to issuance of the Notice to Proceed, the Applicant shall provide a mitigation, monitoring and reporting plan. The plan shall investigate methods for reducing the locomotive emissions through contracting arrangements that require the use of Tier 4 locomotives or equivalent emission levels. The plan shall indicate that, on an annual basis, if the mainline rail emissions of ROG+NOx with the above mitigations still exceed the applicable Air District thresholds, the Applicant shall secure emission reductions in ROG + NOx emissions or contribute to new or existing programs within each applicable Air District, similar to the emission reduction program utilized by the SLOCAPCD, to ensure that the main line rail ROG + NOx emissions do not exceed the Air District thresholds for the life of the project. The Applicant shall provide documentation from each Air District to the San Luis Obispo County Planning and Building

Significant and Unavoidable Cumulative Impacts

Impacts That May Not Be Fully Mitigated To Less Than Significant 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)

Issue Area	Description of Impact	Project Specific Mitigation Measures
		Department that emissions reductions have been secured for the life of the project prior to issuance of the Notice to Proceed.
Air Quality and Greenhouse Gases	Operational activities of cumulative crude by rail trains along the mainline rail routes associated with the Rail Spur Project would generate toxic emissions that exceed thresholds.	AQ-5 Implement measure AQ-3.
Air Quality and Greenhouse Gases	Operational activities of cumulative projects would generate GHG emissions that exceed SLOCAPCD thresholds.	AQ-6 Prior to issuance of the Notice to Proceed, the Applicant shall provide a GHG mitigation, monitoring and reporting plan. The plan shall indicate that, on an annual basis, if GHG emissions exceed the thresholds, the Applicant shall provide GHG emission reduction credits for all of the project GHG emissions. Coordination with the San Luis Obispo Planning and Building Department should begin at least six (6) months prior to issuance of operational permits for the Project to allow time for refining calculations and for the San Luis Obispo Planning and Building to review and approve the emission reduction credits.
Biological Resources	Cumulative crude oil project that use rail and trucks could result in a crude oil spill along mainline rail routes and roads that could impact sensitive plant and wildlife species and wetlands.	BIO-11 The Applicant's contract with UPRR, shall include a provision to provide that UPRR has an Oil Spill Contingency Plan in place for all mainline rail routes in California that could be used for transporting crude oil to the SMR. The Oil Spill Contingency Plan shall at a minimum include the following: 1. A set of notification procedures that includes a list of immediate contacts to call in the event of a threatened or actual spill. This shall include a rated oil spill response organization, the California Office of Emergency Services, California Department of Fish and Wildlife, Oil Spill Prevention and Response, and appropriate local emergency responders. 2. Identification of the resources that could be at risk from an oil spill equal to 20% of the train volume. The resources that shall be identified in the plan, and shown on route maps, include but are not limited to the following: a. Habitat types, shoreline types, and associated wildlife resources in those locations; b. The presence of state or federally-listed rare, threatened or endangered species; c. The presence of aquatic resources including state fish, invertebrates, and plants

Significant and Unavoidable Cumulative Impacts

Impacts That May Not Be Fully Mitigated To Less Than Significant 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)

Issue Area	Description of Impact	Project Specific Mitigation Measures
		including important spawning, migratory, nursery and foraging areas; d. The presence of terrestrial animal and plant resources; e. The presence of migratory and resident state bird and mammal migration routes, and breeding, nursery, stopover, haul-out, and population concentration areas by season; f. The presence of commercial and recreational fisheries including aquaculture sites, kelp leases and other harvest areas. g. Public beaches, parks, marinas, boat ramps and diving areas; h. Industrial and drinking water intakes, power plants, salt pond intakes, and important underwater structures; i. Areas of known historical and archaeological sites (but not their specific description or location); j. Areas of cultural or economic significance to Native Americans (but not their specific description or location). k. A description of the response strategies to protect the identified site and resources at risk. l. A list of available oil spill response equipment and staging locations along the mainline tracks and shall include. m. A program for oil spill training of response staff and a requirement for annual oil spill drillings. 3. The oil spill contingency plan must be able to demonstrate that response resources are adequate for containment and recovery of 20% of the train's volume within 24 hours. In addition, within six hours of the spill the response resources shall be adequate for containment and recovery of 50% of the spill, and 75% of the spill within 12 hours. The Applicant's contract with UPRR, shall include provision that UPRR's Oil Spill Contingency Plan shall be reviewed and approved by California Department of Fish and Wildlife, Office of Spill Prevention and Response prior to delivery of crude oil by rail to the Santa Maria Refinery.

Significant and Unavoidable Cumulative Impacts

Impacts That May Not Be Fully Mitigated To Less Than Significant 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)

Issue Area	Description of Impact	Project Specific Mitigation Measures	
			In addition, the Applicant's contract with UPRR, shall include provisions to provide a copy of UPRR's Oil Spill Contingency Plan to all first response agencies along the mainline rail routes in California that could be used by trains carrying crude oil to the Santa Maria Refinery for the life of the project. Only first response agencies that are able to receive security sensitive information as identified pursuant to Section 15.5 of Part 15 of Title 49 of the Code of Federal Regulations, shall be provided this information.
Cultural Resources	Cumulative crude by rail Project could result in a crude oil spill along the mainline routes that result in the disturbance and destruction of cultural resources along the mainline routes.	CR-6	As part of the Applicant's contract with UPRR, it shall require that a qualified archaeologist, architectural historian, and paleontologist who meet the Secretary of the Interior's Professional Qualification Standards prepare an Emergency Contingency and Treatment Plan for Cultural and Historic Resources along the rail routes in California that could be used to transport crude oil to the SMR. The treatment plan shall include, but not be limited to, the following components: a. Protocols for determining the cultural resources regulatory setting of the incident site; b. Provide various methodologies for identifying cultural resources, as needed, within the incident site (e.g., California Historical Resources Information System records search, agency contact, field survey); and c. If cultural resources are present, identify measures for their avoidance, protection, and treatment. The Treatment Plan shall be in place prior to delivery of crude by rail to the Santa Maria Refinery.
Hazards and Hazardous Materials	The potential for cumulative crude by rail project unit train derailments would increase the risk to the public in the vicinity of the UPRR right-of-way.	HM-2a	Only rail cars designed to FRA, July 23, 2014 Proposed Rulemaking Option 1: PHMSA and FRA Designed Tank Car as listed in Table 4.7.6, shall be allowed to unload crude oil at the Santa Maria Refinery.
		HM-2b	For crude oil shipments via rail to the SMR a rail transportation route analysis shall be conducted annually. The rail transportation route analysis shall be prepared following the requirements in 49 CFR 172.820. The route with the lowest level of safety and security risk shall be used to transport the crude oil to the Santa Maria Refinery.
		HM-2c	The Applicant's contract with UPRR, shall include a provision to require that Positive Train Control (PTC) be in place for all mainline rail routes in California that could be used for

Significant and Unavoidable Cumulative Impacts

Impacts That May Not Be Fully Mitigated To Less Than Significant 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)

Issue Area	Description of Impact	Project Specific Mitigation Measures
		transporting crude oil to the SMR. HM-2d The refinery shall not accept or unload at the rail unloading facility any crude oil or petroleum product with an API Gravity of 30 ^{o} or greater. Implement mitigation measures PS-4a through PS4e.
Public Services and Utilities (Fire Protection and Emergency Response)	Operations of the cumulative crude by rail oil trains on the mainline UPRR tracks would increase demand for fire protection and emergency response services along the rail routes.	PS-4a The Applicant shall provide advanced notice of all crude oil shipments to the Santa Maria Refinery, and quarterly hazardous commodity flow information documents to all first response agencies along the mainline rail routes within California that could be used by trains carrying crude oil to the Santa Maria Refinery for the life of the project. Only first response agencies that are able to receive security sensitive information as identified pursuant to Section 15.5 of Part 15 of Title 49 of the Code of Federal Regulations, shall be provided this information. The plan for providing notice to first response agencies shall be in place and verified by the County Department of Planning and Building prior to delivery of crude by rail to the Santa Maria Refinery. PS-4b Only rail cars designed to FRA, July 23, 2014 Proposed Rulemaking Option 1: PHMSA and FRA Designed Tank Car shall be allowed to unload crude oil at the Santa Maria Refinery. PS-4c The Applicant shall provide annual funding for first response agencies along the mainline rail routes within California that could be used by the trains carrying crude oil to the Santa Maria Refinery to attend certified offsite training for emergency responders to railcar emergencies, such as the 40 hour course offered by Security and Emergency Response Training Center Railroad Incident Coordination and Safety (RICS) meeting Department of Homeland security, NIIMS, OSHA 29CFR 1910.120 compliance. The Applicant shall fund a minimum of 20 annual slots per year for the life of the project. The plan for funding the emergency response training shall be in place and verified by the Cal Fire/County Fire prior to delivery of crude by rail to the Santa Maria Refinery. PS-4d As part of the Applicant's contract with UPRR, it shall require annual emergency responses scenario/field based training including Emergency Operations Center Training activations with local emergency response agencies along the mainline rail routes within California that could be used by the crude oil trains traveling to the Santa Maria Refinery for the life of the project. A total of four training sessions shall be conducted per year at various locations along the rail routes. This contract provision shall be in place and verified by the Cal Fire/County Fire prior

Significant and Unavoidable Cumulative Impacts

Impacts That May Not Be Fully Mitigated To Less Than Significant 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)

Issue Area	Description of Impact	Project Specific Mitigation Measures
		to delivery of crude by rail to the Santa Maria Refinery. **PS-4e** **As part of the Applicant's contract with UPRR, it shall require that all first response agencies along the mainline rail routes within California that could be used by trains carrying crude oil traveling to the Santa Maria Refinery be provided with a contact number that can provide real-time information in the event of an oil train derailment or accident. The information that would need to be provided would include, but not be limited to crude oil shipping papers that detail the type of crude oil, and information that can assist in the safe containment and removal of any crude oil spill. This contract provision shall be in place and verified by the Cal Fire/County Fire prior to delivery of crude by rail to the Santa Maria Refinery.**
Water Resources	Cumulative crude oil project that use rail and trucks could result in a crude oil spill along mainline rail routes and roads that could substantially degrade surface water and groundwater quality.	WR-3 Implement mitigation measures BIO-11 and PS-4a through PS-4e.

1.0 Introduction

This Final Environmental Impact Report (FEIR) has been prepared to address a proposed rail spur extension and rail crude oil unloading facility (Rail Spur Project) that would be located at the Santa Maria Refinery (SMR) in Nipomo. The applicant for the Rail Spur Project is Philips 66 Company (Phillips 66) (the Applicant). The SMR property is located in the southwestern corner of San Luis Obispo County, approximately 1 mile southwest of State Route 1, and approximately 3.5 miles west of the community of Nipomo, in the South County Coastal and South County Inland planning areas. The location of the SMR property is shown in Figure 1-1.

The FEIR also contains a programmatic assessment of various coastal access options through the SMR site (Coastal Access Project). Phillips 66 was recently required to provide a vertical public right of coastal access at the SMR site as a condition of approval of the Phillips 66 Throughput Increase Project (approved by the County Board of Supervisors in March 2013). The assessment of various coastal access options is being considered as a result of the Throughput Project and is not directly related to the Rail Spur Project. The requirement for the coastal access assessment is discussed in more detail below (see Section 1.3).

1.1 Summary of Proposed Rail Spur Project

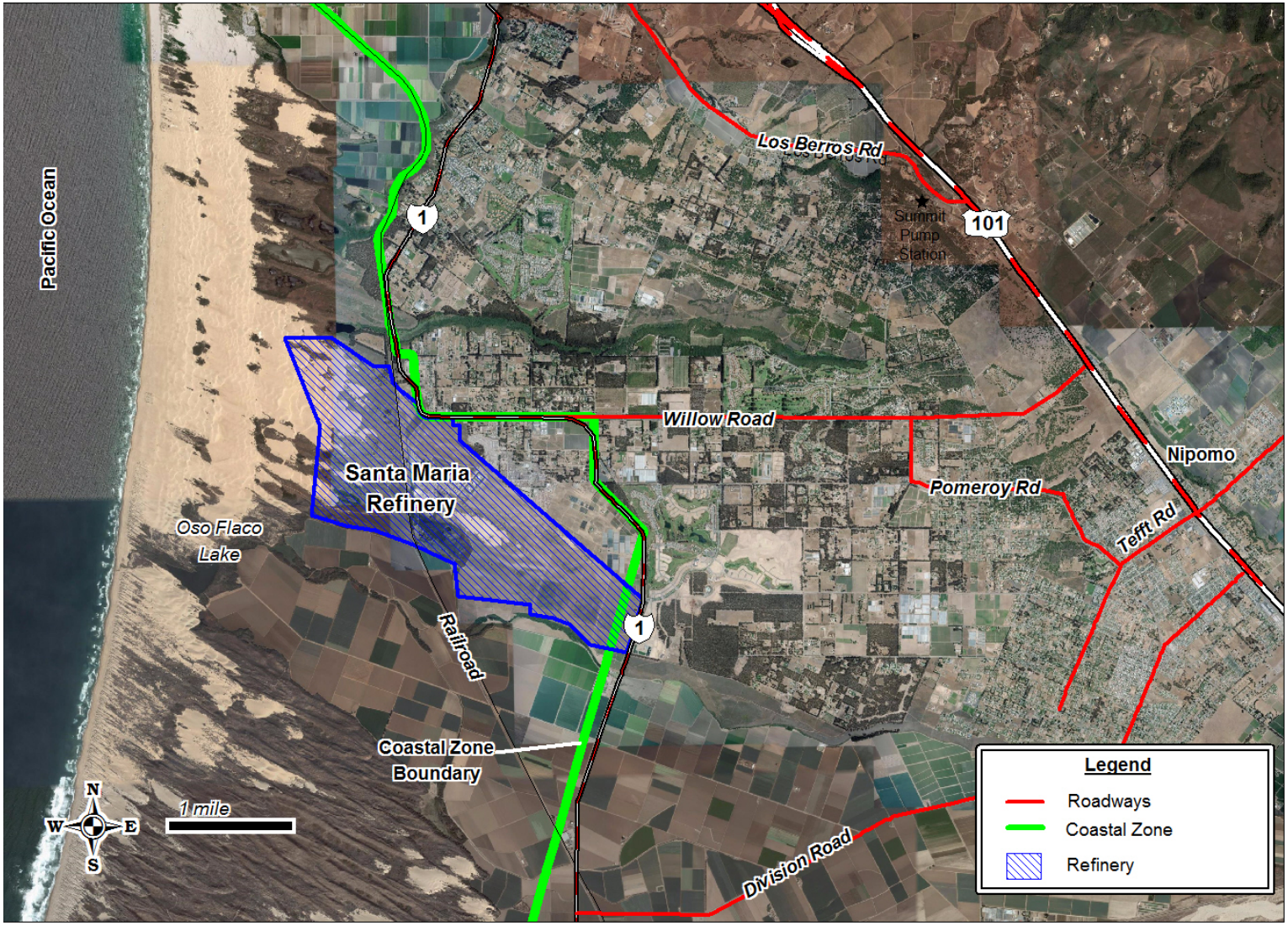
Phillips 66 is proposing to modify the existing rail spur currently on the southwest side of the Santa Maria Refinery (SMR). The rail spur extension and crude oil unloading facilities are proposed entirely on the Phillips 66 property and would be located east of the Union Pacific Railroad and the existing refinery facilities. The area of the Rail Spur Project is zoned for industrial use. Figure 1-2 shows the proposed location of the Rail Spur Project. The EIR has analyzed the Rail Spur Project to a permit (i.e., project specific) level of detail.

The project would include an eastward extension of the existing rail spur as well as a railcar unloading facility that would be used to unload crude oil. Trains would deliver crude oil to the SMR for processing. The unloaded material would be transferred from the proposed unloading facility to existing crude-oil storage tanks via a new on-site above-ground pipeline.

The proposed tracks and unloading facilities would be designed to accommodate unit trains and manifest trains. Unit trains consist of approximately 80 tank cars and associated locomotives and other supporting cars that stay together as one assembly fully dedicated to delivery of crude oil to the SMR. Manifest trains may have a variety of car types and cargos, other than crude oil, that are not fully dedicated as are unit trains. Manifest trains may deliver one or more cars to the refinery and then continue to other destinations to deliver other cargo.

The proposed rail spur lines would extend from the current rail spur at the refinery. The unloading facility would be located at the end of the existing coke storage area and along an existing internal refinery road (see Figure 1-2).

Figure 1-1 Location of the Phillips 66 Santa Maria Refinery (SMR)



Note: While the UPRR tracks pass through the refinery property, Phillips 66 does not own the railroad right-of-way. This property is owned by UPRR.
Source: MRS 2013.

Figure 1-2 Location of Proposed Rail Spur Project

Notes: Yellow line the boundary of the SMR property.

While the UPRR tracks pass through the refinery property, Phillips 66 does not own the railroad right-of-way. This property is owned by UPRR.

Source: Arcadis 2013.

Modification of the existing rail spur would include constructing five parallel tracks that would support the crude oil unit trains, relocation of the two coke rail loading tracks, and replacement of the rails on the two existing coke loading rail tracks. Two of the new tracks would surround an unloading rack and then would come together to form a common track that extends to the east of the loading area to allow for the entire train to be parked off of the mainline track and unloaded. Three additional tracks would extend the full length of the rail spur and run parallel to the unloading area.

The Rail Spur Project would involve unloading of up to five unit trains per week (or a combined total of five unit and manifest trains), with an annual maximum number of trains expected to be approximately 250. Trains could arrive at the Phillips 66 site from the north or the south. The refinery feedstock definition (meaning the materials that could be transported by train into the proposed facility) excludes gaseous feeds, natural gas liquids (NGL), liquefied petroleum gas (LPG), finished refined products, and Bakken crude. The crude oil would be sourced from oilfields throughout North America based on availability, market economics, as well as other factors.

Crude oil would be shipped to the refinery in non-jacketed CPC-1232 tank cars (i.e., post October 1, 2011 tank cars). These cars have a capacity of approximately 31,808 gallons per car. Each car has a weight limit of 210,700 pounds of crude oil. Each tank car would be approximately 60 feet long. The total length of a unit train would be about 5,190 feet long (three locomotives at 90 feet, two buffer cars at 60 feet, and 80 tank cars at 60 feet).

Phillips 66 proposes to use CPC-1232 tank cars. In August 2011, the AAR Tank Car Committee adopted new industry construction specifications for tank cars and the CPC-1232 design became the standard for all tank cars built after October 2011. The rail cars would be designed to meet DOT Packing Group I requirements, which is the highest rating. The tank cars would be equipped with half height head shields, double couplers, and all stainless steel valves. The relief valve would be a designed for high flow. All of the tanker cars servicing the SMR as part of either a unit or manifest train would be owned or leased by Phillips 66.

In a unit train configuration, each train would consist of three locomotives, two buffer cars, and 80 railcars each carrying between 26,076 and 28,105 gallons for a total of between 49,670 and 53,532 barrels of crude oil per unit train. The tank cars would be limited to this range of volume (as opposed to the 31,808 gallons per car listed above) due to the estimated weight of the oil that would be delivered to the SMR. With the delivery of five unit trains per week the average daily delivery of crude oil would be between 35,478 and 38,237 barrels, which is less than the permitted capacity of the SMR with or without the throughput increase project.

Unit trains would arrive at the SMR, be unloaded and then leave the refinery. The total time each train is expected to be at the refinery would be between ten and twelve hours. However, this could vary depending upon when Union Pacific schedules the departure time for the train once it has been unloaded.

The Rail Spur Project would not affect the permitted throughput level at the SMR. Throughput levels at the refinery are capped by the County of San Luis Obispo Department of Planning and Building and by the San Luis Obispo County APCD. These throughput limits cannot be

exceeded without a modification to existing land use and air permits, which would require additional environmental and public review. In addition, no crude oil or refined product would be transported out of the refinery by rail, and no crude oil would be shipped from the refinery via pipeline. All crude delivered to the refinery would be processed at the refinery.

1.2 Agency Use of the Document for the Rail Spur Project

The County determined that an EIR for the Rail Spur Project, consistent with the requirements of CEQA, was needed in order to proceed with permitting. Section 15124(d) of the CEQA Guidelines requires that an EIR contain a statement briefly describing the intended uses of the EIR. The CEQA Guidelines indicate that the EIR should identify the ways in which the lead agency and any responsible agencies would use this document in their approval or permitting processes. Table 1-1 provides a list of possible agencies that would need to issue permits for the Rail Spur Project. The County is the Lead Agency under CEQA, and the other agencies listed in Table 1-2 would serve as responsible agencies.

This FEIR is consistent with Section 15120-15132 of the CEQA Guidelines which sets forth requirements for contents of EIRs. Based upon the environmental impact analysis of the Rail Spur Project, a number of measures have been developed to mitigate the identified impacts associated with the project. The County may incorporate the mitigation measures identified in the FEIR, where applicable, as conditions of approval in project entitlements which may be granted for the Rail Spur Project. The environmental impact analysis will be used by the public and decision makers to help understand the scope of the Rail Spur Project and the associated environmental effects.

The remainder of this section provides a summary of how the key agencies will use this document for permitting of the Rail Spur Project.

The County will use this FEIR as part of its decision-making process in evaluating the proposed Development Plan/Coastal Development Permit for the Rail Spur Project. The County will be responsible for certifying the FEIR, if the Rail Spur Project is approved. The FEIR would also be used as part of the processing of building, grading and any encroachment permits that would be needed should the Rail Spur Project be approved.

The San Luis Obispo County Air Pollution Control District (SLOAPCD) is the agency responsible for issuance of a Permit to Construct (PTC) and a Permit to Operate (PTO), both of which would be required for the Rail Spur Project. To fulfill its obligations as a responsible agency, the SLOAPCD will rely on information contained in this FEIR as part of any PTC/PTO permitting process.

CAL FIRE may use the FEIR as part of their permitting process in coordination with the Building Division which issues the permit. CAL FIRE will have to approve the fire protection systems prior to the fire protection permit being issued for the Rail Spur Project.

The RWQCB will use the FEIR for decision-making regarding any updates to the refinery's National Pollutant Discharge Elimination System (NPDES) permit and for any stormwater construction general permit.

Table 1.1 Possible Rail Spur Project Permits

Agency	Permit	Regulated Activity	Authority
SLO County Planning and Building Department	EIR Certification Development Plan Coastal Development Permit Grading Permits Building Permits	Land use, grading, drainage, and environmental impacts	Title 23 County Code CEQA
SLO County Public Works Department	Encroachment Permit	Any work within public right-of-ways (if needed).	County Code
SLO County Department of Environmental Health	Monitoring Well Permit Application	Possible drilling needed for liquefaction testing	County Code
SLO County Air Pollution Control District (SLOAPCD)	Authority to Construct/ Permit to Operate	Emissions associated with construction and operations	Clean Air Act
CALFIRE	Building Permits (in coordination with the Building Department)	Fire protection systems in buildings and rail unloading facilities.	California Fire Code
California Public Utilities Commission (CPUC)	Review and approval of rail spur track design and construction	Oversight of track construction, maintenance and inspection activities.	California Public Utilities Code
Regional Water Quality Control Board (RWQCB)	Authorization under NPDES Waste Discharge Permits	Discharge to groundwater from stormwater percolation basin.	Clean Water Act Porter-Cologne Water Quality Act
	Authorization under NPDES Storm Water Construction General Permit	Construction activities that disturb more than 1 acre.	Clean Water Act California Water Code
State Office of Historic Preservation (unlikely)	State Level Review of Section 106 Compliance	Project activities that will affect register eligible prehistoric or historic resources subject to federal protection requirements.	Review by the SOHP would only be needed in the project affects registered eligible prehistoric or historic resources subject to federal protection requirements.
California Department of Fish and Wildlife (unlikely)	Compliance with CA Endangered Species Act	Disturbance of State listed species as part of the construction process.	Sections 2050 et seq. of the Fish and Game Code
U.S. Fish and Wildlife Service (unlikely)	Section 10 Consultation (Endangered Species Act) Biological Opinion and Incidental Take Permit.	Impacts to Federally listed species.	16 USCA 1513 50 CFR Section 17

State Office of Historic Preservation (SOHP) may have to conduct a review of the Rail Spur Project if any of the construction activities would affect registered eligible prehistoric or historic resources subject to federal protection requirements. It is unlikely that any register eligible resources would be affected by the Rail Spur Project.

The California Department of Fish and Wildlife (CDFW) might have to issue permits if State listed species are disturbed as part of the construction process.

The U.S. Fish and Wildlife Service (USFWS) is the agency responsible for assuring compliance with the Endangered Species Act (ESA). If the construction activities could impact species listed under the ESA, then consultation with the USFWS may be required for the Rail Spur Project.

1.3 Assessment of Union Pacific Mainline Environmental Impacts

The operation of unit and manifest trains to and from the SMR would be performed by Union Pacific Railroad (UPRR), on UPRR property, and on trains operated by UPRR employees. The movements of those trains to and from the Project Site may be preempted from local and state environmental regulations by federal law under the Interstate Commerce Commission Termination Act of 1995 and the Commerce Clause of the United States Constitution.

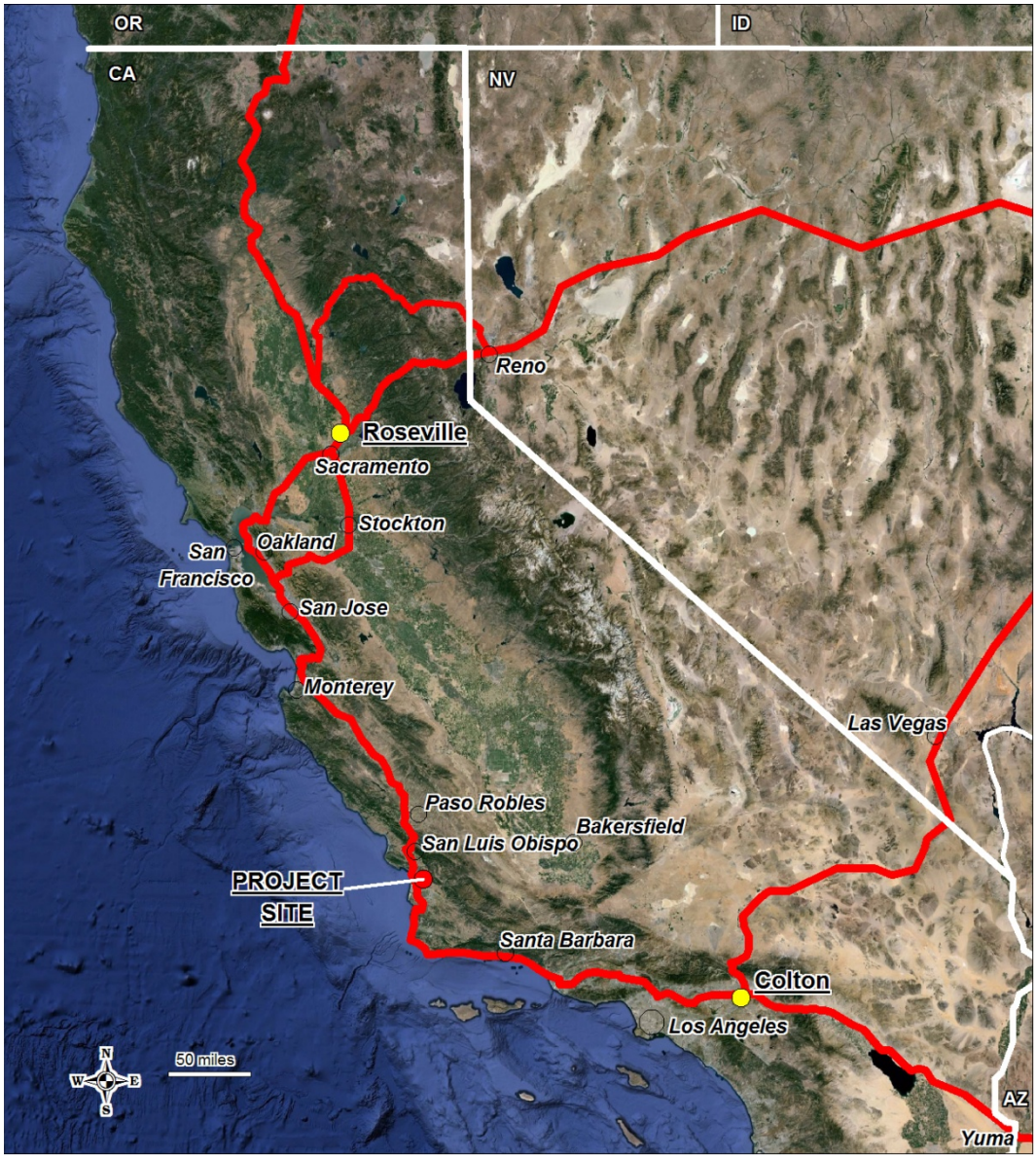
While the potential impacts of those train movements along the UPRR mainline are described in appropriate chapters of this EIR, the County as CEQA Lead Agency, and other state and local responsible agencies may be preempted from imposing mitigation measures, conditions or regulations on UPRR train movements on the mainline.

Trains could enter California at five different locations (one at the north end of the state from Oregon, two at the northeast from Nevada, one at the southeast from Nevada, and one at the south from Arizona). Depending upon the route taken by the train they could arrive at the Phillips 66 site from the north or the south. It is unknown what route UPRR would use to deliver the trains to the SMR. Figure 1-3 shows the main UPRR train routes in California that could be used to deliver crude to the SMR.

Coming from the north the routes merge at the UPRR Roseville Rail Yard. From the south the routes merge at the Colton Rail Yard. Given that the route the trains would travel to get to these two UPRR yards is speculative, the EIR has evaluated in more detail the impacts of trains traveling from these two UPRR yards to the SMR.

Beyond the two UPRR Yards, trains could travel any number of routes. Also, crude oil delivered to California by UPRR would generally pass through either of these two rail yards in route to the SMR. Depending upon the source of the crude oil, crude oil trains could use any portion of the UPRR network between Roseville/Colton and the source location for the crude oil. The exact route that would be taken would depend upon a number of factors, that could include the source of the crude oil, weather conditions, train traffic conditions, etc. Since the routes past Roseville and Colton are somewhat speculative, the EIR has discussed in a more qualitative nature the potential impacts of train traffic beyond these two rail yards.

Figure 1-3 Mainline Rail UPRR Routes to the Santa Maria Refinery



Source: Adapted by MRS from UPRR maps.

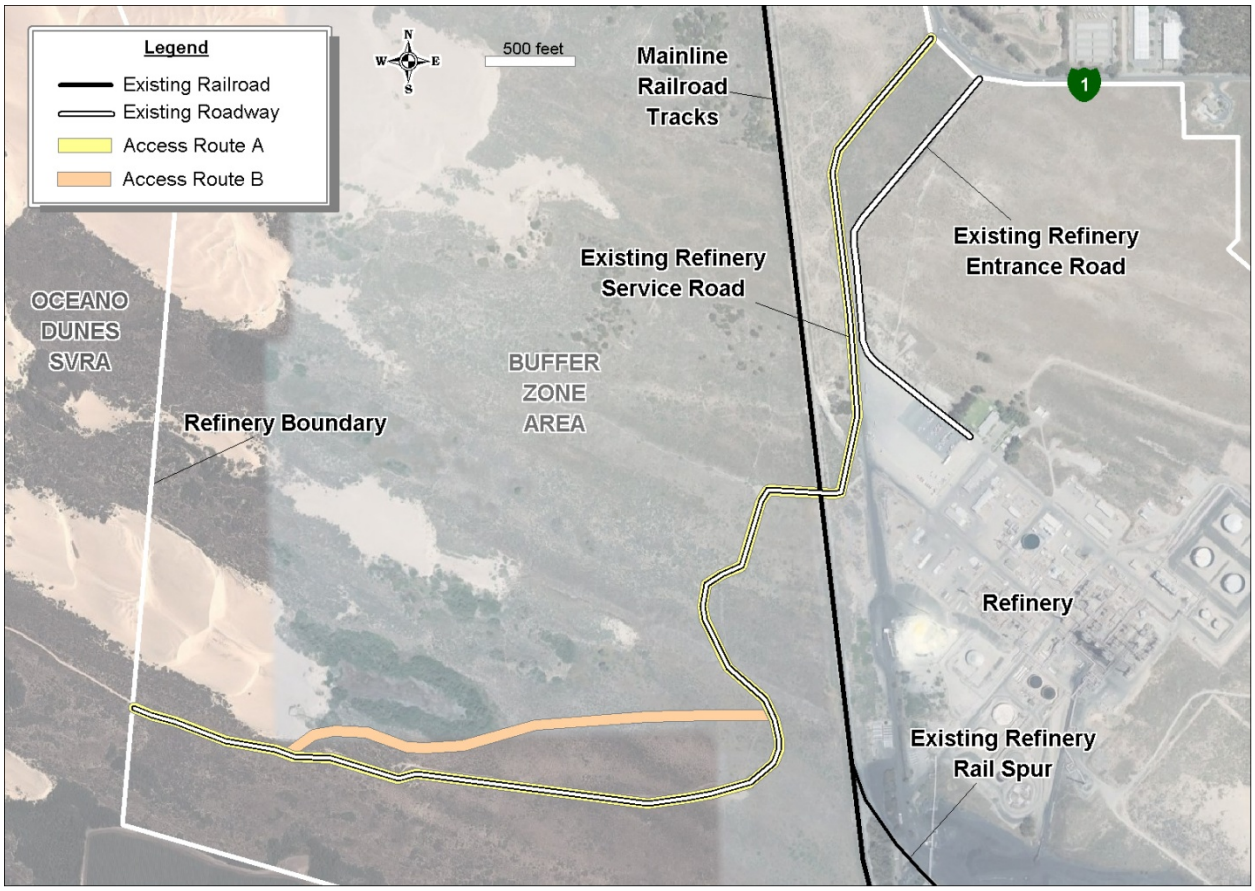
Once the train arrives at the SMR, it would be operated by Phillips 66 personnel on property owned by Phillips 66. Therefore, activities performed within the SMR would not be preempted by federal law since they would not occur on UPRR property and would not be operated by UPRR employees. The impacts of the activities that occur within the SMR are described and evaluated in respective chapters of this FEIR, and the County as CEQA Lead Agency, and other state and local responsible agencies have the authority to impose mitigation measures, conditions or regulations to reduce or mitigate potential impacts within the SMR boundaries.

1.4 Vertical Coastal Access Assessment

The Vertical Coastal Access assessment includes a number of conceptual plans for provision of vertical coastal access through a portion of the SMR site. Figure 1-4 shows the possible locations for the vertical coastal access. The coastal access would run west from State Route 1, across the Union Pacific Railroad (UPRR) mainline tracks to the California Department of Parks and Recreation Oceano Dunes State Vehicular Recreation Area.

As a condition of approval of the Phillips 66 Throughput Increase Project (approved by the County Board of Supervisors in February 2013), Phillips 66 was required to provide a vertical public right of coastal access at the SMR Site. The permit conditions require Phillips 66 to construct vertical public access from State Route 1 to their western property line if such access is found to comply with the coastal access provisions of the County's Coastal Zone Land Use Ordinance (CZLUO).

Figure 1-4 Possible Coastal Access Routes at the SMR Site



Note: While the UPRR tracks pass through the refinery property, Phillips 66 does not own the railroad right-of-way. This property is owned by UPRR.

Source: Adapted from Arcadis 2013

The conditions of approval for the Throughput Increase Project require Phillips 66 to comply with Section 23.04.420 of the Coastal Zone Land Use Ordinance. Construction of improvements associated with vertical public access (if required) shall occur within 10 years of the effective date of this permit (including any required Coastal Development Permit to authorize such construction) or at the time of any subsequent use permit approved at the project site, whichever occurs first. Therefore, if the Rail Spur Project is approved (presumably in less than 10 years), the Throughput coastal accessway requirement would have to be met at that time to be consistent with the County's conditions. Phillips 66 submitted a report indicating that a vertical coastal access at the SMR would not be consistent with the requirements of Section 23.04.420 of the Coastal Zone Land Use Ordinance.

Although the provision of coastal access is not integral to, and has independent utility from (i.e., it can be accomplished on its own accord), the Rail Spur Project, the County determined it was appropriate to include an analysis of various coastal access options in the EIR to assist in determining of such coastal access at the SMR would be consistent with Section 23.04.420 of the Coastal Zone Land Use Ordinance.

The County's condition of approval on the Throughput Project requires that the access be consistent with the standards of Section 23.04.420 of the Coastal Zone Land Use Ordinance, including provisions that a vertical right of access be provided for each mile of coastal frontage, unless that access would be inconsistent with public safety, military security needs or the protection of fragile coastal resources.

Chapter 9 of this FEIR contains a programmatic assessment the potential environmental impacts of various coastal access options for the SMR site. This analysis will be used by the County to assist in determining whether coastal access is appropriate for the SMR site consistent with the standards of Section 23.04.420 of the Coastal Zone Land Use Ordinance. If the County finds that coastal access for this location is consistent with the requirements of Section 23.04.420 of the Coastal Zone Land Use Ordinance, then a formal application would need to be submitted that detailed the type and design of the proposed access. This application would be subject to additional environmental review and an appropriate environmental determination would be required prior to final approval. An additional Coastal Development Permit would also be required based on the location of coastal access and resources found in the vicinity of the final proposed alignment.

In order to gain coastal access from the SMR site, access would also be required across the UPRR property as well as the California Department of Parks and Recreation. Depending upon the type of coastal access, permits could be required from the SLO County (land use permits), California Public Utilities Commission (public crossing of Class I railroad tracks), Caltrans (encroachment permit for State Route 1), USFWS (impacts to federally listed species), and CDFW (impacts to state listed species).

1.5 EIR Process and Scope

This EIR was prepared in accordance with State and County administrative guidelines established to comply with CEQA. Section 15151 of the State CEQA Guidelines, provides the following standards for EIR adequacy:

> *An EIR should be prepared with a sufficient degree of analysis to provide decision makers with information which enables them to make a decision which intelligently takes account of environmental consequences. An evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in light of what is reasonably feasible. Disagreement among experts does not make an EIR inadequate, but the EIR should summarize the main points of disagreement among the experts. The courts have looked not for perfection; but for adequacy, completeness, and a good faith effort at full disclosure.*

The County has determined that the Rail Spur Project needs environmental review in the form of a Project Specific EIR pursuant to CEQA instead of a categorical or statutory exemption, or a Negative Declaration. Under CEQA, "The purpose of an environmental impact report is to identify the significant effects on the environment of a project, to identify alternatives to the proposed project, and to indicate the manner in which those significant effects can be mitigated or avoided" (PRC Section 21002.1[a]). An EIR is the most comprehensive form of environmental documentation identified in CEQA and provides the information needed to assess the environmental consequences of a proposed project. EIRs are intended to provide an objective, factually supported, full-disclosure analysis of the environmental consequences associated with a proposed project that has the potential to result in significant, adverse environmental impacts.

In compliance with State CEQA Guidelines, the County, as the Lead Agency, prepared a Notice of Preparation (NOP) for the proposed projects and solicited comments through distribution of the NOP. A public scoping meeting was held in the community on July 29, 2013 to provide an opportunity for the public to comment on the scope of the EIR. The NOP and comments received in response to the NOP were used to direct the scope of the analysis and the technical studies in this EIR. A copy of the NOP and the comments received are in Appendix I of the EIR.

In November 2013, a Draft EIR was issued for the Rail Spur Project with a 60-day comment period. The comment period for the Draft EIR closed on January 27, 2014. After reviewing the comments on the Draft EIR, the County decided that a revised Draft EIR should be recirculated for public comment. The decision to recirculate the entire EIR was primary based upon the need to expand the discussion of mainline UPRR impacts beyond the borders of San Luis Obispo County. Due to extensive revisions in various parts of the document, this revised Draft EIR does not contain specific written responses to the comments received on the initial Draft EIR since the entire EIR was recirculated for public comment. All comments on the initial DEIR were reviewed and the revised Draft EIR was modified to address comments that were applicable to the revised document (refer to CEQA Guidelines, Section 15088.5(f)(1)). Consistent with the CEQA Guidelines, comments received on the initial Draft EIR have not been included with the FEIR and were not responded to as part of the recirculated Draft EIR.

The revised Draft EIR was released on October 10, 2014, for a 45-day public comment period. During the public comment period a public workshop was held on the revised Draft EIR to provide the public an opportunity to ask questions about the revised Draft EIR. Volume II of the FEIR contains a copy of the comment letters received on the Draft EIR and the responses to those comments. Due to the size of the response to comments, Volume II is provided in electronic format on the CD attached to the inside front cover of the FEIR. Revision marks are used throughout this FEIR to show where changes have been made to the revised Draft EIR. Places where the text has been revised are shown by solid vertical lines on the left margin of the page.

This FEIR identifies the environmental impacts of the Rail Spur Project on the existing environment, identifies mitigation measures for significant impacts, and evaluates alternatives to the Rail Spur Project. This document is intended to provide the County, responsible agencies, and the public with information necessary to understand and evaluate the environmental effect of the Rail Spur Project as part of the decision-making process.

In addition, the FEIR identifies the types of impacts that could result if a Coastal Access Project was approved and/or constructed at the refinery site. The impacts are identified to a programmatic level of detail. The analysis of the Coastal Access Project is intended to provide the County, other governmental agencies, and the public with information necessary to understand the type of environmental impacts that could occur with a Coastal Access Project at the SMR site. This information would be used by the County to determine if a formal Coastal Access Project at this site should be pursued.

The CEQA Guidelines require that a lead agency shall neither approve nor implement a project as proposed where the significant environmental impacts have not been reduced to an acceptable level without making a Statement of Overriding Considerations. An acceptable level is defined as eliminating, avoiding, or substantially lessening significant environmental effects to below a level of significance. If the lead agency approves the Project even though significant impacts identified in the FEIR cannot be fully mitigated, the lead agency must state, in writing, the reasons for its action. In these circumstances, Findings and a Statement of Overriding Considerations must be included in the record of project approval and mentioned in the Notice of Determination.

1.6 EIR Terminology

An effort has been made throughout the EIR to use consistent terminology for various aspects of the project. This is somewhat complicated by the fact that the EIR contains a project specific analysis of the Rail Spur project and a separate programmatic analysis of coastal access at the SMR site. The following provides definitions for some of the key terminology that has been used in the EIR.

1. **"Rail Spur Project"** – Refers to the Rail Spur and Crude Unloading Facility Project only.

2. **"Coastal Access Project"** – Refers to the Coastal Access options that are evaluated in Chapter 9 of the EIR.

3. **"Project Site"** – In all sections of the EIR with the exception of Chapter 9 (Coastal Access) the term "Project Site" refers to the Rail Spur Project site. In Chapter 9 the use of "Project Site" would refer to the Coastal Access Project site. Chapter 4 when there is a need to refer to the Coastal Access site, then the term "Coastal Access Project site" is used.

4. **"Disturbance Area"** – In all sections of the EIR with the exception of Chapter 9 (Coastal Access) the term "Disturbance Area" refers to the Rail Spur Project site. In Chapter 9 the use of "Disturbance Area" would refer to the Coastal Access Project site. Chapter 4 when there is a need to refer to the Coastal Access area, then the term "Coastal Access Disturbance Area" is used.

The key for the reader is that Chapters 2 through 8 of the FEIR are specific to the Rail Spur Project and all terminology is specific to that portion of the project. Where there is a need to talk about the coastal access project in these chapters, the words "Coastal Access" will precede any general terminology.

Chapter 9 of the FEIR is the only chapter that is specific to the coastal access assessment, and all terminology used in this Chapter is specific to that portion of the project. Where there is a need to talk about the Rail Spur Project in Chapter 9, the words "Rail Spur" will precede any general terminology.

1.7 EIR Contents

The FEIR is divided into three volumes. Volume I is the FEIR, Volume II is the FEIR Technical Appendices, and Volume III is the Revised Draft EIR comment letters and response. Volumes II and III are available only in electronic form and are included on the CDs. The FEIR (Volume I) contains the following major chapters:

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

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

1.0 Introduction – Provides an overview of the proposed project evaluated in the EIR, a discussion of agency use of the document, the use of EIR terminology, and a summary of the contents of the EIR.

2.0 Proposed Rail Spur and Crude Unloading Project Description – Provides the background of the Project, including a history of the area and a detailed description of the proposed Rail Spur and Crude Unloading Project including construction and operation. This chapter also contains a discussion of the need and objectives of the Rail Spur and Crude Unloading Project.

3.0 Cumulative Methodology and Project List – Provides a summary of the methodology used to assess cumulative impacts and a description of the projects that have been included in the cumulative analysis.

4.0 Analysis of Environmental Issues for Rail Spur and Crude Unloading Project – Describes the existing conditions found at the project site and vicinity, and assesses the potential environmental impacts that could occur if the Rail Spur and Crude Unloading Project is implemented. These potential impacts are compared to various "Thresholds of Significance" (or significance criteria) to determine the severity of the impacts. Impacts have been evaluated for both the rail spur and unloading facility construction and operation at the SMR as well as for operation along the UPRR mainline rail routes. Mitigation measures intended to reduce significant impacts are identified where feasible. This chapter also discusses cumulative impacts.

5.0 Alternatives Analysis for Rail Spur and Crude Unloading Project – The first part of this chapter presents a description of various alternatives to the Rail Spur Project. This is followed by an alternative screening analysis that was used to identify alternatives that could reduce significant impacts associated with the Rail Spur Project, and to eliminate alternatives from further consideration. The third section provides the environmental analysis of the selected alternatives. A section is provided that summarizes the environmental advantages and disadvantages associated with the Rail Spur Project and the alternatives. The last section is a discussion of the environmentally superior alternative for the Rail Spur Project.

6.0 Other CEQA Mandated Sections – Discusses the significant irreversible environmental changes that could occur if the Rail Spur Project is implemented. The chapter also discusses the spatial, economic, and/or population growth impacts that may result from the Rail Spur Project, as well as energy conservation.

7.0 List of Rail Spur Project Mitigation Measures – Contains a listing of all identified mitigation measures that should be included if a permit is issued for the Rail Spur Project.

8.0 Mitigation Monitoring Program for Rail Spur Project – Contains a listing of all identified mitigation measures that should be included in any permit issued for the Rail Spur Project, their implementation requirements, verification schedule, and parties responsible for their implementation and verification.

9.0 Programmatic Evaluation of Coastal Access at the SMR Site – This chapter of the EIR contains the programmatic assessment of various coastal access options for the SMR site. The section includes a description of the various options, a summary of the baseline conditions that are unique to the coastal access site and a discussion of the key environmental issues and impacts that would be associated with development of each of the options.

The technical appendices for the FEIR are included in Volume II. These technical appendices support the analysis in the FEIR. The appendices are voluminous, and are therefore provided in electronic format on the CD. The technical appendices include the following:

Appendix A – Project Description Information

A.1-General Project Information

A.2-Preliminary Draft SWPPP

Appendix B – Air Quality

B.1-Air Emission Calculations

B.2- Health Risk Assessment Protocol and Report

Appendix C – Biological Resources

C.1-Botanical Assessment (Applicant Prepared)
C.2-Wildlife Assessment (Applicant Prepared)
C.3-Burrowing Owl Survey Report (Applicant Prepared)
C.4-Sensitive Species Descriptions and Lists
C.5-List of Sensitive Plant and Wildlife Species along the UPRR Mainline Routes
C.6-Sensitive Resources Report-Vegetation (Applicant Prepared)
C.7-Leidos Vegetation Verification Reports
C.8-2015 Nipomo Lupine Survey Report (Applicant Prepared)

Appendix D – Noise Modeling

Appendix E – Preliminary Fire Protection Plan

Appendix F – Amtrak Passenger Train Delay Data

Appendix G – Rail Spur Project Preliminary Policy Consistency Analysis

Appendix H – Hazard Appendices

H.1-Risk Assessment Methodology
H.2-Analysis of Rail Oil Release Rates
H.3-Oil Spill Consequence Modeling Results
H.4-Risk Assessment Modeling Results
H.5-Summary of CPUC Railroad Regulations
H.6-List of High Threat Urban Areas (HTUAs)

Appendix I – Notice of Preparation (NOP) and NOP Comment Letters

Appendix J – List of EIR Preparers

Appendix K – Agencies and Individuals Consulted During EIR Preparation

Appendix L – List of Abbreviations and Acronyms

The revised Draft EIR comment letters and responses are included in Volume III. The comment letters and responses are voluminous and therefore are only provided in electronic format on the CD. The response to comments volume on the CD provides information on how to use the response to comments volume, a response to comments executive summary, and all of the comment letters and associated response broken down into the follow groups.

- Governmental Agencies,
- Applicant,
- Organizations and Schools,
- General Public, and
- Form Letters.

2.0 Project Description

Phillips 66 Company (Phillips 66) proposes to modify the existing rail spur currently on the southwest side of the Santa Maria Refinery (SMR) located in unincorporated San Luis Obispo County California (see Figure 2-1). Modifications to the rail spur are being proposed to allow Phillips 66 to receive crude oil at the refinery via train. The project would include an eastward extension of the existing rail spur as well as a railcar unloading facility. Trains would deliver crude oil to the SMR for refining. The unloaded crude oil would be transferred from the new unloading facility to existing crude-oil storage tanks via a new on-site above-ground pipeline. No crude oil would be shipped out of the refinery as part of this project except for any off-spec crude[1] that is delivered by rail. No Bakken crude would be delivered to the SMR as part of the project.

The proposed tracks and unloading facilities would be designed to accommodate unit trains and manifest trains. Unit trains consist of approximately 80 tank cars and associated locomotives and other supporting cars that stay together as one assembly. Manifest trains may have a variety of car types and cargos and are not fully dedicated to a single cargo as are unit trains. Manifest trains may deliver one or more cars to the refinery and then continue to other destinations to deliver other cargo.

2.1 SMR Rail Project Purpose and Objectives

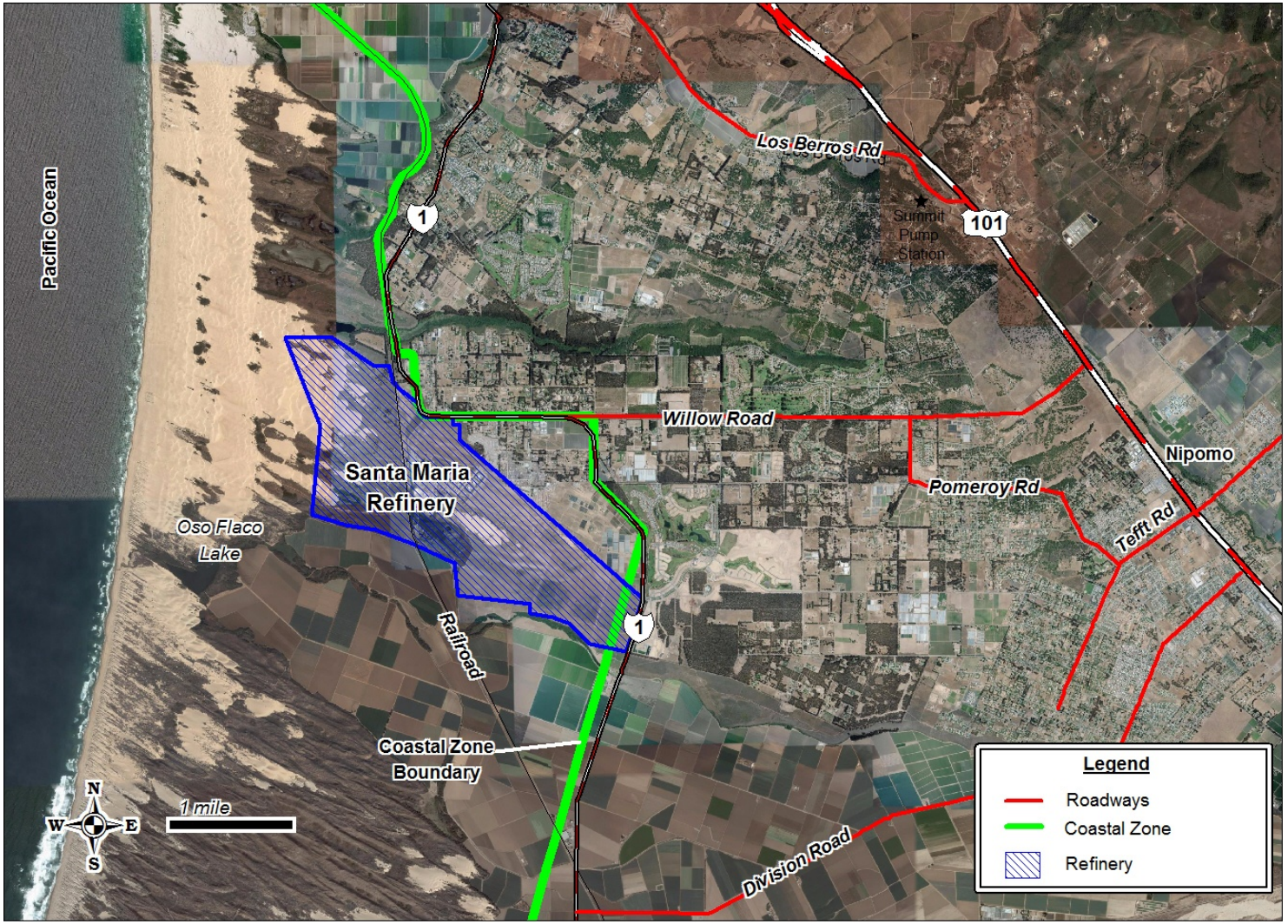
Pursuant to Section 15124(b) of the CEQA Guidelines, the description of the proposed project is to contain "a clearly written statement of objectives" that would aid the lead agency in developing a reasonable range of alternatives to evaluate in the EIR, would aid decision makers in preparing findings and, if necessary, a statement of overriding considerations.

The objectives of the project as defined by the Applicant are the following:

- Allow the refinery to obtain a range of competitively priced crude oil by providing the capability to obtain raw material from North American sources that are served by rail.
- Extend the existing rail spur within the refinery and install the necessary infrastructure to safely and efficiently transfer crude oil from rail cars to the existing refinery storage tanks for processing.
- Avoid and minimize environmental and community impacts, and mitigate any unavoidable impacts to the maximum extent feasible.

[1] Off-spec crude would be crude that does not meet the agreed upon specification between P66 and the producer. Typically off-spec crude has higher amounts of water than allowed by the refinery. It is not expected that much off-spec crude would be delivered to the refinery and would likely be limited to one or two tank cars per year.

Figure 2-1 Santa Maria Refinery Location



Note: While the UPRR tracks pass through the refinery property, Phillips 66 does not own the railroad right-of-way. This property is owned by UPRR.
Source: MRS.

- Develop a project that is consistent with the objectives of the San Luis Obispo County General Plan and Local Coastal Program.
- Design, construct, and operate a project that complies with all local, state, and federal regulatory requirements.
- Maximize the use of existing infrastructure and resources to support the economic vitality of the County and State.

2.2 Refinery Site Background

The SMR was built on the Arroyo Grande mesa in southern San Luis Obispo County (SLOC) in 1955 (see Figure 2-1). The facility is surrounded by industrial, recreational, agricultural, residential land, and open space (see Table 2.1). The SMR operates 24 hours per day and 365 days per year, except when shut down for maintenance.

Table 2.1 General Project Site Information

Item	Description
Assessor parcel numbers	091-141-062, 092-391-021, 034, 092-401-005, 011, 013, 092-411-002, 005
Supervisorial district #	4
Planning area	South County Coastal
Land use category	IND - Industrial
Combining designation(s)	Flood Hazard Area Coastal Appealable Zone
Existing uses	Phillips 66 Company Santa Maria Refinery
Topography	Generally flat, coastal dunes
Vegetation	Coastal, dune vegetation
Parcel size	2.5 square miles (~1,644 acres)
Surrounding Land Use Categories and Uses	
North	Industrial and Residential Suburban (IND and RS). Mobile home storage and residential uses.
East	Industrial, Agricultural, and Recreation (IND, AG, and REC). Vacant, farming, residential, and golf course.
South	Agricultural (AG). Farming.
West	Open Space and Recreational (OS and REC). Sensitive resource area and dune recreation.

Source: SLOC 2010

The SMR was previously owned by several companies, including Union Oil Company of California, Tosco, Phillips Petroleum, and ConocoPhillips. Since 1955, the land use has been petroleum oil refining.

The SMR and the Rodeo Refinery (located in the San Francisco Bay area), are linked by a 200-mile pipeline and comprise the San Francisco Refinery (see Figure 2-2). The SMR is designed to process heavy, high-sulfur crude oil. The refinery is not designed to process large quantities of light crude oil.

Figure 2-2 Facility Location and Pipeline Route to Rodeo Refinery

Source: MRS

Semi-refined liquid products from the SMR are sent by pipeline to the Rodeo Refinery for upgrading into finished petroleum products. The semi-refined products that are shipped via pipeline to the Rodeo Refinery include naphtha and gas oils[2]. Products leaving the SMR are: (1) semi-refined petroleum by pipeline; (2) solid petroleum coke by rail or haul truck; and (3) solid recovered sulfur by haul truck.

2.3 Proposed SMR Rail Project

Phillips 66 proposes to extend the existing rail spur from the southwest side of the refinery extending east to add an unloading facility, on-site pipelines, and replacement coke rail loading tracks (see Figure 2-3). Additionally, an existing agricultural road would be improved as an unpaved eastern Emergency Vehicle Access route between the eastern end of the rail spur and State Route 1. The tracks and unloading facilities would be designed to accommodate trains of approximately 80 tank cars and associated locomotives in unit trains or manifest train configurations. These trains would deliver crude oil to the facility for processing. The unloaded material would be transferred to the existing storage tanks via a new pipeline that would be constructed across the existing coke storage area and along an existing internal refinery road. The project would occur entirely within the existing Phillips 66 boundary.

The project would also include work within the existing refinery connecting and upgrading existing infrastructure. This includes adding a new electricity cable to an existing pipeway and adding a new fire water pipeline to an existing pipe rack. The rails on the existing rail spur would also be replaced.

The new rail spur lines would extend from the terminus of the current spur. The unloading facility would be located at the end of the existing coke storage area and along an existing internal refinery road.

The construction areas are summarized below and shown on Figure 2-3:

- 6,915 feet – Length of spur extension (including approximately 2,445 feet within the existing industrial coke plant area);
- 270 feet – Maximum width of construction area for rail extension;
- 2,325 feet – Length of the new pipeline route from the unloading facility to the internal refinery (an additional 2,800 feet would be constructed within the existing refinery connecting to the existing storage tanks and existing steam boilers); and
- 2,400 feet – Length of new steam pipelines from the unloading facility east between Tracks 1 and 2.

[2] Naphtha is a mixture of hydrocarbon molecules generally having between 5 and 12 carbon atoms. Gas oils are a mixture of hydrocarbons molecules that generally have between 13 and 25 carbon atoms. Both of these are intermediate products that are typically used at refineries to produce gasoline and other transportation fuels.

Figure 2-3 Proposed Project Areas

Notes: Yellow line the boundary of the SMR property.

While the UPRR tracks pass through the refinery property, Phillips 66 does not own the railroad right-of-way. This property is owned by UPRR.

Source: Arcadis 2013.

The maximum width of the temporary construction area for pipeline installation would be 25 feet. The construction and permanent facilities would affect the acreages shown in Table 2.2. Acreage breakdown (temporary + permanent) are summarized below:

- 41.6 acres – Rail Spur and Unloading Facility (25.3 acres permanent),
- 3.8 acres – New Pipeline (1.8 acres permanent), and
- 1.6 acres – Secondary Emergency Vehicle Access (1.6 acres permanent).

Collectively, the entire project, including temporary and permanent impacts, would affect approximately 47 acres. Of this area, 19.5 acres would occur within the existing refinery and coke area, and 27.5 acres would occur in undeveloped areas outside the refinery and coke facilities.

Detailed maps showing temporary and permanent areas of disturbance are provided in Appendix A (see pages A-9 through A-11).

Table 2.2 Proposed Project Impacted Areas

Area	Construction Disturbed Area (acres)[a]	Permanent Disturbed Area (acres)
Rail Spur Within Currently Undisturbed Areas Outside of The Refinery and Coke Facilities	25.9	16.7
Pipeline Route Within Currently Undisturbed Portions of the Coke Area	0.6	0.4
Rail Spur and Unloading Area Within Currently Disturbed Portions of the Coke Area	15.7	8.6
Pipeline Portion Within Currently Undisturbed Areas of the Refinery	1.1	0.8
Pipeline Portion Within Currently Disturbed Areas of the Refinery	2.1	0.6
Secondary Emergency Vehicle Access[b]	1.6	1.6
Total Area Currently Undisturbed	28.3	18.6
Total Area Currently Disturbed	18.7	10.1
Total Area	47.0	28.7

a. Acreages include both temporary and permanent disturbance areas.
b. Existing dirt road disturbed area is 0.9 acres. Improved road disturbance area would be 1.6 acres. New disturbance for access road would be 0.7 acres.
Source: Applicant drawing 5632-SK-A-200A-C dated 8/8/2013. See Appendix A pages A-9 through A-11.

Currently undisturbed areas, temporarily affected during construction, would be returned to pre-project conditions following completion of construction. The construction grading would create approximately 139,775 cubic yards of cut and 113,675 cubic yards of fill. Note that the final volumes may differ based on final engineering design plans.

The proposed project would consist of the following components:

- Rail Spur Modifications,
- Mainline Turnout,
- Unloading Facility,
- Unloading System,
- Fire Protection and Safety System,
- Pipelines
- Access Roads,
- Secondary Emergency Vehicle Access,
- Security Fence,
- Spill Containment and Response Facilities, and
- Support Buildings.

Each of these is described below.

2.3.1 Rail Spur Modifications

The unloading facility would be designed around "train slots" (a track that can contain an entire unit train). Union Pacific bases the number of slots on the number of trains arriving per day and/or the yearly tonnage, and the 'dwell period' (the hours that the train would be at the facility.) Phillips 66 would unload up to five trains per week. Phillips 66 estimates that a complete 80-car train would be unloaded within 10 to 12 hours, including time for positioning and preparing the train for departure. The proposed two-slot facility (Tracks 1/2 and Track 3) would allow adequate capacity unloading.

Modification of the existing rail spur would include constructing five parallel tracks (as the tracks extend east, some rail tracks would merge). In addition, two new coke rail loading tracks (Coke Track 1 [CT1] and Coke Track 2 [CT2]) would be installed north of the new crude oil unloading tracks to allow for easier and shorter access to the coke storage area. Additionally, the two existing coke rail storage tracks (Track 765 and the end of Track 764), south of the crude oil unloading tracks, would have new rails installed and would no longer be used for loading coke, but would be used as part of the rail unloading facilities as described below. A line diagram of the rail tracks at the SMR is shown in Figure 2-4.

The existing rail spur (Track 764) on the southern portion of the property will have its track replaced. Track 764 currently provides rail access to the coke storage area (end of Track 764 and Track 765) and would provide a common entry point for the new tracks. Two tracks would surround an unloading rack and then would come together to form a common track that extends to the east of the loading area to allow for the entire train to be parked off of the mainline track and unloaded. Three additional tracks would extend the full length of the rail spur and run parallel to the unloading area.

Figure 2-4 Proposed Rail Track Line Diagram

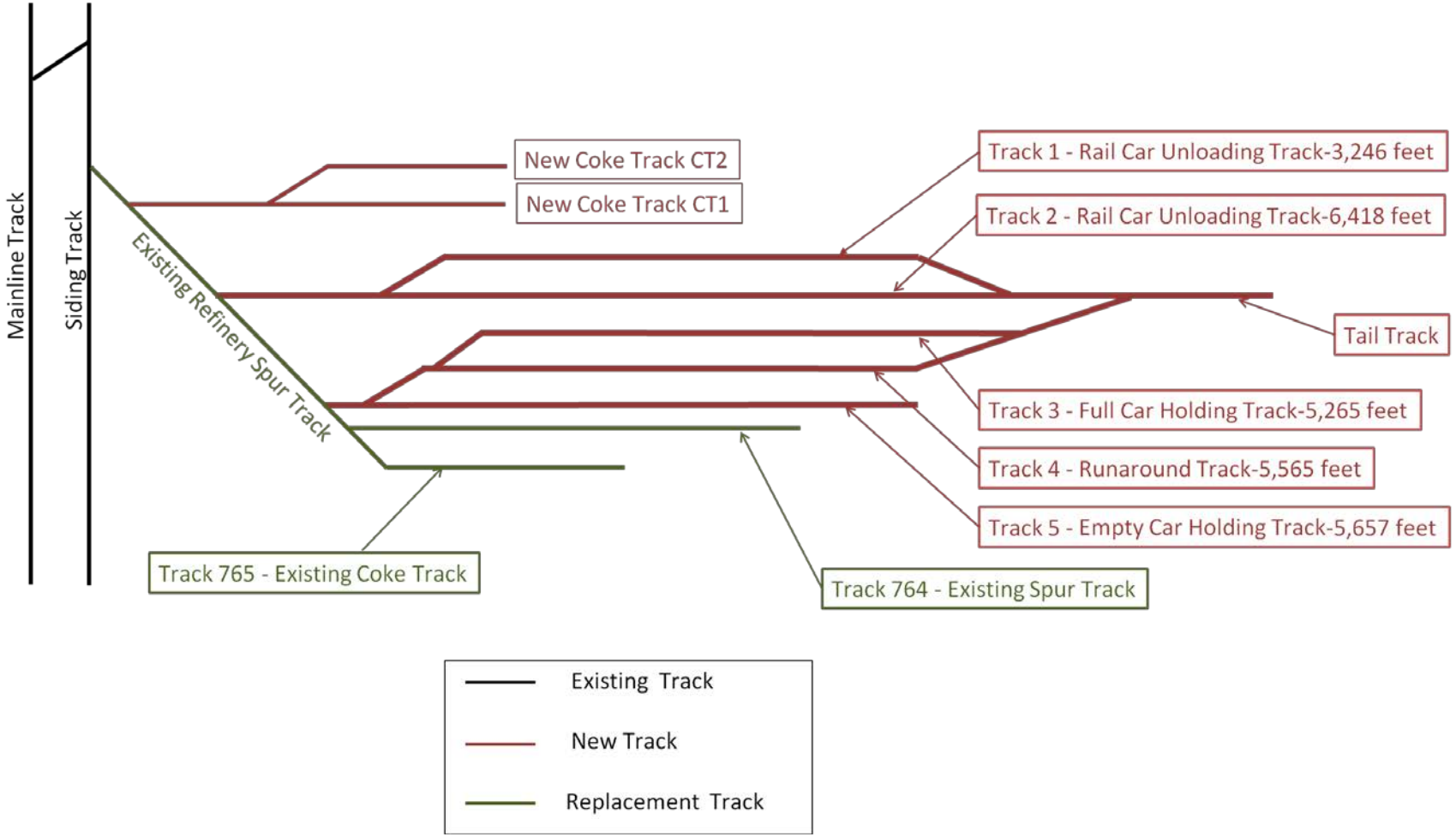


Diagram is not to scale.
Track distances are total length available for track and may include some overlap with other tracks.
Source: Developed by MRS from Union Pacific Rail Track Drawings. See Appendix A.

The system has been designed to allow for up to two full trains to temporarily be on the Refinery Site at one time in case a second train arrives while the first is still being unloaded.

The tail track would have a connection at the eastern end that would allow the locomotives to return to the common entry and leave the facility, if required, and would also allow the locomotive to return to the entry area and the loading rack area and switch the tank car strings onto and off of the unloading rack. This "tail" track would be long enough to accommodate three locomotives.

The track area within the refinery located between the mainline and the loading area is called the "lead" track and this would be long enough for 10 tank cars and the switching locomotives. The tracks associated with the rail spur project are summarized below.

- ***Existing Refinery Spur Track (Track 764) –*** The existing refinery spur track provides access from the UPRR siding track to the refinery and the coke loading area, and can currently be used to load coke onto rail cars. This existing track would be replaced as part of this project. The coke cars shall be queued on this track prior to leaving full. This track would only be used for queuing and moving rail cars into and out of the SMR.
- ***Track 1 (Rail Car Unloading Track) –*** This unloading track would run next to the unloading rack to allow for rail car unloading and merges with Track 2 after the unloading rack. The unloading rack on Track 1 is designed to unload 10 rail cars at a time.
- ***Track 2 (Rail Car Unloading Track) –*** This is a second unloading track that runs next to the unloading rack (on the opposite, south side as Track 1) to allow for rail car unloading and runs the entire length of the rail spur. This track is designed to handle the full length of a unit train and is also designed to unload 10 rail cars at a time.
- ***Track 3 (Full Car Holding Track) –*** This track runs the entire length of the spur and would receive a full unit train should Tracks 1 and 2 be occupied by unloading trains.
- ***Track 4 (Runaround Track) –*** This track runs the entire length of the spur and would allow locomotives to return to the front of the facility after dropping off an 80-car train on Tracks 1 or 2. This track would be empty most of the time.
- ***Track 5 (Empty Car Holding Track) –*** This track would run the entire length of the spur and would be used for queuing up empty cars after the unloading process is complete;
- ***Tail Track –*** This is a short section of track located at the far eastern end that would allow locomotives to switch between Tracks 2, 3, and 4, and move from the front to the back of the rail cars.
- ***Coke Tracks (CT1 and CT2) –*** Two new coke tracks would be installed to service rail loading of coke from the coke area. The new coke tracks are needed since the proposed rail tracks for the crude oil unloading would be placed between the coke piles and the existing coke rail track. By moving the coke rail tracks to the north side of the proposed crude unloading tracks, the front end loader, which is used to load coke into rail cars, would not have to cross the proposed new tracks.
- ***Refinery Spur Track (Track 765) –*** Track 765 shall be repurposed as a "Bad Order" Track. This existing refinery spur track provides storage for crude railcars that cannot be unloaded

and for rail cars requiring inspection and/or repair before continued use, as needed. The rails on this existing track would be replaced as part of this project.

Detailed track diagrams are included in Appendix A (pages A-1 through A-5).

2.3.2 Mainline Turnout (Siding)

Unit train service would not require substantial changes to the turnout from the Union Pacific mainline running north-south adjacent to the refinery since this track is adequately built for the anticipated weight. The turnout guides north- and southbound trains off the mainline onto the siding and then into the refineries rail spur. Trains going south can move directly onto the siding and into the refinery rail spur. Trains coming north must pass the mainline siding and then back onto the mainline siding for access to the refinery rail spur.

Union Pacific may require a small change in the angle of the turnout; however, if required, the construction of the new turnout would be a minor change from the current configuration and the construction would occur entirely within the existing disturbed track area on UPRR right-of-way. Because other trains continually pass through the Arroyo Grande/Santa Maria area on the Union Pacific mainline, the turnout must allow a unit train to clear the mainline without stopping.

2.3.3 Unloading Facility

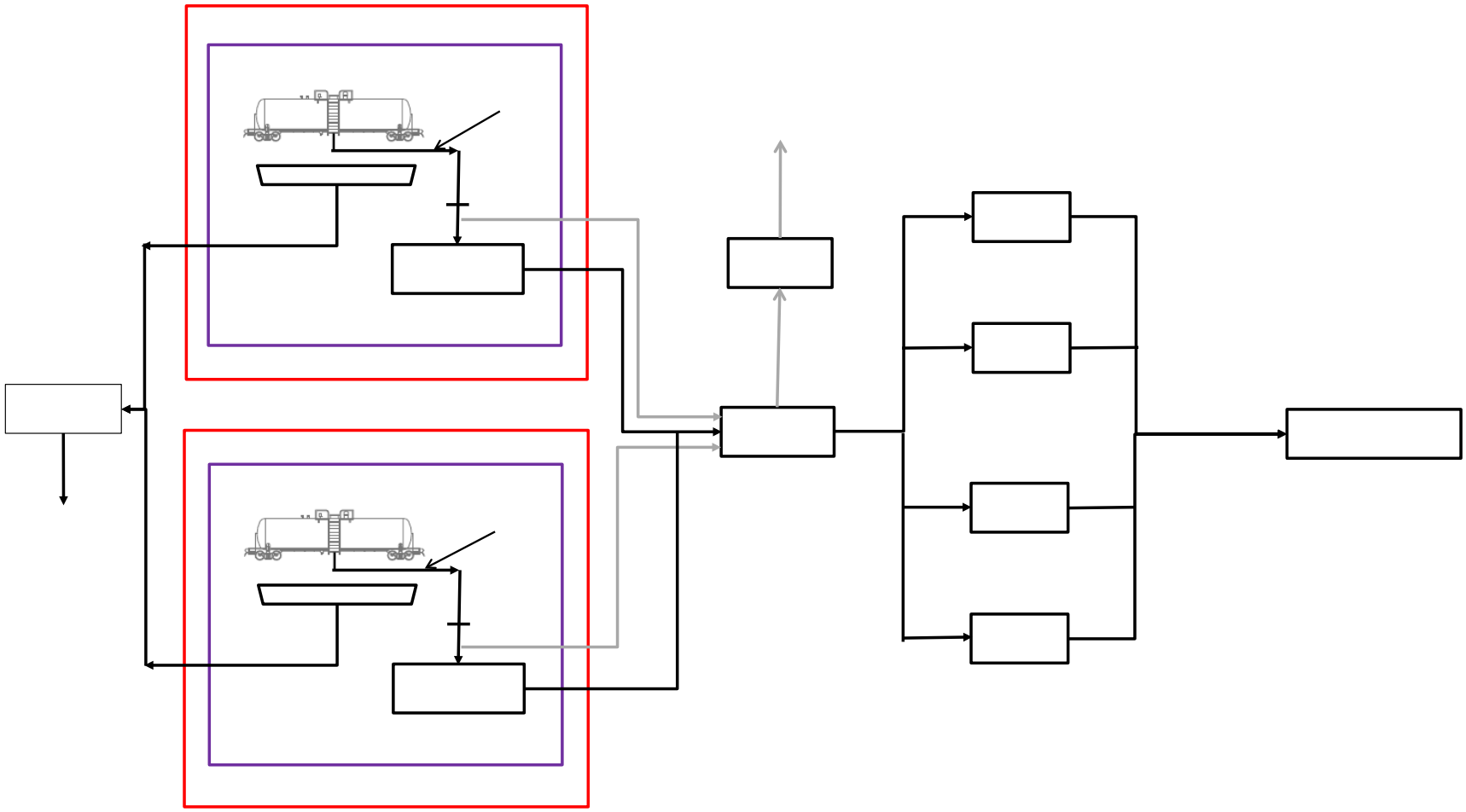
The unloading facility would include an access platform and a system of pumps and meters, suction lines from the railcars, carbon beds for vapor treatment, steam lines and steam condensate vessel, and a common pipeline leading to the refinery's existing tank farm. Figure 2-5 provides a simplified block flow diagram of the unloading facilities. Figure 2-6 provides a plot plan of the unloading facility that shows the location of the major components (the carbon beds would be located on the metering pad shown in Figure 2-6). Appendix A provides plan and cross-section views of the proposed rail unloading facility (see pages A-6 through A-8).

The access platform would run parallel to the railcar unloading tracks, with an individual gangway and safety cage at each rail car unloading station.

The access platform and tracks would be supported by reinforced concrete construction. This area would provide structural support, spill containment (see Section 2.3.10 below), and a clear, solid work surface for the operators.

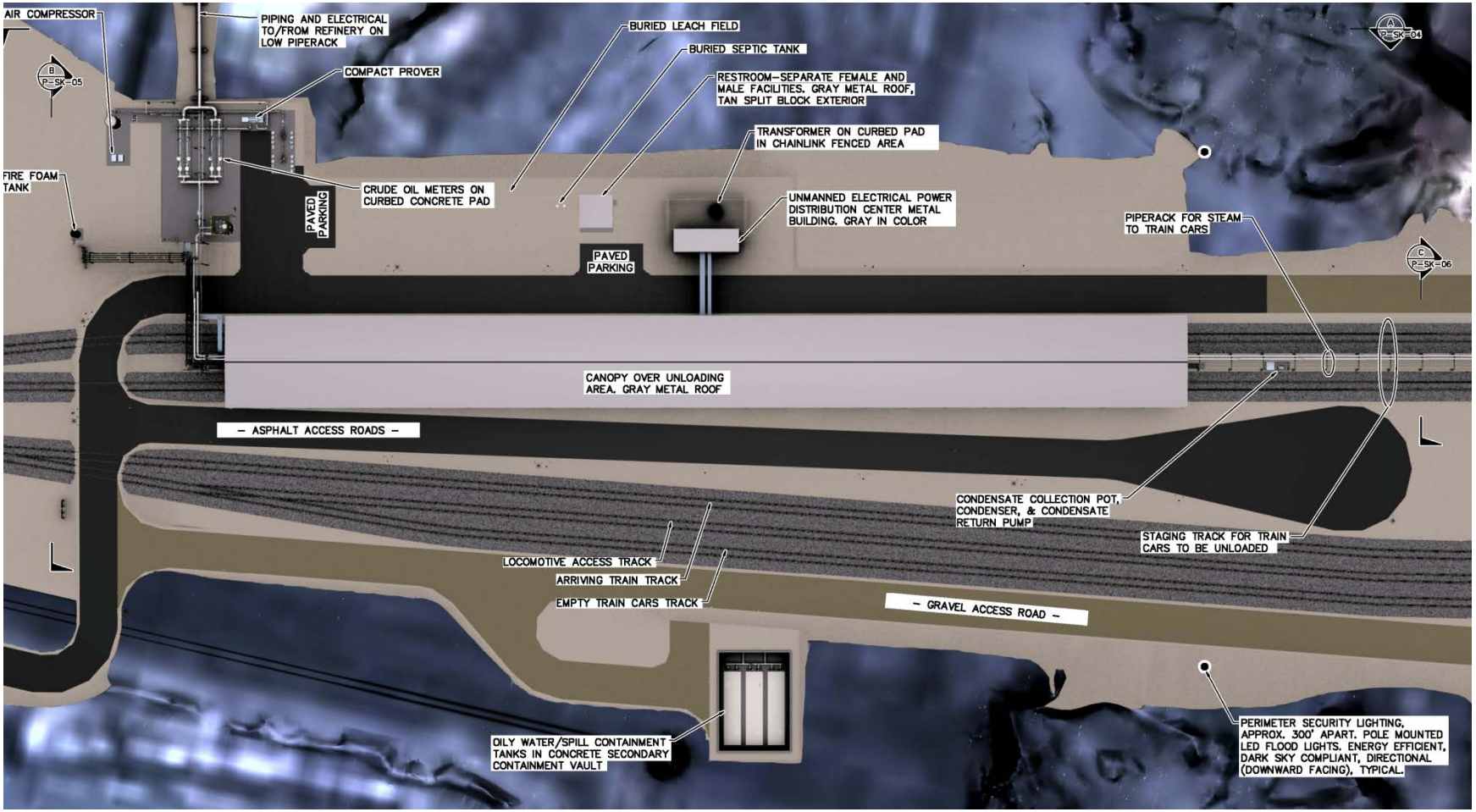
Phillips 66 would unload up to five trains per week. Phillips 66 estimates that a complete 80-car train would be unloaded within 10 to 12 hours, including time for positioning and preparing the train for departure. The proposed two-slot facility (Tracks 1/2 and Track 3) would allow adequate capacity unloading.

Figure 2-5 Simplified Block flow Diagram of Rail Unloading System



Source: Developed by MRS from Phillips 66 Land Use Application.

Figure 2-6 Plot Plan of Rail Unloading Facility



Source: Phillips 66 updated drawing, 2014.

2.3.4 Unloading System

The unloading facility would be equipped with two 10-car unloading systems allowing 20 rail cars to be unloaded at one time. The unloading rack is configured to unload two 10-car strings simultaneously (one 10-car string on Track 1 and one 10-car string on Track 2). The 600-foot-long center platform would provide access to the tops of the railcars.

Each of the rail car unloading stations would consist of an unloading line and a positive displacement pump (See Figure 2-5).

The system used to unload each car would consist of an adapter unit to connect the rail car to couplings, hoses, valves and piping connecting to a 400 gallon-per-minute (gpm) positive displacement pump.

The unloading system would be equipped with one air eliminator and associated carbon beds and four flow meters. Upon exiting each of the unloading pumps the crude oil from each unloading system would be commingled into a common pipeline that would flow through the air eliminator to remove any air and then to one of four flow meters specifically associated with particular pumps. Upon exiting the flow meters the crude oil from the two unloading systems would again be commingled and transported via a new pipeline to the existing refinery crude oil storage tanks (see Figure 2-5). The SMR has three existing crude oil storage tanks (TK-901/TK-903-98,771 barrels each, and TK-900-98,144 barrels).

The air eliminator would be used to remove vapors (mostly air) potentially mixed in with the crude oil. Air is typically present at the beginning and end of unloading when crude oil levels are low and the inlets to the unloading pumps are empty. Air removal reduces the potential for an explosive atmosphere, protects the system's flow meters and ensures accurate flow measurement. This air/vapor flow from the air eliminator would be passed through two carbon beds to remove any hydrocarbon vapors before the air is vented to the atmosphere (see Figure 2-5).

The carbon beds would be piped in series to provide primary removal and final polishing. These carbon beds would be located onsite as part of the crude oil metering system. The filter medium would be removed by a vendor and replaced with fresh medium as needed during operations.

In addition, a small volume 'prover' would be installed to allow frequent proving of flow meters.

A computer system would be used to control and monitor the unloading system's pumps, air compressors, meters and its interface with the refinery's crude oil storage tank system. A new 4160V-480V power distribution center would run the pumps, ventilation system, lighting, telephones, fire alarm and fire suppression systems. Power would be supplied initially from the Carbon Plant and subsequently by extending a line from the main substation located on-site in 2015.

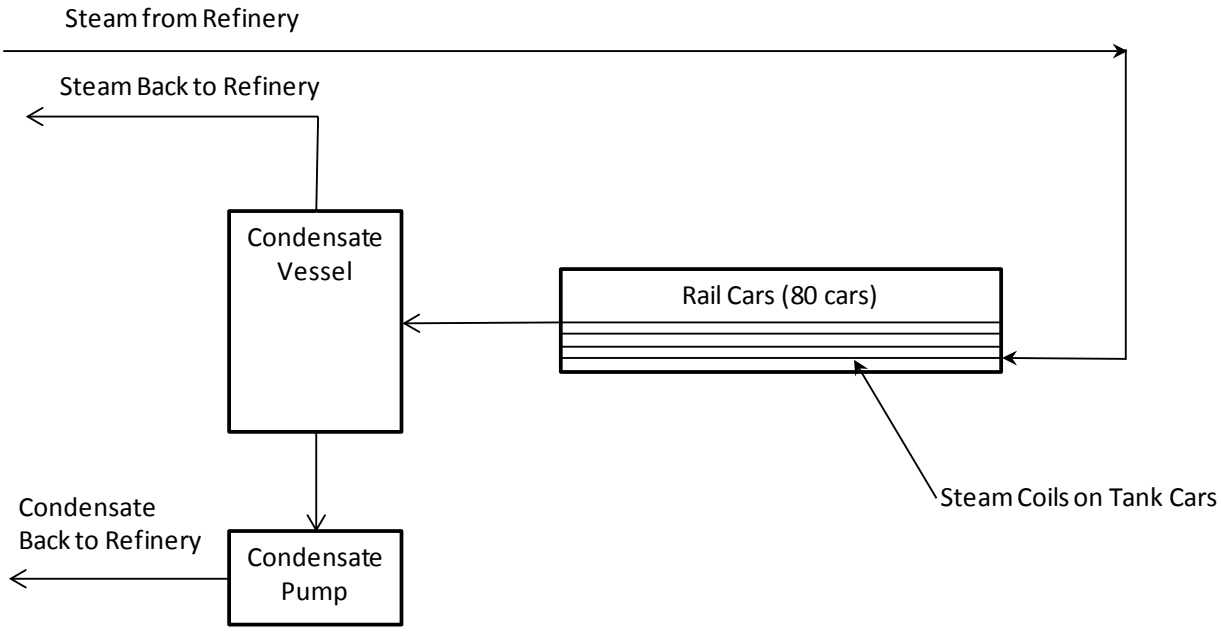
The unloading facility would also be equipped with steam lines that would allow the rail cars to be heated prior to unloading. Phillips 66 would construct new infrastructure to utilize steam already produced at SMR to heat cars that have been subject to unanticipated delays during

transit that has allowed the crude oil to cool. Phillips 66 has stated that the proposed use of the steam heating system would be used only once per year. The heating system would only be needed if a unit train was held up in transit in an area of very cold weather for two or more days and the crude cooled to a temperature below the required pour point.

The steam system would include new piping to convey steam to the rail cars and to return the "used" steam to the refinery, the installation of a condensate collection system to recover the water from further "used" steam, and piping to return the condensate back to the existing steam boilers at the refinery. The condensate collection system would include a tank and a pump to facilitate returning the condensate to the existing SMR boilers. All of the proposed infrastructure would be located in areas already disturbed or proposed for disturbance as part of the project. No new surface disturbance would be required for the installation of the steam system.

Phillips 66 would divert steam from the existing steam production system to the car heating system once per year. Phillips 66 would need to purchase an offsetting amount of electricity from PG&E during the time the steam is being used to heat the rail cars. No new steam generation would be required for the heating of the rail cars. Phillips 66 would need to divert about 30,000 lbs/hr of steam from the existing boilers. This would require Phillip 66 to purchase an additional 5 MW/hr of electricity from PG&E when the steam is diverted for use to heat the rail cars. Figure 2-7 shows a simplified schematic of the steam heating system.

Figure 2-7 Simplified Schematic of Steam Rail Car Heating System



During the heating operation, rail cars would be placed on Tracks 1 and 2 and each of the 80 cars would be connected to the steam line coming from the refinery. Each rail car would be equipped with heating coils (i.e., piping coils) located on the outside bottom half of the rail cars. The steam

would travel from the inlet steam pipe to the heating coils on each tank car and then to the return steam line. The return steam line would pass through a condensate collection tank, where any condensed steam (i.e., water) would be removed. The remaining steam would then travel via pipeline back to the SMR boiler system. Any collected condensate would be pumped via pipeline back to the SMR boiler system. The rail cars would be heated for about 21 hours and then the normal unloading operations would begin. During the heating process, all of the locomotives would be shutdown.

2.3.5 Fire Protection and Safety System

A new fire protection and safety system would be installed for the unloading rack, consisting of fire detection equipment, safety showers, eyewash stations, hydrants, controls and piping. The unloading rack would be equipped with a foam sprinkler deluge system and firewater monitors with foam generators at the unloading rack periphery. The foam spray system would require a foam concentrate storage tank. The system specifications are provided below.

- Foam/Water Deluge System.
- Square footage under canopy: 32,860 ft^2, 26.5 feet high.
- Divide under canopy area into 5 zones of 6,572 ft^2 each.
- Assume two adjacent zones would be activated in a fire.
- Design density = 0.16 GPM/ft^2.
- Flow rate required =3 x 6,572 x 0.16 = 3,155 GPM.
- Provide additional flow of 2 x 500 GPM monitors = 1,000 GPM.
- Total fire water flow required = 4,155 GPM.
- Activation of deluge valves via manual pull stations (valves) or pilot sprinkler line.
- Pilot sprinkler line shall have fusible heads rated at 175^oF.
- Bladder tank for foam concentrate storage sized for two consecutive activations of two adjacent zones.
- Pressurizing of line downstream of deluge valve activates pressure switch for remote alarm and pressurizes hydraulic valve that opens to allow foam concentrate flow to ratio proportioner.
- Assumed foam concentrate is 3% type.

Foam/Water Monitors would be self-educting nozzles with foam totes. The monitors shall be mounted at grade a minimum of 50’ away from unloading cars.

Water Supply System would consist of the following:

- Install approximately 1,200 feet of 8-inch pipe from the existing water line at the Coke Control Room to the unloading rack area. The supply for this pipe comes from incorporating

the existing 6-inch water line and another 6-inch pipe in the area. The two lines would come together to supply the lower portion of the loop.

- Install approximately 2,700 feet of 8 inch pipe from the existing 10" water line to the unloading rack area. Provide 8-inch fire water loop around the unloading rack.
- Provide two Fire Department Connections (FDC's) with check valve between for boosting of pressure in fire water loop at unloading rack (if necessary).
- Two new lines would tie together for a short run to allow for re-pumping by refinery fire truck pump into looped system around rack.

The project would also include a secondary Emergency Vehicle Access route from the eastern end of the rail spur to State Route 1, which is discussed below in Section 2.3.8. A copy of the Draft Fire Protection Plan prepared by the Applicant is provided in Appendix F.

2.3.6 Pipelines

Downstream of the two unloading facility meter assemblies, a new 24-inch above ground crude oil pipeline would be routed along an existing internal dirt road on the Phillips 66 property between the unloading facility and the refinery. This pipeline would connect with the existing refinery crude oil storage tanks. The route for this crude oil pipeline is shown in Figure 2-3. This dirt road accommodates periodic on-site traffic only associated with refinery personnel traveling at low-speeds. The new crude oil pipeline would be approximately 3,525 feet in length. The crude pipeline to the existing storage tanks would be equipped with electrical heat tracing that would be used to keep the heated crude warm until the next train load of crude can be used to push it into the existing storage tanks.

New steam and condensate pipelines would be installed from the existing SMR boilers to the unloading rack. The steam lines would then run east from the unloading rack between Tracks 1 and 2. Two 6-inch above ground steam lines would be installed along with one 2-inch condensate line. The route for these pipelines is shown in Figure 2-3, and would use the alignment as the crude oil pipeline. The total length of the steam pipelines would be approximately 6,300 feet. The total length of the condensate pipeline would be about 2,300 feet.

2.3.7 Access Roads

Paved access roads would be constructed around the unloading rack (1.7 acres). Crushed miscellaneous base would be used around the rail spur for access by operations, safety, and maintenance crews. The road surrounding the rail spur would be 24 feet in width along the southern side of the spur and 12 feet in width along the northern side for a total of 4.6 acres. Appropriately sized turn-around areas meeting County and CAL FIRE standards and a mid-way track crossing are also included to maximize efficiency in the event of an emergency. Figure 2-3 shows the location of the access roads.

2.3.8 Secondary Emergency Vehicle Access

An Emergency Vehicle Access route would be constructed from the eastern end of the rail spur 3,000 feet to State Route 1 following existing agricultural roads. Figure 2-3 shows the location of the secondary emergency access road. Total area of the emergency access road would be 1.6 acres including 1 foot shoulders (with 0.6 acres currently an existing dirt roadway). The secondary access road would be improved with crushed miscellaneous base (most likely decomposed granite or comparable surfacing) to support emergency vehicles as prescribed by CAL FIRE but would not be paved.

2.3.9 Security Fence and Lighting

As required by the U.S. Department of Homeland Security, an extension of the existing eight-foot in height chain link fencing topped with barbed wire would be required around the periphery of the new tracks. The security fence would not extend east around the perimeter of the secondary emergency access road. Additional lighting would also be required for the rail unloading facility. LED flood lights would be mounted on standards. The security fence lighting would be on standards that are 15-feet high and spaced 500 feet apart. The unloading facility lighting would be on standards that are 25-feet high and spaced 150-feet apart. Each light would have a rating of 13,138 lumens[3]. The lights would be dark sky compliant and be downward facing to minimize nighttime glare. The approximate location of the light poles is shown in Figure 2-6. A lighting diagram for the unloading facility is provided in Appendix A (pages A-24 through A-28).

2.3.10 Spill Containment and Response Facilities

Trench drains would feed below-grade 16-inch-diameter drain lines routed to three parallel 20,000 gallon rectangular storage tanks (approximately 60,000 gallons total volume) located in an open top vault for containment. The system would be sized to contain the contents of one rail car as well as the foam and water that would be released from the fire suppression system. The spill containment system is shown in Figure 2-6. Oil and water would be extracted from the spill containment storage tanks with vacuum trucks, which would in turn dispose of the liquids at the refinery oily water system, or offsite at a designated petroleum waste disposal facility.

Phillips 66 has a number of existing process safety policies and procedures that would apply to the SMR rail project, including the equipment and operating procedures. These programs are designed to prevent releases of hazardous materials, minimize risk, and ensure the refinery's ability to process crude without increasing risk of releases. For example, the Mechanical Integrity Program covers equipment used to process, control, and store hazardous chemicals and assigns responsibility for equipment inspection and testing as well as maintenance. This program meets the requirements of CCR Title 8 Sec 5189, "Process Safety Management of Acutely

[3] Lumens is a measure of light output. For example a 75-watt incandescent bulb casts 1,190 lumens, and a 150-watt incandescent bulb produces 2,880 lumens.

Hazardous Materials" (f), (j) and 29 CFR 1910.119, "Process Safety Management of Highly Hazardous Chemicals" (j). These programs would be applicable to the operational aspects of this proposed project. The refinery uses a Positive Material Identification (PMI) program to ensure the integrity of all mechanical and pressurized systems. This program is overseen by the refinery's Inspection Supervisor.

Any new feedstock coming to the refinery undergoes a complete Management of Change (MOC) analysis to ensure that all hazards, as well as the refinery's systems are safe and operable. The MOC program is part of the refinery's Process Safety Management program and tracks equipment modification, addition of new systems and process changes. MOC covers all changes that involve specific chemicals at or above threshold limits as defined in California Code of Regulation, Section 5189, Appendix A or flammable liquids or gasses as defined by California Code of Regulations, Section 5194(c) including new construction, modifications, changes in chemicals or materials, changes in feedstock, and changes in concentrations, temperatures, pressures, or flow rates outside of established Safe Process Limits.

The refinery is also covered by the California Accidental Release Prevention (CalARP) program, which is designed to prevent accidental releases potentially harming the public and the environment and to satisfy community right-to-know laws. Phillips 66 has prepared the required Risk Management Plan (RMP) to analyze the potential for accidents and development of operating procedures, training and maintenance requirements, compliance audits and incident investigation. The refinery additionally has an approved Spill Prevention, Control and Countermeasure Plan (SPCC).

2.3.11 Support Buildings

The unloading facility would include a small parking area and restroom facilities. Both men's and women's restroom facilities would be served by potable water and a septic system for wastewater disposal. Figure 2-6 shows the location of the support buildings. All septic system components would be constructed in accordance with applicable State and County regulations and State Regional Water Quality Control Board standards.

2.4 Construction Activities

Construction would require contractor mobilization, construction site preparation, establishment of a staging and equipment laydown area (within existing refinery disturbed areas), clearing and grading, removal of the existing rail turnout, laying new track, and assembling the unloading facility and pipeline. The last stage of construction would include demobilization, soil stabilization, restoring vegetation, and removal and disposal of construction wastes (e.g., demolition materials, packaging, and other solid waste).

After contractor mobilization, the site would be prepared, the limits of disturbance would be clearly marked, and initial clearing and grubbing would occur within the construction area. The site would be graded and any remaining soil would be used for the emergency access road, revegetation, or other access road work in the project area.

If specified by Union Pacific, the existing rail turnout would be modified to accommodate the planned unit trains, including demolition/removal of approximately 1,300 feet of existing track and placement of a new turnout track and signal, if needed. This work would occur within the existing track corridor and would not require impacts outside the existing disturbed area.

The primary facilities, including the rail extension, unloading station and pipeline, would be constructed by Phillips 66 construction contractors. The number of construction workers would peak at approximately 150[4] during the construction of the pipeline, rail, and unloading area. Trucks would import construction materials and components (e.g., track segments, pipe), which would be stored on site in a laydown area. If feasible, some materials may be imported by rail, but this impact analysis considers a 'worst-case' scenario that the construction materials need to be delivered by truck. Track construction would include grading, soil compaction and stabilization, placement of sub-ballast and installation of rail, ties and ballast. Track ballast is used to form the rail track bed to allow drainage and to bear the weight of the rail cars. Delivery of construction materials would avoid peak traffic hours.

The unloading facility and system would be assembled adjacent to the completed tracks with connections to the refinery crude oil storage tanks, stormwater collection system, firewater system, and steam system.

2.4.1 Construction Schedule

The overall construction is anticipated to occur over a period of 9 – 10 months. In some cases, portions of the individual tasks below would occur concurrently. The anticipated construction schedule is listed below and is based on a hypothetical approval date in spring 2016:

- Demolition – July 2016 (1 month)
- Turnout track replacement (if needed) – July 2016 (1 month)
- Grading – September – November 2016 (4 months)
- Soil Transport – September – November 2016 (4 months)
- Construction of Rail – Mid November 2016 – Mid December 2016 (1 month)
- Construction of Pipeline – December 2016 – March 2017 (4 months)
- Construction Unloading Area – December 2016 – March 2017 (4 months)
- Commissioning/Turnover – April – May 2017 (2 months)

[4] The number of construction workers would vary depending on the construction activity and number of construction equipment required. Details on construction workers are provided in Appendix A (page A-30).

2.4.2 Construction Equipment

Construction equipment proposed for the construction of the facilities is listed in Table 2.3 below.

Table 2.3 Construction Equipment

Phase Name	Equipment Type	Equipment Number	Daily Usage (hours)	Horse Power	Load Factor
Demolition	Dump Truck	2	4	381	0.38
	Bulldozer	2	4	358	0.40
	Backhoe with Chipper	1	4	75	0.37
	Water Truck	1	4	381	0.38
Turnout Track Replacement	Bulldozer	3	8	358	0.40
	Tractor	4	8	75	0.37
Grading	Excavator	1	4	157	0.38
	Grader	2	4	162	0.41
	Dump Truck	4	4	381	0.38
	Bulldozer	2	4	358	0.40
	Scraper	2	4	356	0.48
	Water Truck	1	4	381	0.38
Soil Transport	Dump Truck	5	4	381	0.38
	Bulldozer	2	4	358	0.40
	Water Truck	1	4	381	0.38
Construction of Rail	Pile Driver	1	2	82	0.50
	Flatbed Truck	2	4	381	0.38
	Concrete Truck	1	4	381	0.38
	Water Truck	1	4	381	0.38
	Dump Truck	2	4	381	0.38
	Paver	1	5	89	0.42
	Compactor	1	2	8	0.29
	Bulldozer	1	4	358	0.40
	Backhoe	1	4	75	0.37
Construction of Pipeline	Cranes	1	3	208	0.29
	Flatbed Truck	3	6	381	0.38
	Paver	1	5	89	0.42
	Water Truck	1	4	381	0.38
	Compactor	1	2	8	0.29
	Backhoe (trench)	1	4	75	0.37
Construction of Unloading Area	Crane	1	7	208	0.29
	Forklift	3	8	149	0.20
	Generator Set	1	8	84	0.50
	Tractor	3	7	75	0.37
	Welder	1	8	46	0.30
Commissioning/ Turnover	None				

Source: Developed by MRS from Phillips 66 Land Use Application and Phillips 66 comments on Project Description.

2.4.3 Construction Vehicles

Equipment and materials would need to be transported to and from the site, as well as employee vehicles. Trucks would be used to deliver piping, railroad track, ties, and ballast as well as the equipment to be installed and the construction equipment. Peak daily trips are summarized in Table 2.4 below. Appendix A shows the details of the work and truck trip estimates (pages A-29 and A-30).

Table 2.4 Vehicle Trips, Peak Day, One-Way Trips

Phase Name	Worker Trip Number	Truck Trip Number	Total Trip Number
Demolition/Removal of Existing Track	16	36	52
Turnout Track Replacement	18	18	36
Grading	40	66	106
Unloading Area and Pipeline Construction	320	110	430
Construction of Rail	24	218	242
Commissioning	40	8	48

1. Peak vehicle trip estimates do not account for vehicle movements that are confined to the project site.
2. See Appendix A for details on Vehicle Trips.

Source: Developed by MRS from Phillips 66 Land Use Application and Phillips 66 comments on Project Description.

2.5 Operations

Project operations would include unloading of up to five trains per week, with an annual maximum number of trains expected to be approximately 250. Trains would arrive from different oilfields and/or crude oil loading points depending on market availability. Trains could arrive at the Phillips 66 site from the north or the south. The refinery feedstock definition (meaning the materials that could be transported by train into the proposed facility) excludes gaseous feeds, natural gas liquids (NGL), liquefied petroleum gas (LPG), finished refined products, and Bakken crude. The feedstock would be sourced from oilfields throughout North America based on market economics and other factors.

Crude oil would be shipped to the refinery in non-jacketed CPC-1232 tank cars (i.e., post October 1, 2011 tank cars). Appendix A provides the specification for the tanks cars (pages A-31 and A-32). These cars have a capacity of approximately 31,808 gallons per car. Each car has a weight limit of 210,700 pounds of crude oil. Each tank car would be approximately 60 feet long. The total length of a unit train would be about 5,190 feet long (three locomotives at 90 feet, two buffer cars at 60 feet, and 80 tank cars at 60 feet).

Phillips 66 proposes to use CPC-1232 tank cars. In August 2011, the AAR Tank Car Committee adopted new industry construction specifications for tank cars and the CPC-1232 design became the standard for all tank cars built after October 2011. The rail cars would be designed to meet DOT Packing Group I requirements, which is the highest rating. The tank cars would be equipped with half height head shields, double couplers, and all stainless steel valves. The relief valve would be designed for high flow.

In a unit train configuration, each train would consist of three locomotives, two buffer cars, and 80 railcars each carrying approximately 27,300 gallons for a total of about 52,000 barrels of crude oil per unit train. The tank cars would be limited to this range of volume due to the estimated weight of the oil that would be delivered to the SMR. With the delivery of five unit trains per week the average daily delivery of crude oil would be 37,142 barrels, which is less than the SLO Planning Department permitted capacity of 44,500 barrels per day.

Due to the weight of the train and the steep grade, an additional two locomotives would be required for the portion of the route between Santa Margarita, California and San Luis Obispo, California coming over the Cuesta Grade (a distance of approximately 15 miles).

In a manifest train configuration, varying number of railcars would be dropped off at SMR by a passing train. A dedicated locomotive would remain on-site to move cars. This would be a small locomotive that would only be capable of moving a few rail cars at a time, and would not be used for unloading of unit trains. In a manifest train configuration, a number of crude oil railcars would be dropped at the refinery and then the train would continue to other destinations. Rail cars delivered via manifest train would meet the same specifications as discussed above for the unit train tank cars. The refinery would have a dedicated locomotive that would be used to move the railcars from the manifest train while they are on site. This dedicated locomotive would only be used for manifest deliveries.

Because trains would arrive at different times throughout the week, the number of workers would vary depending on the number of trains and worker arrival and departure time would vary throughout the day and night. Additional employees over the current refinery employees would be required in order to unload and manage the trains, with the increase ranging as high as 12 additional employees at one time.

Consistent with current operations, the crude oil delivered by rail and pumped to the storage tanks at the refinery would be processed at the SMR and then the semi-refined products would be transported by pipeline to the Rodeo refinery in the Bay Area. No crude oil or refined product would be transported out of the refinery by rail except for any off-spec crude that is delivered by rail. No crude oil would be moved from the refinery via pipeline.

2.5.1 Train Routes to the Santa Maria Refinery

Trains would arrive from different oilfields and/or crude oil loading points depending on market availability. The exact location of the source of crude oil that would be delivered to the refinery is unknown and could change over time based upon market conditions and availability. Union Pacific Railroad (UPRR) would be responsible for delivering the trains to the SMR. The main UPRR train routes within the United States are shown in Figure 2-8. Trains could enter California from at least five different locations (one at the north end of the state from Oregon, two at the northeast from Nevada, one at the southeast from Nevada, and one at the south from Arizona). Depending upon the route taken by the train they could arrive at the Phillips 66 site from the north or the south.

It is unknown what route UPRR would use to deliver the trains to the SMR and it would likely vary based on the source location of the crude oil. However, there is certainty regarding the two segments of the route on the "Coast Line" that lead to the SMR from the north and from the south where there are no alternative routes. Coming from the north, the available routes merge south of San Jose. Coming from the south, the available routes merge north of Los Angeles.

Figure 2-8 Main UPRR Rail Routes in the United States

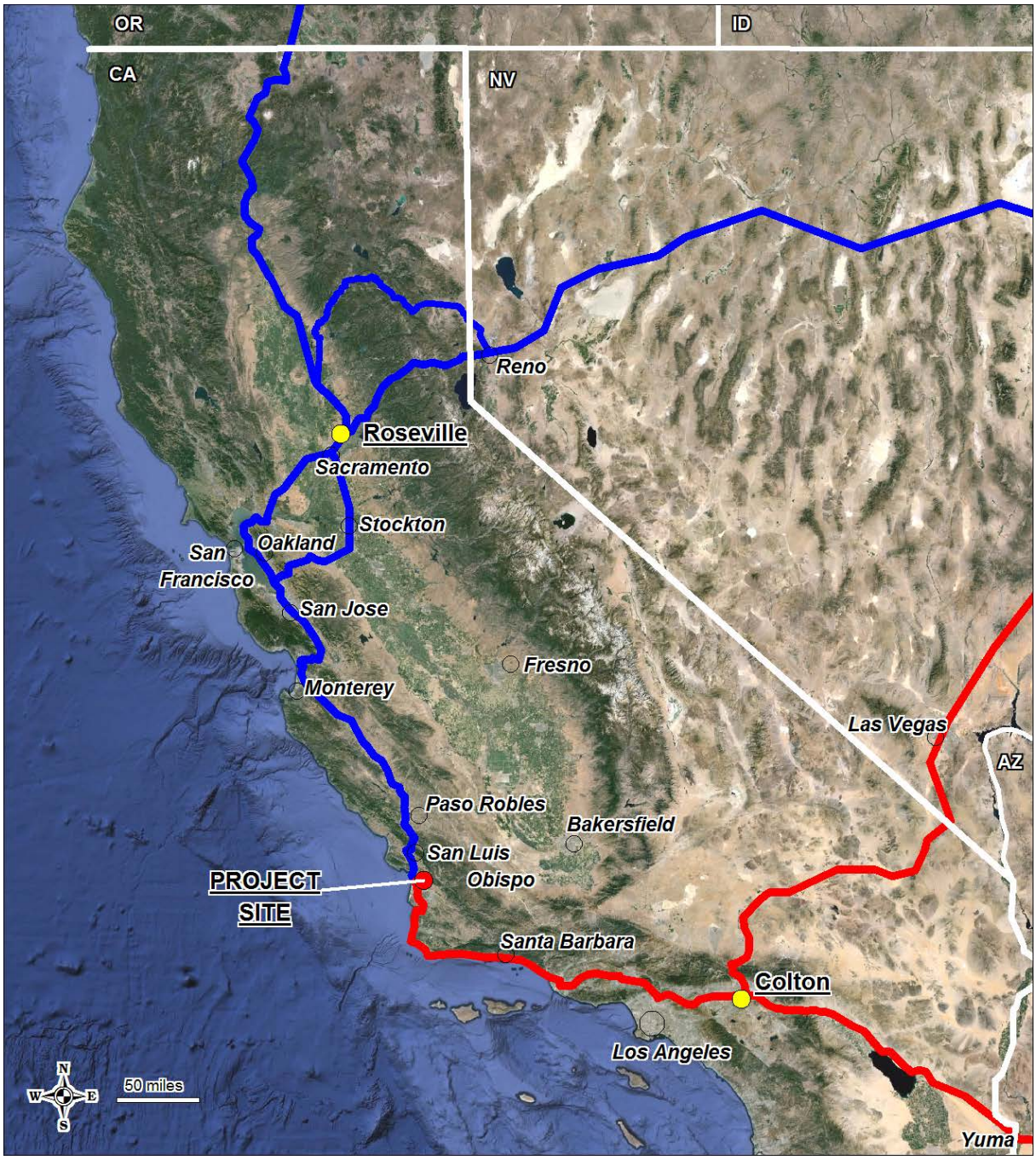
Source: UPRR website

For purposes of environmental review, this DEIR has assessed in detail the impacts from the nearest UPRR rail yards in Roseville and Colton to the SMR, though in both cases, this extends the review beyond those sections of track for which there is route certainty. Figure 2-9 shows the main UPRR train routes from the California State border to these two rail yards, and then on to the SMR. In addition, the DEIR has discussed, in less detail, the impacts of rail transportation beyond these two rail yards in the applicable issue areas.

Pursuant to the recent voluntary agreement between US railroads and the Department of Transportation, the Rail Corridor Risk Management System (RCRMS) will be utilized to determine the safest routes for trains with 20 or more cars of crude oil. The RCRMS is a

software tool that provides assistance to all Class I railroads in the routing of hazmat shipments to meet federal requirements. The RCRMS is the result of thorough analysis and prioritization of 27 risk factors identified by the Transportation Security Administration to be accounted for in all hazmat rail route planning. RCRMS undergoes modifications and updates based on continuing analysis of rail hazmat transportation data.

Figure 2-9 Mainline Rail Routes to the Santa Maria Refinery



Source: Adapted by MRS from UPRR maps.

2.5.2 Train Unloading Sequence

The tracks and unloading rack would be designed to allow for the safe and efficient movement of multiple trains and cars in and out of the facility while minimizing the required space. Figure 2-4 provides a line diagram of the track layout. The unloading sequence described below would be for a unit train (a train with three locomotives, two buffer cars, and 80 tanker cars). The sequence would be similar for rail cars delivered via a manifest train, but the number of railcars handled would be substantially less. The train arriving at the refinery would be assembled and delivered to the site by UPRR. The final configuration of the train would be determined by UPRR. Based upon discussions with Phillips 66 and UPRR, a possible unit train configuration would be two locomotives at the front of the train, followed by two buffer cars, 80 tanker cars, with the third locomotive at the end of the train. This is the train configuration that has been used in the EIR to evaluate the impacts of the unloading operations.

The rail spur has been designed to allow for unit trains to arrive at the refinery from the north or the south on UPRR's main line track. The trains would enter the existing refinery spur from the north after having pulled off onto the UPRR siding track. Once the unit train was at the refinery the unloading sequence would begin.

Once the train is on the refinery site, operation of the train would be turned over to Phillips 66 and it would follow the following typical sequence.

1. ***Position Train on Tracks 1 and 2 –*** The train would pull into the facility down Track 2, which has one of the two unloading racks (unloading rack #2). The 80th tanker car would be positioned at the first rail car unloading line. This would position the last ten tanker cars at unloading Rack #2. The third engine, which would be at the back of the train, would be decoupled and would move to the end of Track 764 and shutdown. The train would be uncoupled between tanker car 40 and 41. The two engines at the front of the train would pull the remaining section of the train past the intersection of Tracks 1 and 2 in an easterly direction. At this time two locomotives would be positioned on the Tail Track. The train would then be pushed up Track 1 till the 40th car is positioned at the front loading line of unloading Rack #1. The engines would then decouple from the train and then move back down to the Tail Track and then move back up Track 4, which is the runaround track, to the area nearest the refinery. The engines would be decoupled and one engine would move on to Track 2, one engine would move on to Track 1. These two engines would be used in the unloading operations as discussed below.

2. ***Train Unloading –*** Unloading would occur at two racks, and each rack would be capable of unloading 10 cars. At each rack the first unloading would be connected to the first car and the pump started. Then the second unloading line would be connected and the pump started. This process would continue till all 10 cars on each rack were unloaded. After each car is unloaded, the unloading line would be disconnected. It is estimated that it would take about two hours to unload a set of 20 cars (10 at each of the two racks) including moving, switching and decoupling. Once the first set of ten tanker cars at each unloading rack is unloaded, one of the engines would pull the train forward (in a westerly direction) by 10 cars, thereby lining up the next ten tanker cars for unloading. The empty tanker cars would be moved to Track 5, the empty car holding track. This process would repeat three times until

all forty tanker cars had been unloaded at each of the two unloading racks. Once all of the unloading was completed, and the empty cars would be located on Track 5, the two remaining buffer cars would be moved from Track 1 to Track 5 and placed at the front of the empty cars. Finally, the train would be reassembled on Track 5 and made ready for departure from the refinery. The moving of the tanker cars at each unloading rack would be done by one locomotive. The unloading of a unit train is expected to take approximately eight hours, which includes the unloading, switching and repositioning activities.

3. ***Third Locomotive –*** The third locomotive is not needed for the unloading operations. This locomotive would be at the end of the train when it arrives at the refinery. This locomotive would be disconnected from the back of the train and moved to the end of Track 764. This locomotive would shut down until the empty car train is ready to leave the refinery.

4. ***Idle Time Prior to Departure –*** Once the unloading operations are complete, the two locomotives that were used for the unloading operations would connect to front of the empty car train located on Track 5. These two locomotives would idle until the train left the refinery. During this period the rail car brakes would be pumped up with compressed air. In addition, UPRR would inspect the train to ensure all the cars are connected properly and the brakes are correctly pumped up. The idle time would depend upon how long the train had to wait until the UPRR scheduled departure. Based upon an 11.5 hour turnaround, it would be about 1.4 hours.

5. ***Train Departure –*** Just prior to departure, the third locomotive on Track 764 would connect to the back of the train. The empty train would leave the refinery and head back on to the UPRR mainline track. It is anticipated that each train would be at the refinery for about 10 to 12 hours.

Table 2.5 provides a summary of the train operations and the estimated times associated with each operation listed above. The total time a train would be at the refinery would be approximately 10 to 12 hours, of which about eight hours would be needed for unloading, switching and repositioning activities.

Locomotive refueling for the unit trains would not need to be conducted at the refinery since the main line engines would be used to handle the cars while at the refinery. UPRR would ensure the main line engines were adequately fueled prior to arrival on site. However, refueling of the dedicated locomotive that would be used with manifest trains would need to occur on site. Diesel fuel for the onsite locomotive would be delivered to the refinery by tanker truck. The fuel would be pumped from the tanker truck directly to the locomotive. The amount of refueling needed would depend upon the frequency of delivery of manifest railcars. The maximum refueling would be one tanker truck per week. Each tanker truck would carry about 4,000 gallons of diesel fuel.

Table 2.5 Timing for Train Unloading Operations

Task	Locomotive #	Locomotive Mode (Minutes)				Total (hrs)	Comments
		Switching	Idle	Off	Total		
Position Train on Track 1 and 2	1	75	25	0	100	1.7	It would take about 1.7 hours to position the tanker cars on track 1 and 2. During this time each locomotive would have varying amounts of switching and idling time depending upon the activity that is occurring. Both locomotives would be in switching mode when moving the tanker cars. When only the locomotives are moving one would be in switching mode, and the other would be in idle mode. This task covers the time it would take to pull the train down Track 2 and line up the 80th car with the first unloading line, disconnect the train between cars 40 and 41, pull the train east down the track and then push the first 40 tanker cars back up Track 1 west so that the 40th car is lined up with the first unloading line on Track 1. The two locomotives would then disconnect from the tank cars and move onto Track 4 (runaround track) back to the end nearest the refinery where they would be used for the unloading operations.
	2	41	59	0	100	1.7	
Unloading	1 and 2	70	410	0	480	8.0	Each unloading rack is designed to unload 10 tanker cars at a time. Four unloading operations would occur at each unloading rack per train (10 tanker cars/rack x 2 unloading racks x 4 unloading operations = 80 tanker cars). Each unloading operation would include about 45 minutes to connect/disconnect the unloading lines to the tanker car and 70 minutes to unload the rail cars. This would give a total of 460 minutes of unloading time per train. There would be 70 minutes of switching time per locomotive during the unloading operations. This switching time is needed to move the tanker cars from the unloading tracks to the empty car track and rebuild the empty train. The total time for unloading operations including switching of tanker cars and rebuilding the empty train would be about 480 minutes (8 hours).
Third Locomotive	3	32	65	584	680	11.3	The third locomotive, which would be at the back of the train, would be disconnected from the train upon arrival at Track 2. The locomotive would then move to the end of Track 764. Once in this position, the locomotive would be shut down until the train is ready to depart the refinery. On cold days the engine may automatically idle for short periods of time to keep the engine warm. It has been assumed that the engine would idle 10% of the time it is at the end of Track 764 during all days.
Idle Time Prior to Departure	1 and 2	0	83	0	83	1.4	This is the time between completing the unloading operations and waiting for the train to depart the refinery. This would include about 20 minutes

Table 2.5 Timing for Train Unloading Operations

Task	Locomotive #	Locomotive Mode (Minutes)				Total (hrs)	Comments
		Switching	Idle	Off	Total		
							for pump up of the rail car brakes and about 60 minutes for UPRR to inspect the train prior to departure.
Train Departure	1, 2, and 3	27	0	0	27	0.4	Just prior to departure, the third locomotive on Track 764 would also connect to the train. The train would depart the refinery on to the mainline UPRR track.
Total		172	518	0	690	11.5	A unit train would be at the refinery site for about 11.5 hours. This includes the arrival and departure time. There would be about 19.2 total locomotive-hours of idle on-site, 5.8 total locomotive-hours of switching, and 9.5 locomotive hour of off time. This is a total of 34.5 locomotive-hours of operation (3 locomotives x 11.5 hours = 34.5 locomotive-hours of operation). It is expected that the turnaround for a train at the refinery would be between 10 and 12 hours.

Notes:

1. Assumes a total time that train is at the site is 11.5 hours.
2. Assumes two locomotives are used for switching. One locomotive for each of the unloading racks.
3. Assumes the two locomotives used for the unloading operations are idling when not actively switching rail cars.
4. The unloading times are per rack and assume that the two racks are used simultaneously to unload rail cars.
5. Assumes a switching speed of 3 miles per hour.
6. Assumes the third locomotive idles 10% of the time and is shutdown 90% of the time when at the end of track 764. This is an approximation and could vary depending upon the season.
7. The hours for the "third locomotive engine" occur concurrently with the other operations, so are not counted in the total time.
8. The hours for the second locomotive during the positioning operation occur concurrently with the first locomotive so they are not counted in the total time.
9. Train departure times end when tail end of the train leaves the SMR. During the majority of this departure time the locomotives at the head of the train would be on the UPRR mainline tracks.
10. Train arrival times start when the locomotives at the head of the train enters the SMR. During the majority of the arrival time the locomotive at the tail of the train would be on the UPRR mainline tracks.

See Appendix A for detailed timing calculations (pages A.1-33 and A.1-34.

Source: Data developed by MRS with input from Applicant and their rail consultants.

2.5.3 Control Systems

Control of the unloading rack and appurtenances would be Programmable Logic Controller (PLC) based. All local pumps, valves and instrumentation would be controlled and or monitored by a new PLC. This PLC would have a local HMI screen, dual redundant processors, power supplies and ethernet fiber ports for communication to the remote control center.

The PLC would be configured to communicate with the Refinery Distributed Control System (DCS) to receive crude oil tank level signals and for the refinery control center to monitor operations and alarms from the unloading rack. Within the local PLC, pump operation and control, air compressor operation and control, meter and prover control would be monitored.

The PLC would communicate with the Refinery DCS system for Alarm display and monitoring functions. A single mode fiber-optic cable would be used to communicate with the DCS system via an Ethernet IP (or Modbus TCP) protocol. Additional Fibers would be used for Switchgear communication with the Main Substation for SCADA.

The PLC and HMI for the Unloading Rack would be located in the Electrical & Control Power Distribution Center (PDC) building. The location of this facility is shown in Figure 2-6. This area of the building would be partitioned from the Electrical area by a wall for isolation from high voltage electrical magnetic force. There would be a UPS complete with batteries and external Maintenance Bypass located nearby to power the PLC.

2.5.4 Rail Car Unloading Utility Requirements

The rail spur operations would utilize electricity to operate pumps and unloading equipment, which would be received from the SMR electrical generation systems and/or the grid. Electrical demand for the additional equipment and operations would average 900 kW. The peak power consumption would be about 1,000 kW.

It is anticipated that on occasion a train would arrive requiring heat to facilitate unloading. This could occur for example if weather forced an extended delay in a cold climate on the way to the SMR. Phillips has indicated that once per year steam could be necessary to heat the rail cars prior to unloading. Steam would be diverted from the existing refinery boilers to heat the rail cars. This steam is normally used to generate electricity for the refinery. Phillips 66 would divert approximately 30,000 lbs/hr of steam for 21 hours from electrical production (an existing process and set of hardware) to warm the rail cars. Phillips 66 would have to buy approximately 5 MW/hr (the amount of electricity which the steam would normally generate) of power for the 21 hours the steam is being used to heat the rail cars.

On an annual basis, SMR produces about 43,800 megawatt-hours (MWH) and purchases from the grid about 23,718 MWH for a total of 67,518 MWH. The additional electrical purchases during rail car heating would be 105 MWH which is an approximately 0.4% increase in purchased power for the year.

The rail unloading operations would not use any natural gas or refinery gas other than the refinery gas that is used to generate the steam discussed above.

2.5.5 Current Rail Car Operations

Currently, the rail operations at the SMR consist of the export of petroleum coke for commercial use throughout the U.S. and abroad. A train typically arrives every Wednesday and drops off 18 to 20 empty cars. After delivering the empty cars, the engine picks up any full cars and leaves the SMR. This operation typically takes a few hours. Each full car hauls approximately 100 tons of coke. The delivered empty cars are filled with coke during the following week and moved around on site by the 'Shuttlewagon.' The Shuttlewagon, also referred to as a 'switching locomotive' is a small unit compared to an actual train locomotive. The Shuttlewagon operates less than two hours per week. Fuel consumption is typically less than five gallons of diesel per week.

2.6 Crude Oil Changes from Rail Spur Project

The SMR is designed to handle heavy sour crude. SMR partially refines the crude oil to extract intermediates and gases, and uses the heavier crude oil components to produce petroleum coke. The SMR refinery is not designed to handle light sweet crudes such as Bakken, and is not designed to produce finish grade petroleum products such as gasoline, diesel fuel, jet fuel, etc.

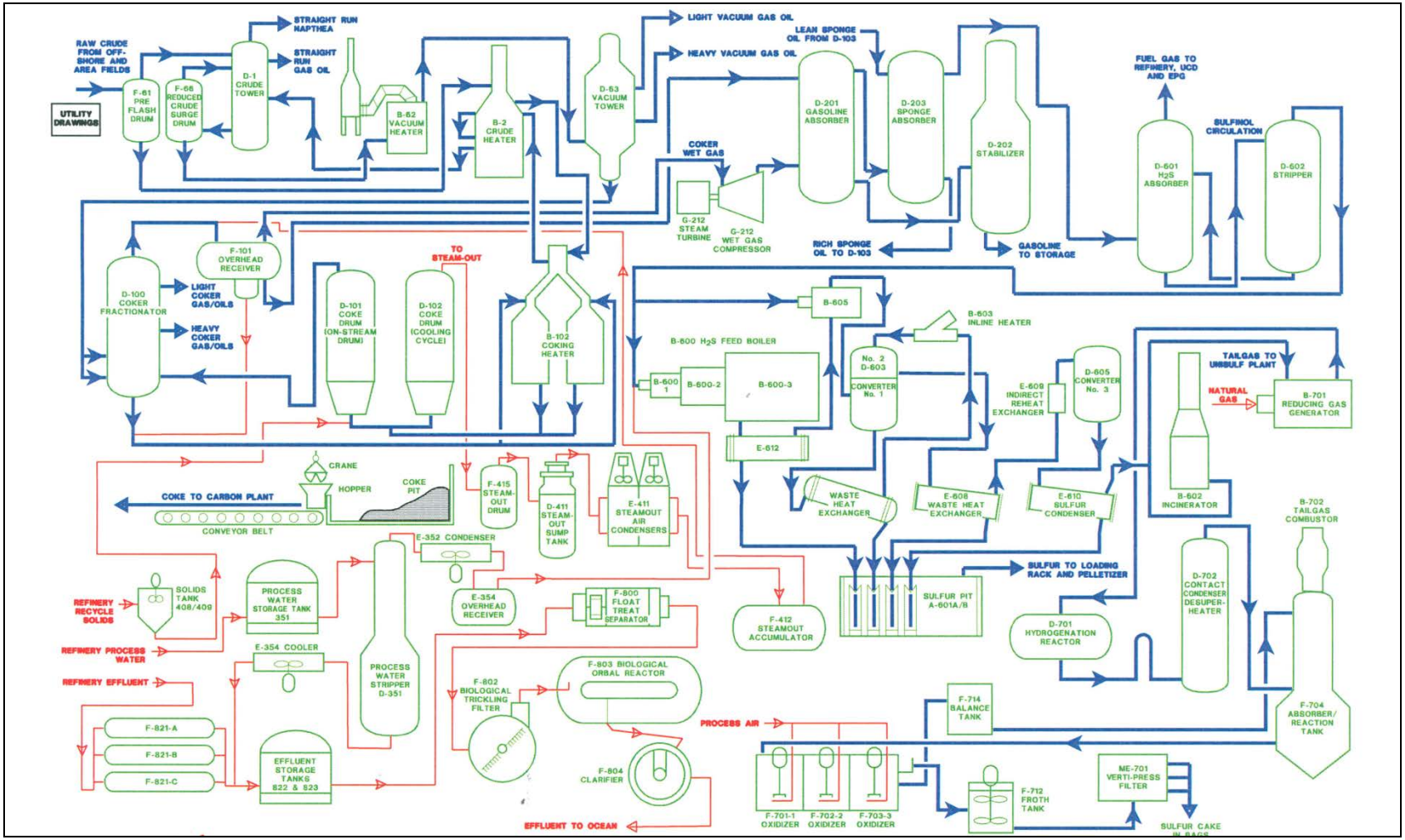
Figure 2-10 provides a simplified flow diagram of the SMR. Crude entering the refinery is first processed through an atmospheric distillation unit, which produces gas oil, pressure distillate (naphtha), and some fuel gas. The majority of the propane/butane contained in the crude oils processed at the SMR ends up in the refinery fuel gas. As shown in Table 2.6 below, the amount of liquefied petroleum gases (LPG-propane and butane) in the expected crudes that would be delivered by rail are similar to what is currently being processed at the refinery.

The remaining oil is sent to a vacuum distillation unit where additional gas oil is extracted. Residual oil is finally delivered to the coking unit where thermal decomposition makes it into green coke, gas oils, and fuel gas. Green coke produced by the coking units is sold.

Gases produced at the refinery are processed in a sulfur removal system and then used as fuel at the refinery. Sulfur removed from the gas is converted to elemental sulfur and sold. Gas oil and naphtha recovered as part of the distillation and coking processes are shipped by pipeline to the Phillips Rodeo Refinery in the San Francisco Bay area for processing into gasoline, diesel fuel, and other petroleum end-use products.

Prior to pipeline shipment to the Rodeo Refinery the naphtha and gas oils are stored in tanks located at the SMR. The naphtha and gas oils are shipped via a common carrier pipeline system to the Rodeo Refinery located in the Bay Area. The pipeline system goes from the SMR through the San Joaquin Valley on to the Bay Area. During transit, the naphtha and gas oils can be routed into storage tanks in the San Joaquin Valley.

Figure 2-10 SMR Block Flow Diagram



Source: Conoco Phillips Increase Throughput EIR, 2012.

The SMR currently receives all crude oil for processing by pipeline coming from various sources, including the Outer Continental Shelf (60-85%), Price Canyon/Santa Maria Valley/San Joaquin Valley (5-20%), San Ardo (5-10%) and Canada (2-7%). Crude oil is stored in three tanks at the SMR. Table 2.6 provides a list of the existing storage tanks at the SMR and their capacities.

Table 2.6 Existing Oil Storage Tanks at SMR

Tank ID Number	Material Stored	Capacity (barrels)
1	diesel #2	504
100	recovered oil	10,195
101	recovered oil	10,195
115	gland oil	645
550	naphtha	55,940
551	naphtha	55,940
800	gas oil	81,250
801	gas oil	81,250
900	crude oil	98,144
901	crude oil	98,771
903	crude oil	98,771

Source: Data provided by Phillips 66.

The bulk of the crude oil processed at the SMR comes from offshore platforms in the Outer Continental Shelf of Santa Barbara County and from oil fields in the Santa Maria area.

In addition, to the material shipped to SMR directly by pipeline from the source, crude oil from some onshore areas, such as the Arroyo Grande (Price Canyon) oil field and the San Joaquin Valley is delivered by truck to the Santa Maria Pump Station and then pumped into a dedicated pipeline to the SMR. The SMR has been processing Canadian crude for about one year. The Canadian crude processed at the SMR has been Kearl Lake dilbit crude (i.e., diluted bitumen crude), which is a heavy, high sulfur crude mixed with a diluent, which is a less viscous hydrocarbon. Canadian crude has made up 2-7% of the crude processed at the SMR.

The Canadian crude is shipped via rail to a crude unloading facility near Bakersfield California and then is trucked to the Santa Maria Pump Station for delivery into the dedicated pipeline, which carries crude oil to the SMR.

Crude oil is classified by a number of different factors including weight, density, sulfur content, and volatility. Thin and volatile oils are characterized as “light,” whereas thick and viscous oils are “heavy.” The American Petroleum Institute (API) rates light oils with a gravity of 30 to 40 degrees, which means the density is much less than that of water, and therefore these oils float on water. In contrast, some heavy oils with an API gravity of less than 12 degrees are so dense that they sink in water. Sour crude are ones that have high sulfur content.

The characteristic properties as reported in literature or otherwise of interest of the typical crude blend and range of major crudes processed at the SMR are provided in Table 2.7.

Table 2.7 Properties of Current and Potential Future Crude Oils at the Santa Maria Refinery

Property	Unit of Measure	Current SMR Operations		Potential Crude by Rail Sources	
		Typical Crude Blend	Range of Major Crude Sources	Access Western Blend	Peace River Heavy
API Gravity	°API	18.6	12.2-21.0	22.8	20.4
BTEX Percentage	Volume %	0.81	0.8-0.89	1.25	0.99
LPG Percentage	Volume %	0.9	0-1.0	0.73	0.89
Sulfur Concentration	Weight %	4.2	2.1-5.2	4.0	5.0
Vanadium Concentration	wppm	208	41-400	190	167
Nickel Concentration	wppm	85	71-118	73	56
Total Acid Number (TAN)	mgKOH/g	1.0	0.4-4.0	1.7	2.5

1. Typical blend properties based upon 3-year average.
2. Range of major crudes represent the major sources of current crudes to the refinery and include a number of OCS and local onshore sources.
3. Both potential crudes by rail are Canadian tar sand dilbits.

Source: Data provided by Phillips 66, 2014 and from http://www.crudemonitor.ca/home.php

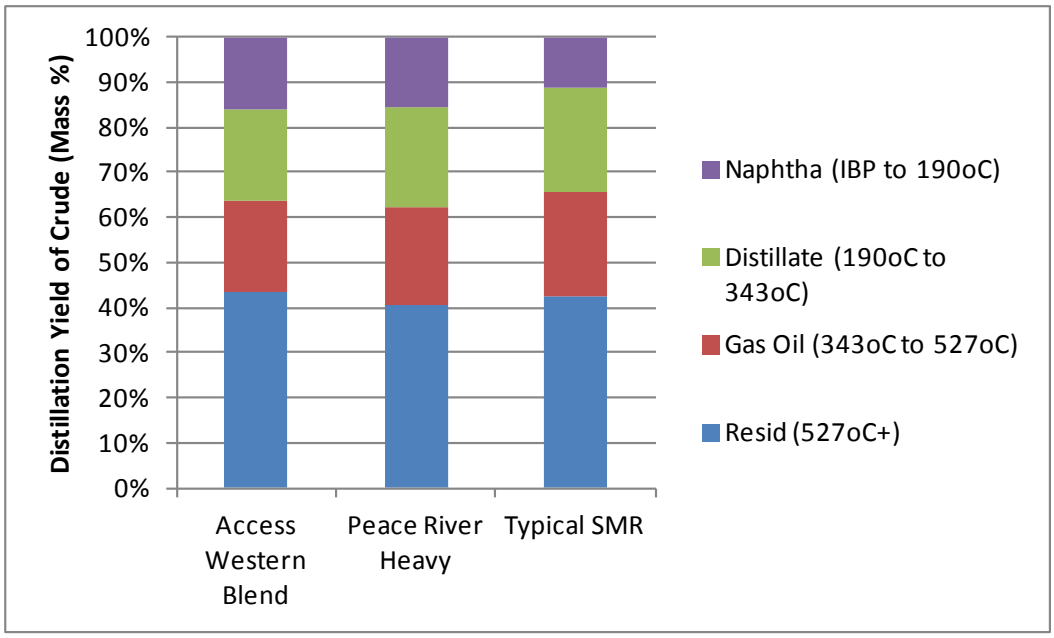
The SMR, as with all refineries, is similar to other manufacturing facilities that regularly evaluate their principal manufacturing feedstocks in terms of availability, suitability, and economics. This is certainly true of the crude oil feedstock used at the SMR. As described above, the refinery processes a range of crude oils from different sources, and the crudes vary from time to time. In addition, the refinery often blends crudes from multiple sources prior to processing. As the data in Table 2.7 shows, the SMR historically has processed and currently processes primarily heavy, sour crudes, although these are sometimes blended with other lighter, sweeter crudes in small amounts.

Phillips 66 expects to continue to receive, blend and process a comparable range of crudes in the future, and will select future crudes to be delivered by rail based upon a number of factors including availability, suitability, and economics. Table 2.7 provides the characteristic properties of two future crudes that could be delivered to the refinery by rail. Given the design of the refinery, unit trains would have to deliver heavy crudes that are similar to what is currently being processed at the SMR. The data in Table 2.7 shows that the potential crudes delivered to the refinery by rail are comparable to those currently or recently processed at the SMR.

As stated above, it is not possible to predict precisely which crude oils will be delivered to the SMR via rail. One of the objectives of the project is to provide greater access to the larger crude oil market, and the specific crudes received by rail would likely vary from time to time as has been the case for the current refinery crude slate. However, the crude oil types shown in Table 2.7 provide a reasonable representation of the range of crude oil types that could be processed based on the design limits of the refinery, current economics, and crude oil availability.

The two crudes listed in Table 2.7 as representative of crude oil that could be delivered by rail are both Canadian tar sand dilbits. Dilbit is Canadian tar sands oil, also known as bitumen, which is mixed with lighter petroleum liquid known as diluent to form a crude oil that can be shipped via pipeline, rail or truck. The diluent is typically composed of hydrocarbons in the naphtha and distillate range. Figure 2-11 shows a breakdown of the hydrocarbon distribution as a function of boiling point of the two Canadian crudes and the typical SMR crude blend.

Figure 2-11 Hydrocarbon Components of Crude Oils as a Function of Boiling Point



Canadian Crudes base upon historical averages (all samples since July 2007).
IBP-Initial Boiling Point
Sources:
http://www.crudemonitor.ca/dist.php?units=c&temp=527&submit=-%3E&recov=33.63&acr=PH&time=hist
http://www.crudemonitor.ca/dist.php?acr=AWB&time=hist
Phillips 66-Average values for 2014 and part of 2015.

As shown in Figure 2-11 the relative hydrocarbon components of the two dilbit crudes are very similar to the current SMR blend crude. While the dilbit crudes have a slightly higher naphtha component, they have a slightly smaller distillate and gas oil component. The resid component for all three is essentially the same. The diluent that is mixed with the Canadian tar sands oil would be processed in the SMR with the naphtha/distillate and gas oils being shipped via pipeline to the Rodeo Refinery consistent with the current refinery practices.

The Rail Spur Project is not predicated on any single crude, but is designed to handle a variety of crude oils that can be generically described as heavy, sour crudes. “Heavy” crudes are generally considered to be those with API gravity of approximately 20 or less. “Sour” crudes are generally considered to be those with sulfur content greater than 1.0%.

The Rail Spur Project will bring crude oils to SMR that are comparable to those historically processed at the facility, particularly with respect to sulfur concentration, metals concentration, and volume percent of crude oil fraction that is processed at the coker.

Additionally, to ensure that the operational, safety, and environmental parameters are consistently maintained at the refinery, all new feedstocks must be assessed and approved through the site’s formal Management of Feedstock Change Process, which is a requirement of the CalOSHA Process Safety Management regulations. The Management of Feedstock change is done prior to the initial receipt of any new crude source to the refinery. The purpose of

Management of Feedstock Change is to establish the chemical, physical, and operating process requirements for any feedstock changes. The primary purpose of this process is to:

1. Determine the potential impact of new feedstock on the mechanical integrity / limits of the processing equipment in order to ensure compatibility.
2. Develop a plan to monitor system integrity during the change.
3. Determine what changes to the inspection program may be required.
4. Identify any potential adverse impacts to overall refinery operations, including environmental conditions and / or product quality.

Management of Feedstock Change is required whenever a new crude source is being considered for the refinery. No new crude sources can be delivered to the refinery until the management of change process is complete and been approved by the refinery management.

The focus of the management of change process is to assure that the mechanical integrity of equipment is maintained, preventing operational upsets, and prevent adverse impacts to the environment. If the crude oil being vetted through the site's management of feedstock change process passes all of the quality, safety, and environmental assessments, and it receives all subsequent approvals by management, only then can it be processed at the facility. The feedstock cannot be introduced into the facility until final approval from the Facility Manager has been received.

2.7 Rail Spur Project Effect on Refinery Throughput

The SMR currently processes less than their allowable permit levels. The SLOCAPCD permit limits are 48,000 barrels per day (bpd) and a 12-month rolling average of crude throughput of 16,220,660 barrels per year (bpy). The County Department of Planning and Building permit limit is 44,500 bpd maximum. These were the permit limits for the refinery at the time the Notice of Preparation for the Rail Spur Project was issued.

In 2009, Phillips 66 applied to change the Land Use Permit daily limit by 10% to 48,950 bpd (the Throughput Increase Project). This was done to align the Land Use Permit limit with the APCD permit limit. An EIR was competed assuming a throughput of 48,950 bpd for 365 days which equates to 17,866,750 barrels. In March 2015, after completion of all conditions of approval, Phillips 66 received final notice to proceed from County Planning to implement the new throughput limit.

The refinery consists of two identical crude distillation processes, Coker A and Coker B. The design rate for each Coker Unit is approximately 24,000 bbls/day of crude. Operating each unit at capacity has a combined refinery throughput of approximately 48,000 bpd. The new Land Use Permit limit of 48,950 bpd provides flexibility to operate both coker units at their design rate, simultaneously.

The permitted limits for the refinery are not changing with the proposed SMR rail project. The ability of the SMR to operate at the maximum approved throughput level is based on the existing

infrastructure, equipment size and capacity. It is not dependent on, or related to, the Rail Spur Project.

Table 2.8 lists historical annual crude oil throughputs.

Table 2.8 Historical Crude Oil Production

Year	Throughput (bpy)	Average (bpd)
2003	13,813,748	37,851
2004	14,352,098	39,326
2005	15,489,149	42,442
2006	14,290,448	39,157
2007	15,810,183	43,321
2008	15,249,521	41,665
2009	13,080,967	35,838
2010	13,724,829	37,785
2011	14,126,030	38,701
2012	13,724,829	37,602
2013	15,196,669	41,635

Source: Phillips 66

Phillips 66 states that the throughput increase was not proposed as a precursor to seeking approval of the Rail Spur Project. Crude oil received by rail and/or pipeline cannot exceed the throughput limits already established by San Luis Obispo County Department of Building and Planning and the APCD.

At the time of the throughput application (submitted by Phillips's predecessor-in-interest ConocoPhillips), the SLOAPCD's permit limited throughput to 48,000 bpd and 16,220,600 bpy, whereas the County's land use permit allowed 44,500 bpd. The throughput permit application made the two agency's permits consistent and, according to Phillips allowed the refinery to maintain an annual rolling average closer to its maximum permitted levels when having to compensate for refinery closures due to long-term maintenance and repairs.

As discussed in Section 2.6, the bulk of the crude oil processed at the SMR is delivered via pipeline from offshore platforms in the Outer Continental Shelf of Santa Barbara County, from oil fields in the Santa Maria area, and other onshore sources such as Price Canyon in SLO County. This pipeline system is currently the only way that the Phillips 66 refinery can receive crude oil. Crude oil can be trucked to the Santa Maria Pump Station and then placed into the pipeline for delivery to the refinery. Truck delivery to the Santa Maria Pump Station is limited to a permitted maximum of 819,000 gallons (26,000 bbls) per day by the Santa Barbara County APCD. Having only one pipeline system available for delivering crude oil to the refinery limits the refinery's ability to obtain crude oil from sources outside of the local area.

When the refinery was built it was owned by The Union Oil Company of California, and most of the local crude production was also owned by Union Oil, so the single pipeline system made sense as a method for delivering all of the crude oil to the refinery. However, Phillips 66 (the current refinery owner) does not produce any of the local crude oil and must purchase all of the crude oil for the refinery from a wide range of producers.

This change in relationship between the refinery and the producers, limits Phillips 66's ability to source competitively priced crude oil. With recent increases in North American crude oil production, an increased number of crude oil sources have become "advantaged". "Advantaged crudes" in general terms is a subjective phrase that primarily reflects a preference for crude oil inputs based on favorable supply, demand, and pricing factors that are subject to and impacted by a dynamic, complex, and at times, volatile crude oil market. "Advantaged crudes" typically have limited pipeline capacity from the production area to refinery destinations. Phillips 66 would like to benefit from these competitively priced crudes. In the short-term (three to five years), the availability of these competitively priced crudes would be the main driver for the SMR rail project.

In the short-term, depending upon the volume of crude oil received by rail, some of the oil delivered via pipeline or via truck to the Santa Maria Pump Station could be displaced. Any displaced crude oil would likely be sold to other refineries in the Los Angeles or Bay areas. The amount, location, and destination of any displaced oil would be driven by market forces. Given the dynamics of the crude oil market, it is speculative as to what if any local crude oil would be displaced, and what would happen to any oil if it were displaced.

In the long-term, the need for the SMR rail project could be driven by declines in local production of crude oil that can be delivered by pipeline. Production from offshore Santa Barbara County (OCS crude) has been in decline for a number of years. Oil production in Santa Barbara County (both onshore and offshore) peaked at about 188,000 barrels in 1995 (County of Santa Barbara Energy Division website) and currently production is around 61,000 barrels per day for both onshore and offshore oil fields (BOEM Pacific Region and Drilling Edge websites).

There are a number of onshore oil development projects in northern Santa Barbara County that are being proposed that if approved could replace some of this lost production. However, the success and amount of additional production from these projects is currently speculative.

2.8 Project Lifetime

The SMR rail project is expected to operate for the remaining life of the SMR, which could be another 20 or 30 years, if not longer. Decommissioning and abandonment of the Rail Spur facilities would require similar equipment and durations as the construction of the facilities, which are discussed in Chapter 4.0 of the EIR. Once all of the equipment was removed the area would be graded and then revegetated.

The remaining life of the refinery is dependent on crude oil supplies, prices and overall economics. At the end of the life of the SMR, the County of San Luis Obispo would undertake an environmental review of the decommissioning and abandonment of the entire refinery complex, including the rail spur.

3.0 Cumulative Methodology and Project List

This chapter of the EIR provides a summary of the methodology used to analyze cumulative impacts and a list of the cumulative 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, as defined in section 15065(c). Section 15355 of the State CEQA Guidelines defines "cumulative impacts" as two or more individual effects that, when considered together, are either considerable or compound other environmental impacts.

State CEQA Guidelines (14 CCR 15130) require 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" (State CEQA Guidelines, Section 15355). Cumulative impacts are further described as follows:

> The individual effects may be changes resulting from a single project or a number of separate projects.
>
> 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 (State 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(i)(5):

> 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.

A typical "project specific" cumulative analysis looks at the changes in the environment that result from the incremental impact of development of a proposed project and other reasonably foreseeable projects that have not been included in the environmental setting. For example, the air quality impacts of two projects in close proximity may prove to be insignificant when project emissions are analyzed separately, but could be significant when these emissions are combined

and analyzed together. While these projects may be unrelated, their combined (i.e., cumulative) air quality impacts would be significant.

The goal of the cumulative project analysis is to identify those reasonably foreseeable projects that could have spatial and temporal overlaps with the proposed project. These projects could have a potential for a significant cumulative environmental impact. Projects with temporal overlaps include those that are planned to occur during the same timeframe as the proposed project. Projects with spatial overlaps are those that would have impacts in the same area or on the same resources as those of the proposed project (e.g., emissions that could affect the same air basin).

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 noise and 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 a number of 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 proposed project's schedule.

One of the main goals of the cumulative analysis was 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 an a project-specific impact would not occur in a specific issue area then the project could not contribute to any existing adverse commutative impact. 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.

The cumulative impact analysis for each individual issue area is included in the respective discussions in Sections 4.1 through 4.15 of this EIR.

3.2 Cumulative Projects

The EIR uses a list-based approach to determining the potential for significant impacts. Each of the cumulative project categories is summarized below.

Other Recent Santa Maria Refinery Projects

The projects in recent years at the SMR include the throughput increase project and the removal of soil and debris mound. The Throughput Increase Project would increase the permitted capacity of the refinery. These projects are summarized in Table 3-1. The Throughput Increase Project has been approved by the San Luis Obispo County Board of Supervisors, the project has not received the final notice to proceed from the San Luis Obispo County Planning Department.

Other Relevant Local Project in the Vicinity of the Santa Maria Refinery

All approved or pending projects within the vicinity of the SMR were identified using information from the San Luis Obispo Planning Departments. The final cumulative projects in the vicinity of the SMR were assembled from the projects that could both temporally and spatially overlap with the Rail Spur Project. Although some uncertainty exists as far as the final scope, design, and start time of some cumulative projects, the best available information was used to determine the temporal and spatial overlaps. A list of the cumulative project within the vicinity of the SMR is summarized in Table 3.1.

Other Oil Production Projects in Northern Santa Barbara County

There are a number of oil and gas development project within Northern Santa Barbara County that are in various stages of development. Most of these projects propose to move the oil production to the SMR. If all of these projects are approved and reach their estimated peak production, about 23,000 bbls per day of new crude oil could be available for processing at the SMR. A summary of these proposed oil development projects are provided in Table 3.1

Other Crude by Rail Project in California

A number of other crude by rail projects have been proposed or undertaken within California. These projects are summarized in Table 3.1.

Passenger Rail Projects

New passenger train service between San Luis Obispo and San Francisco has been proposed for a number of years. This would travel on the same UPRR Coastal Route as the SMR crude oil trains. A summary of this proposed passenger train service is provided in Table 3.1.

Table 3.1 Cumulative Projects

#[a]	Project	Location	Description
Projects at the Santa Maria Refinery			
1	Philips 66 Co. – Refinery Throughput Increase	2555 Willow Rd., near Arroyo Grande (Rural South County)	Development Plan / Coastal Development Permit to allow for the increase in the daily maximum limit of crude oil throughput (by 10 percent) from 44,500 barrels per day (bpd) to 48,950 bpd at the existing oil refinery. Additionally, for the SLOCAPCD permit, the 12-month rolling average of crude oil throughput would increase from 16,220,600 barrels per year (bpy) to 17,866,750 bpy. The project will not result in new ground disturbance.
2	Philips 66 Co. – Removal of Soil and Debris Mound	2555 Willow Rd., near Arroyo Grande (Rural South County)	Minor Use Permit / Coastal Development Permit to allow for the removal of approximately 10,000 cubic yards of soil and debris mounds containing petroleum coke that is impacted with vanadium and nickel that is associated with brick and slag from a former calciner unit.
Projects in the Vicinity of the Santa Maria Refinery			
3	Phillips 66 Pipeline Project	5-mile pipeline between the Arroyo Grande Oil Field and Phillips 66 Santa Maria Refinery	Request for the installation of a 5.6 mile (10 inch) pipeline to transport crude oil from the Arroyo Grande oil field to the existing (12 inch) Phillips 66 pipeline at the intersection of Oak Park Road and Grande Avenue in the City of Arroyo Grande. New pipeline will mostly parallel or be within Price Canyon Road ROW.
4	Freeport-McMoRan Oil & Gas Oil Field Expansion	1821 Price Canyon Road (Arroyo Grande Oil Field)	Conditional Use Permit to expand its existing operations of the Arroyo Grande Oil Field (AGOF) through a Phase V Development Plan. The proposed project would occur over a 10-year period, and would include the addition of 11 new well pads (with access roads) and modification of 38 existing well pads, drilling of approximately 350 wells, an increase in production, handling and transportation of crude oil, abandonment of wells no longer capable of production or operation, expansion of the existing electrical power system/lines, and installation of an additional pipe bridge and replacement of one of the two existing pipe bridges over Pismo Creek.
5	Guadalupe Oil Field Remediation	2184 West Thornberry Road, Guadalupe	The Remediation site occupies over 2,700 acres with more than 80 different locations found to be contaminated with diluent (petroleum hydrocarbon used to help thin heavy crude oil for transport). Since the initial observation of diluent leaks in the late 1980's, 40 of the 80 identified source plumes have been excavated and cleaned up, involving more than one million yards of contaminated soils being processed/ removed. More than 150 miles of pipeline have been removed. Project is immediately north of the Santa Maria River as it meets the Pacific Ocean. Guadalupe is proposing to change their truck haul route for non-hazardous impacted soil (NHIS) to use Highway 1 and Willow Road.
6	Shapiro Mixed Use Development	170 South Frontage Rd., Nipomo	A Vesting Tentative Tract Map (Tract 2611) / Conditional Use Permit to allow subdivision of an existing 5.2-acre parcel into 9 parcels ranging in size from 8,307 square feet to 1.32 acres each and development of 12,000 square feet of office space, 44,000 square feet of retail space, 4,500 square feet of restaurant space, and 51 multi-

Table 3.1 Cumulative Projects

#[a]	Project	Location	Description
			family residential units. The project will result in the disturbance of approximately 4+ acres of a 5.2-acre parcel. The proposed project is within the Commercial Retail land use category.
7	Land Dev LLC Mixed Use Development	Near Juniper St. and North Frontage Rd., Nipomo	A Tentative Tract Map to subdivide five parcels totaling 19.1 acres into 24 lots ranging from 0.2 to 5.2 acres for the purpose of development and a Conditional Use Permit for a mixed-use development including: a 96-bed assisted living facility and a 36 unit senior living apartment complex. The assisted living facility contains 59 assisted living beds, 15 transitional/light memory care beds, and 22 memory care beds. The 36 unit senior complex will be independent living units; a 16,000-square foot themed restaurant and conference facility; and 130,000 square feet of retail, office, and professional buildings. The proposed project includes improvements to Mary Avenue, Magenta Avenue, and Juniper Street; the construction of 733 parking spaces; and the construction of two stormwater-retention basins. The will result in the disturbance of the entire 19.1-acre area and approximately 1.9 acres due to road improvements, for a total disturbance area of approximately 21 acres. The proposed project is located on the southeastern side of Juniper Street, approximately 90 feet west of the North Frontage Road.
8	Nipomo Center Mixed Use Development	Between Hill St. and Grande Ave., Nipomo	A Vesting Tentative Tract Map (2312) and Conditional Use Permit to subdivide an existing 10.98-acre parcel into 59 residential parcels ranging in size from 0.03 to 0.12 acres, and 10 commercial parcels ranging in size from 0.21 to 0.84 acres, each for the purpose of sale and/or development. The proposed two-phase development includes 59 duplex, triplex, and fourplex residential units and 75,868 square feet of commercial space. The project includes one 0.67-acre parcel for a drainage basin, and one 0.43-acre parcel for open space. The project includes off-site road improvements to Hill Street and Grande Avenue. The proposed project will result in the disturbance of the entire 10.98-acre parcel. The purpose of the reconsideration is to modify the approved commercial uses and the lot layout. The division will create an onsite road (Frontage Road). The proposed project is within the Commercial Retail land use category and is located between Hill Street and Grande Avenue, west of U.S. Highway 101.
9	Holloway Development Tract Map	561 South Oakglen Ave., Nipomo	A Vesting Tentative Tract Map and Conditional Use Permit for a cluster subdivision of an existing 20.3-acre parcel into 18 residential parcels, approximately 0.5 acres each, for the purpose of sale and/or development, and one 10.4-acre open space parcel with a 6,000-square-foot building site. The project will result in the disturbance of approximately 10 acres of the 20.3-acre parcel. The division will create one onsite road. The proposed project is within the Residential Suburban land use category and is located on the east side of South Oakglen (at 561 South Oakglen Avenue), southeast of the intersection with Amado Road.

Table 3.1 Cumulative Projects

#[a]	Project	Location	Description
10	Laetitia Agricultural Cluster Subdivision	Near Nipomo and Arroyo Grande (Rural South County)	The project proposes a Vesting Tentative Tract Map and Conditional Use Permit to subdivide portions of the 1,910-acre Laetitia property into 102 single-family 1-acre home sites, a Ranch Headquarters/Community/Homeowners Association Facility and four open space lots. The applicant intends to file a Conditional Use Permit application in the future to also permit the operation of a Dude Ranch on the project site. The 1,910-acre Laetitia project site is approximately 2 miles north of Nipomo adjacent to U.S. Highway 101 within unincorporated San Luis Obispo County. Approximately 76 acres of the project site are located on the west side of the highway, and the remaining 1,834 acres are on the east side. An existing driveway entrance at U.S. Highway 101, where visitors access the existing tasting room and winery, would provide primary access to the project site east of the highway. The Los Berros Road interchange and Thompson Road would provide primary access to the project site west of the highway. The site is within the South County Area Plan of the San Luis Obispo County General Plan. All proposed development would be on the portion of the site that lies east of U.S. Highway 101. The current vineyard agricultural use will continue on the 76-acre parcel west of the highway.
11	Sheridan Properties Industrial Park	804 Sheridan Rd., Callender-Garrett	Request by Sheridan Properties for a Development Plan / Coastal Development Permit to allow construction of a 5-phase Industrial Park of 21 units on 7 underlying legal parcels. Phase I will include the construction of 2 units with a combined square footage of 9,168. Phase II will include the construction of 6 units with a combined square footage of 24,803. Phase III will include the construction of 4 units with a combined square footage of 19,384. Phase IV will include the construction of 5 units with a combined square footage of 32,498. Phase V will include the construction of 4 units with a combined square footage of 19,865. The total first floor square footage for the proposed development is 105,718 square feet. Approximately 43,000 square feet of second story floor is possible within the overall development (dependent on tenant needs), for a total maximum of 149,000 square feet of floor area. Additionally, each phase will include the construction of all associated infrastructure (e.g. streets, parking, landscaping, and drainage facilities) necessary to serve that phase of development. The applicant is requesting up to 1 caretakers unit to be constructed on each legal lot of record for a total of 7 caretaker units (500 square feet each) with a maximum square footage of 3,500 square feet for the entire development. The project will result in the phased disturbance of approximately 13.5 acres (including approximately 38,000 cubic yards of cut and 50,000 cubic yards of fill) on a 13.75 acre parcel. The proposed project is within the Industrial land use category and is located at 804 Sheridan Road in the village of Callender-Garrett. The site is in the South County (coastal) planning area.

Table 3.1 Cumulative Projects

#[a]	Project	Location	Description
			The project site currently contains a mix of uses including two legal non-conforming residences, an industrial building, and RV storage. Development of the project site will include the following characteristics: (1) approximately 105,000 square feet of buildings; (2) approximately 230,000 square feet of paving; (3) a 40,000 square feet retention basin; and (4)24,000 square feet of Lupine exclusion area and other open areas.
12	Laursen Parcel Map	Pomeroy Rd. and Willow Rd. intersection between Arroyo Grande and Nipomo	Subdivide existing 24-acre parcel into 4 parcels for sale and/or development.
13	Nipomo Community Park Master Plan	Pomeroy Rd. and Tefft St., Nipomo	Phased construction of recreation facilities and related infrastructure over 20 years.
14	Picacho Ranch / PG&E Communications Facility	Hilltop northeast of Laetitia Winery (APN 047-071-026)	A Conditional Use Permit to allow for a 120 ft tall radio tower (20x20 ft foundation), one communications trailer/building and foundation, fuel cell pad, with perimeter fence with gate. The project will result in the disturbance of approximately 1,428 square feet on a 398 acre parcel. The proposed project is within the Agriculture land use category and is located at 2130/2132 El Camino Real, Arroyo Grande, CA 93420. The site is in the South County Inland planning area.
15	The Heights at Vista del Mar Tract Map	Between Coast View Drive and Castillo del Mar (adjacent to the City of Arroyo Grande)	16-lot approved tract map requesting to add 6 more (to 22 lots)
Oil Development Project in Northern Santa Barbara County			
-	Aera Energy LLC East Cat Canyon Oil Field Redevelopment Project	Cat Canyon	Aera Energy LLC is proposing to redevelop the East Cat Canyon Oil Field with 296 wells that could produce up to 10,000 bbls per day of oil. The oil would be trucked from the facility for delivery to various customers. This project is currently undergoing environmental review.
-	ERG Operating Company West Cat Canyon Oil Field Development and Pipeline Projects	Cat Canyon	ERG Operating Company is proposing to expand development of the West Cat Canyon Oil Field with 233 wells and an estimated peak production of 5,000 bbls per day. Oil produced from this development would be moved via a new pipeline to the Phillips 66 Sisquoc pipeline for delivery to the SMR. The pipeline would have a capacity of 25,000 barrels per day, and has been designed to accommodate other producers in the area that might want to use the pipeline. The oil development project is currently undergoing environmental review. The Pipeline project was approved by the Santa Barbara County Planning Commission in March of 2015.
-	Pacific Coast Energy Company Orcutt Oil Field Expansion	Orcutt	Pacific Coast Energy Company is proposing an expansion of their oil operations in the Orcutt Oil Field. The expansion would involve 96 new wells and produce a peak of an

Table 3.1 Cumulative Projects

#[a]	Project	Location	Description
	Project		additional 1,800 bbls per day for a total peak of about 3,600 bbls per day. The current and future production is moved via pipeline to the SMR. This project is currently undergoing environmental review.
-	Santa Maria Energy Orcutt Oil Field Expansion Project	Orcutt	Santa Maria Energy has proposed to expand their oil operations at the Orcutt Oil Field with 136 new wells over two phases. Oil production is estimated to peak at 3,000 bbls per day and would be transported via a new pipeline connecting the Careaga Lease facilities with the existing Phillips 66 12-inch oil line located along Graciosa Road and terminating at the Phillips 66 pump station. The oil would then be moved via pipeline to the SMR. This project was approved by the Santa Barbara County Board of Supervisors in November of 2013.
-	PetroRock LLC Cat Canyon Oil Field Development	Cat Canyon	PetroRock LLC has proposed to develop oil and gas resources in the Cat Canyon Oil Field. The project would consist of 56 new oil and gas wells. Peak oil production is estimated at 1,600 bbls per day and the oil would be trucked to the Santa Maria Pump Station and then via pipeline to the SMR. This project was approved by the County of Santa Barbara Planning Commission in March of 2014.
Crude by Rail Projects in California			
--	Kinder Morgan	City of Richmond	Repurposed ethanol transloading facility; currently operating; crude is loaded onto trucks bound for Tesoro refinery in City of Martinez. The terminal is permitted to unload 72,000 barrels per day, which is about one 100-car unit train per day. Until November 2014 was receiving two 100-car unit trains of Bakken crude per month. Shipments have stopped due to changes in crude market.
--	Alon Bakersfield Refinery Crude Flexibility Project	Kern County	This project would allow for greater flexibility for the refinery to utilize a variety of crude oils. The proposed project would involve: (1) expansion of existing and construction of new rail, transfer and storage facilities; to include construction of a double rail loop from a new on-site spur connection off of the existing BNSF Railway and the addition of up to three boilers; (2) construction of process unit upgrades and/ or modifications; (3) repurposing of existing tankage; and (4) relocation and modernization of existing Liquefied Propane Gas (LPG) truck rack and upgrades to sales rack. The rail component of the project would allow for the delivery and unloading of two 104-car unit trains per day.
--	Valero Benicia Crude by Rail	City of Benicia	This project would allow the Valero Benicia Refinery to receive crude by rail. The Project involves the installation of a new tank car unloading rack, rail track spurs, pumps, pipeline, and associated infrastructure at the Refinery. The project would allow the Refinery to accept up to 100 tank cars of crude oil a day in two 50 tank car trains. The project would allow Valero to receive up to 70,000 barrels per day of the crude oil

Table 3.1 Cumulative Projects

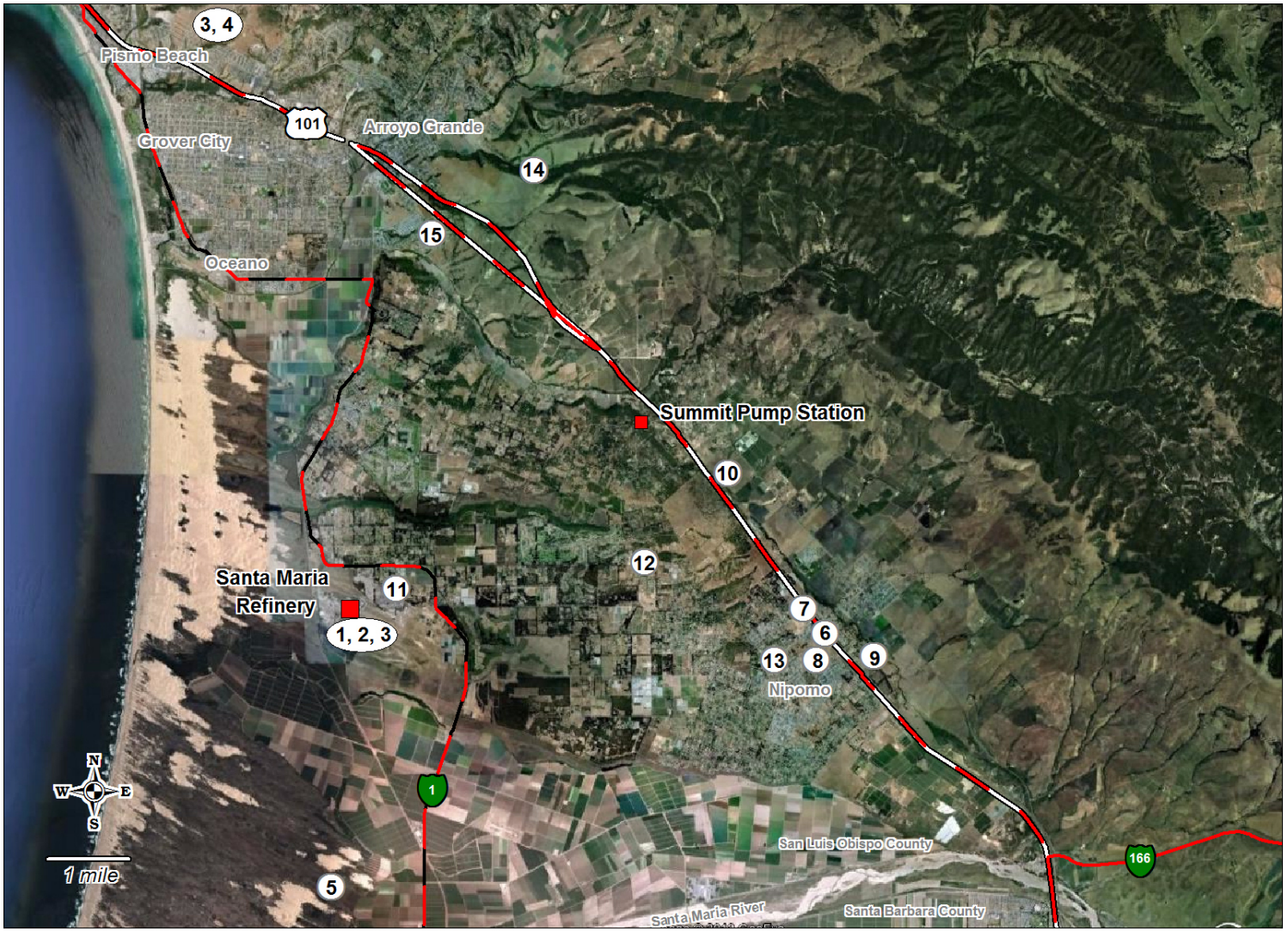
#[a]	Project	Location	Description
			by rail.
--	Plains All American Pipeline LP	Kern County	Plains All American Pipeline LP is building a rail unloading facility in Kern County with a capacity of about 65,000 to 70,000 bpd that would handle one unit train per day.
--	Targa Stockton	Port of Stockton	A proposed marine terminal that could receive up to 70,000 barrels per day of crude by rail. Crude would be unloaded in to tanks and then transferred to barges or tankers as well as the Kinder Morgan Partners (KMP) pipeline system for delivery to Bay Area refineries.
Passenger Train Projects			
--	Coast Daylight Passenger Train	San Luis Obispo to San Francisco	Proposed Amtrak California train that would run one-roundtrip per day between San Luis Obispo and San Francisco. This passenger train service could start in 2015 pending agreement with UPRR for access to their tracks.

a. Designates the number used on Figure 3-1 to show the location of the cumulative projects.

The WesPac Crude by Rail Project was removed from the cumulative list since their updated application to the City of Pittsburg has eliminated the crude by rail portion of the project (City of Pittsburg. 2015).

Sources: SLOC 2013, Caltrans 2013, City of Benicia 2014, Kern County 2014, City of Pittsburg 2015, Reuters 2014, SBC 2015.

Figure 3-1 Location of Cumulative Projects



Source: Prepared as part of EIR by MRS.

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4.0 Rail Spur Environmental Analysis

This chapter examines the potential environmental impacts of the Rail Spur and Crude Unloading Project. Each issue area analyzed in this chapter provides background information and describes the environmental setting (baseline conditions) to help the reader understand the underlying conditions against which an impact is evaluated. In addition, each section describes how an impact on those underlying conditions is determined "significant" or "less than significant." Finally, the individual sections recommend mitigation measures to reduce significant impacts. Throughout this chapter, impacts are identified with a letter-number designation (e.g., impact BIO.1, impact AE.3). Corresponding mitigation measures are connected numerically to their impacts (e.g., BIO-1a and AE-3a).

This environmental impact report (EIR) includes many references that have been abbreviated to acronyms. A list of acronyms is included following the Table of Contents, as well as in Appendix H.

Assessment Methodology

The analysis of each issue area begins with an examination of the existing physical setting (baseline conditions as determined pursuant to Section 15125(a) of the California Environmental Quality Act [CEQA] Guidelines) that may be affected by the Rail Spur Project. The effects of the Rail Spur Project are defined as changes to the environmental setting attributable to Rail Spur Project components or operation.

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

The operation of unit and manifest trains to and from the Rail Spur Project Site would be performed by Union Pacific Railroad (UPRR), on UPRR property, and on trains operated by UPRR employees. The movements of those trains within San Luis Obispo County and other counties and cities to and from the Project Site, while described in this section of the EIR, may be preempted from local and state environmental regulations by federal law under the Interstate Commerce Commission Termination Act of 1995 and the Commerce Clause of the United States Constitution.

Trains could enter California at five different locations (one at the north end of the state from Oregon, two at the northeast from Nevada, one at the southeast from Nevada, and one at the south from Arizona). Depending upon the route taken by the train they could arrive at the Phillips 66 site from the north or the south. It is unknown what route UPRR would use to deliver the trains to the SMR.

Coming from the north the routes merge at the UPRR Roseville Rail Yard. From the south the routes merge at the Colton Rail Yard. Given that the route the trains would travel to get to these two UPRR yards is speculative, the EIR has evaluated in more detail the impacts of trains traveling from these two UPRR yards to the SMR.

Beyond the two UPRR Yards, trains could travel any number of routes. Also, crude oil delivered to California by UPRR would generally pass through either of these two rail yards in route to the SMR. Depending upon the source of the crude oil, crude oil trains could use any portion of the UPRR network between Roseville/Colton and the source location for the crude oil. The exact route that would be taken would depend upon a number of factors, that could include the source of the crude oil, weather conditions, train traffic conditions, etc. Since the routes past Roseville and Colton are somewhat speculative, the EIR has discussed in a more qualitative nature the potential impacts of train traffic beyond these two rail yards.

While the potential impacts of those train movements along the UPRR mainline are described in appropriate chapters of this EIR, the County as CEQA Lead Agency, and other state and local responsible agencies may be preempted from imposing mitigation measures, conditions or regulations on UPRR equipment and train movements on the mainline.

By contrast, all activities performed within the SMR site are not preempted by federal law since they would not occur on UPRR property and would not be operated by UPRR employees. The impacts of the activities that occur on the Rail Spur Project Site are described and evaluated in respective chapters of this EIR, and the County as CEQA Lead Agency, and other state and local responsible agencies have the authority to impose mitigation measures, conditions or regulations to reduce or mitigate potential impacts within the boundaries of the SMR.

As discussed in the Chapter 2.0, Project Description, there are three possible mainline rail routes to the SMR from the Roseville and Colton rail yards. In assessing the impacts associated with each of these routes it has been assumed that all the trains (250 per year) would use the route being evaluated since this represents a worst case for each route. However, it is possible that the trains servicing the SMR could use different routes over time, which would serve to reduce some of the identified impacts since fewer trains would travel a given route.

Rail Spur and Crude Unloading Project Impact Analysis

Based upon the Notice of Preparation (NOP) and scoping comments, 13 issue/resource areas were identified where potentially significant impacts could occur from the Rail Spur Project. The impact analysis for each of these issue areas is provided in the following subsections of Chapter 4. The analysis of each issue area has defined the study area for purposes of the impact analysis. In most cases, the study area is the region that is in the vicinity of the Rail Spur Project.

For each identified impact, the following framework was used:

- Impact Discussion;
- Mitigation Measures; and
- Residual Impacts

The residual impact is the impact classification after any mitigation has been applied. If an impact is found to be *less than significant* then the residual impact would remain *less than significant* with or without mitigation. All residual impacts identified in this document have been classified according to the following criteria:

Class I - Significant and Unmitigable: Significant adverse impacts that cannot be effectively mitigated. No measures can be taken to avoid or reduce these adverse effects to insignificant or negligible levels.

Class II – Less Than Significant with Mitigation: These impacts are potentially similar in significance to those of Class I impacts, but can be eliminated or reduced below an issue area's significance criteria threshold by the implementation of mitigation measures.

Class III – Less Than Significant: An adverse impact that does not meet or exceed an issue's significance criteria threshold. Generally, no mitigation measures are required for such impacts, although they may still be recommended should the lead or responsible agency deem it appropriate to reduce the impact to the maximum extent feasible.

Class IV - Beneficial: Effects are beneficial to the environment.

If the impact remains at or above the pertinent significance criteria after mitigation is applied, it is deemed to be *significant and unavoidable, Class I*. If a "significant impact" is reduced, based on compliance with mitigation, to a level below the pertinent significance criteria, it is determined to no longer have a significant effect on the environment (i.e., to be *less than significant with mitigation, Class II*). If an action creates an adverse impact above the baseline condition, but such impact does not meet or exceed the pertinent significance criteria, it is determined to be *less than significant, Class III*. An action that provides an improvement to an environmental issue area in comparison to the baseline information is recognized as a *beneficial* impact, *Class IV*.

Formulation of Mitigation Measures and Mitigation Monitoring Program

When significant impacts are identified, feasible mitigation measures are formulated to eliminate or reduce the severity of the impacts and focus on the protection of sensitive resources. The effectiveness of a mitigation measure is subsequently determined by evaluating the impact remaining after its application. The impacts remaining after mitigation are considered residual impacts. The residual impacts can be either *significant* or *less than significant*. Implementation of more than one mitigation measure may be needed to reduce an impact below a level of significance. The mitigation measures recommended in this document are identified in the impact sections and presented in a Mitigation Monitoring Plan, provided in Chapter 8 of the EIR.

Measures that have been incorporated as part of an Applicant's Project design are considered design features and are not considered as mitigation measures under CEQA. If they eliminate or reduce a potentially significant impact to a level below the significance criteria, they eliminate the potential for that significant impact since the "measure" is a component of the action. However, if the Project is approved, the Applicant-proposed measures would be part of the conditions of approval.

Public Resources Code Section 21081.6 establishes two distinct requirements for agencies involved in the CEQA process. Subdivisions (a) and (b) of the section relate to mitigation

monitoring and reporting, and the obligation to mitigate significant effects where possible. Pursuant to subdivision (a), whenever a public agency completes an EIR and makes a finding pursuant to Section 21081(a) of the Public Resources Code taking responsibility for mitigation identified in the EIR, the agency must adopt a program of monitoring or reporting which will ensure that mitigation measures are complied with during implementation of an approved project.

San Luis Obispo County (County) will be responsible for monitoring of the mitigation measures adopted pursuant to this EIR. One important step in monitoring is defining the responsibility of the Applicant to support this process. Mitigation Measure EM-1 defines this process, and is required to support all other mitigation measures and Applicant-proposed measures defined in this EIR.

EM-1 Prior to issuance of the first grading and/or construction permits, the Applicant shall enter into agreements with the County to provide funding for an environmental monitor to ensure compliance with each Agency's environmental Conditions of Approval. The monitor shall assist the Agencies in condition compliance and mitigation monitoring for all applicable construction and operational stages of the Rail Spur Project, as specified in a scope of work, as approved by the Agencies.

The monitoring plan shall include a post-construction program to monitor measures that extend beyond the construction period (e.g., success of revegetation and landscaping, etc.), as well as monitor certain mitigation measures required during the operational phase.

The monitor will prepare a working monitoring plan that reflects the Agencies -approved environmental mitigation measures/conditions of approval. This plan will include:

1. *goals, responsibilities, authorities, and procedures for verifying compliance with environmental mitigations;*
2. *lines of communication and reporting methods;*
3. *daily and weekly reporting of compliance;*
4. *construction crew training regarding environmental sensitivities;*
5. *authority to stop work; and*
6. *action to be taken in the event of non-compliance.*

The environmental monitor shall be under contract to the Agencies. Costs of the monitor, and any Agency administrative fees, shall be paid by the Applicant.

The Applicant shall also be responsible for funding work required by permit conditions requiring use of individuals with special expertise (e.g., botanist, wildlife biologist). The Agencies' environmental monitor will coordinate the monitoring efforts of the specialist, including communication with the Agencies, reporting and availability (at appropriate times: prior to issuance of construction permits, or during construction, as required by applicable permit conditions).

Cumulative Projects Impact Analysis

Each issue area in this chapter includes a cumulative impact analysis, which identifies the potential impacts of the Rail Spur Project that might not be significant when considered alone, but that might contribute to a significant impact in conjunction with the other cumulative projects. The list and description of cumulative projects is included in Chapter 3.0, Cumulative Projects.

4.1 Aesthetics and Visual Resources

This section addresses issues involving aesthetics and visual resources resulting from the proposed Rail Spur Project. The environmental setting provides information on the aesthetics and visual resources in the vicinity of the Project Site. The impacts evaluation focuses on the potential effects of the Rail Spur Project including cumulative aesthetics and visual impacts, and identifies potential mitigation measures. The visual analysis is focused on the area in the vicinity of the SMR. All of the mainline rail routes are existing track and therefore are part of the existing visual quality. Additional trains on the existing tracks would not affect the visual quality since trains are expected to be seen along these tracks. As such, train travel on the existing mainline tracks would not impact aesthetic or visual resources.

4.1.1 Environmental Setting

4.1.1.1 Regional Visual Setting

The project is located within the southwestern region of San Luis Obispo County, approximately 2.5 miles from the Pacific Ocean. The regional landscape can be broadly defined as an old marine terrace between the coast and the Temattate Hills to the east. Much of the region is made of sand dune complexes along the beach which transition to wide mesas inland. Creeks and drainages in the region generally have an east-west orientation on their way to the ocean. The native landscape of the inland portions of the region include coast live oak woodland, chaparral and grasslands, with healthy riparian corridors along the creeks and drainage ways. Specialized plant communities are found along the immediate coastline and into the dune complex. Eucalyptus trees were introduced into the area as a forest crop and have since become established over much of the Nipomo Mesa (see Figure 4.1-1).

Figure 4.1-1 Regional Visual Character – Looking north from State Route 1 (north of the City of Guadalupe) toward the Nipomo Mesa

Source: Carr 2013

The large stature of eucalyptus groves creates a dominant visual element throughout much of the inland area. The coastal dune complex which extends from the shoreline to as far as approximately 2 miles inland, is among the largest of its type in California. The region also includes portions of the Santa Maria Valley to the south, consisting of broad, flat agricultural croplands which meet the dunes as they approach the coastline.

The region has a generally rural visual character. Agriculture, open space and recreation, larger-lot residences and light industry making up much of the land use (refer to Figure 4.1-1). In the past decade, the Nipomo region has been recognized as one of the faster growing areas of San Luis Obispo County. Several planned residential subdivisions and golf resorts have been constructed and are continuing to be developed, which have an incremental effect on the rural appearance of the region. Although the region is becoming more suburbanized, the area still maintains much of its rural character, due in large part to the abundant cropland, open space and dunes. These attributes contribute to a moderately high visual quality for the region (refer to Figure 4.1-2). Throughout the mesa area, scattered stands of mature eucalyptus and oak trees contribute to an overall vegetated visual character and a somewhat forested appearance.

Figure 4.1-2 Regional Visual Character – Looking west from State Route 1 on the Nipomo Mesa

Source: Carr 2013

The project site is part of an approximately 1,650 acre parcel owned by Phillips 66 situated between the coastal dunes and the Nipomo Mesa to the northeast. Land use surrounding the property includes golf course development and residential to the northeast, the Oceano Dunes State Vehicular Recreation Area to the west, and agricultural cropland to the south. Several commercial and light industrial uses such as auto-dismantlers and storage yards are found immediately north of existing refinery activities on the property. State Highways 1 and 101 are the primary transportation routes through the region, with State Route 1 passing immediately to the north and east of the property. The Union Pacific Railroad tracks bisect the Phillips 66 property and pass immediately west of the refinery facility. The unincorporated community of Nipomo is located east of the project site along State Highway 101 and serves as the commercial center of the mesa. The small, agriculture-based City of Guadalupe is situated on State Route 1

in the Santa Maria Valley south of the project site. Arroyo Grande to the north and Santa Maria to the southeast are the largest cities serving the region.

4.1.1.2 The Project Site

The project site consists mostly of the vegetated back-dune area inland from the more active Pismo dune complex (see Figure 4.1-3). The landscape of the project site is defined by undulating topography covered predominately by coastal scrub and sparse grasses. A few low ridgelines cross the project site in an east-west orientation, and the overall landform gradually decreases in elevation to the south, toward Little Oso Flaco Creek. Because of the undulating topography, views through and across the project site are often limited. A few scattered trees can be seen throughout the project site, although most of the larger native vegetation is concentrated at the creek along the project site's southern perimeter.

Figure 4.1-3 Project Site Visual Character – The refinery as seen from Oso Flaco Road

Source: Carr 2013

The Santa Maria Refinery (SMR) occupies the approximate center of the project site. Because of its tall chimney stacks and towers, portions of the SMR can be seen from much of the surrounding area. Because of topography and intervening vegetation, the refinery's buildings and ground-floor activities are largely blocked from viewing locations to the north and east. Because the landform generally flattens-out southwest of the project site, viewpoints in that area have the greatest visual exposure to the SMR itself (refer to Figure 4.1-3). The visual character of the SMR and the related coke processing facility is one of heavy-industrial use. Some of the on-site elements include the large stacks, storage tanks, the processing plant itself, above-ground pipes, material storage, large-scale equipment and trucks, railroad tracks and train cars. Most of the SMR land area has been leveled, and a large employee parking area is located along its western side. Paved and unpaved service and access roads are seen throughout and surrounding the SMR. The coke processing area is recognized by its noticeably black ground-plane and large

stockpiles of materials and processing byproducts. The SMR facilities are surrounded by chain link and barbed-wire perimeter fencing.

The project site is located in the southern half of the property, southeast of the refinery plant. The rail spur project would continue southeast from the existing rail spur located in the coke processing area. The coke processing area is highly disturbed and shows an intense industrial use. As the area of the rail spur project continues east, the landscape becomes more natural in appearance (refer to Figures 4.1-2 and 4.1-3). In this eastern area the undulating back dunes are mostly stabilized with scattered low vegetation; and the surrounding topography somewhat limits views to the project site, particularly as seen from the north and northeast (see Figure 4.1-4).

Figure 4.1-4 Project Site Visual Character – The eastern area of the project site looking west from State Route 1

Source: Carr 2013

4.1.2 Regulatory Setting

Visual impacts resulting from the Rail Spur Project are within the jurisdiction of the County of San Luis Obispo. The regulatory setting pertaining to visual resources includes the County's review of the proposed development's consistency with various elements of the County of San Luis Obispo General Plan and the San Luis Obispo County Coastal Zone Land Use Ordinance, in addition to the provisions in the California Environmental Quality Act (CEQA) Guidelines relating to visual resources.

4.1.3 Significance Criteria

The determinations of significance of Rail Spur Project impacts are based on applicable policies, regulations, goals, and guidelines defined by CEQA and the County of San Luis Obispo. In addition to comparing the project to relevant policies and standards, the aesthetic resources assessment identified which specific criteria contribute most to the existing quality of each view, and if change would occur to that criteria as a result of the project. If a change in visual

condition was identified, this change was analyzed for its potential effect on the existing scenic character. This analysis was combined with the potential number of viewers from public vantage points, their sensitivities and viewing duration in order to determine the overall level of impacts. Specifically, the project would be considered to have a significant effect on the environment if the effects exceed the significance criteria described below.

For the purpose of this study, short-term visual impacts were considered to be those changes that would be visible for duration of five years or less. Long-term impacts would be those alterations to the visual environment that would be in effect for a period greater than five years.

4.1.3.1 California Environmental Quality Act Guidelines

The significance of potential aesthetic resources impacts are based on thresholds identified within the County's Initial Study and Appendix G of the CEQA Guidelines. According to the Guidelines, aesthetic impacts would be considered significant if the proposed project would:

Have a substantial adverse effect on a scenic vista.
A substantial adverse impact to a scenic vista would occur if the proposed project would significantly degrade the scenic landscape as viewed from public roads or from other public areas. The degree of potential impact on scenic vistas varies with factors such as viewing distance, duration, viewer sensitivity, and the visual context of the surrounding area.

The aesthetics section analyzes the extent that the project would alter the visual quality of the project site and its surroundings. The specific characteristics that define important vistas are identified, and the project's effect on those characteristics is assessed. If the fundamental quality of the vistas are substantially reduced, significant impacts would result.

Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within an officially designated state scenic highway.
This CEQA threshold does not apply because the project is not within the view corridor of any officially designated state scenic highway.

Substantially degrade the existing visual character or quality of the site and its surroundings.
Project related actions would be considered to have a significant impact on the visual character of the site if they altered the area in a way that significantly changed, detracted from, or degraded the visual quality of the site or was inconsistent with community policies regarding visual character. The degree to which that change reflects documented community values and meets viewers' aesthetic expectations is the basis for determining levels of significance. Visual contrast may be used as a measure of the potential impact that the project may have on the visual quality of the site. If a strong contrast occurred where project features or activities attract attention and dominate the landscape setting, this would be considered a potentially significant impact on visual character or quality of the site.

Project components that are not subordinate to the landscape setting could result in a significant change in the composition of the landscape. Consideration of potential significance includes

analysis of visual character elements such as land use and intensity, visual integrity of the landscape type, and other factors.

Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.
The project would result in a significant impact if it subjected viewers from public roads or residences to a substantial amount of point-source lighting visibility at night, or if the collective lumination of the project resulted in a noticeable spill-over effect into the nighttime sky, increasing the ambient light over the region. The placement of lighting, source of illumination, and fixture types combined with viewer locations, adjacent reflective elements, and atmospheric conditions can affect the degree of change to nighttime views. The degree of impact caused by night lighting would consider the type of lighting proposed by the project along with the lighting reasonably expected to be generated by future project build-out.

4.1.3.2 Consistency with County of San Luis Obispo Plans and Policies

County of San Luis Obispo planning documents do not contain specific criteria for determining thresholds of significance regarding aesthetic resources. However, in comparing the project to the above CEQA Guideline thresholds, substantial consideration was given to the project's consistency with public policies, plans, goals and regulations concerning scenic vistas, scenic roadways, visual character, and night lighting. The following goals, policies and guidelines provide a basis for determining levels of potential impact as well as an indication of aesthetic values and sensitivity to visual change.

County of San Luis Obispo Initial Study Checklist
Will the project:

a. Create an aesthetically incompatible site open to public view?
b. Introduce a use within a scenic view open to public view?
c. Change the visual character of an area?
d. Create glare or night lighting which may affect surrounding areas?
e. Impact unique geological or physical features?

Coastal Zone Framework for Planning (Coastal Zone Land Use Element)
Strategic Growth Goal 1: Preserve open space, scenic natural beauty and natural resources. Conserve energy resources. Protect agricultural land and resources.

San Luis Obispo County Coastal Plan Policies
Chapter 4: Energy and Industrial Development
Policy 1: New Facilities and Expansion of Existing Sites
When new sites are needed for industrial or energy-related development, expansion of facilities on existing sites or on land adjacent to existing sites shall take priority over opening up additional areas or the construction of new facilities unless it can be shown that 1) alternative locations are infeasible and that the environmental impacts of opening up a new site are less than the impacts of expansion on or adjacent to existing sites; 2) to do otherwise would adversely affect the public welfare; and 3) adverse environmental impacts are mitigated to the maximum extent feasible. Priority shall be given to coastal-dependent industrial uses. When appropriate,

coastal-related developments should be accommodated within reasonable proximity to the coastal-dependent uses they support.

Chapter 10: Visual and Scenic Resources
The Coastal Zone Land Use Element references the California Coastal Act as follows:

3025l. The scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural land forms, to be visually compatible with the character of surrounding areas and, where feasible, to restore and enhance visual quality in visually degraded areas. New development in highly scenic areas such as those designated in the California Coastline Preservation and Recreation Plan prepared by the Department of Parks and Recreation and by local government shall be subordinate to the character of its setting.

30253. ... new development shall:

(5) Where appropriate, protect special communities and neighborhoods which, because of their unique characteristics, are popular visitor destination points for recreational uses. The Coastal Act defines these special communities and neighborhoods as follows:

l. Areas characterized by a particular cultural, historical or architectural heritage that is distinctive in the coastal zone;

2. Areas presently recognized as important visitor destination centers on the coastline;

3. Areas with limited automobile traffic that provide opportunities for pedestrian and bicycle access for visitors to the coast;

4. Areas that add to the visual attractiveness of the coast.

Policy 1: Protection of Visual and Scenic Resources
Unique and attractive features of the landscape, including but not limited to unusual landforms, scenic vistas and sensitive habitats are to be preserved protected, and in visually degraded areas restored where feasible.

Policy 2: Site Selection for New Development
Permitted development shall be sited so as to protect views to and along the ocean and scenic coastal areas. Wherever possible, site selection for new development is to emphasize locations not visible from major public view corridors. In particular, new development should utilize slope created "pockets" to shield development and minimize visual intrusion.

Policy 4: New Development in Rural Areas
New development shall be sited to minimize its visibility from public view corridors. Structures shall be designed (height, bulk, style) to be subordinate to, and blend with, the rural character of the area. New development which cannot be sited outside of public view corridors is to be screened utilizing native vegetation; however, such vegetation, when mature, must also be

selected and sited in such a manner as to not obstruct major public views. New land divisions whose only building site would be on a highly visible slope or ridge top shall be prohibited.

Policy 5: Landform Alterations Grading, earthmoving, major vegetation removal and other landform alterations within public view corridors are to be minimized. Where feasible, contours of the finished surface are to blend with adjacent natural terrain to achieve a consistent grade and natural appearance.

Policy 7: Preservation of Trees and Native Vegetation
The location and design of new development shall minimize the need for tree removal. When trees must be removed to accommodate new development or because they are determined to be a safety hazard, the site is to be replanted with similar species or other species which are reflective of the community character.

Conservation and Open Space Element
Policy E 7.1 Non-Renewable Energy Facility Siting
Energy, fossil fuel, and related facilities will be sited, constructed, and operated in a manner to protect the public from potential hazards and significant environmental impacts.

General

1) Locate new or expanded facilities outside sensitive view corridors, scenic, or recreational areas.
2) If the proposed location visually impacts views of the site from public roads or lands, prepare a screening plan to minimize visual impacts.
3) All exterior lighting shall be energy efficient and shielded to not extend beyond the site.

Goal VR 1: The natural and agricultural landscape will continue to be the dominant view in rural parts of the county.

Through review of the proposed development and as part of the EIR prepared for the project, consideration will be given to siting in unobtrusive locations, height of structures, visually effective setbacks, lighting, and other project specific visual concerns. Goal VR 2: The natural and historical character and identity of rural areas will be protected.

Policy VR 2.1 Develop in a manner compatible with Historical and Visual Resources
Through the review of proposed development, encourage designs that are compatible with the natural landscape and with recognized historical character, and discourage designs that are clearly out of place within rural areas.

Policy VR 2.2 Site Development and Landscaping Sensitivity
Through the review of proposed development, encourage designs that emphasize native vegetation and conform grading to existing natural forms. Encourage abundant native and/or drought-tolerant landscaping that screens buildings and parking lots and blends development with the natural landscape. Consider fire safety in the selection and placement of plant material, consistent with Biological Resources Policy BR 2.7 regarding fire suppression and sensitive plants and habitats.

Goal VR 7: Views of the night sky and its constellations of stars will be maintained.

Policy VR 7.1 Nighttime Light Pollution
Protect the clarity and visibility of the night sky within communities and rural areas, by ensuring that exterior lighting, including streetlight projects, is designed to minimize nighttime light pollution.

Title 23 Coastal Zone Land Use Ordinance (CZLUO)

23.04.210 - Visual Resources

e. General Visual Standards for Coastal Development. Notwithstanding subsections (a)-(d) above, all development requiring a coastal development permit must be consistent with the requirements of Coastal Plan Visual and Scenic Resource Policies 1-11 as applicable.

23.04.320 - Outdoor Lights
The standards of this section are applicable to all outdoor night-lighting sources installed after the effective date of this Title, except for street lights located within public rights-of-way and all uses established in the Agriculture land use category. No land use permit is required for lighting facilities, though an electrical permit may be required by Title 19 of this code.

a. Illumination only: Outdoor lighting is to be used for the purpose of illumination only, and is not to be designed for or used as an advertising display, except as provided by Sections 23.04.300 et. seq. (Signing).

b. Light directed onto lot: Light sources are to be designed and adjusted to direct light away from any road or street, and away from any dwelling outside the ownership of the applicant.

c. Minimization of light intensity: No light or glare shall be transmitted or reflected in such concentration or intensity as to be detrimental or harmful to persons, or to interfere with the use of surrounding properties or streets.

d. Light sources to be shielded:

   1) Ground illuminating lights: Any light source used for ground area illumination except incandescent lamps of 150 watts or less and light produced directly by the combustion of natural gas or other fuels shall be shielded from above in such a manner that the edge of the shield is level with or below the lowest edge of the light source. Where any light source intended for ground illumination is located at a height greater than eight feet, the required shielding is to extend below the lowest edge of the light source a distance sufficient to block the light source from the view of any residential use within 1,000 feet of the light fixture.

   2) Elevated feature illumination: Where lights are used for the purpose of illuminating or accenting building walls, signs, flags, architectural features, or landscaping, the light source is to be shielded so as not to be directly visible from off-site.

e. Height of light fixtures: Free-standing outdoor lighting fixtures are not to exceed the height of the tallest building on the site.

Chapter 5: Site Development Standards

23.05.034 - Grading Standards

d. Landform alterations within public view corridors. Grading, vegetation removal and other landform alterations shall be minimized on sites located within areas determined by the Planning Director to be a public view corridors from collector or arterial roads. Where feasible, contours of finished grading are to blend with adjacent natural terrain to achieve a consistent grade and appearance.

g. Revegetation: Where natural vegetation has been removed through grading in areas not affected by the landscape requirements (Section 23.04.180 et seq. - Landscape, Screening and Fencing), and that are not to be occupied by structures, such areas are to be replanted as set forth in this subsection to prevent erosion after construction activities are completed. [Amended 1993, Ord. 2649]

Land Use Circulation Element Planning Area Standards - South County Coastal Area Plan
Combining Designations:
Industrial: Union Oil

The following standards apply to the large industrial area west and south of State Route 1 currently occupied by the Santa Maria Oil Refinery and the Santa Maria chemical plant. (LCP)

l. Permit Requirements. Any proposed modification or expansion of the existing refinery or coke oven or the construction of partial oil and gas processing facilities to service off-shore derived oil and gas that involves land area beyond that presently developed requires Development Plan approval and shall be subject to the following: (LCP)

c. Screening of the facilities from public view through height limitations, careful site design, artificial contoured banks and mounding, extensive landscaping, and decorative walls and fences. (LCP)

d. Any part of the facilities that cannot effectively be screened by the above methods shall be painted with non-reflective paint of colors that blend with the surrounding natural landscape. (LCP)

San Luis Obispo County General Plan Agriculture Element

Open Space Goal (OSG1) states as an objective to "Identify, protect, sustain, and where necessary restore and reclaim areas with (scenic) characteristics." Agricultural Policy (AGP30b.3) says that “development should use natural landforms and vegetation to screen development whenever possible.” Agricultural Policy (AGP30b.4) states that “in prominent locations, to encourage structures that blend with the natural landscape or are traditional for agriculture.”

The San Luis Obispo County Design Guidelines

This document prepared by the San Luis Obispo County Department of Planning and Building consists of “design objectives, guidelines and examples that will help retain and enhance the unique character of the unincorporated communities and rural areas of San Luis Obispo County”.

The following design objective applies to the project site: **RC-7e-**Artificial slopes that are visible to the public should match the natural contours in the immediate vicinity.

4.1.4 Assessment Methodology

The findings of this study are based on multiple field visits conducted over several weeks, including review of the entire site as well as the surrounding area. Resource inventories were conducted both on foot and from moving vehicles, during the day and nighttime. Existing visual resources and site conditions were photographed and recorded. Assessment of Rail Spur Project elements and programs were based on plans and descriptions provided by the project applicant, including photo-simulations. County planning documents and previous studies relevant to the project and surrounding area were referred to for gaining an understanding of community aesthetic values.

Locations of critical structure and design elements were identified based on site plan information and engineering drawings provided by the project applicant. Critical project features such as the alignment of the proposed tracks and limits of disturbance were surveyed and staked in the field. These stakes, along with the known heights of existing landscape and built elements were used as visual scale references for confirming accuracy of photo-simulations, and for determining overall project visibility.

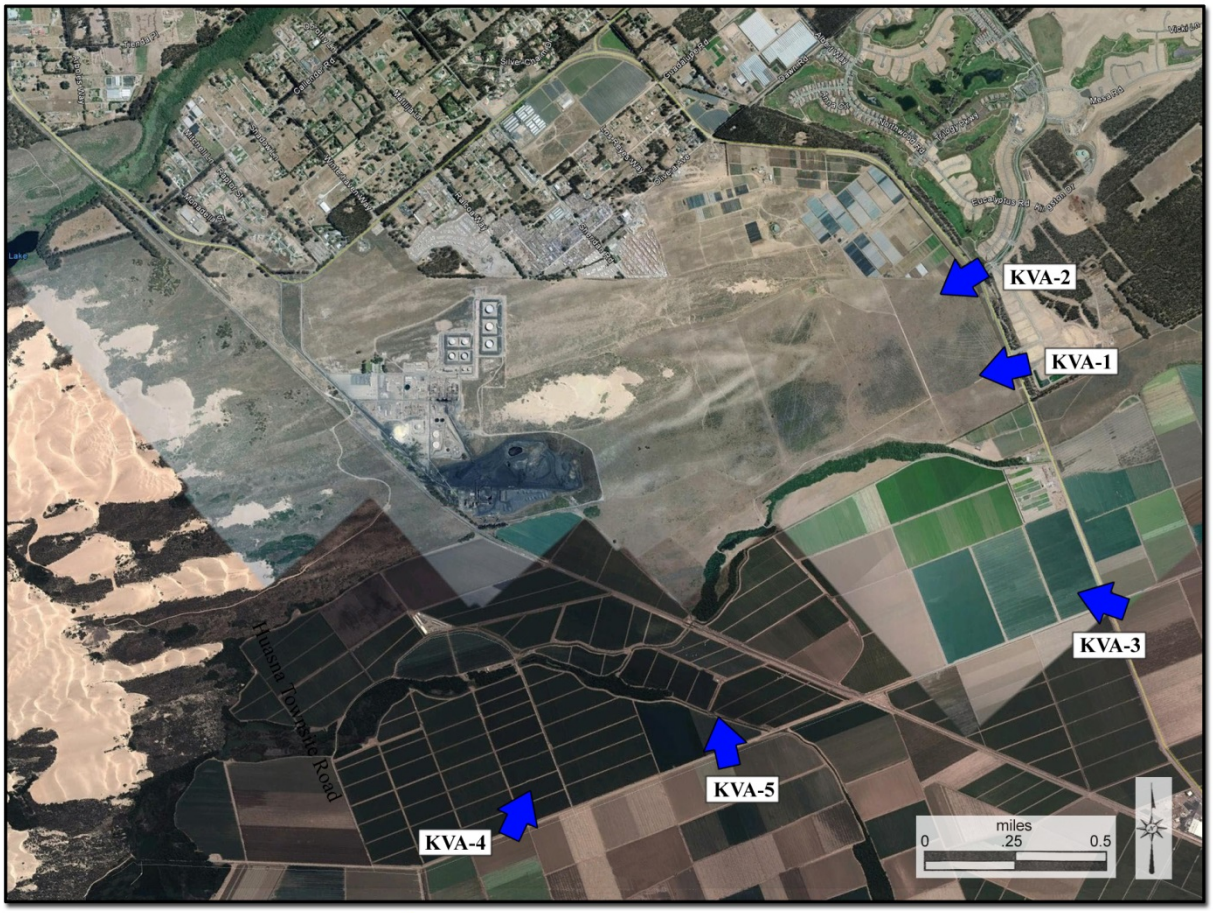
The project site was then viewed from all potential public viewer group locations on State Route 1, Oso Flaco Road, and all other roads and public viewpoints in the vicinity. Resulting from this initial review, representative viewpoints were determined for further analysis, based on dominance of the site within the view, duration of views, and expected sensitivity of the viewer group. Of those representative viewpoints, Key Viewing Areas (KVAs) were selected which would best illustrate the visual changes proposed by the project. Photo-simulation viewpoint locations were compared to the Key Viewing Areas identified by the analysis. Once verified for accuracy and appropriateness of location, the simulations were used to quantify potential project visibility and to assess related impacts. The project site was then field-reviewed to assist in determining possible mitigation measures. Images of the existing views, along with photo-simulations of the Rail Spur Project can be seen in Figures 4.1-6 through 4.1-10 (these figures are under impact AV.1). The five KVAs listed in Table 4.1.1 were selected to represent the extent and quality of views to the project from the surrounding area. A corresponding map of the KVA locations is shown in Figure 4.1-5.

Table 4.1.1 Key Viewing Areas (KVAs)

KVA	Location	Figure Nos.
KVA-1	From State Route 1 near Via Entrada Road.	4.1-6
KVA-2	From State Route 1 near Via Concha Road.	4.1-7
KVA-3	From State Route 1 at Oso Flaco Road.	4.1-8
KVA-4	From Oso Flaco Road approximately 0.8 mile west of State Route 1.	4.1-9
KVA-5	From Oso Flaco Road approximately 0.3 mile west of State Route 1.	4.1-10

KVA-Key Viewing Areas
Source: Carr 2013

Figure 4.1-5 Key Viewing Area (KVA) Map



Source: Carr – Google Maps 2013

Photo-Simulations

Photo-simulations were prepared by the project applicant illustrating the estimated appearance of the project as proposed by the applicant (refer to Figures 4.1-6 through 4.1-10 in Section 4.1.6.1). Photographs were taken from key public viewpoints and registered on a GPS unit. The GPS coordinates of the photographed viewpoint locations were imported to Google Earth for reference. The proposed facility was then modeled based on real-world coordinates and rendered according to the GPS viewing positions, using the same focal length and field-of-view as the camera. The rendered images were merged with the baseline photographs, and the view/scale of the rendered images were checked against existing landmarks (tanks, towers, dunes, etc.) to ensure proper representation.

The photo-simulations were then analyzed by the EIR consultant, and along with the results of the field studies conducted by the EIR consultant, the potential visual effects of the project were determined. The project site was then reviewed again in order to develop recommendations for reducing any identified adverse effects.

Photographic images and simulations are a valuable tool for understanding and disclosing the estimated visual effect of the proposed Rail Spur Project. It is important to note however that photographs do not represent the same level of visual acuity and sensitivity to detail as the human eye. As a result, photo-simulations tend to understate the anticipated perception of impacts.

4.1.5 Project Visibility

4.1.5.1 From State Route 1

The Rail Spur Project would be visible along an approximately 0.5 mile segment of State Route 1. Travelling in the southbound direction, intervening topography and development generally precludes views to the project until a point along the highway approximately 300 feet north of the Via Concha Road intersection. From that point continuing south, the easternmost portion of the rail spur tracks and trains would be seen to the west at a viewing distance of approximately 0.5 mile. From State Route 1, the unloading area would be approximately 1.4 miles away. Because of this viewing distance the proposed unloading area canopy and other structures would not be readily discernible among the other existing refinery and coke processing area development. The alignment of the proposed rail spur track extension would be oriented nearly perpendicular to State Route 1, and as a result views of the tracks and trains would generally be looking down the tracks rather than seeing them from the side. This viewing orientation would lessen the visible area of the project relative to the overall viewshed as seen from key viewpoints along State Route 1.

The project would also be potentially visible from a portion of northbound State Route 1 near Guadalupe. However because of the viewing distance, noticeability of the Rail Spur Project from this area would be substantially reduced.

4.1.5.2 From Oso Flaco Road

Portions of the Rail Spur Project would be seen intermittently from locations on Oso Flaco Road at viewing distances ranging from approximately 1 mile to 1.3 miles away. The project would also be partially visible from the Oso Flaco Lake public parking area. Since the proposed tracks would run approximately parallel to Oso Flaco Road, views of the project from this area would include side-views of the trains. The unloading area and associated canopy would be seen from the western segments of Oso Flaco Road. From these viewpoints the proposed unloading facility would be viewed in the context of the existing coke processing area. This industrial context, along with the viewing distance would lessen noticeability of the unloading area when viewed from Oso Flaco Road. From certain eastern segments of Oso Flaco Road, the riparian vegetation along Little Oso Flaco Creek would block views of the project. Where visible, the rail spur and trains would be seen extending to the east from the existing coke processing area. Views of the unloading facility would be seen but would be largely obscured by intervening vegetation and landform. From these southern viewpoints the proposed grading would be most visible. The existing undulating topography surrounding the project site would somewhat reduce visibility of

the project, however in certain areas the fill slopes along the southern side of the rail spur and the cut slopes along the northern side would be noticeable.

4.1.5.3 From Other Roadways and Viewing Areas

From Amtrak Passenger Trains
The Union Pacific Railroad tracks pass immediately west of the refinery and the project site. Amtrak passenger trains using the tracks offer close viewing opportunities of the existing refinery as well as portions of the project site. Much of the proposed unloading facility would be seen in the foreground as part of the existing industrial setting, and the new tracks would angle away toward the eastern open space. Existing topography in the area of the coke processing facility partially blocks views of the project site along this segment of the Union Pacific Railroad tracks.

From Residential Areas East of State Route 1
Portions of the project would be seen from public roadways and paths within the Trilogy residential development east of State Route 1. Westbound Via Concha Road would provide limited views to the easternmost portion of the rail spur, similar to those from along State Route 1 in this area. Portions of Louise Lane would also allow for views of the rail spur to the southwest. From these residential streets the unloading facility would not be easily noticed due to topography and viewing distance. The proposed rail road tracks would be visible from some of the residential homes in the Monarch Ridge Townhome development, which is located just east of the of the development area across Highway 1.

From the California Coastal Trail
The California Coastal Trail parallels State Route 1 along the Trilogy development frontage. The Coastal Trail in this area is separated from the highway at most locations by mature trees. Views to the project site are available however though gaps in the vegetation. Similar to the views from State Route 1, the easternmost portion of the tracks would be seen at a viewing distance of approximately 0.5 mile. The unloading facility would not be readily seen from the Coastal Trail.

From the De Anza Trail
The Historic Juan Bautista de Anza Trail corridor passes through the eastern portion of the project site. This somewhat wide swath is considered to be the general route the explorer and his party traversed through the area. This historic route is commemorated in part by the establishment of the Juan Bautista de Anza recreational trail. In the project vicinity, this recreational trail follows the alignment of the California Coastal Trail just east of State Route 1. As such, views to the project site are the same as those described from the Coastal Trail.

From the Industrial-Zoned Area to the North
The project would not be visible from public roadways north of refinery. Although Sheridan Road, Gasoline Alley Way and other roadways in this area are relatively close to the existing refinery, the adjacent landform blocks views to the south. The upper portions of the refinery can be seen from much of this area, but the Rail Spur Project would not be visible.

From the Pismo Dunes State Vehicular Recreation Area
The upper portions of the refinery facility are visible from the eastern portion of the Oceano Dunes State Vehicular Recreation Area, however the Rail Spur Project would not be seen because of intervening topography, vegetation and viewing distance.

4.1.6 Project Impacts and Mitigation Measures

This section discussed the impacts and any mitigation measures associated with the Rail Spur Project related to aesthetics and visual resources.

Impact #	Impact Description	Phase	Impact Classification
AV.1	The eastern extension of the proposed rail spur and its associated trains would reduce quality views of the open space as seen from portions of State Route 1, the California Coastal Trail, the De Anza Trail, and other public areas east of State Route 1, resulting in a potentially significant impact.	Construction and Operations	Class II

The project site is within two distinct landscape types in terms of visual sensitivity. Although the entire parcel is zoned industrial, the eastern portion of the project site serves as scenic open space for viewpoints along State Route 1, the California Coastal Trail, the De Anza Trail, and from streets within the Trilogy development. The westernmost portion of the project is in an area of heavy industrial use and as a result has little visual sensitivity.

Viewpoints from the East
Figures 4.1-6 through 4.1-8 provide photo simulations from the three key viewing areas that are to the east of the project site (KVA-1 through KVA-3). As seen from viewpoints east of the project such as State Route 1 and portions of residential streets in the Trilogy and Monarch Ridge Townhome developments, the eastern end of the project site is currently part of the mid-ground landscape, and is seen in the context of surrounding agricultural fields, dunes, riparian corridors and the Pacific Ocean. From these viewpoints the existing refinery can also be seen, although intervening topography and distance limit views of much of the ground-level operations. Where visible, the existing refinery dominates views to the northwest and creates a strong industrial visual identity.

The view looking west and southwest from State Route 1 is considered a scenic vista because of the panoramic composition of natural and agricultural land use patterns, sweeping views of the dunes and the coastline, and the Pacific Ocean beyond. The Rail Spur Project elements, where visible, would not block views of coastal visual resources such as the dunes, the ocean, riparian areas, or agriculture. The eastern extension of the rail spur and its associated trains would however reduce views of the open space seen in the mid-ground, an important visual contributor to the overall scenic vista, which has the potential to be a significant impact. The proposed unpaved access road from the rail spur to State Route 1 would appear as a typical farm road and would not affect scenic views.

Figure 4.1-6 Existing and Proposed Views from KVA 1 (State Route 1 at Via Concha Road).

Note: Proposed view is with a simulation of the rail unloading facility.
Source: Arcadis 2013

Figure 4.1-7 Existing and Proposed Views from KVA 2 (State Route 1 at Via Entrada Road).

Note: Proposed view is with a simulation of the rail unloading facility.
Source: Arcadis 2013

Figure 4.1-8 Existing and Proposed Views from KVA 3 (State Route 1 at Oso Flaco Road).

Note: Proposed view is with a simulation of the rail unloading facility.
Source: Arcadis 2013

Figure 4.1-9 Existing and Proposed Views from KVA 4 (Oso Flaco Road 0.8 mile west of State Route 1).

Note: Proposed view is with a simulation of the rail unloading facility.
Source; Arcadis 2013

Figure 4.1-10 Existing and Proposed Views from KVA 5 (Oso Flaco Road 0.3 mile west of State Route 1).

Note: Proposed view is with a simulation of the rail unloading facility.
Source: Arcadis 2013

Viewpoints from the South

Figures 4.1-9 and 4.1-10 provide photo simulations from the two key viewing areas that are to the south of the project site (KVA-4 and KVA-5). As seen from viewpoints south of the project such as Oso Flaco Road, views toward the project site are more dominated by agriculture in the foreground, with the Nipomo Mesa and inland hills rising up as a backdrop.

From these southern vantage points views of the project site include the mid-ground open space as well as the industrial refinery and coke processing area to the west. The Union Pacific Railroad tracks also cross through this area, adding to the working character of this landscape view.

Scenic vistas from these viewpoints are defined by the agricultural and natural land uses in the foreground, with the hills framing the background to the northeast. Because of the viewing distance and orientation, the Rail Spur Project elements would not block views of any of these coastal resources, and as a result would not have an adverse effect of scenic vistas as seen from Oso Flaco Road.

Viewpoints from Amtrak Passenger Trains

Amtrak passenger trains would also have direct views of the project site, passing immediately adjacent to the existing refinery and coke processing facility. From these elevated viewpoints, scenic vistas include the varied natural and man-made land use patterns, the dunes, agriculture, open space and the surrounding hillsides. The proposed unloading facility would be seen as part of the existing industrial area and would have no effect on scenic vistas. The rail spur extension to the east and the associated trains would not block views of coastal resources such as the dunes, hills, coastline, or riparian areas. As seen from Amtrak, the Rail Spur would slightly reduce the amount of open space seen in the mid-ground. However, considering the extent of high-quality open space views afforded travelers on the coastal route, this slight reduction in open space for a short viewing period would be insignificant, particularly when seen in the general context of the adjacent refinery.

Mitigation Measures

AV-1a Prior to issuance of grading and construction permits, the applicant shall submit a revised site-grading plan to the Department of Planning and Building for review and approval showing the following:

a. An earthen berm shall be constructed around the eastern perimeter of the rail spur. The berm shall be a minimum of 10 feet tall and a maximum of 20 feet tall above the existing grade and as shown on the Berm Location Concept Map shown below (Figure 4.1-11) for the purpose of reducing views of the rail spur and trains from State Route 1 and the California Coastal Trail / De Anza Trail.

b. The berm shall be designed and constructed to appear as a natural dune landform and shall have gradually undulated horizontal and vertical dimensions (consistent with Policy 5: Landform Alterations).

c. No other existing landforms which would provide visual screening of the facility shall be used as source of borrow material for the required berm.

d. *The berm shall be revegetated with native grasses and shrubs to match the surrounding natural landcover and plant community.*

No disturbance shall occur outside of the identified area of disturbance shown on the site-grading plan.

AV-1b Prior to issuance of grading and construction permits, the applicant shall submit a revised site-grading plan to the Department of Planning and Building for review and approval showing the following:

a. *All new cut and fill slopes shall include slope-rounding and landform grading techniques to avoid an engineered appearance (consistent with Policy 5: Landform Alterations).*

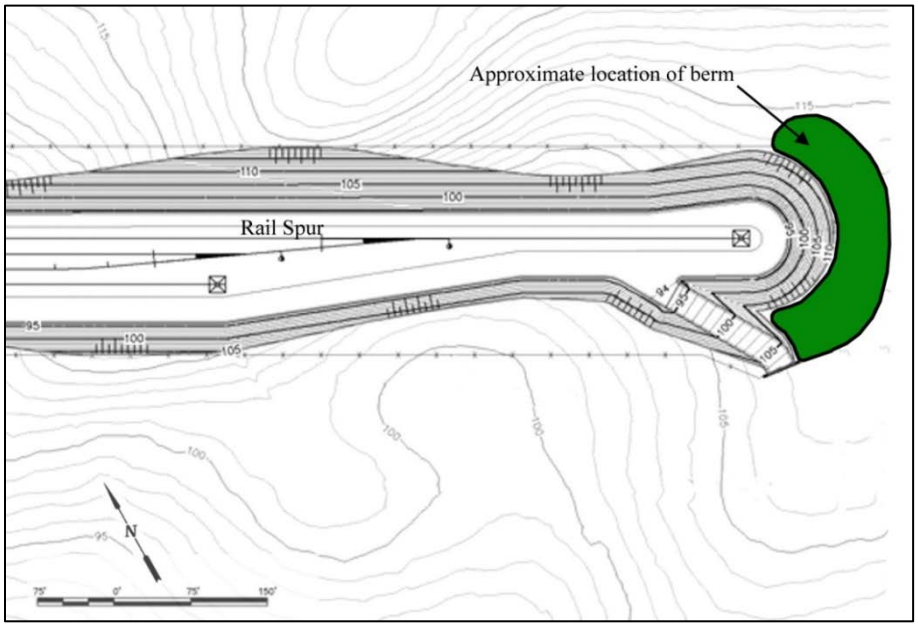
AV-1c Prior to issuance of grading and construction permits, the applicant shall submit a Habitat / Landscape Revegetation Plan to the Department of Planning and Building for review and approval showing the following:

a. *All new slopes shall be revegetated with native grasses and shrubs to match the surrounding natural landcover and plant community.*

Residual Impacts

By reducing visibility of the rail spur and associated trains in the current open space area, mitigation measures AV-1a through AV-1c would lessen the project's adverse effects on scenic vistas as seen from key public viewpoints on State Route 1, the California Coastal Trail, the De Anza Trail, and other public areas east of State Route 1. As a result, these measures would result in visual impacts considered to be *less than significant with mitigation (Class II).*

Figure 4.1-11 Berm Location Concept Map



Source: Carr 2013

Impact #	Impact Description	Phase	Impact Classification
AV.2	The expanded industrial use and visibility of the rail spur and associated trains on the existing open space would cause the project to be more noticeable as seen from public viewpoints on State Route 1, the California Coastal Trail, the De Anza Trail, and other public areas east of State Route 1. This effect on the existing visual character would be inconsistent with the County of San Luis Obispo visual policy goals, resulting in a potentially significant impact.	Construction and Operations	Class II

As previously mentioned, the Project Site crosses two distinct landscape character zones; the heavily industrial area to the west, and the natural open space toward the east. This context differentiation is a fundamental factor in determining the project's potential effect on the existing visual character of the site and its surroundings.

Viewpoints from the East

As seen from viewpoints such as State Route 1, the California Coastal Trail, the De Anza Trail, and portions of residential streets in the Trilogy and Monarch Ridge Townhome developments, the visual identity of the project site and vicinity is mostly defined by working agriculture, rural lands, natural open space, and residential. The refinery complex and other industrial uses are also visible and influence the existing visual character. North of the project the industrial uses are more evident, however as seen from eastern viewpoints the agricultural and natural landscape character to the south become more visually dominant. The proposed unloading area would be within the existing industrial part of the coke processing facility, and would be consistent with the visual character of that area. The rail spur which would extend approximately 0.9 mile east, would add an industrial element into land which currently serves as visual open space. As seen from State Route 1, the Coastal Trail, the De Anza Trail and other eastern viewpoints, the rail spur and associated rail cars would represent a visual expansion of the adjacent industrial refinery use. This expansion of industrial elements would not be entirely unexpected at this location, however the current balance of visual character elements would be altered. The visual encroachment of the industrial refinery-related activities onto the adjacent visual open space would have an adverse effect on the existing character of the site, and would represent a potentially significant impact. The proposed unpaved access road connecting the rail spur to State Route 1 would look like an agricultural road typical of the setting.

Viewpoints from the South

Viewpoints to the project from Oso Flaco Road and points south would see portions of the rail spur as well as the unloading facility. Views from these areas are largely defined by the working agricultural operations visible in the fore and mid-ground. The industrial character of the refinery and coke processing area are more noticeable from these viewing locations. Because of that, the proposed unloading facility would not be inconsistent with the visual character at that location. Views of the overall landscape from this area include several strong horizontal lines created by black field fencing, access roads, crop boundaries, the existing railroad tracks, and the riparian corridors. As a result, combined with the viewing distance, the linear form of the rail

spur and associated trains would be somewhat less noticeable in the viewshed. When seen, the project would not be out of character with the working landscape view from Oso Flaco Road.

Viewpoints from Amtrak Passenger Trains

The Amtrak passenger train passes immediately alongside the refinery and coke processing facility. Because of this visual setting, the proposed unloading facility would be visually appropriate for its surrounding. To the east, the proposed rail spur would somewhat reduce views of the existing open space. However, a strong existing industrial visual impression exists for Amtrak passengers as they pass directly adjacent to the refinery facility. As a result viewers would likely see the proposed rail spur as a logical part of the industrial use. In addition, Amtrak travelers may be less sensitive to seeing a railroad use in the surrounding landscape since their viewing experience would be inherently railroad-based. Because of these factors the Rail Spur Project would not have an adverse effect on the visual character of the site and surroundings as seen from Amtrak passenger trains.

Mitigation Measures

AV-2 Implementation of mitigation measures AV-1a through AV-1c required for Impact AV.1 would also reduce potential impacts to existing visual character and quality of the site and its surroundings.

Residual Impacts

By implementing mitigation measures AV-1a through AV-1c the impacts to the visual character and quality of the site and surroundings would be considered *less than significant with mitigation (Class II).* The required mitigation measures would cause the project to be less noticeable in the landscape, and as a result the perceived encroachment of industrial character into the current open space would be less evident.

Impact #	Impact Description	Phase	Impact Classification
AV.3	The project would create a new source of substantial light and glare which would adversely affect nighttime views in the area.	Operations	Class II

New outdoor lighting is proposed throughout the project. As evaluated in the 2014 RDEIR, the unloading area would have 70 floodlights placed or mounted under the canopy. Forty of these lights would be directed toward the railcars and placed 60 feet apart, with 8,238 Lumens each. Thirty of these canopy lights would be directed to the walkway area and would be placed 20 feet apart, with 5,856 Lumens each. Two additional lights on 20-foot poles would be focused on the Meter area and Drain Tanks. The lights associated with the unloading area would be used on an as-needed basis, when trains are being unloaded. This could occur at night between dusk and dawn, since trains could arrive at any hour. Trains would be on site approximately 10 to 12 hours, and unloading would last approximately 8 hours per train.

Additional lighting is proposed along the perimeter fencing around the rail spur, which would extend approximately 0.9 mile east of the unloading area. This lighting would be placed on 15-foot tall poles, at 500 feet apart around the entire perimeter of the spur. Two floodlights would

be placed on each pole, at 18,955 Lumens each. These security lights are proposed to remain on only when a train is at the refinery.

The preliminary lighting plans describe that Dark Skies Compliant light fixtures would be used, however no additional information is provided regarding the specific design, orientation and connection angles of project lighting as they relate to Dark Sky practices. The preliminary lighting plans are provided in Appendix A (pages A-24 through A-28).

The current light levels in the area vary greatly. The refinery facility is a substantial source of light, and security and operational lighting is highly visible every night of the year. Coastal fog, which occurs often, increases visibility of the lighting by creating a noticeable atmospheric glow surrounding the facility. The other sources of night light are the auto-related industrial area to the north, and the residential areas to the north and east. State Route 1 creates nighttime lights in terms of headlights and streetlights at intersections. The lights of Guadalupe can be seen in the distance to the south. The surrounding agricultural areas show very few lights. Looking southwest from State Route 1, the eastern portion of the project site currently emits no nighttime lights. Nighttime views to the northwest show a significant amount of light associated with the refinery and coke processing facility.

The lighting proposed at the unloading facility would appear to be part of the existing coke processing area and would likely go unnoticed to the casual observer. Although the unloading facility lights would introduce light into a new area, they would not appear out of place given the relatively close proximity to the refinery and coke processing facility. The closest residence to the unloading area lights would be approximately 0.5 mile away east and south. The Trilogy and Monarch Ridge Townhome developments would be more than one-mile from the unloading area lights. The unloading area lights would be used during the unloading operations, which would be a maximum of five times per week for about 10 to 12 hours per unloading. It is also unlikely that all of the unloading operations would occur at night when the lights would be needed.

The security lighting proposed for the rail spur perimeter would be seen from viewpoints along State Route 1 and portions of the Trilogy and Monarch Ridge Townhome developments. The security lighting would extend to just beyond the east terminus of the Rail Spur. The closest residence to the unloading area lights would be approximately 0.5 mile away.

The project proposes shielded light fixtures, which if installed correctly and included as part of a comprehensive Dark Skies compliant plan, would help reduce noticeable light. However since the final lighting plan is not complete at this time, the potential exists for visible glare and light trespass into the surrounding area due to improper design, and therefore the impact is considered potentially significant.

Mitigation Measures

AV-3a *Prior to issuance of grading and construction permits, the applicant shall submit a comprehensive lighting plan to the Department of Planning and Building for review and approval showing the following:*

a. The Lighting Plan shall be based on a photometric study prepared by a qualified engineer who is an active member of the Illuminating Engineering Society of North America (IESNA).

b. The Lighting Plan shall be prepared by a qualified engineer who is an active member of the IESNA using guidance and best practices endorsed by the International Dark Sky Association.

c. The applicant shall provide the specific technical data and performance criteria required by the applicable safety policy used as the basis for the Lighting Plan.

d. As part of the Lighting Plan, illumination levels shall be the minimum required by the specifically defined public safety policy and ordinances.

e. As part of the Lighting Plan, direct views of all lighting sources shall be directed downward and shielded from view from public roads.

f. As part of the Lighting Plan, lights shall be designed and constructed to reduce illumination of the adjacent slopes and dunes where applicable.

g. As part of the Lighting Plan, no lights shall be placed east of any portion of the screening berm required in mitigation measure AV-1a.

h. As part of the Lighting Plan, lighting for all rail spur perimeter fencing shall be equipped with motion sensors for activation rather than left on continuously.

AV-3b Within six months following completion of construction, a Lighting Evaluation Report shall be submitted to the Department of Planning and Building for review and approval. The purpose of the Lighting Evaluation Report shall be to assess and correct any unexpected or residual lighting impacts following project completion. The report shall be prepared by a by a qualified engineer who is an active member of the IESNA who was not associated with the preparation of the Lighting Plan described in mitigation measure AV-3a. Preparation of the Lighting Evaluation Report shall be by a qualified engineer retained by the County of San Luis Obispo and funded by the project applicant. The Lighting Evaluation Report shall include the following at a minimum:

a. A comprehensive assessment of the lighting resulting from the rail spur project and project operations as seen from State Route 1, Oso Flaco Road, the California Coastal Trail, De Anza Trail and public viewing areas to the east. The Lighting Evaluation Report shall assess the completed project during a variety of operational conditions including all typical procedures such as unloading, moving of trains, multiple trains present, etc. The Report shall evaluate and identify where, if any unexpected light impacts occur, such as but not limited to reflection off trains, adjacent landforms, buildings, unexpected sources, etc.

b. The Lighting Evaluation Report shall make specific recommendations to reduce the effects of any unexpected or excessive residual lighting impacts identified in

the report. Recommendations may include but not be limited to: repositioning lights, lowering heights, increasing sizes of cut-off shields, reducing types of luminaires, reducing wattage, and modifying operational procedures.

AV-3c ***Existing Facility and Operations Lighting Evaluation****. Prior to issuance of grading and construction permits, the applicant shall submit a comprehensive evaluation of the existing refinery facility and operations lighting to the Department of Planning and Building for review and approval showing the following:*

a. The Existing Facility and Operations Lighting Evaluation shall be prepared by a qualified engineer who is an active member of the Illuminating Engineering Society of North America (IESNA).

b. The Existing Facility and Operations Lighting Evaluation shall assess the sources and levels of all existing lighting associated with the refinery operations, and shall determine if any lighting levels exceeds the minimum required by applicable County of San Luis Obispo, state and federal safety regulations.

c. If lighting levels exceed the applicable regulations, the Existing Facility and Operations Lighting Evaluation shall make specific recommendations to reduce the lighting levels to the minimum required.

The Existing Facility and Operations Lighting Evaluation shall also identify and make recommendations to eliminate visibility of all point source lighting as seen from public roadways. The project applicant shall implement all recommendations made by the Lighting Evaluation Report and required by the Department of Planning and Building.

Residual Impacts

By implementing mitigation measures AV-3a and AV-3b the impacts to nighttime lighting and glare would be considered *less than significant with mitigation (Class II).* The required mitigation measures would limit the amount of light that would spill over from the lighting fixtures.

The air quality mitigation measure AQ-4c would limit the unloading of trains at the SMR from between 7 A.M. and 7 P.M. This would serve to eliminate most of the nighttime lighting associated with the rail unloading operations. There could still be some nighttime lighting that would be needed when a train arrived at the SMR. Trains that arrived at night would need to pull on to the SMR property and then would shutdown. Some lighting for workers in the unloading area would likely be needed, but would only last for about an hour.

Impact #	Impact Description	Phase	Impact Classification
AV.4	Visibility of headlights and other operational and safety lights from trains on the rail spur would create a new source of light and glare which would adversely affect nighttime views in the area.	Operations	Class II

Due to safety requirements, train engines and other equipment operating at nighttime on the rail spur would have headlights and other lights turned on for an undetermined length of time. Because of the generally east-west orientation of the rail spur tracks, lights from train engines moving the tanker cars around would potentially be a highly visible new source of light and glare as seen from public viewpoints to the east.

Mitigation Measures

AV-4 *Implementation of mitigation measures AV-1a through AV-1c required for Impact AV.1 and mitigation measure AV-3b required for Impact AV.3 would also reduce potential impacts caused by trains operating on the rail spur.*

Residual Impacts

Implementation of mitigation measures AV-3a and AV-3b and AV-4 would reduce the project's adverse night lighting effects as seen from key public viewpoints on State Route 1, the California Coastal Trail, the De Anza Trail, and other public areas surrounding the Project Site by minimizing glare and light spillover into the surrounding area. As a result, the project impacts would be considered to be *less than significant with mitigation (Class II).*

4.1.7 Cumulative Analysis

The cumulative section addresses how this project may contribute to a change in visual quality when viewed along with other existing and reasonable future development in the area (per CEQA Guidelines, Section 15130).

Portions of the Nipomo Mesa have experienced moderate amounts of new development in the last several years. That development has been mostly residential, with golf resort developments the most prevalent. Few new or expanded industrial uses have appeared in the local landscape. Cumulative visual and aesthetic impacts would be limited to the cumulative project in the same viewshed as the Rail Spur Project. The cumulative projects listed in Chapter 3, which are in the vicinity of the SMR, are more non industrial uses and would fit the existing visual character of the area. Although the Rail Spur Project would have an adverse effect on the open space scenic vista and character of the site, it would be part of an existing industrial facility, and would not be out of context with the existing visual character of the area. As a result, the cumulative visual impacts would be considered less than significant.

4.1.8 Mitigation Monitoring Plan

Mitigation Measure	Plan Requirements and Timing	Compliance Verification		
		Method	Timing	Responsible Party
AV-1a	Prior to issuance of grading and construction permits, the applicant shall submit a revised site-grading plan to the Department of Planning and Building for review and approval showing the following: a. An earthen berm shall be constructed around the eastern perimeter of the rail spur. The berm shall be a minimum of 10 feet tall and a maximum of 20 feet tall above the existing grade and as shown on the Berm Location Concept Map shown below (Figure 4.1-11) for the purpose of reducing views of the rail spur and trains from State Route 1 and the California Coastal Trail / De Anza Trail. b. The berm shall be designed and constructed to appear as a natural dune landform and shall have gradually undulated horizontal and vertical dimensions (consistent with Policy 5: Landform Alterations). c. No other existing landforms which would provide visual screening of the facility shall be used as source of borrow material for the required berm. d. The berm shall be revegetated with native grasses and shrubs to match the surrounding natural landcover and plant community. No disturbance shall occur outside of the identified area of disturbance shown on the site-grading plan.	Review of Site Plans	Prior to Issuance of Grading and Construction Permits	County Department of Planning and Building
AV-1b	Prior to issuance of grading and construction permits, the applicant shall submit a revised site-grading plan to the Department of Planning and Building for review and approval showing the following: a. All new cut and fill slopes shall include slope-rounding and landform grading techniques to avoid an engineered appearance (consistent with Policy 5: Landform Alterations).	Review of Site Plans	Prior to Issuance of Grading and Construction Permits	County Department of Planning and Building
AV-1c	Prior to issuance of grading and construction permits, the applicant shall submit a Habitat / Landscape Revegetation Plan to the Department of Planning and Building for review and approval showing the following: a. All new slopes shall be revegetated with native grasses and shrubs to match the surrounding natural landcover and plant community.	Review of Site Plans	Prior to Issuance of Grading and Construction Permits	County Department of Planning and Building
AV-3a	Prior to issuance of grading and construction permits, the applicant shall submit a comprehensive lighting plan to the Department of Planning and Building for review and approval showing the following: a. The Lighting Plan shall be based on a photometric study prepared by a qualified engineer who is an active member of the Illuminating Engineering Society of North America (IESNA).	Review of Lighting Plan	Prior to Issuance of Grading and Construction Permits	County Department of Planning and Building

Mitigation Measure	Plan Requirements and Timing	Compliance Verification		
		Method	Timing	Responsible Party
	b. The Lighting Plan shall be prepared by a qualified engineer who is an active member of the IESNA using guidance and best practices endorsed by the International Dark Sky Association. c. The applicant shall provide the specific technical data and performance criteria required by the applicable safety policy used as the basis for the Lighting Plan. d. As part of the Lighting Plan, illumination levels shall be the minimum required by the specifically defined public safety policy and ordinances. e. As part of the Lighting Plan, direct views of all lighting sources shall be directed downward and shielded from view from public roads. f. As part of the Lighting Plan, lights shall be designed and constructed to reduce illumination of the adjacent slopes and dunes where applicable. g. As part of the Lighting Plan, no lights shall be placed east of any portion of the screening berm required in mitigation measure AV-1a. h. As part of the Lighting Plan, lighting for all rail spur perimeter fencing shall be equipped with motion sensors for activation rather than left on continuously.			
AV-3b	Within six months following completion of construction, a Lighting Evaluation Report shall be submitted to the Department of Planning and Building for review and approval. The purpose of the Lighting Evaluation Report shall be to assess and correct any unexpected or residual lighting impacts following project completion. The report shall be prepared by a by a qualified engineer who is an active member of the IESNA who was not associated with the preparation of the Lighting Plan described in mitigation measure AV-3a. Preparation of the Lighting Evaluation Report shall be by a qualified engineer retained by the County of San Luis Obispo and funded by the project applicant. The Lighting Evaluation Report shall include the following at a minimum: a. A comprehensive assessment of the lighting resulting from the rail spur project and project operations as seen from State Route 1, Oso Flaco Road, the California Coastal Trail, De Anza Trail and public viewing areas to the east. The Lighting Evaluation Report shall assess the completed project during a variety of operational conditions including all typical procedures such as unloading, moving of trains, multiple trains present, etc. The Report shall evaluate and identify where, if any unexpected light impacts occur, such as but not limited to reflection off trains, adjacent landforms, buildings, unexpected sources, etc. b. The Lighting Evaluation Report shall make specific	Review of project post-construction and review of Lighting Plan.	Within six months following completion of construction	County Department of Planning and Building

Mitigation Measure	Plan Requirements and Timing	Compliance Verification		
		Method	Timing	Responsible Party
	recommendations to reduce the effects of any unexpected or excessive residual lighting impacts identified in the report. Recommendations may include but not be limited to: repositioning lights, lowering heights, increasing sizes of cut-off shields, reducing types of luminaires, reducing wattage, and modifying operational procedures.			
AV-3c	**Existing Facility and Operations Lighting Evaluation.** Prior to issuance of grading and construction permits, the applicant shall submit a comprehensive evaluation of the existing refinery facility and operations lighting to the Department of Planning and Building for review and approval showing the following: a. The Existing Facility and Operations Lighting Evaluation shall be prepared by a qualified engineer who is an active member of the Illuminating Engineering Society of North America (IESNA). b. The Existing Facility and Operations Lighting Evaluation shall assess the sources and levels of all existing lighting associated with the refinery operations, and shall determine if any lighting levels exceeds the minimum required by applicable County of San Luis Obispo, state and federal safety regulations. c. If lighting levels exceed the applicable regulations, the Existing Facility and Operations Lighting Evaluation shall make specific recommendations to reduce the lighting levels to the minimum required. The Existing Facility and Operations Lighting Evaluation shall also identify and make recommendations to eliminate visibility of all point source lighting as seen from public roadways. The project applicant shall implement all recommendations made by the Lighting Evaluation Report and required by the Department of Planning and Building.	Review of existing lighting evaluation report.	Prior to Issuance of Grading and Construction Permits	County Department of Planning and Building

4.1.9 References

California Scenic Highways Program website, California Department of Transportation website, 2013: http://www.dot.ca.gov/hq/LandArch/scenic_highways/scenic_hwy.htm

Coastal Access Program: the California Coastal Trail. California Coastal Commission website, 2012: http://www.coastal.ca.gov/access/ctrail-access.html

Illuminating Engineering Society of North America (IESNA) website, 2013: http://www.iesna.org/

International Dark-Sky Association website. 2013. http://www.darksky.org/

John D'Allesandro, Division Manager/ Process Systems, SPEC Services, Inc., Pers. Comm. September 18, 2013.

Juan Bautista de Anza National Historic Trail, National Park Service website, 2013: http://www.nps.gov/juba/index.htm

Oceano Dunes State Vehicular Recreation Area, California State Parks website, 2013: http://ohv.parks.ca.gov/?page_id=1207

4.2 Agricultural Resources

This section analyzes potential impacts to agricultural resources that would be caused by implementation of the Rail Spur Project. This includes the direct or indirect conversion of agricultural soils to non-agricultural uses, conflicts with Agricultural zoning or Williamson Act contracts, dust and other incompatible land use impacts, and potential impacts to other agricultural resources, including water supplies, farm support services, and infrastructure. The section discusses existing agricultural conditions in the project vicinity, identifies the applicable regulatory setting, defines thresholds of significance, and identifies potential impacts and recommended mitigation measures for any identified significant impact. The section also provides a discussion of cumulative agricultural resource impacts.

4.2.1 Environmental Setting

4.2.1.1 Regional Agricultural Setting

According to the most recent United States Department of Agriculture (USDA) National Agricultural Statistics Service (NASS) Census of Agriculture, California is the leading agriculture-producing state, with a total value of almost $33.9 billion in agricultural products sold in 2007 (USDA NASS 2007). The California Department of Food and Agriculture (CDFA) report a record $43.5 billion in sales in 2011, a 15 percent increase over 2010 sales of $38 billion. California remained the number one state in cash farm receipts, comprising 11.6 percent of the U.S. total, with approximately 15 percent of the national receipts for crops and 7.4 percent of the national revenue for livestock and livestock products (CDFA 2013).

Within California, San Luis Obispo County ranked fifteenth in 2011 among state counties in overall agricultural production with total sales of over $736 million, a 3.3 percent increase over 2010 sales (CDFA 2011). The total crop value in the county for 2013 totaled $960.7 million, an 11 percent increase over 2012 (County of San Luis Obispo Department of Agriculture/Weights and Measures 2014). The top two commodities in the County in 2013 (for the second year in a row) were wine grapes (all) and strawberries, which accounted for 45 percent of the total combined value of the county's agricultural industry. Wine grape sales totaled $220.4 million (23 percent) and strawberries were valued at $210.6 million (22 percent). Other 2013 top ten commodities in San Luis Obispo County included: cattle and calves ($96,390,000), broccoli ($64,135,000), avocados ($44,299,000), vegetable transplants ($33,164,000), cut flowers ($26,359,000), indoor decoratives ($19,417,000), cauliflower ($14,163,000), and Napa cabbage ($13,431,000).

Table 4.2.1 shows the total production value of agricultural industry categories within the county in 2012 and 2013.

Table 4.2.1 Total Production Value by Agricultural Category for 2013

Agricultural Category	2012	2013	Change
Animal Industry	$73,857,000	$100,865,000	$27,008,000
Field Crops	$24,612,000	$16,365,000	-$8,247,000
Fruit and Nut Crops	$463,296,000	$507,933,000	$44,637,000
Nursery Stock	$95,155,000	$97,651,000	$2,496,000
Vegetable Crops	$204,900,000	$237,896,000	$32,996,000
TOTAL PRODUCTION VALUE	$861,820,000	$960,710,000	$98,890,000

Source: County of San Luis Obispo Department of Agriculture, 2013 Annual Crop Report.

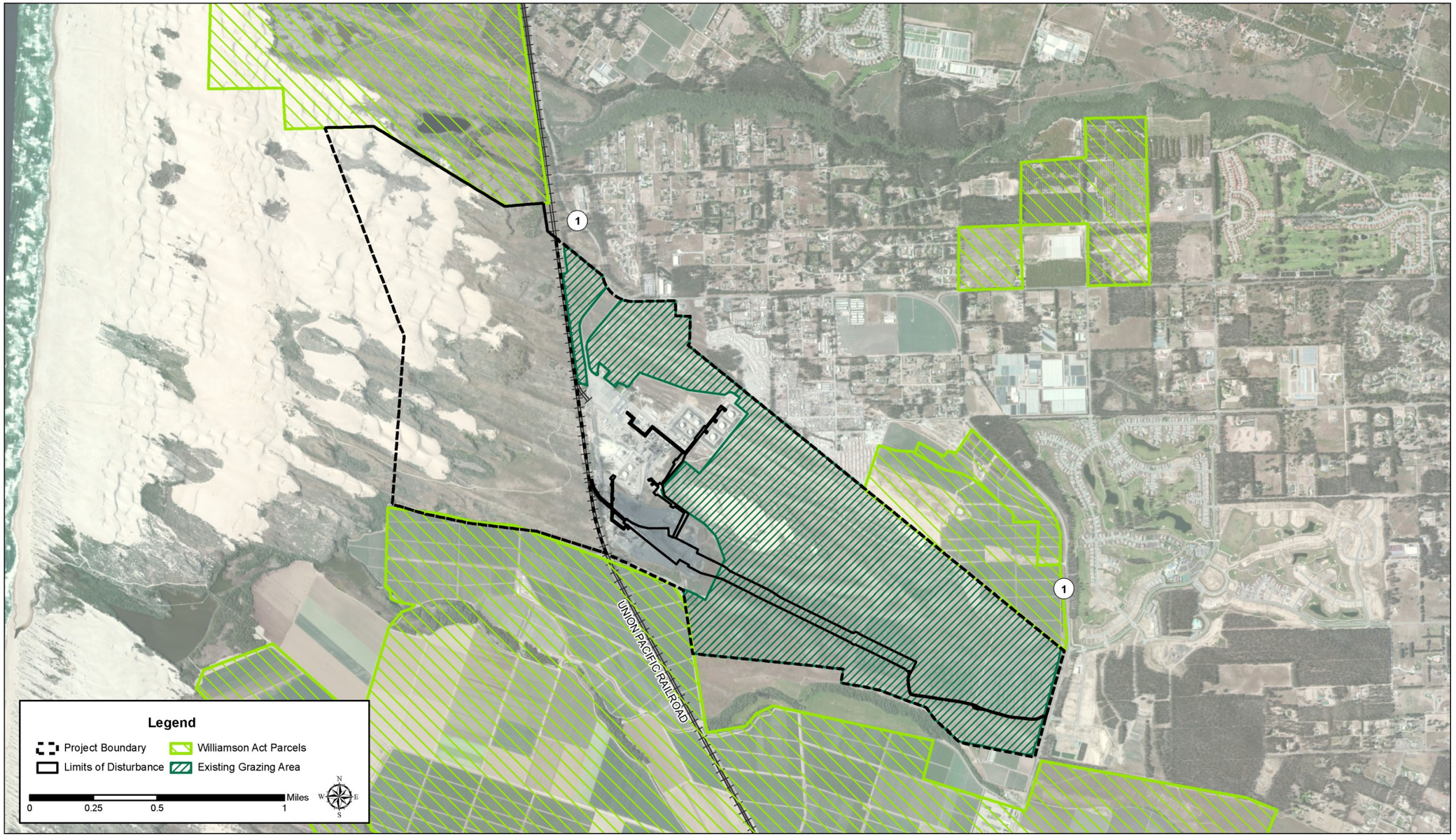
4.2.1.2 Local Agricultural Setting

The majority of the Project Site is within the Industrial land use category; however, a small portion of the southeast corner (approximately 10.3 acres) is within the Agriculture land use category (refer to Figure 4.8-2). The Project Site currently supports grazing activities (also conducted by Phillips 66 on property owned by Phillips 66) on open areas outside of the approximately 242-acre fenced area that encloses the active refinery and processing facilities. The number of head varies, but generally between 0 and 30 cattle and calves are grazed on an approximately 750-acre portion of the Project Site. The cattle do not have access to the entire area at once. They are rotated through different sections of the site to allow for longer periods between grazing events for the grass to regrow. The area currently used for grazing activities is depicted in Figure 4.2-1.

The applicant intends to fence the area encompassing the proposed rail spur extension and off-loading facility, while allowing access for cattle grazing to continue within the remainder of the project site. Pursuant to Section 23.08.046 of the Coastal Zone Land Use Ordinance (CZLUO), allowable cattle density is limited to three animals per acre in the Industrial land use category. Therefore, the portion of the project area currently used for grazing has the potential to support approximately 2,220 cattle and calves.

Cattle and calves were the third leading agricultural commodity in San Luis Obispo County in 2013 (County of San Luis Obispo Department of Agriculture/Weights and Measures 2013). Total cattle and calves inventory in the county was approximately 105,000 in 2013, up from 72,900 in 2012. Pursuant to the San Luis Obispo County 2013 Annual Crop Report, the number of cattle grazing the hillsides was dramatically reduced due to excessive drought conditions, lack of available grass for grazing, and the high cost of supplemental feed. This caused producers to sell off livestock, which will result in long term effects as it will take producers several years to rebuild herds. As a result, the price per unit decreased from $123 to $108 per hundredweight (cwt), or every 100 pounds, between 2012 and 2013. Despite this reduction in price per unit, the number of animals increased by approximately 44 percent, resulting in an overall increase of approximately 39 percent in total production value (from roughly $69.5 million in 2012 to $96.4 million in 2013) (County of San Luis Obispo Department of Agriculture/Weights and Measures 2014).

Figure 4.2-1 Existing Agricultural Uses



Source: Countywide_luc. SLO County Planning and Building Geographic Technology & Design. April 23, 2009; SLO_WA_2005. SLO County Planning & Building Geographic Technology & Design. 2005.

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4.2.1.3 On-site Soils

Soil types at the project site are described below. This information is summarized from the USDA Soil Conservation Service's *Soil Survey of San Luis Obispo County, California (Coastal Part)* (1984). Project site soils are shown in Figure 4.2-2 and their agricultural characteristics are summarized in Table 4.2.5, below.

134 – Dune Land. This soil unit consists of hilly areas along the coast that are composed of sand-sized particles that shift with the wind. Most areas are almost devoid of vegetation, though some areas are partially covered with California sagebrush or beach grass and are somewhat stabilized. Permeability of soil unit is very rapid, and the available water capacity is very low. Surface runoff is slow, and the hazard of soil blowing is very high. Most areas of dune land are used for recreational purposes associated with the beach.

184 – Oceano Sand (0 to 9 percent slopes). This soil unit is found in old stabilized sand dunes and is very deep, excessively drained, and nearly level to moderately sloping. It is formed in deposits of windblown sand at elevations of 10 to 500 feet, in areas ranging in size from 50 to 3,000 acres. Natural vegetation found on this soil unit is mainly brush, annual grasses, and scattered hardwoods. Typically, the surface layer is brown sand about 29 inches thick. The underlying material is stratified pale brown and pink sand to a depth of 60 inches or more. Some areas of this soil have a sandy loam surface layer.

Permeability of this soil is rapid, and the available water capacity is low. Surface runoff is slow or moderate, and the hazard of soil blowing is high. The effective rooting depth is 60 inches or more. Most areas of this soil are used for recreation, as rangeland, or for urban development. Other areas support lemons, Christmas trees, avocados, and strawberries.

All crops must be irrigated because the soil is droughty, with a low water holding capacity. The soil is also very susceptible to soil blowing. These problems can be minimized by providing cover crops in orchards and utilizing mulch. Cover crops of grasses or legumes can be grown if irrigated, and some dryland cover crops can be satisfactorily grown, depending on the location.

This soil unit is poorly suited to rangeland. The droughty texture supports a very short period of quality forage. Gully erosion is also a hazard during wet years because of the channeling of runoff water. Erosion can be controlled by maintaining a good vegetative cover at all times.

185 – Oceano Sand (9 to 30 percent slopes). This soil unit has characteristics consistent with unit 184 – Oceano Sand (0-9% slopes), above, except that is occurs in strongly sloping and moderately steep soils in old established sand dunes. Permeability of this soil is rapid, and the available water capacity is low. Surface runoff is medium or rapid. The hazard of water erosion is moderate or high, and the hazard of soil blowing is high. Most areas of this soil are used for recreation, as rangeland, or for urban development. Other areas support eucalyptus trees.

The effective rooting depth of this soil is also 60 inches or more. It is similarly poorly suited to rangeland because of the short period of quality forage and erosion hazards. Maintaining a good plant cover at all times will help protect the soil from erosion.

223 – Xerorthents, Escarpment. This map unit consists of moderately steep and steep, relatively smooth, descending slopes at the ends of terraces (a level shelf of land interrupting a declivity, with steep slopes above and below). Slopes average 40 percent, but range from 20 to 50 percent. Typically, characteristics of the soil material vary considerably within a short distance. The soils are fairly well stabilized; vegetative cover if annual grasses and shrubs.

Soil material is variable, but is generally light colored loam, sandy loam, or loamy sand of 24 to 48 inches deep. When the soil surface is bare, runoff is rapid and the risk of erosion is high. Some areas within this soil unit have deep gullies. Areas of this soil unit can be used for grazing. However, livestock grazing should be managed to protect the soil from excessive erosion.

111 – Camarillo Sandy Loam. This unit consists of very deep, somewhat poorly drained, and nearly level soils on alluvial plains near existing drainageways. It is formed in alluvium weathered from sedimentary rocks in areas typically ranging from 20 to 100 acres. Natural vegetation is typically annual grasses and forbs with scattered hardwoods. Most areas of this soil unit are presently cultivated, though the marginal area of the project site consisting of this soil unit (0.2 acres) is used for grazing (adjacent areas south of the project site within this soil unit area support row crops). Elevations typically range from 10 to 200 feet.

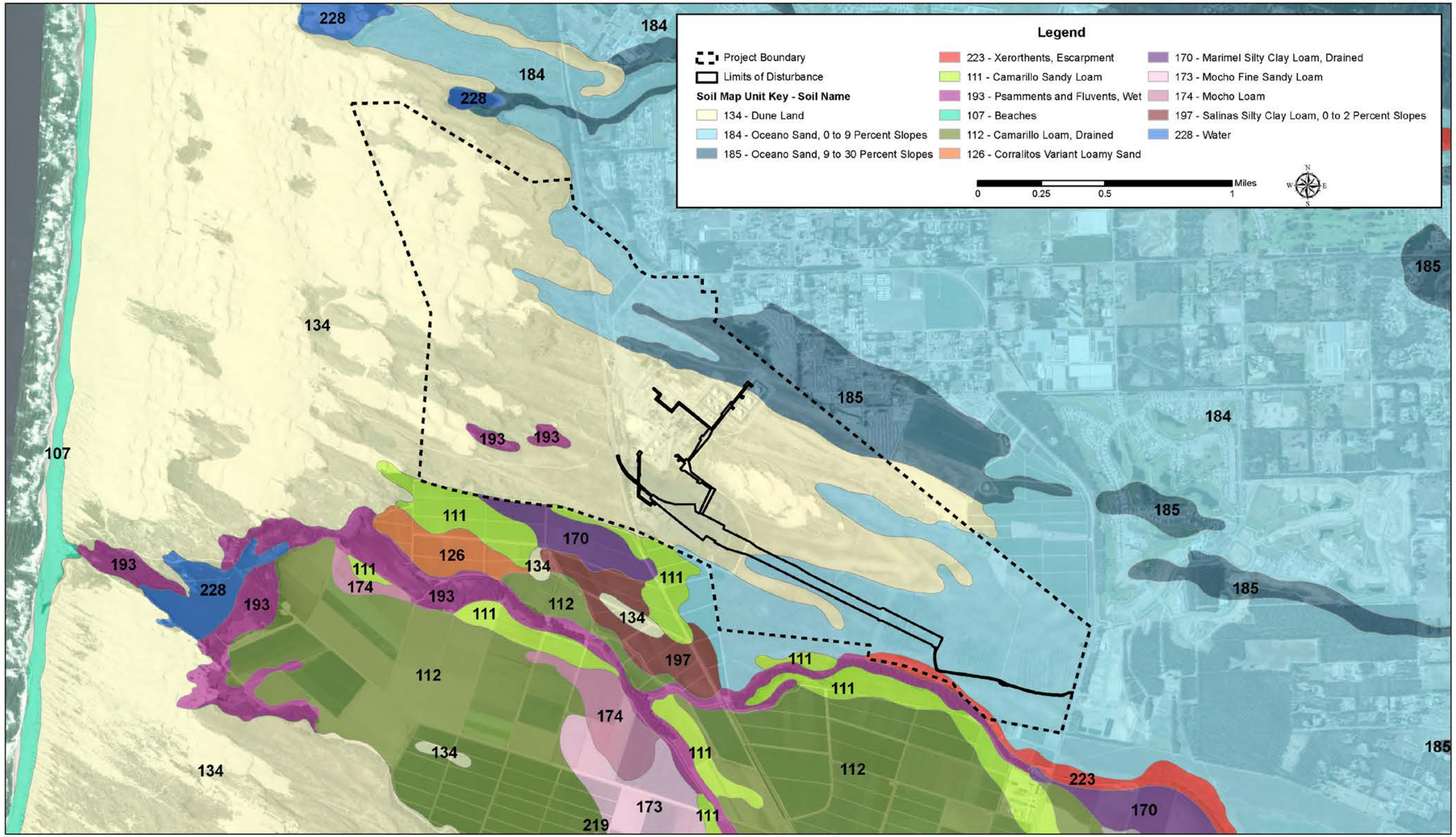
Typically, the surface layer is pale brown sandy loam 12 inches thick. The underlying material is stratified pale brown, yellowish brown, and light yellowish brown silty clay loam, light yellowish brown fine sandy loam, and pale brown loamy fine sand to a depth of 60 inches or more. An irregular arrangement of reddish brown patches are present around a depth of 24 inches, and the profile is moderately alkaline (containing a mixture of soluble salts found in arid soils) and calcareous (containing calcium carbonate or calcite or chalk) throughout.

Permeability of this soil is moderate, and the available water capacity is high. Surface runoff is slow. The hazard of water erosion is slight, and the hazard of soil blowing is moderate. The effective rooting depth is limited by a seasonal high water table at a depth of 2 to 3.5 feet from January to May. It increases to 60 inches or more during the drier times of the year. This soil is subject to brief periods of flooding. Most areas of this soil unit are used for cultivated crops; some are used as rangeland.

This soil is moderately suited to rangeland. Soil deposition is a problem, especially during years of high rainfall, because of the sediment load from upslope runoff. The soil produces quality forage for a short period; rapid depletion of surface moisture makes the germination of annuals difficult.

193 – Psamments and Fluvents, Wet. This soil map unit consists of small, very poorly drained basins in areas of Dune land or in coarse textured valley alluvium near streams and river bottoms. The soils are wind- and water-deposited sands and loamy sand that commonly contain layers of organic material. These areas are waterlogged all or most of the year, and vegetation consists of water- and salt-tolerant grasses and forbs. These soils are very poorly drained. Free water is within 10 to 20 inches of the surface for the majority of the year. Areas of these soils have little to no farming value and are used mainly as wildlife habitat.

Figure 4.2-2 Soils Map



Source: SLOCo_NRCS_Soils. U.S. Department of Agriculture, Natural Resources Conservation Service, Soil Survey Geographic (SSURGO) Database for San Luis Obispo County. October 17, 2005.

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These and other soil units have been classified by national, state and local agencies by their ability to support agricultural uses, including in the USDA's land capability classification system and Important Farmland Inventory, the California Department of Conservation's Farmland Mapping and Monitoring Program, and San Luis Obispo County's Conservation and Open Space Element. Each of these classification systems is more fully described below.

4.2.1.4 USDA Natural Resource Conservation Service Classifications

The USDA Natural Resources Conservation Service (NRCS) assesses the potential agricultural productivity and limitations of different soils by utilizing both the land capability classification (LCC) system (described in the National Soil Survey Handbook Part 622.02) and the Important Farmland Inventory (pursuant to requirements of CFR Chapter 7 Part 657). The land capability classification system classifies soil units based on their capability to produce commonly cultivated crops and pasture plants without deteriorating over a long period of time (see Table 4.2.2, below). The system is subdivided into capability class and capability subclass. Capability classes range from I to VIII (1 to 8), with soils having the slightest limitations to agricultural use receiving the highest ratings (Class I). LCC sub-classes are utilized to further characterize soils within a specific class by designating the main hazard by which a particular soil is limited by reference to a letter, including: erosion (e); water (w); shallow, droughty, or stony (s); and very cold or very dry (c). Class I soils have no sub-classes because soils of this type have few limitations. Some soils are given different classifications for irrigated and non-irrigated conditions.

Table 4.2.2 Land Capability Classifications

Class	Definition
I (1)	Slight limitations that restrict use.
II (2)	Moderate limitations that reduce the choice of plants or require moderate conservation practices.
III (3)	Severe limitations that reduce the choice of plants or require special conservation practices, or both.
IV (4)	Very severe limitations that restrict the choice of plants or require very careful management, or both.
V (5)	Little or no hazard of erosion, but other limitations, impractical to remove, that limit their use mainly to pasture, range, forestland, or wildlife food and cover.
VI (6)	Severe limitations that make them generally unsuited to cultivation and that limit their use mainly to pasture, range, forestland, or wildlife food and cover.
VII (7)	Very severe limitations that make them unsuited to cultivation and that restrict their use mainly to grazing, forestland, or wildlife.
VIII (8)	Limitations that preclude their use for commercial plant production and limit their use to recreation, wildlife, or water supply for esthetic purposes.

Source: NRCS National Soil Survey Handbook, Title 430-VI;

LCC classifications of the soils at the project site are shown in Table 4.2.5, below.

The NRCS Important Farmland Inventory is an inventory of the prime and unique farmland of the nation, as well as an inventory of farmland of statewide and local importance developed in consultation with the appropriate state or local agency. Its purpose is to identify the extent and location of important rural lands needed to produce food, feed, fiber, forage and oilseed crops.

Prime Farmland is identified as land with the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and that is also available for these uses. It has the soil quality, growing season, and moisture supply needed to economically produce sustained high yields of crops when treated and managed, including water management, according to acceptable farming methods. In general, prime farmlands have an adequate and dependable water supply from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, acceptable salt and sodium content, and few or no rocks. They are permeable to water and air, and are not excessively erodible or saturated with water for long periods of time. Soils must meet specific criteria related to moisture, available water capacity, temperatures, pH levels, root zones, slope, permeability, and rock composition in order to meet the NRCS classification of prime farmlands.

Unique Farmland is land, other than prime farmland, that is used for the production of specific high value food and fiber crops. Unique farmlands must have an adequate moisture supply and a combination of favorable factors related to soil quality and other site conditions that favor the growth of a specific food or fiber crop.

Farmlands of Statewide Importance are lands that are of statewide importance for the production of food, feed, fiber, forage, and oilseed crops. The criteria for defining and delineating this land are determined by the appropriate state agency. Lastly, some local areas have additional farmlands that are locally significant for the production of food, feed, fiber, forage, and oilseed crops. While not identified as having national or statewide importance, these lands may be identified by the appropriate local agency as having local significance.

Based on the NRCS Important Farmland Inventory criteria set out in the Code of Federal Regulations (Title 7 – Agriculture, Part 657 – Prime and Unique Farmlands) and the National Soil Survey Handbook Part 622.03, states prepare and maintain a current list of soil survey map units that meet the criteria for farmland. In California, this is done by the California Department of Conservation (CDC) Farmland Mapping and Monitoring Program.

4.2.1.5 Farmland Mapping and Monitoring Program

The CDC Division of Land Resource Protection developed the Farmland Mapping and Monitoring Program (FMMP) in 1984 to analyze impacts to California's agricultural resources. Land is rated based on the land capability classification system, California's Revised Storie Index, and recent land use. Land designations include: Prime Farmland, Farmland of Statewide Importance, Unique Farmland, Farmland of Local Importance, Grazing Land, Urban and Built-Up Land, Other Land, and Water. The FMMP defines these as follows:

- Prime Farmland (P): Farmland with the best combination of physical and chemical features able to sustain long term agricultural production. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. Land must have been

used for irrigated agricultural production at some time during the four years prior to the mapping date.

- Farmland of Statewide Importance (S): Farmland similar to Prime Farmland but with minor shortcomings, such as greater slopes or less ability to store soil moisture. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.
- Unique Farmland (U): Farmland of lesser quality soils used for the production of the state's leading agricultural crops. This land is usually irrigated, but may include non-irrigated orchards or vineyards as found in some climatic zones in California. Land must have been cropped at some time during the last four years prior to the mapping date.
- Farmland of Local Importance (L): Land of importance to the local agricultural economy as determined by each county's board of supervisors and a local advisory committee. In San Luis Obispo County, Farmland of Local Importance is defined as areas that meet all the characteristics of Prime Farmland or Farmland of Statewide Importance with the exception of irrigation. Additional farmlands of Local Importance include dryland field crops of wheat, barley, oats, and safflower.
- Farmlands of Local Potential (LP): San Luis Obispo County also developed an additional category of Farmlands of Local Importance to classify lands having the potential for farmland, which have Prime or Statewide characteristics but are not cultivated. These lands are considered Farmlands of Local Potential.
- Grazing Land (G): Land on which the existing vegetation is suited to the grazing of livestock.
- Urban and Built-Up Land (D): Land occupied by structures with a building density of at least one unit to 1.5 acres, or approximately six structures to a 10-acre parcel. This land is used for residential, industrial, commercial, construction, institutional, public administration, railroad and other transportation yards, cemeteries, airports, golf courses, sanitary landfills, sewage treatment, water control structures, and other developed purposes.
- Other Land (X): Land not included in any other mapping category. Common examples include low density rural developments; brush, timber, wetland, and riparian areas not suitable for livestock grazing; confined livestock, poultry or aquaculture facilities; strip mines, borrow pits; and water bodies smaller than 40 acres. Vacant and nonagricultural land surrounded on all sided by urban development and great than 40 acres is mapped as Other Land.
- Water (W): Perennial water bodies with an extent of at least 40 acres.

Based on the FMMP for San Luis Obispo County (2008), the vast majority of the Project Site contains soils classified as Urban and Built-Up Land, Farmland of Local Potential and Other Land. Urban and Built-Up Land and Other Land encompass 58.75 percent of the Project Site, while Farmlands of Local Potential encompass 422.8 acres, or 41.14 percent of the Project Site. Very minimal areas of Farmland of Statewide Importance and Unique Farmland are located adjacent to the southern project boundary; however, these areas respectively comprise 0.01 percent or less of the Project Site. FMMP designations are shown in Figure 4.2-3, below.

The Storie Index is a widely accepted method of rating soils for agricultural potential in California, which has been used for over 50 years. Originally, Storie Index ratings were hand-generated by soil survey staff and collaborators; therefore, ratings were somewhat subjective because of the inherent biases associated with the design of the classification system and the subjectivity of individual survey staff members. The Revised Storie Index is generated digitally from the NRCS National Soil Information System. Since 2005, the NRCS has published Storie Index ratings generated by the Revised Storie Index method, which reduces the subjectivity associated with this method of land classification.

Ratings are generated solely from soil characteristics, including a wide range of soil profile and landscape characteristics such as soil depth, surface texture, subsoil conditions, drainage, salinity, erosion, and topography. The index is defined by a grade system, ranging from 1 to 6 (refer to Table 4.2.3) and range from less than 10 to 100, with a rating of 100 representing the highest possible potential for agricultural production. Grade 1 soils (Storie Index ratings between 80 and 100) are considered excellent for agriculture and are considered prime soils. Grade 6 soils (Storie Index rating of less than 10) are considered unsuited for agriculture (O'Geen et al. 2008).

Table 4.2.3 Revised Storie Index Ratings

Grade	Storie Index Rating	Definition
1	80 – 100	Excellent – very minor or no limitations that restrict use of general agricultural use
2	60 – 80	Good – suitable for most crops, but have minor limitations that narrow the choice of crops and may require some special management practices
3	40 – 60	Fair – suited to fewer crops or to special crops and require careful management
4	20 – 40	Poor – limited to a narrow range of crops and require special management for intensive agriculture
5	10 – 20	Very Poor – generally not suited to cultivated crops but can be used for pasture and range
6	Less than 10	Non-agricultural – not suited to agricultural use

Source: USDA Soil Conservation Service, Soil Survey of San Luis Obispo County, Coastal Part (1984)

Revised Storie Index ratings of soils at the project site are shown in Table 4.2.4, below.

Table 4.2.4 On-Site Soils, Revised Storie Index Ratings

Soil Unit	Grade	Revised Storie Index Rating	Major Limitations
134 – Dune Land	6	< 10	n/a
184 – Oceano Sand (0-9% slopes)	3	49	drainage, fertility
185 – Oceano Sand (9-30% slopes)	3	41	drainage, fertility
223 – Xerorthents, Escarpment	5	19	erosion
111 – Camarillo Sandy Loam	2	60	drainage, flooding
193 – Psamments and Fluvents, Wet	6	8-10	drainage, salinity

Source: USDA Soil Conservation Service, Soil Survey of San Luis Obispo County, Coastal Part (1984)

The State of California has also defined prime farmland in the California Land Conservation Act, also known as the Williamson Act (Government Code Section 51201(c)) as any of the following:

1. All land that qualifies for rating as Class I or Class II in the NRCS land capability classification system;
2. Land which qualifies for rating 80 through 100 in the Storie Index Rating;
3. Land which supports livestock used for the production of food and fiber and which has an annual carrying capacity equivalent to at least one animal unit per acre as defined by the United States Department of Agriculture;
4. Land planted with fruit- or nut-bearing trees, vines, bushes, or crops which have a nonbearing period of less than five years and which will normally return during the commercial bearing period on an annual basis from the production of unprocessed agricultural plant production not less than $200 per acre; and
5. Land which has returned from the production of unprocessed agricultural plant products an annual gross value of not less than $200 per acre for three of the previous five years.

4.2.1.6 San Luis Obispo County's Conservation and Open Space Element

The County of San Luis Obispo has combined information from these various state and federal sources into a single definition of Important Agricultural Soils of San Luis Obispo County in its Conservation and Open Space Element (COSE) of the General Plan (San Luis Obispo County 2010). Important Agricultural Soils are identified as Prime Farmland, Farmland of Statewide Importance, Other Productive Soils, and Highly Productive Rangelands. The County's definition of Prime Farmland utilized both the state and federal definitions of prime farmland.

Based on the COSE, approximately 53 percent of the Project Site consists of Important Agricultural Soils. Only Dune Land, which is the largest soil unit at the Project Site, comprising 479.8 acres and almost 47 percent, and Xerorthents, Escarpment (9.6 acres and 0.9%) are not considered Important Agricultural Soils. Of the Important Agricultural Soils present, 0.11 acres (less than 0.1 percent of the Project Site) are considered Prime Farmland, 455.5 acres (44.31 percent) are considered Farmland of Statewide Importance, and 89 acres (8.6 percent) are considered Other Productive Soils.

Important Agricultural Soils at the project site are mapped in Figure 4.2-3, below. Table 4.2.5 summarizes the size and classifications of the project site soils, based on the federal, state, and local classification systems described above.

Table 4.2.5 Summary of On-Site Soils

Soil Unit	Area (acres)	Area (%)	LCC		Revised Storie Index Rating	COSE Important Agricultural Soils Classification
			irrigated	non-irrigated		
134 - Dune Land	479.8	46.9%	VIIIe	VIIIe	Non-agricultural	n/a
184 - Oceano Sand (0-9% slopes)	454.4	44.4%	IVe-1	VIe	Fair	Statewide Importance
185 - Oceano Sand (9-30% slopes)	79.4	7.8%	n/a	VIe	Fair	Other Productive Soils
223 - Xerorthents, Escarpment	9.6	0.9%	n/a	VIIe	Very poor	n/a
111 - Camarillo Sandy Loam	0.2	0.02%	IIw-2	IIIw-2	Good	Prime
193 - Psamments and Fluvents, Wet	0.08	0.01%	n/a	VIw	Non-agricultural	Other Productive Soils

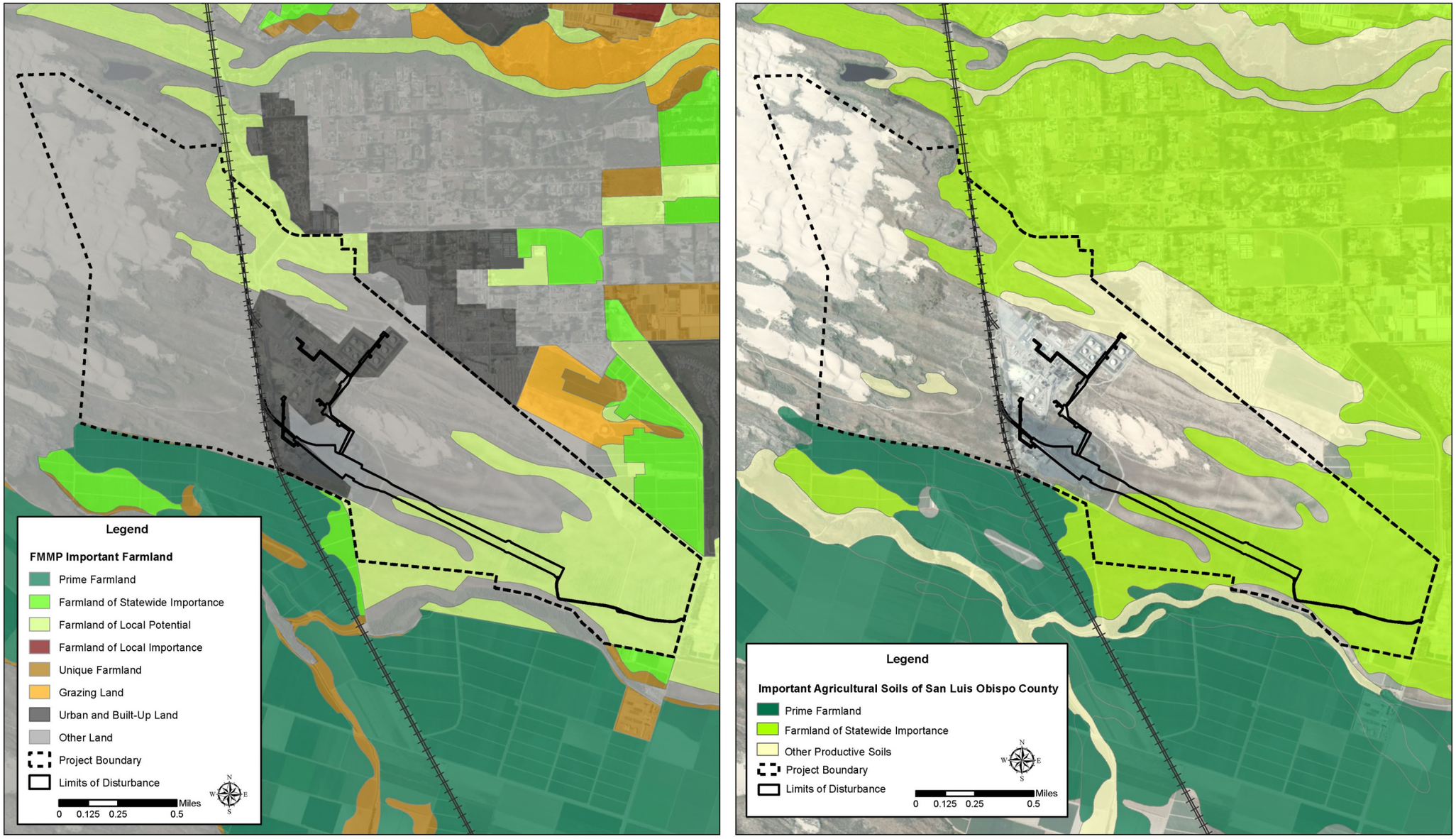
Source: USDA *Soil Survey of San Luis Obispo County, Coastal Part* (1984); San Luis Obispo County Conservation and Open Space Element (2010).

4.2.1.7 Farmland Conversion

The CDC utilizes the FMMP to track the conversion of farmland to other uses in the state. Irrigated farmland in California decreased by more than 317 square miles (203,011 acres) between 2006 and 2008. Urban land increased by 72,548 acres, a 29 percent decrease relative to the 2004 to 2006 reporting period. This was the lowest urbanization rate since the late 1990s, reflecting the effects of the recent economic recession. Long-term land idling and reversion to dry farming due to water availability issues was the primary contributing factor to irrigated land decreases, primarily in the San Joaquin Valley.

In San Luis Obispo County, 357 acres of agricultural land were converted to non-agricultural use between 2008 and 2010. The 357 acres converted consisted of Farmland of Local Importance (138 acres) and Grazing Land (219 acres), but no Prime Farmland, Farmland of Statewide Importance, or Unique Farmland was converted to non-agricultural uses. Approximately 1,590,741, acres of agricultural land were surveyed within the county in 2010, including 409,726 acres of important farmland and 1,181,015 acres of grazing land (DOC 2014). The total conversion of lands, to non-agricultural uses or otherwise, within the county between 2008 and 2010 is shown in Table 4.2.6, below.

Figure 4.2-3 Important Farmland and Important Agricultural Soils Maps



Source: Sanluisobispo2008.Department of Conservation, Farmland Mapping and Monitoring Program, 1984-2008; SLOCo_NRCS_Soils. U.S. Department of Agriculture, Natural Resources Conservation Service, Soil Survey Geographic (SSURGO) Database for San Luis Obispo County. October 17, 2005; County of San Luis Obispo, COSE, 2010.

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Table 4.2.6 San Luis Obispo County Farmland Conversion 2008-2010

Agricultural Land Use Category	Total Acreage Inventoried		2008-2010 Acreage Changes			
	2008	2010	Acres Lost	Acres Gained	Total Changed	Net Changed
Prime Farmland	41,569	41,319	1,129	879	2,008	-250
Farmland of Statewide Importance	21,109	21,132	685	708	1,393	23
Unique Farmland	38,777	39,950	894	2,067	2,961	1,173
Farmland of Local Importance	309,081	307,325	7,281	5,525	12,806	-1,756
IMPORTANT FARMLAND SUBTOTAL	*410,536*	*409,726*	*9,989*	*9,179*	*19,168*	*-810*
Grazing Land	1,183,042	1,181,015	7,549	5,522	13,071	-2,027
AGRICULTURAL LAND SUBTOTAL	*1,593,578*	*1,590,741*	*17,538*	*14,701*	*32,239*	*-2,837*
Urban and Built-up Land	44,392	45,017	582	1,207	1,789	625
Other Land	239,045	242,998	1,801	5,754	7,555	3,953
Water Area	10,521	8,780	1,741	0	1,741	-1,741
TOTAL AREA INVENTORIED	**1,887,536**	**1,887,536**	**21,662**	**21,662**	**43,324**	**0**

Source: California Department of Conservation, Division of Land Resource Protection, California Farmland Conversion Report 2008-2010.

4.2.1.8 Williamson Act

The Williamson Act, also known as The California Land Conservation Act of 1965, is the State of California's primary conservation program for agricultural and open space lands. The voluntary program allows property owners to receive reduced property taxes in exchange for ten or 20 year commitments in the form of legally enforceable contracts to keep the property in agricultural production. The program is a two-step process involving the establishment of an agricultural preserve by the local legislative body and then approval of a land conservation contract. Based on the County Assessor's parcel database as of September 2006, there were approximately 4,140 Williamson Act contracts in the County encompassing 781,000 acres. There were also 1,630 agricultural preserves covering an area of 183,800 acres.

No portion of the project site is currently under an Agricultural Preserve or Williamson Act contract. However, several immediately adjacent parcels to the northwest, northeast and south of the project site include substantial lands under Williamson Act contracts (refer to Figure 4.2-1, above). Uses allowed on land under contract must meet the County CZLUO requirements, County Rules of Procedure to Implement the California Land Conservation Act of 1965, and the principles of compatibility outlined in the Land Conservation Act (California Government Code Section 51200 et seq.).

4.2.1.9 UPRR Mainline Routes

Trains could enter California at least five different locations (one at the north end of the state from Oregon, two at the northeast from Nevada, one at the southeast from Nevada, and one at the south from Arizona). Depending upon the route taken by the train they could arrive at the SMR from the north or the south. It is unknown what route UPRR would use to deliver the trains to the

SMR. Coming from the north the routes merge at the UPRR Roseville Rail Yard. From the south the routes merge at the Colton Rail Yard. Given that the route the trains would travel to get to these two UPRR yards is speculative, the EIR has evaluated in more detail the impacts of trains traveling from these two UPRR yards to the SMR.

Beyond the two UPRR Yards, trains could travel any number of routes (refer to Figure 2-8). Also, crude oil delivered to California by UPRR would generally pass through either of these two rail yards in route to the SMR. Depending upon the source of the crude oil, crude oil trains could use any portion of the UPRR network between Roseville/Colton and the source location for the crude oil. The exact route that would be taken would depend upon a number of factors, that could include the source of the crude oil, weather conditions, train traffic conditions, etc. Since the routes past Roseville and Colton are somewhat speculative, the EIR has discussed in a more qualitative nature the potential agricultural resource impacts of train traffic beyond these two rail yards.

The UPRR mainline routes from Roseville in the north and Colton in the south that would be used to transport crude oil to the SMR refinery pass through or adjacent to extensive agricultural lands and uses, including row crops, vineyards, orchards, grazing land, and nurseries. An overview of agricultural areas along the mainline routes is shown in Figures 4.2-4 through 4.2-9.

4.2.2 Regulatory Setting

4.2.2.1 State Regulations and Policy

California Land Conservation Act (Williamson Act)

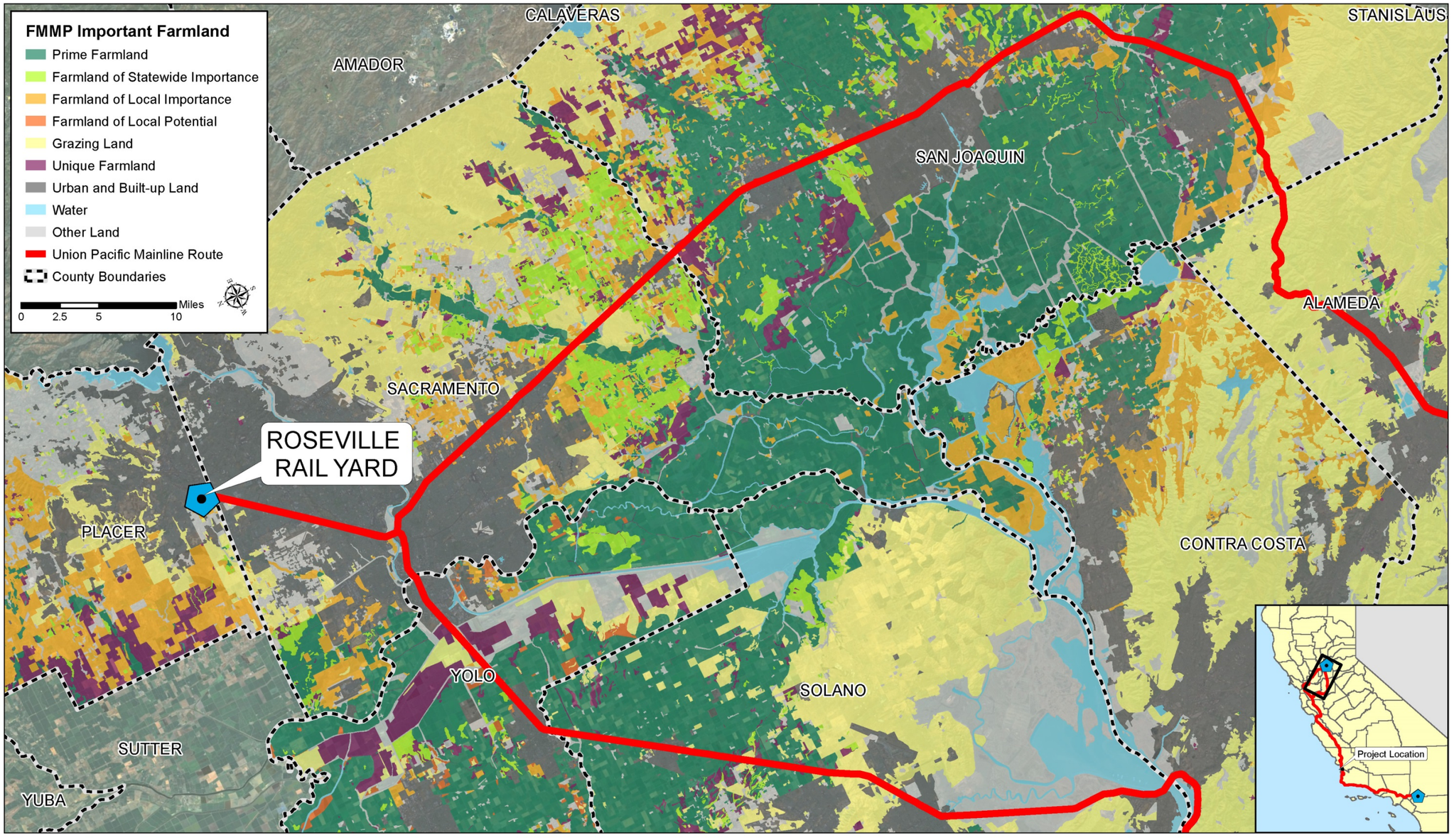
As defined by Government Code 51200 et seq., the California Land Conservation Act of 1965 (Williamson Act) enables local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space use. As an incentive, landowners receive lower property tax assessments based on agricultural or open space land uses, as opposed to the unrestricted value of the land. Until recently, local governments have received a subvention to replace a portion of forgone property tax revenues from the state via the Open Space Subvention Act of 1971. However, due to recent state budget issues, subvention payments have declined or been eliminated in recent years.

4.2.2.2 Local Regulations and Policy

Agriculture Element

The Agriculture Element of the San Luis Obispo County General Plan (separated from the Open Space Element in May 2010) provides a background on agricultural resources within the County. Through the goals, policies, implementation programs, and measures provided within the document, the County's intent is to "Identify those areas of the county with productive farms, ranches and soils, and establish goals, policies and implementation measures that will enable their long-term stability and productivity." Of the policies in the Agriculture Element, several are directly applicable to this project. Please refer to Appendix G, Preliminary Policy Consistency Analysis, for a discussion of these policies as they relate to this project.

Figure 4.2-4 UPRR Mainline Routes Agricultural Maps (Sheet 1 of 6)



Source: Department of Conservation, Farmland Mapping and Monitoring Program, 1984-2008.

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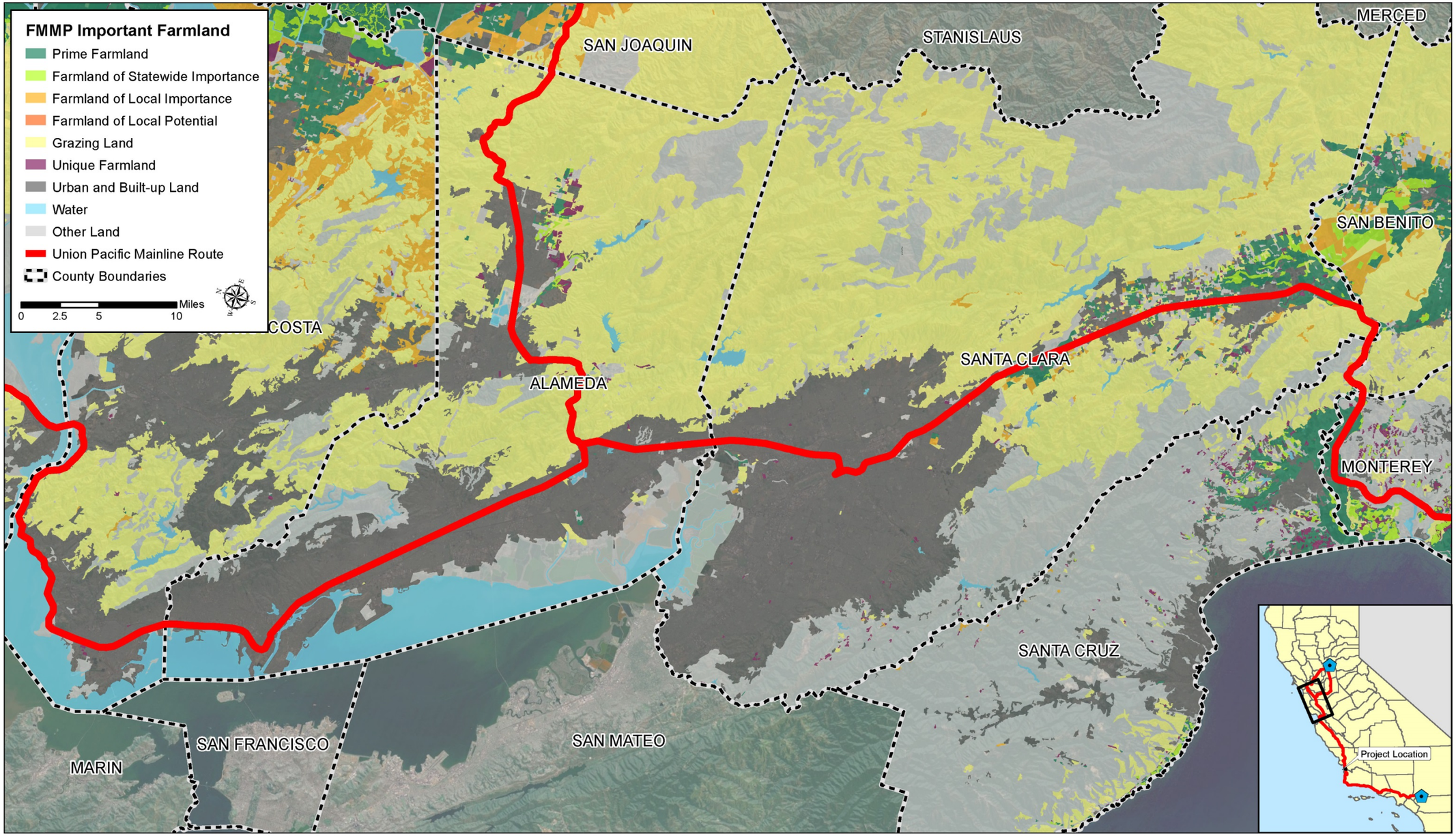
Figure 4.2-5 UPRR Mainline Routes Agricultural Maps (Sheet 2 of 6)



Source: Department of Conservation, Farmland Mapping and Monitoring Program, 1984-2008.

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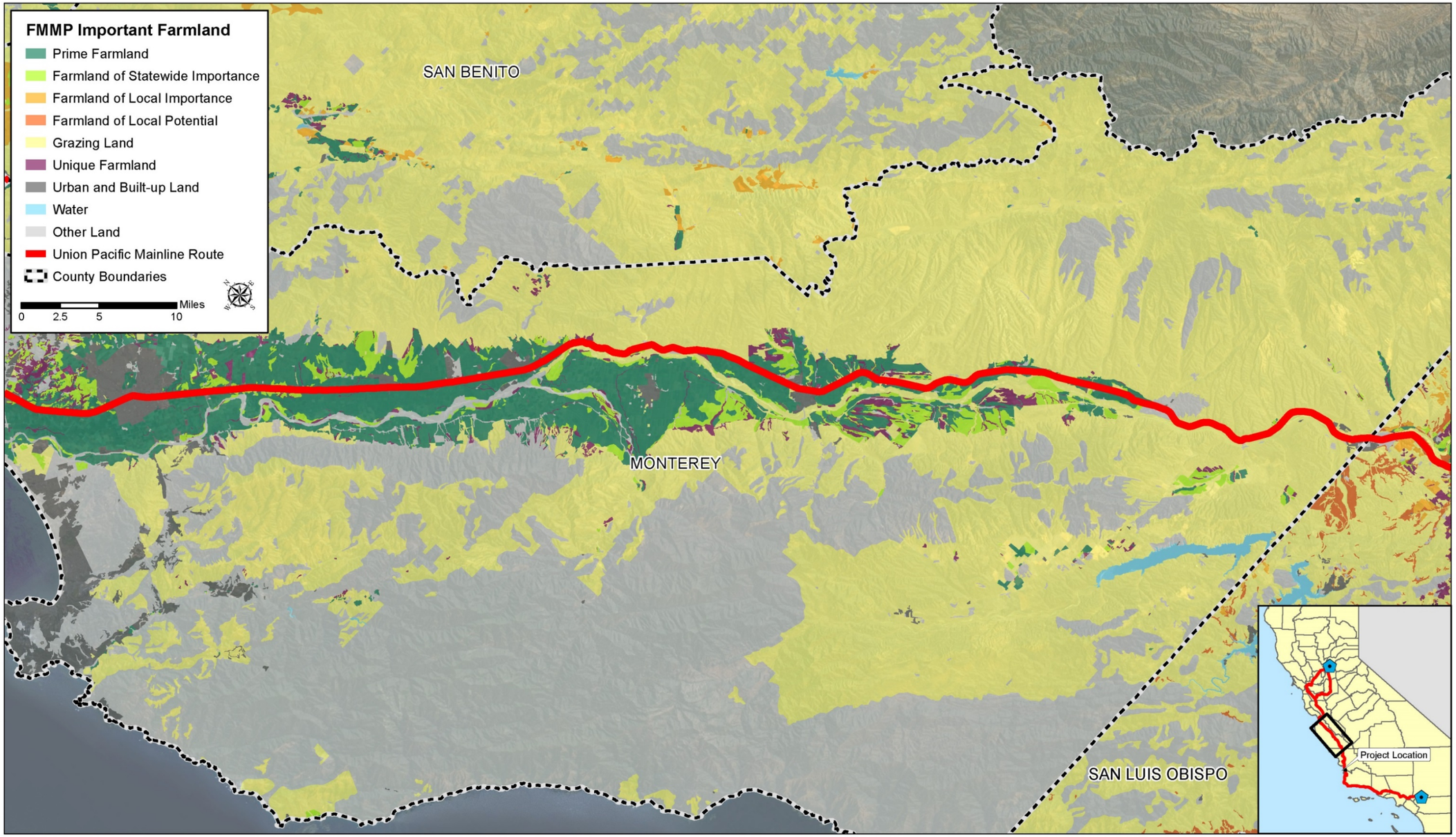
Figure 4.2-6 UPRR Mainline Routes Agricultural Maps (Sheet 3 of 6)



Source: Department of Conservation, Farmland Mapping and Monitoring Program, 1984-2008.

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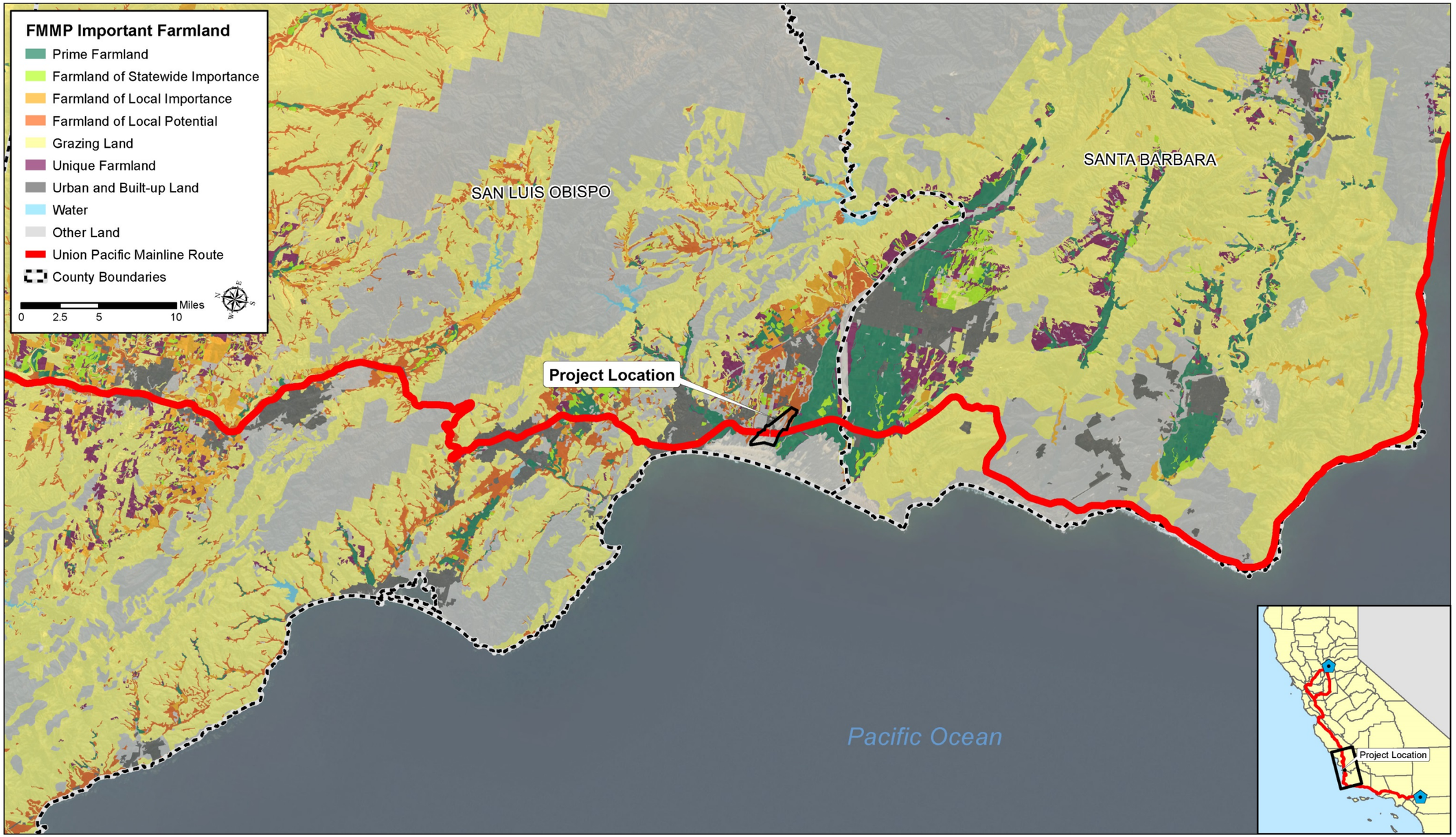
Figure 4.2-7 UPRR Mainline Routes Agricultural Maps (Sheet 4 of 6)



Source: Department of Conservation, Farmland Mapping and Monitoring Program, 1984-2008.

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Figure 4.2-8 UPRR Mainline Routes Agricultural Maps (Sheet 5 of 6)

Source: Department of Conservation, Farmland Mapping and Monitoring Program, 1984-2008.

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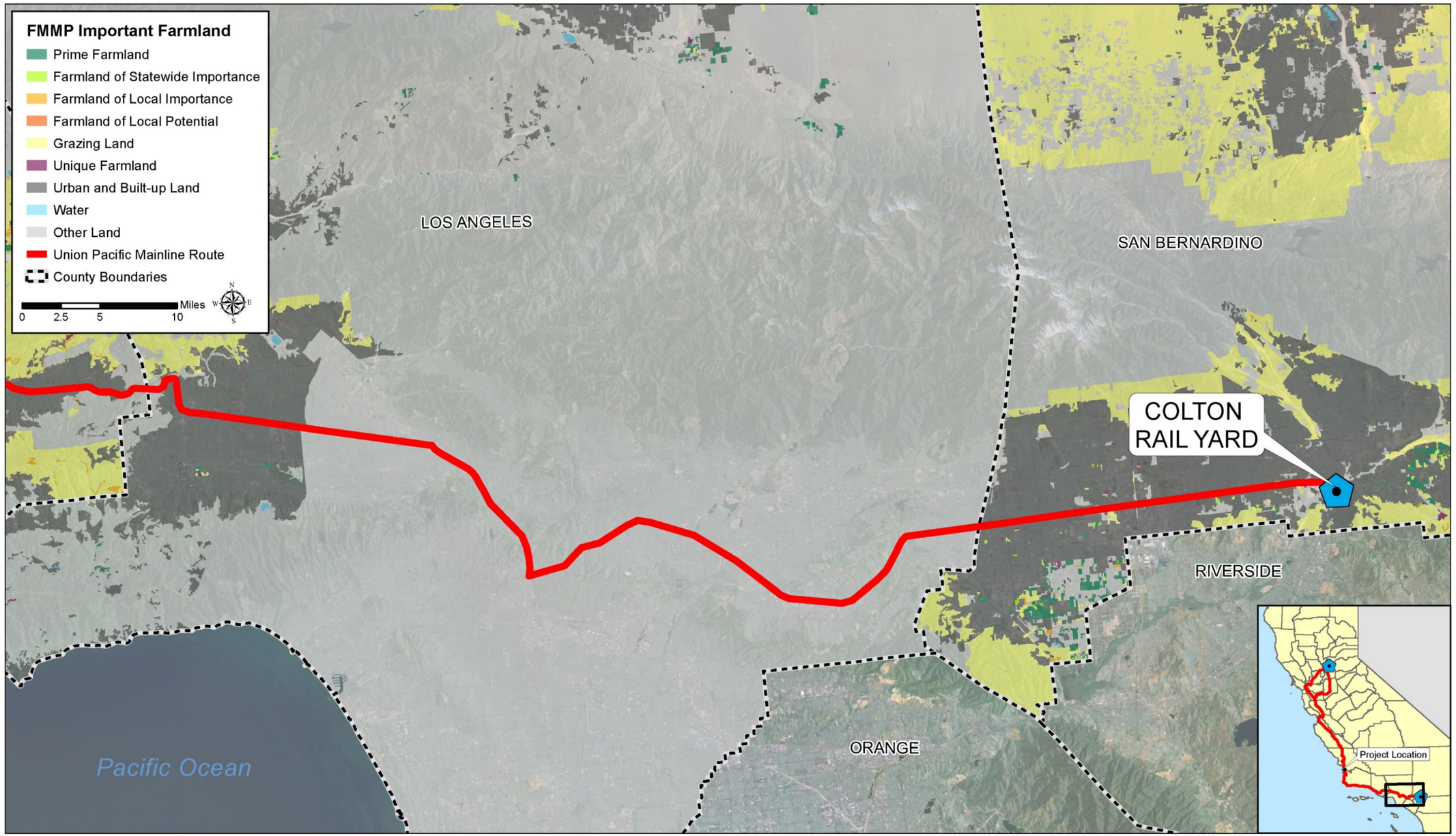
Figure 4.2-9 UPRR Mainline Routes Agricultural Maps (Sheet 6 of 6)



Source: Department of Conservation, Farmland Mapping and Monitoring Program, 1984-2008.

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Conservation and Open Space Element

The COSE is based on the principles of strategic growth, with the intent to preserve unique or valuable natural resources, to manage development within the sustainable capacity of the county's resources, and to reduce the county's contribution to global climate change. The COSE consists of a policy and program document and a technical appendix. The policy and program document includes a chapter that specifically addresses soils, which identifies resource management goals, policies and strategies that preserve and protect soil resources from degradation or loss by wind and water erosion, preserve and protect watershed function and ecological health through soil conservation, and protect agricultural soils from conversion to urban and residential uses. Several policies of the COSE are directly applicable to the project. Please refer to Appendix G, Preliminary Policy Consistency Analysis, for a discussion of these policies as they relate to this project.

San Luis Obispo County Right-to-Farm Ordinance

The San Luis Obispo County Right-to-Farm Ordinance (County Code Chapter 5.16) states that "the use of real property for agricultural operations including agricultural processing is a high priority and favored use."

The ordinance provides that: "it is the declared policy of this County to enhance and encourage agricultural operations, including agricultural processing within the County…[and] to provide to the residents of this County proper notification of the County's recognition and support through this ordinance of those persons' and/or entities' right to farm". The ordinance also states that: "where non-agricultural land uses occur near agricultural areas, agricultural operations frequently become the subjects of nuisance complaints due to lack of information about such operations. As a result, agricultural operators may be forced to cease or curtail their operations. Such actions discourage investments in farm improvements to the detriment of agricultural uses and the viability of the County's agricultural industry as a whole."

The right-to-farm ordinance advises purchasers of residential and other property types adjacent to existing agricultural operations of the inherent potential nuisances associated with the purchase of such property. Concerns may include the noise, odors, dust, chemicals, smoke and hours of operation that may accompany agricultural operations.

4.2.3 Significance Criteria

The significance of potential agricultural impacts is based on thresholds identified within the County of San Luis Obispo Initial Study Checklist, which was developed in accordance with Appendix G of the CEQA Guidelines. The County Checklist provides the following thresholds for determining impact significance with respect to agricultural resources. Agricultural impacts would be considered significant if the proposed project would:

- Convert prime agricultural land, per NRCS soil classification, to non-agricultural use;
- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use;

- Impair agricultural use of other property or result in conversion to other uses; or
- Conflict with existing zoning for agricultural use, or Williamson Act program.

4.2.4 Project Impacts and Mitigation Measures

The following sections discuss the Rail Spur Project's potential to result in adverse environmental effects to agricultural resources based on the thresholds identified above.

Impact #	Impact Description	Phase	Impact Classification
AR.1	The Rail Spur Project would result in conversion of prime agricultural land per NRCS soil classification to non-agricultural use.	Construction and Operations	None

Based on the NRCS Web Soil Survey, on-site soils farmland classifications are provided in Table 4.2.7. None of the soils encompassing the Project Site are considered prime farmland except for potentially Camarillo sandy loam, which would only be considered prime when irrigated and drained. No portion of the Project Site is irrigated at this time but water resources are available that would allow for irrigation of the Camarillo Sandy Loam soils (see Water Resources Section for a water availability discussion). The Camarillo Sandy Loam soil unit lies almost entirely south of the Project Site and only extends beyond the project boundary onto the Project Site in very small areas (approximately 0.2 acre) south of the existing industrial coke plant area (refer to Figure 4.2-2, above). No disturbance is proposed within 400 feet of this soil unit; therefore, the Rail Spur Project is not likely to disturb or affect any Camarillo Sandy Loam soils. Use of the existing UPRR Mainline Route would place trains on existing tracks and haul routes, and would not result in any conversion of prime adjacent soils along the route.

Table 4.2.7 NRCS Soil Classifications

Soil Unit	Farmland Classification
134 – Dune Land	Not prime farmland
184 – Oceano Sand (0-9% slopes)	Farmland of statewide importance
185 – Oceano Sand (9-30% slopes)	Not prime farmland
223 – Xerorthents, Escarpment	Not prime farmland
111 – Camarillo Sandy Loam	Prime farmland, if irrigated and drained
193 – Psamments and Fluvents, Wet	Not prime farmland

Source: USDA NRCS Web Soil Survey; http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm

No conversion of prime agricultural land, per NRCS soil classification, to non-agricultural use would result from the Rail Spur Project. No impacts would occur.

Impact #	Impact Description	Phase	Impact Classification
AR.2	The Rail Spur Project would result in the permanent conversion of approximately 22.3 acres of Farmland of Statewide Importance, based on soil classifications in the COSE, to non-agricultural use.	Construction and Operations	Class III

Areas of Prime Farmland, Unique Farmland and Farmland of Statewide Importance (mapped through the FMMP) are shown in Figure 4.2-3, above (left side of the graphic). The FMMP maps these areas based on the NRCS soil classifications discussed above as well as California's Revised Storie Index and recent land uses. Based on the FMMP, the Project Site does not contain any Prime Farmland, Unique Farmland or Farmland of Statewide Importance; however, Farmland of Local Potential is delineated onsite. While adjacent parcels do have areas within these designations, none of the adjacent farmlands are located within 400 feet of the proposed area of disturbance and no effects on these farmlands would result. Potential effects on adjacent agricultural uses are further discussed below.

Based on the FMMP, no conversion of these farmlands to non-agricultural use would occur. However, to account for local conditions related to the agricultural industry and the particular crops grown within the County, and to protect the local resources best suited to support those crops, the County established its own soil classification system in the COSE. Based on the COSE classifications, the Project Site contains a very small area of soils that are considered Prime Farmland, and substantive areas of Farmland of Statewide Importance and Other Productive Soils (refer to Figure 4.2-3, right side of the graphic).

The Prime Farmland designation coincides with the Camarillo Sandy Loam soil unit discussed above. No project activities are proposed within 400 feet of these soils and no conversion of COSE-designated Prime Farmland would occur.

The Farmland of Statewide Importance designation identified in the COSE is associated with the Oceano Sand, 0 to 9 percent slopes, soil unit (refer to Figure 4.2-2). Development of the Rail Spur Project would result in the disturbance of approximately 22.3 acres of Farmland of Statewide Importance in areas currently used for grazing. The unloading facility and all related appurtenances are sited outside of the Important Farmland; however, the proposed tracks would extend approximately 0.8 mile into Farmlands of Statewide Importance. Approximately 12.3 acres of Oceano Sand within the Farmland of Statewide Importance designation would be permanently converted to non-agricultural use as a result of development of the rail spur extension and the emergency vehicle access road. Disturbance to the remaining 10 acres of this COSE-designated Important Agricultural Soil would only occur during short-term construction activities; these areas would be restored to the extent feasible after construction of the project. All 22.3 acres would be located within the security fencing that would surround the proposed rail spur extension or converted directly into the emergency access roadway area. Therefore, this entire area of Farmlands of Statewide Importance would be considered permanently converted due to the infeasibility of utilizing these areas as farmland after construction of the project. Use of the existing UPRR Mainline Route would place trains on existing tracks and haul routes, and would not result in any conversion of adjacent soils along the route.

Conversion of this area would remove existing rangeland with the capacity for approximately 67 cattle (22.3 acres times 3 head per acre). However, the site has not historically been grazed anywhere near the allowable capacity for industrial parcels, and the intensity of existing grazing activities (0 to 30 head) could easily be continued on remaining undeveloped areas of the Project Site. Because the proposed operations are similar to existing industrial operations at the refinery, no additional land use incompatibility issues are expected to result from the Rail Spur Project that would significantly affect grazing activities. Therefore, no significant impacts to existing grazing activities would occur.

The Oceano Sand soil type is well suited for some agricultural uses (such as strawberries which prefer well drained soils) provided that adequate water is available. Farmlands of Statewide Importance are located both directly north and south of the eastern portion of the Project Site where the rail extension is proposed, and currently support intensive row crops in areas also comprised of Oceano Sands. Therefore, the potential for more intensive agricultural use of this area exists. However, the farmlands on the Project Site are not currently used for intensive agricultural production and such use is not likely as long as existing industrial refining continues due to private land use preferences, existing zoning and permitting constraints, and incompatibility issues.

Due to the Rail Spur Project's location on an Industrial-zoned parcel and the presence of multiple site conditions and regulatory constraints that would make future agricultural use of this area unlikely, conversion of these farmlands to industrial use consistent with existing land uses and zoning is considered a less than significant impact on agricultural resources.

The San Luis Obispo County General Plan includes policies for maintaining agricultural lands, and states:

> "*Other lands (non-prime) suitable for agriculture shall be maintained in or available for agricultural production unless: 1) continued or renewed agricultural use is not feasible; or 2) conversion would preserve prime agricultural land or concentrate urban development within or contiguous to existing urban areas which have adequate public services to serve additional development; and 3) the permitted conversion will not adversely affect surrounding agricultural uses.*
>
> *All prime agricultural lands and other (non-prime) lands suitable for agriculture are designated in the land use element as Agriculture unless agricultural use is already limited by conflicts with urban uses.*" (San Luis Obispo County LCP, Chapter 7: Agriculture, Policy 1)

All portions of the Rail Spur Project Area except the easternmost segment of the EVA, including all areas of Farmlands of Statewide Importance that would be converted, are within the Industrial land use designation (refer to Figure 4.8-2). Per the LCP, all prime and other (non-prime) lands suitable for agricultural use are designated as Agriculture unless agricultural uses are limited by conflicts with urban uses. Therefore, the area to be converted as a result of the Rail Spur Project is not considered suitable for agricultural purposes per guidance in the LCP and for other reasons discussed above. Because these areas are not suitable for agricultural purposes, the LCP does not

require their maintenance for agricultural production (refer to Policy 1, above, which only applies to other (non-prime) lands suitable for agriculture).

Mitigation Measures

No mitigation measures would be necessary because the potential impact would be less than significant. The potential for adverse impacts to on-site agricultural soils and farmlands would further be minimized by implementation of measures proposed to reduce risks of erosion, sedimentation, stormwater runoff, and hazardous material contamination. Refer to mitigation proposed in Sections 4.6, Geological Resources, 4.7, Hazards and Hazardous Materials, and 4.13, Water Resources.

Residual Impacts

The Rail Spur Project would convert Farmlands of Statewide Importance to non-agricultural use; however, these actions would occur on land zoned for Industrial Use and the project would not significantly disrupt existing grazing activities. More intensive agricultural activities on the site are unlikely due to the industrial land classification, regulatory constraints including requirement of a coastal development permit, the presence of Nipomo Mesa lupine, and the past and present crude refining activities. With implementation of the mitigation measures proposed elsewhere in this EIR, impacts associated with the conversion of agricultural soils and farmlands would be further minimized. Residual impacts would be *less than significant (Class III)*.

Impact #	Impact Description	Phase	Impact Classification
AR.3	The project could result in effects that impair adjacent agricultural uses, including the generation of dust and contaminated air emissions, soil and water contamination, use of water within the Santa Maria Groundwater Basin, the spread of noxious weeds, and increased risk of fire or oil spills, which have the potential to adversely affect adjacent agricultural areas.	Construction and Operations	Class II

Project development could generate dust and contaminated air emissions, create hazardous materials contamination, increase water demands, spread noxious weeds, increase risk of fire or oil spills, and result in other effects, all with the potential to adversely effect on-site grazing activities and adjacent off-site agricultural uses.

The SMR currently supports heavy industrial uses in operation 24 hours/day 365 days/year. Existing uses include crude oil and carbon processing, railroad tracks and train cars, large-scale equipment and trucks, large stacks, storage tanks, above-ground pipelines, and material storage. Existing industrial uses have occurred at the Project Site concurrent with adjacent grazing activities for decades. The Rail Spur Project would extend the railroad tracks into existing grazing areas, which would result in an extension of noise, dust, and air pollution similar to those along other areas of the railroad tracks extending through the SMR. However, the uses proposed by the Rail Spur Project would be consistent with existing uses at the SMR and would not result in a new or different use in the area that would be substantially less compatible with grazing activities. Because the proposed operations are similar to existing heavy industrial operations at

the refinery that have historically occurred with no discernable effect on adjacent grazing activities, no additional land use incompatibility issues are expected to result from the Rail Spur Project that would significantly affect onsite grazing activities.

Although the potential for oil spills currently exists at the SMR, the Rail Spur Project increases the potential for leaks or spills due to operation of the unloading facility and associated pipeline.

Given the low speed the trains would be moving at the site (3 mph) it is unlikely that a tank car could be impacted enough to result in a spill. This is discussed further in the Hazards Section (Section 4.7). In addition, most of the rail spur would be below the surrounding grade (see grading plans in Appendix A). This would help to contain any oil spilled within the rail spur graded area.

The most likely spill related event would be a release during the unloading process due to a loading line failure. The unloading racks are equipped with oil spill drain boxes which would feed below-grade 16-inch-diameter drain lines routed to three parallel 20,000 gallon rectangular storage tanks located in a vault for containment. The total capacity of the containment system would be about 273,000 gallons (this includes the drain boxes, curbed area, pipelines and storage tanks). The containment system has been designed to move any spilled oil away from the rail cars and into the 60,000 gallon storage tanks. The loss of a loading hose could result in a maximum spill of about 27,300 gallons of crude oil (the capacity of one rail car). This system would effectively control spills that would from the loading operations.

A spill from the new crude oil pipeline has the potential to result in the worst-case spill of about 90,800 gallons of crude oil. This worst case spill would occur where the pipeline connects with unloading pumps since this is the lowest elevation of the pipeline. As one moves up the pipeline toward the storage tanks, the maximum spill volumes decrease, with the smallest spill volumes being near the storage tanks. In the event of a release from the pipeline the oil would drain into the area around the pipeline and unloading racks (see grading plans in Appendix A).

In the unlikely event that a spill got outside the perimeter of the unloading facility it would be generally be confined to the Project Site given the topography of the surrounding area.

As noted in the Water Resources section of the EIR, mitigation is identified that would further reduce the potential for contamination of soil and water (refer to WR-1 and WR-2). The applicant is required to comply with existing fire safety regulations to prevent and contain fires. In addition, the Rail Spur Project would be sited in the interior portions of the Project Site and all areas of disturbance would be separated from adjacent agricultural areas by 400 feet or more. Therefore, the potential for impacts related to soil and water contamination, and destruction by accidental fires and spills is considered low but would still be considered potentially significant.

The Water Resources section of the EIR includes an assessment of water demand; please refer to that section for more detailed information. In summary, the 2012 Water Supply Assessment prepared for the Throughput Increase Project concluded that the total water supplies available during normal, single-dry, and multiple-dry water years, within a 20-year projection, will meet the projected water demand for the increased throughput project, based on the Phillips 66 groundwater rights in the Nipomo Mesa Management Area (NMMA), as defined in the

Stipulation for the Santa Maria Groundwater Litigation (the Stipulation). In the next 20 years, if a Severe Water Shortage Condition occurs, per the Stipulation, Phillips 66 would have rights to 110 percent of the highest amount of prior groundwater use, or 1,550 AFY. The County of San Luis Obispo and other major water purveyors in the NMMA are bound by the Superior Court of the County of Santa Clara, under the Stipulation to uphold the Phillips 66 SMR rights to use water. Increased throughput (not associated with the Rail Spur Project) would result in a water demand up to 1,111 AFY. The proposed Rail Spur Project would increase water demand by 250 gallons per day, or 0.3 AFY. This additional 0.3 AFY of groundwater use would not be a substantial increase above existing conditions, and would not result in a significant decrease in water available for agricultural uses on adjacent parcels, and agricultural uses overlying the Santa Maria Groundwater Basin. Therefore, potential impacts related to water demand would be less than significant.

Regarding dust, the applicant is required to comply with San Luis Obispo County APCD standards for control of particulate matter, which would reduce the generation and transport of dust during construction (see mitigation measure AQ-1f). Regarding the spread of noxious weeds, mitigation is identified in the Biological Resources section that addresses the potential spread of invasive plants (refer to BIO-9). Potential impacts on agricultural uses of other properties would be potentially significant prior to implementation of these mitigation measures.

Mitigation Measures

AR-3 Implement WR-1, WR-2; AQ-1f, and BIO-9.

Residual Impacts

Based on implementation of mitigation measures referenced above and discussed in detail within this EIR (Air Quality, Biological Resources, and Water Resources), potential impacts to agricultural resources onsite and in the area would be *less than significant with mitigation (Class II)*.

Impact #	Impact Description	Phase	Impact Classification
AR.4	The project proposes disturbance and use of lands within the Agriculture designation to support industrial development.	Operations	None

The vast majority of the Project Site is within the Industrial land use designation. However, a small portion in the southeastern corner of the site, approximately 10 acres, is within the Agriculture land use designation (refer to Figure 4.8-2). Proposed activities within this area would be limited to improvements to the existing dirt road to provide secondary emergency vehicle access to the Rail Spur Project. Approximately 0.25 acre of this area would be converted to the improved road; however, no new or different use is proposed that would conflict with the agricultural designation or future agricultural use of the property. This area is outside of the Coastal Zone; therefore, LCP policies related to the maintenance of lands suitable for agricultural use are not applicable.

Potential impacts would be less than significant. Impacts related to the conversion of agricultural lands and soils are discussed further above.

The Project Site is not subject to a Williamson Act contract, although several adjacent agricultural parcels are under such contracts. The Rail Spur Project would not directly conflict with any Williamson Act contracted lands. The potential for indirect effects on adjacent agricultural lands that may be subject to Williamson Act contracts are discussed above.

No impacts related to the Williamson Act program would occur.

Impact #	Impact Description	Phase	Impact Classification
AR.5	The project could result in effects that impair adjacent agricultural uses along the UPRR mainline in the event of a derailment and/or spill, including the generation of contaminated air emissions, soil and water contamination, and increased risk of fire, which have the potential to adversely affect adjacent agricultural areas.	Operations	Class I

The addition of up to five train round trips per week on the UPRR mainline routes would increase the potential for spills or fire-related impacts on adjacent agricultural soils in the event of an accident, derailment or other upset conditions during transport along the mainline routes. The probability of a crude oil train release incident is discussed in the Hazardous and Hazardous Materials Section (Section 4.7). This probability represents the probability of a release incident for the length of the rail routes between the SMR and Roseville or Colton. In order for there to be an impact to agricultural resources, the incident would need to occur in the vicinity of these resources. This would lower the probability of an oil train release impacting agricultural resources.

As discussed in the Hazards and Hazardous Materials Section (Section 4.7), the worst case spill from a unit train on the mainline tracks was assumed to be 180,000 gallons (about six tanker cars).

In the event of an accident, a spill of transported crude could occur, potentially damaging any agricultural areas, soils, crops, water sources, and uses within the area of the spill. An accident along the mainline routes could also create a fire hazard in agricultural areas, which could spread substantially beyond the areas directly adjacent to the tracks. As shown in Figures 4.2-4 through 4.2-9, the mainline rail routes pass through numerous prime, statewide or local important farm lands. All of these agricultural areas could be impacted in the unlikely event of an oil spill in close proximity to these areas. In the event of an oil spill adjacent to these areas, there could be a complete loss of the agricultural resources due to fire or oil spill in the vicinity of the impact area.

Some short-term impacts could be minimized through site remediation, clean-up, and restoration of the agricultural resources (i.e., replanting, removal of contaminated soils). However, impacts related to water source contamination and loss of some specialty crops (i.e., old growth vines that

have value in their age) would be more difficult to mitigate. The loss of some crops, prime soils, and other agricultural resources may not be mitigable through restoration and replacement in kind. Therefore, impacts to agricultural resources associated with an oil spill along the mainline routes would be considered potentially significant.

Spill Impacts beyond Roseville and Colton Yards
Beyond the two UPRR Yards, trains could travel any number of routes (refer to Figure 2-8). Also, crude oil delivered to California by UPRR would generally pass through either of these two rail yards in route to the SMR. Depending upon the source of the crude oil, crude oil trains could use any portion of the UPRR network between Roseville/Colton and the source location for the crude oil. The exact route that would be taken would depend upon a number of factors, that could include the source of the crude oil, weather conditions, train traffic conditions, etc.

While the exact route the trains would take to get to these two rail yards is speculative, all of the routes within and outside of California would traverse various amounts of agricultural areas, which would increase the probability of a spill impacting agricultural resources. In the event of a spill impacting agricultural resources along this portion of the route the impacts could be significant for the same reasons discussed above for the routes between Roseville/Colton and the SMR.

Mitigation Measures
Implement mitigation measures PS-4a through PS-4e and BIO-11.

Residual Impacts
Implementation of mitigation measures PS-4a through PS-4e would reduce the likelihood of an oil spill and the ability of first response agencies to respond to a crude oil spill. In particular, PS-4b would require the use of safer tank cars that would reduce the likelihood of a spill in the event of an accident. Use of the upgraded tanker cars would reduce the probability of a 100 gallons or greater oil spill to between once in 172 years and once in 291 years depending upon the route taken to get to the SMR. Even with implementation of these mitigation measures oil spill impacts to agricultural resources along the mainline rail routes would remain significant and unavoidable depending upon the location of the spill.

Under Federal and State law, UPRR and the owner of the crude oil would be responsible for cleanup and remediation of any oil spill. SB 861 requires that operators demonstrate they have the financial resources to pay for spill response, cleanup, and damages based upon a reasonable worst case spill volume.

Even with these mitigation measures, in the unlikely event of oil spill along the UPRR mainline tracks, impacts to agricultural resources could be significant. Depending upon the location of the spill, impacts may occur to a particular crop or soil or other agricultural resource that cannot be mitigated through remediation and replanting (i.e., old growth vines and orchards, a unique soil type/condition that can't be replenished from off-site areas). A spill could also contaminate an agricultural water source, resulting in long-term and wide-spread impacts to agricultural uses.

Federal law may preempt local agency regulation of rail lines; therefore, implementation of appropriate mitigation measures to protect agricultural resources along the UPRR mainline may

not be feasible or enforceable. Residual impacts to agricultural resources along the UPRR mainline rail routes from an oil spill could be *significant and unavoidable (Class I)* depending upon the location of the spill.

4.2.5 Cumulative Analysis

The Rail Spur Project would result in less than significant impacts to agricultural resources associated with the conversion of approximately 22.3 acres of Farmland of Statewide Importance based on designations contained in the County COSE. No impacts to prime soils, adjacent agricultural lands, agricultural zoning, or Williamson Act designated lands would occur.

Additional projects in the cumulative development scenario would also contribute to the conversion of Prime, Unique and Important Farmlands, including the Price Canyon Oil Field Expansion and Laetitia Agricultural Cluster Subdivision. While the Price Canyon Oil Field Expansion would include development activities in an area suitable for agricultural production, and surrounded by productive agriculture (similar to the Rail Spur Project), the proposed expansion activities would occur within established oil extraction areas designated for industrial use. Therefore, they would be an appropriate use for that location. Potential impacts on adjacent and nearby agriculture would be the primary risk of that project, and such impacts can generally be mitigated through dust, erosion, sedimentation, and hazardous materials control measures. Therefore, no significant cumulative impact would result from increased industrial activities within properly designated Industrial areas that may otherwise be properly suited for agricultural use.

The Laetitia Agricultural Cluster Subdivision Project would result in significant loss of active agricultural uses and bring residential uses into existing buffer and greenbelt areas. However, both project-specific and cumulative impacts to agricultural resources have already been identified as significant and unavoidable in the Draft EIR for that project (September 2008). In addition, the Rail Spur Project does not involve impacts similar to those identified during review of the Laetitia Project (i.e., urban development into the greenbelt area, elimination of agricultural buffers, inconsistency with the Land Use Ordinance and Agriculture and Open Space Element). Therefore, the Rail Spur Project's contribution to this cumulative impact would be less than significant.

As noted in the Water Resources section of the EIR, the Rail Spur Project would not result in significant cumulative impacts to water supply, pursuant to compliance with the existing Stipulation. This indicates that the project's use of water would not result in a significant cumulative impact to agricultural resources related to impairment of agricultural production due to water supply. Therefore, potential cumulative impacts to agricultural resources would be less than significant.

There is the potential for cumulative impacts associated with the crude by rail project discussed in Chapter 3. In conducting the cumulative analysis for crude by rail it has been assumed that the cumulative projects listed in Table 3.1 would use the same rail car tank design as the SMR Rail Spur Project, and that the cumulative crude by rail projects, with the exception of the Phillips

Rail Spur Project, would transport a Bakken type crude, which is a worst case assumption.[1] It has also been assumed that all of the Rail Spur Project crude oil trains would use routes discussed below.

If all of the crude by rail projects travel via the UPRR Roseville Rail Yard, then up to eight crude oil trains per day could travel on the stretch of track between Sacramento and the California boarder (two for Valero, one for Kinder Morgan, two for Alon, one for Targa, one for Plains All American, and one for the SMR). From Roseville, rail traffic would likely follow two different routes; one following the I-80 corridor to Reno, Nevada, with the other heading north along the I-5 corridor to Oregon. A third route through the Feather River Canyon was not considered for further analysis.

From Sacramento the crude oil trains servicing the Valero Benicia and Kinder Morgan projects could use the same UPRR tracks as the Rail Spur Project from Sacramento to the Bay Area. This portion of track could have up to four crude oil trains per day (two for Valero, one for Kinder Morgan, and one for the SMR).

From Sacramento the crude oil trains servicing the Alon and Plains All American projects could use the same tracks as the Rail Spur Project from Sacramento to Stockton a distance of about 46 miles. This portion of track could have up to four crude oil trains per day (two for Alon, one for Plains All American, and one for the SMR).

This level of crude oil train traffic would increase the probability of an oil spill along these mainline routes. Assuming all of the cumulative crude oil trains use the same route from Sacramento to the California border, the cumulative probability of a 100 gallon or greater oil spill would be about once every seven years for the route from the SMR to the Oregon border, and once every six years for the route from the SMR to the Nevada border.

None of the other cumulative crude by rail projects would use the mainline tracks along the southern route thorough the Los Angeles Basin since the crude oil trains going to Bakersfield would use Tehachapi Pass via Barstow and would not travel has far west as Colton. However, up to four unit trains per day could share the route between Nevada and Barstow (two for Alon, one for Plains All American, and one for the SMR). Assuming these cumulative crude oil trains use the same route from Barstow to the California border, the cumulative probability of a 100 gallon or greater oil spill would be about once every 25 years for the southern route from the SMR to the Nevada border.

In the event of an accident along stretches of track in proximity to prime, statewide or local important farm land, a spill of transported crude could occur, potentially damaging any agricultural areas, soils, crops, water sources, and uses within the area of the spill. An accident also create a fire hazard in agricultural areas, which could spread substantially beyond the areas directly adjacent to the tracks.

[1] Canadian Crude, as specified in the Project Description, was assumed for the Phillips Rail Spur Project as part of the project and cumulative analysis.

Some short-term impacts could be minimized through site remediation, clean-up, and restoration of the agricultural resources (i.e., replanting, removal of contaminated soils). However, impacts related to water source contamination and loss of some specialty crops (i.e., old growth vines that have value in their age) would be more difficult to mitigate. The loss of some crops, prime soils, and other agricultural resources may not be mitigable through restoration and replacement in kind. Therefore, potential cumulative impacts to agricultural resources associated with an oil spill would be considered significant and unavoidable.

4.2.6 Mitigation Monitoring Plan

No mitigation monitoring plan is required for Agricultural Resources since no agricultural mitigation measures were identified. Mitigation measures WR-1, WR-2; AQ-1f, BIO-9a, BIO-11, and PS-4a through PS-4e were identified as measures that would mitigate agricultural impacts. The mitigation monitoring plan measures are addressed in the applicable issue areas.

4.2.7 References

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4.3 Air Quality and Greenhouse Gases

This section discusses construction and operational emissions and odors that could result from the Rail Spur Project. The section also discusses air toxic emissions as well as greenhouse gas emissions. The section describes the regulatory settings associated with the Project, identifies the applicable significance thresholds for air and GHG impacts, assesses potential impacts of the Rail Spur Project and recommends measures to mitigate significant impacts. The section also provides a discussion of cumulative air and GHG impacts.

Emission rates were generated using standard emission factors and use rates contained within the CalEEMod modeling program, as applicable. Toxic emission impacts were assessed utilizing the most recent version of the HARP2 modeling program. Emission calculations and modeling results are included in Appendix B. As described in Section 2.0, Project Description, the Rail Spur Project would include the installation of a rail unloading facility and associated pipelines and utilities. This analysis is intended to provide a reasonable worst-case scenario of potential air emissions resulting from the proposed activities and recommends mitigation to reduce significant impacts.

4.3.1 Environmental Setting

San Luis Obispo County (SLOC) is part of the South Central Coast Air Basin, which also includes Santa Barbara and Ventura counties. The climate of the region is strongly influenced by its proximity to the Pacific Ocean. Airflow around the County plays an important role in the movement and dispersion of pollutants. The speed and direction of local winds are controlled by the location and strength of the Pacific high-pressure system and other global weather patterns, topographical factors, and circulation patterns that result from temperature differences between the land and the sea.

The land area of San Luis Obispo County is approximately 3,316 square miles, encompassing varied vegetation, topography, and climate. From a geographical and meteorological standpoint, the County can be divided into three general regions: the Coastal Plateau, the Upper Salinas River Valley, and the East County Plain. Air quality in each of these regions is characteristically different, although the physical features that divide them provide only limited barriers to the transport of pollutants between the regions.

The Rail Spur Project is within the Coastal Plateau. Approximately 75 percent of the County population, and a corresponding portion of the commercial and industrial facilities, are also within the Coastal Plateau. Due to higher population density and closer spacing of urban areas, emissions of air pollutants per unit area are generally higher in this region than in the other two regions of the county, although the meteorological characteristics of the coastal areas contribute to lower monitoring results.

4.3.1.1 Air Quality Monitoring

Ten air-quality monitoring stations measure San Luis Obispo County's air quality (Grover Beach only monitors wind speed and direction, no air quality). The San Luis Obispo County Air Pollution Control District (SLOCAPCD) operates seven permanent stations at Nipomo Regional Park, Grover Beach, Morro Bay, Atascadero, Red Hills (near Shandon in eastern San Luis Obispo County), Arroyo Grande, and the Carrizo Plain. The California Air Resources Board (CARB) operates two additional stations in the cities of San Luis Obispo and Paso Robles. One station on the Nipomo Mesa (i.e., Nipomo-Guadalupe) is operated by the SLOCAPCD for the Phillips Refinery.

Although the Arroyo Grande station is the closest to the Rail Spur Project, it only monitors particulate matter (PM_{10} and $PM_{2.5}$). Therefore, the closest SLOCAPCD station to the Rail Spur Project area that monitors for Project-related pollutants is the Nipomo Regional Park monitoring station, approximately 5 miles east of the Rail Spur Project area. The Nipomo-Guadalupe monitoring station, approximately 1 mile southeast of the Rail Spur Project Site, is examined in this report for particulate matter, sulfur dioxide, and wind speed and direction information.

Air quality monitoring is rigorously controlled by federal and state quality assurance and control procedures to ensure data validity. Gaseous pollutant levels are measured continuously and averaged every hour, 24 hours per day. Particulate pollutants (PM_{10}) are monitored continuously at the Arroyo Grande, Nipomo Regional Park and Nipomo-Guadalupe stations and continuous $PM_{2.5}$ monitors (hourly average) at Nipomo-Guadalupe and Arroyo Grande stations.

Specific Air Pollutants

Carbon Monoxide (CO): CO is a colorless and odorless gas formed by the incomplete combustion of fossil fuels. CO competes with oxygen, often replacing it in the blood, thus reducing the blood's ability to transport oxygen to vital organs in the body. The ambient air quality standard for CO is intended to protect people whose medical condition already compromises their circulatory system's ability to deliver oxygen.

Nitrogen Dioxide (NO_2): NO_2 is a brownish gas formed in the atmosphere through a rapid reaction of the colorless gas nitric oxide (NO) with atmospheric oxygen. NO and NO_2 are collectively referred to as nitrogen oxides (NO_x). NO_2 can cause respiratory irritation and constriction of the airways, making breathing more difficult.

Sulfur Dioxide (SO_2): SO_2 is a colorless, pungent gas formed primarily by the combustion of sulfur-containing fossil fuels. Health effects include acute respiratory symptoms and breathing difficulty.

PM_{10}, the coarse fraction of suspended particulate matter measuring 10 microns or less in diameter, includes a complex mixture of man-made and natural substances including sulfates, nitrates, metals, elemental carbon, sea salt, soil, organics, and other materials. PM_{10} have adverse health impacts because these microscopic particles can penetrate the respiratory system. In some cases, the particulates themselves may cause actual damage to the alveoli of the lungs or they may contain adsorbed substances that are injurious.

Ambient PM_{10} concentrations have been primarily a localized issue of concern in SLOC, including Paso Robles, San Luis Obispo, Morro Bay, and Nipomo. Exceedances in these areas are the major impetus for the county's nonattainment designation for the state PM_{10} standard. The major sources for PM_{10} are mineral quarries, grading, demolition, agricultural tilling, road dust, and vehicle exhaust.

$PM_{2.5}$ is a subset of the PM_{10}. In addition to the health effects of PM_{10}, exposure to $PM_{2.5}$ may result in increased respiratory symptoms, disease, and decreased lung function.

In addition to primary criteria pollutants, the SLOCAPCD monitors ozone at various locations throughout the region. Unlike primary criteria pollutants emitted directly from an emissions source, ozone is a secondary pollutant. Ozone is formed in the atmosphere through the photochemical reaction of volatile organic compounds (VOC), NO_x, oxygen, and other hydrocarbon materials with sunlight.

Ozone is a deep lung irritant, causing the passages to become inflamed and swollen. Exposure to ozone alters respiration, most characteristically with shallow, rapid breathing and a decrease in pulmonary performance. Ozone also reduces the respiratory system's ability to fight infection and remove foreign particles.

Ozone exists both at ground level, where it is considered a pollutant with harmful effects and at higher elevations in the lower portion of the stratosphere from approximately 13 to 40 kilometers above Earth, where it absorbs more than 95 percent of the sun's ultraviolet light providing a beneficial effect.

Combustion byproducts reacting with sunlight and ambient conditions primarily generate ground-level ambient ozone. Areas where ozone violations primarily occur are the northern and eastern portions of the county, where summer temperatures are high. Ozone levels exceeding the state standard have been measured in Paso Robles, the Carrizo Plain, and Atascadero in recent years. In addition, ozone is carried into San Luis Obispo County from upwind regions of the state.

Table 4.3.1 provides a list of the State and National criteria air pollutant standards. Because concentrations of ozone and PM_{10} exceed state health-based standards, SLOC has been designated as a non-attainment area for these two pollutants. Table 4.3.2 shows 4 years of monitoring data between 2010 and 2013 for ozone, NO_2, and PM_{10} for the Nipomo Regional Park monitoring station, approximately 5 miles east of the SMR (at West Tefft Street and Pomeroy Road). Also shown are PM and SO_2 monitoring results for the Nipomo-Mesa and Nipomo-Guadalupe Road sites (Mesa2), which are within 1 mile of the Refinery to the east, and the Cal Fire station, located adjacent to the SMR. The federal PM_{10} was exceeded at the Cal Fire station. Exceedances to the federal ozone standard were noted during this timeframe at monitors located in eastern SLOC. PM_{10} and ozone exceed the state standards. The eastern portion of San Luis Obispo County has been designated non-attainment for the federal 8-hr ozone standard. Table 4.3.2 shows the monitoring results for the monitoring stations close to the project site. Historically, the SLOCAPCD has operated three monitoring stations on the Mesa. These include Nipomo-Regional Park, Nipomo-Guadalupe Road, and Nipomo-Hillview Road. The Nipomo-Hillview Road station is closed, and was only used to monitor PM_{10}. Table 4.3.3 shows the

attainment status of criteria pollutants throughout the entire South Central Coast Air Basin. As per the SLOCAPCD annual report in 2013 "The federal 24-hour PM2.5 standard of 35 µg/m3 was exceeded three times at Cal Fire in 2013; this site also exceeded the federal and state standards for annual average $PM_{2.5}$ (12 µg/m3). As a result, the county will soon be designated by the CARB as nonattainment for that standard, since one year of exceeding the annual standard is a violation of the standard. Violation of the federal $PM_{2.5}$ annual standard (also 12 µg/m3) does not occur until the 3-year average of annual averages exceeds the standard. Based on data collected in 2014, the County may be in danger of violating the federal standard as well by year's end."

The CARB meteorological data from the Nipomo-Guadalupe monitoring station, approximately 1 mile southeast of the Rail Spur Project Site, is the closest station to the Project Site that has detailed wind direction and speed information. This data was plotted into a wind rose (Figure 4.3-1) to demonstrate the predominant wind direction and speeds at the Project Site. Figure 4.3-1 shows that the predominate wind blows from the west and northwest 36 percent of the time, and from the east (east and southeast) less than 20 percent of the time. Wind speeds averaged approximately 5 miles per hour, with periods of stronger winds above 20 miles per hour occurring less than one percent of the time.

4.3.1.2 Countywide Emissions Inventory

This section summarizes the countywide emission inventory.

Countywide Criteria Pollutant Emissions

On a regional basis, ozone is the criteria pollutant of significant concern in SLOC, particularly within the Coastal Plateau. Ozone is a secondary pollutant, formed in the atmosphere by complex photochemical reactions involving the precursor pollutants of nitrogen oxides (NO_x) and reactive organic gases (ROG) and sunlight.

The amount of ozone formed is dependent upon both the ambient concentration of the chemical precursors and the intensity and duration of sunlight. Consequently, ambient ozone concentration tends to vary seasonally with the weather.

NO_x is emitted primarily from the combustion of fossil fuels with mobile source producing the majority of NO_x emissions. Table 4.3.4 shows data on the most recent inventory available from the SLOCAPCD (year 2008). The majority of ROG emissions are also generated by mobile source fossil fuel combustion, wildfires and through the evaporation of petroleum products. Particulate emissions are generated primarily from road dust, wildfires and construction activities.

Although large sources are surveyed and updated each year, the SLOCAPCD performs an emissions inventory for the majority of permitted sources every 3 years. The last complete inventory was conducted for 2008 emissions; Table 4.3.4 shows these emissions for ozone precursors and particulate matter. As seen in the table, the largest sources of ozone precursors are on-road vehicles, other mobile sources, and wildfires. The largest sources of particulate matter are wildfires, road dust, construction and demolition, and residential fuel combustion. Petroleum refining contributes less than one percent of the $PM_{2.5}$ emissions in the County.

Table 4.3.1 State and National Criteria Air Pollutant Standards, Effects, and Sources

Air Pollutant	State Standard (concentration, averaging time)	Federal Primary Standard (concentration, averaging time)	Most Relevant Effects
Ozone	0.09 ppm, 1-hour average 0.070 ppm, 8-hour	0.075 ppm, 8-hour average (0.070 ppm after 12/28/2015)*	(a) Short-term exposures: (1) Pulmonary function decrements and localized lung edema in humans and animals (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 altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (c) Vegetation damage; (d) Property damage.
Carbon Monoxide	9.0 ppm, 8-hour average 20 ppm, 1-hour average	9 ppm, 8-hour average 35 ppm, 1-hour average	(a) Aggravation of angina pectoris and other aspects of coronary heart disease; (b) Decreased exercise tolerance in persons with peripheral vascular disease and lung disease; (c) Impairment of central nervous system functions; (d) Possible increased risk to fetuses.
Nitrogen Dioxide	0.18 ppm, 1-hour average, 0.03 ppm, annual average	0.053 ppm 0.10 ppm 98th percentile, 3-year average	(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 pulmonary structural changes; (c) Contribution to atmospheric discoloration.
Sulfur Dioxide	0.04 ppm, 24-hour average 0.25 ppm, 1-hour average	0.075 ppm, 1-hour, 99th percentile 3-year average 0.14 ppm 24-hour 0.03 ppm annual arithmetic mean	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})	20 µg/m^3, annual arithmetic mean 50 µg/m^3, 24-hour average	150 µg/m^3, 24-hour average	(a) Excess deaths from short-term exposures and exacerbation of symptoms in sensitive patients with respiratory disease; (b) Excess seasonal declines in pulmonary function, especially in children.
Suspended Particulate Matter ($PM_{2.5}$)	12 µg/m^3, annual arithmetic mean	12 µg/m^3, annual arithmetic mean 35 µg/m^3, 24-hour average	Decreased lung function from exposures and exacerbation of symptoms in sensitive patients with respiratory disease, elderly, and children.
Sulfates	25 µg/m^3, 24-hour average	No federal standard	(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 due to corrosion.
Lead	1.5 µg/m^3, 30-day average	0.15 µg/m^3, roll 3-month average 1.5 µg/m^3, calendar quarter	(a) Increased body burden; (b) Impairment of blood formation and nerve conduction.

Table 4.3.1 State and National Criteria Air Pollutant Standards, Effects, and Sources

Air Pollutant	State Standard (concentration, averaging time)	Federal Primary Standard (concentration, averaging time)	Most Relevant Effects
Visibility-Reducing Particles	In sufficient amount to give an extinction coefficient of 0.23 per kilometers (visual range of 10 miles or more) with relative humidity less than 70%, 8-hour average (10 a.m. to 6 p.m. PST)	No federal standard	Reduction of visibility, aesthetic impact and impacts due to particulates (see above)
Hydrogen Sulfide	0.03 ppm, 1-hour average	No federal standard	Odor nuisance. IDLH and ERPG-3 of 100 ppm
Vinyl Chloride	0.01 ppm, 24-hour average	No federal standard	Known carcinogen.

Note: µg/m3 = micrograms per cubic meter.
* The 0.075 ppm was effective May 27, 2008. Was 0.08 ppm prior. Updated by EPA from 0.075 ppm to 0.070 on October 1, 2015, effective December 28, 2015
Source: SLOCAPCD 2009 and CARB 9/8/2010

Table 4.3.2 Monitoring Results at the Nipomo Monitoring Stations

Pollutant	Standard	2010	2011	2012	2013
Ozone					
Maximum 1-hour concentration (ppm)		.083	.075	.065	.076
Number days exceeded: State	> 0.09 ppm/1-hour	0	0	0	0
Max 8-hour concentration (ppm)		.075	.071	.060	.072
Number days exceeded: State	> 0.07 ppm/8-hour	2	1	0	1
Number days exceeded: Federal	> 0.075 ppm/8-hour	0	0	0	0
Particulates (PM_{10})					
Maximum 24-hour concentration ($\mu g/m^3$)		55.3	63.9	76.8	109.7
Number days exceeded: State	> 50 $\mu g/m^3$/24-hour	2	3	10	20.2
Number days exceeded: Federal	> 150 $\mu g/m^3$/24-hour	0	0	0	0
Maximum 24-hour concentration ($\mu g/m^3$) – Nipomo-Guadalupe		144.3	123.8	150.4	136.5
Number days exceeded: State	> 50 $\mu g/m^3$/24-hour	45	32	42	60.4
Number days exceeded: Federal	> 150 $\mu g/m^3$/24-hour	0	0	0	0
Maximum 24-hour concentration ($\mu g/m^3$) – CDF		167	134	180	163
Number days exceeded: State	> 50 $\mu g/m^3$/24-hour	74	65	70	93
Number days exceeded: Federal	> 150 $\mu g/m^3$/24-hour	1	0	3	2
Nitrogen Dioxide (NO_2)					
Daily Maximum NO_2 (ppm)		.0148	.0129	.009	0.09
Number days exceeded: State	> 0.18 ppm/1-hour	0	0	0	0
Sulfur Dioxide (SO_2)					
Maximum 1-hour concentration, ppm – Nipomo-Guadalupe		.023	.005	.007	0.146

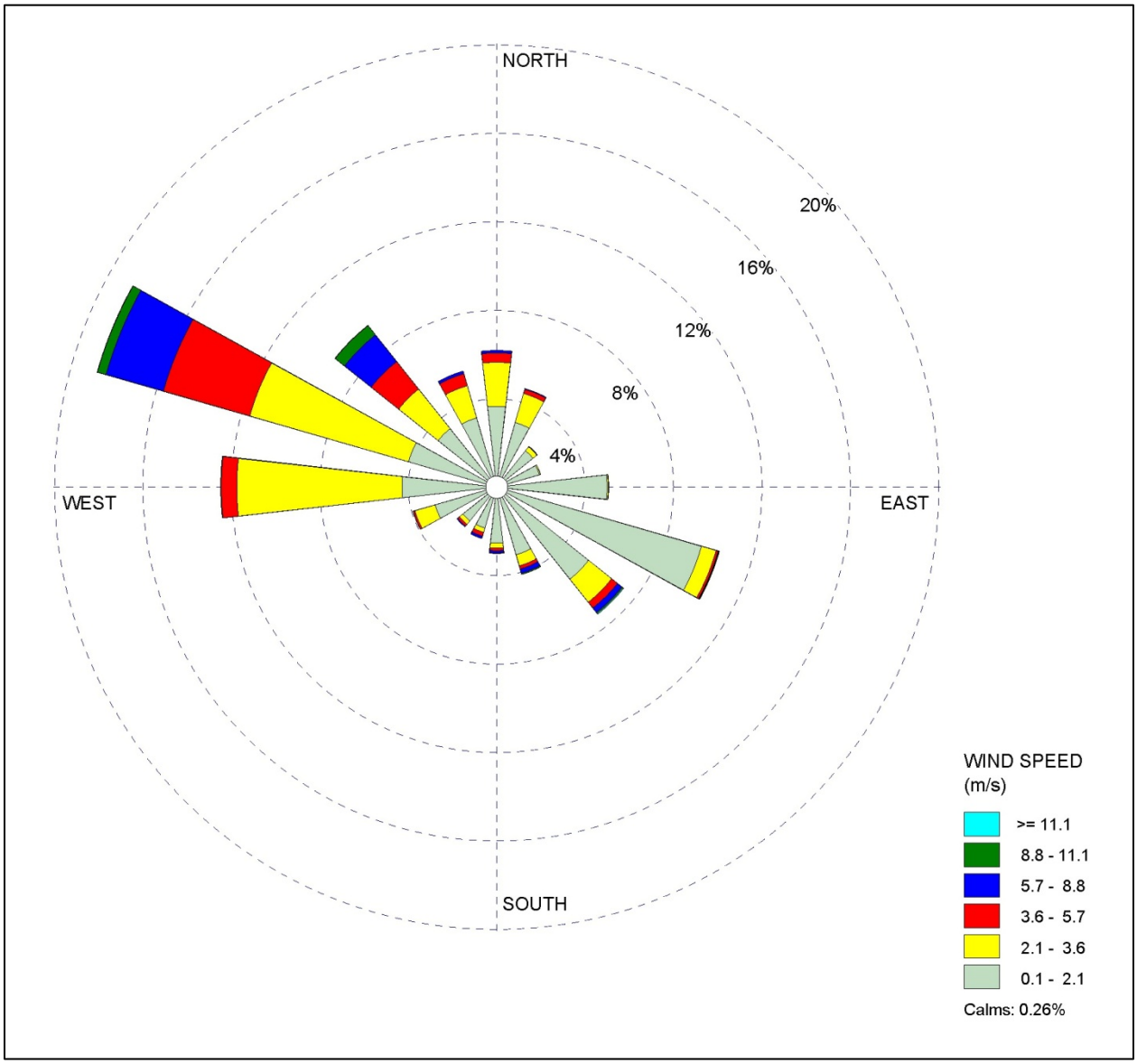
Notes: The Nipomo Regional Park Station monitors NO_2, ozone and PM_{10}. Nipomo Guadalupe values used for SO_2 and PM_{10}. CDF only monitors PM.
Source: CARB website Air Quality Data, SLOCAPCD Annual reports

Table 4.3.3 Attainment Status of Criteria Pollutants in San Luis Obispo County

Pollutant	State	Federal
O_3 – 1-hour	Non-attainment	Revoked
O_3 – 8-hour	Non-attainment	Non-attainment in eastern SLOC
PM_{10}	Non-attainment	Attainment
$PM_{2.5}$	Attainment	Attainment
CO	Attainment	Attainment
NO_2	Attainment	Attainment
SO_2	Attainment	Attainment
Lead	Attainment	Attainment
All others	Attainment/Unclassified	Attainment/Unclassified

Note: EPA action on a new ozone standard was released October 1, 2015..
Source: CARB

Figure 4.3-1 Nipomo Meteorological Station Wind Rose



Note: Wind rose shows the direction that the wind is coming from.
Source: SLOCAPCD meteorological data, Nipomo Guadalupe Road (Mesa 2) monitoring station 2008-2012

Countywide Air Toxics

Air toxics are substances that may cause or contribute to an increase in cancer or serious illness, such as respiratory disease. The federal 1990 Clean Air Act Amendments (CAAA) set up a new nationwide air toxics control program. The federal program focuses on larger industrial sources that are of the highest national priority, such as chemical manufacturers. State and local air pollution control agencies adopt measures to minimize Californians' exposure to toxic air contaminants (TAC). The State of California regulates TAC in several ways. The Toxic Air

Contaminant Identification and Control Act (AB1807-1983) created a program to reduce the health risks from air toxics.

Table 4.3.4 San Luis Obispo County Ozone Precursors and PM Emissions by Source

Emission Sources of Ozone Precursors	ROG (tpy)	ROG %	NO_x (tpy)	NO_x %
Fuel Combustion	64	1	586	4
Waste Disposal	8.1	0	1.3	0
Cleaning/Surface Coating	1,023	11	0.0	0
Petroleum Production and Marketing	372	4	13	0
Industrial Processes	101	1	37	0
Solvent Evaporation	604	6	0.0	0
Miscellaneous Processes	1,445	15	258	2
On-Road Motor Vehicles	2,623	27	4,448	33
Other Mobile Sources	1,837	19	7,563*	56
Wildfires	1,581	16	715	5
Total Ozone Precursor	9,657**		13,620	
Emission Sources of Particulate Matter	**PM_{10} (tpy)**	**PM_{10} %**	**$PM_{2.5}$ (tpy)**	**$PM_{2.5}$ %**
Wildfires	2,307	20	1,956	46
Ships & Commercial Boats	366	3	356	8
Cooking	123	1	74	2
Waste Burning & Disposal	34	0	32	1
Fugitive Wind Blown Dust	639	6	106	2
Unpaved Road Dust	3,226	28	321	7
Paved Road Dust	1,789	16	266	6
Construction & Demolition	1,486	13	150	3
Livestock	723	6	150	3
Residential Fuel Combustion	631	6	610	14
Mineral Processes	87	1	-	-
Farm Equipment	-	-	62	1
Off-Road Equipment	-	-	91	2
On-Road Motor Vehicle	-	-	114	3
Petroleum Refining	-	-	9	0
Total PM	11,410		4,298	

Notes: * 4,587 tons of this is ships and commercial boats – ARB area source offshore
** Excludes biogenic and geogenic sources
Source: SLOCAPCD 2008 Emission Inventory

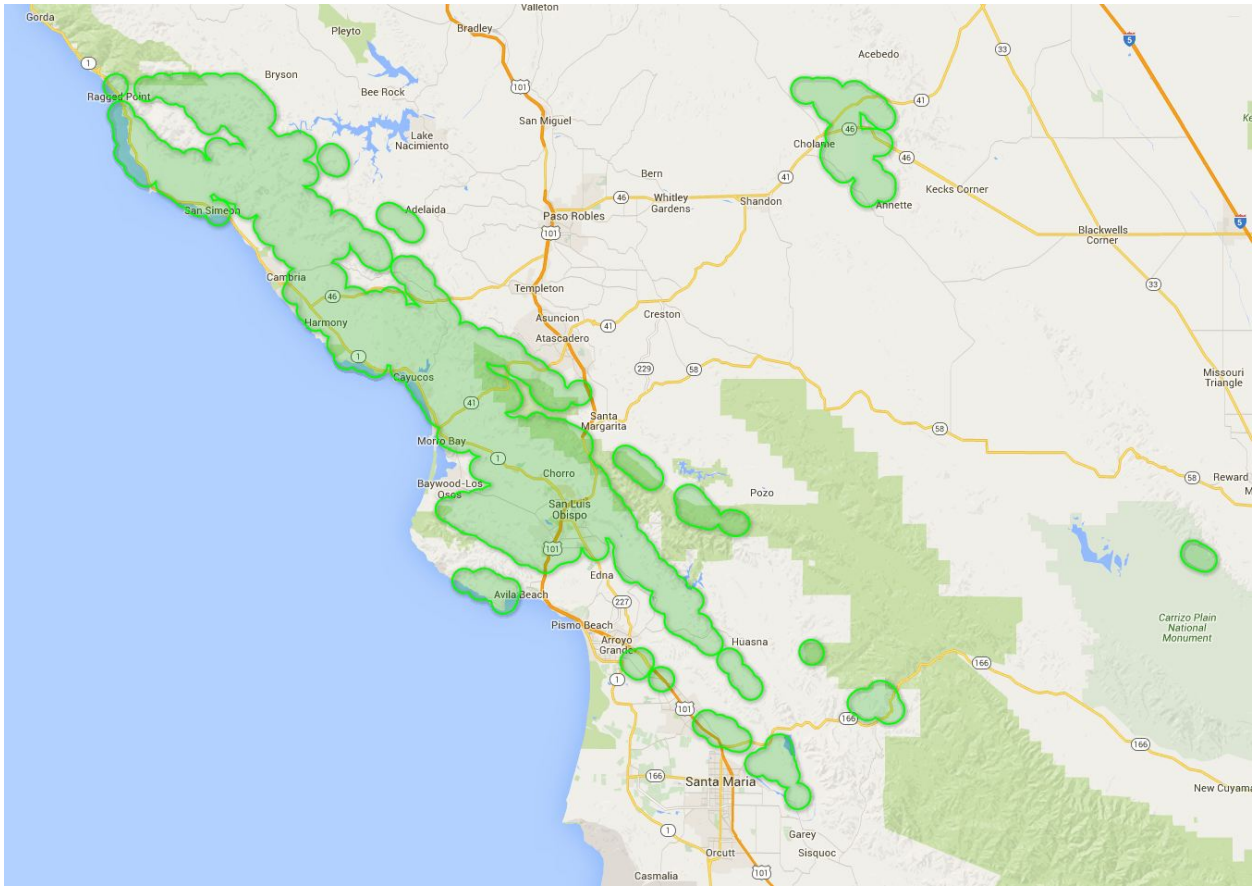
This law expanded CARB authority to evaluate and control air toxics. An additional state law, the Air Toxics "Hot Spots" Information and Assessment Act (AB2588-1987) supplements the original legislation by requiring a statewide air toxics inventory and notifying local residents of

significant risks from nearby sources. A 1992 amendment to the law (SB1731) requires that risks be reduced from these sources.

The CARB has identified asbestos as a TAC. In its natural state, asbestos occurs throughout many areas. Serpentine is a very common rock type in California and was identified by the CARB as having the potential to contain naturally occurring asbestos. Under the CARB Air Toxics Control Measure (ATCM) for Construction, Grading, Quarrying, and Surface Mining Operations, prior to any grading activities at a site, a geologic analysis is necessary to determine if serpentine rock is present. Grading projects larger than 1 acre in serpentine rock would require prior SLOCAPCD approval of an Asbestos Dust Mitigation Plan and an Asbestos Health and Safety Program.

Serpentine rock is found in many regions of SLOC, including coastal areas, as far inland as Paso Robles, and the extreme eastern area along the San Andreas Fault. Figure 4.3-2 shows areas subject to the naturally occurring asbestos ATCM requirements. The Project Site is within one of these general areas that may include asbestos-containing rock.

Figure 4.3-2 Areas Requiring Asbestos ATCM Geological Analysis and Requirements



Source: SLOCAPCD CEQA Handbook 2012

Fugitive Dust

The project is located in an area that has historically been subject to poor air quality conditions (e.g., exceeds the state PM10 standard over 70 times per year) due to high northwesterly winds and blowing sand and dust across the Oceano dunes (SLOCAPCD 2010).

A study performed by the SLOCAPCD, the South County Phase 2 Particulate Study, evaluated whether impacts from off-road vehicle activities at the Oceano Dunes State Vehicle Recreational Area (ODSVRA), the Phillips Refinery coke piles, and adjacent agricultural fields were contributing to the particulate problems on the Nipomo Mesa (SLOCAPCD 2010). As the SVRA is upwind of the Nipomo Mesa, the study data includes the SVRA in the area that is the major source of particulates on the Nipomo Mesa. Average weekend and weekday particulate measurements taken on the Nipomo Mesa over the past 12 years were analyzed to determine whether there were higher PM levels on the weekends, which would be relevant to the typically higher weekend off-road vehicle activity at the SVRA.

The analysis found higher weekend concentrations at one monitoring station but the data were not conclusive. The Phase 2 portion of the study concluded that off-road vehicle activity in the SVRA is a major contributing factor to the PM concentrations observed on the Nipomo Mesa and that neither the petroleum coke piles at the Phillips facility nor agricultural fields or activities in and around the area are a significant source of ambient PM on the Nipomo Mesa.

The study indicates that off road vehicle activity on the dunes is known to cause de-vegetation, destabilization of dune structure, and destruction of the natural crust on the dune surface. All of these increase the ability of winds to entrain sand particles from the dunes and carry them to the Nipomo Mesa, representing an indirect emissions impact from the vehicles. The study concluded that off-road vehicle activity is the primary cause of the high PM levels measured on the Nipomo Mesa during episode days.

The study documents the frequent occurrence of unhealthful particulate levels on the Nipomo Mesa. Even though the composition of the particulates is predominately natural crustal particles, the health implications are not lessened. All fine airborne particulate matter, regardless of composition, can cause respiratory distress when inhaled, especially to the very young, the elderly, and those with compromised respiratory systems. In addition, sand particles from the Oceano Dunes are high in crystalline silica, a known carcinogen.

The SLOCAPCD subsequently adopted Rule 1001, "Fugitive Dust Emissions Standards, Limitations and Prohibitions" to address fugitive dust from offroad vehicle activity on the dunes.

4.3.1.3 Odors

The release of material that contains even small amounts of sulfur compounds (H_2S) or hydrocarbons produces an odor. Several compounds associated with the oil and gas industry can produce nuisance odors. Sulfur compounds, found in oil and gas, have very low odor threshold levels. For instance, H_2S can be detected by humans at concentrations from 0.5 parts per billion [ppb] (detected by 2 percent of the population) to 40 ppb, qualified as annoying by 50 percent of the population. Above these levels, H_2S would be detected by most people. The Occupational Safety and Health Administration limits occupational exposure to H_2S at 20 ppm with a 50 ppm

peak over 10 minutes (29 CFR 1910.1000 Z-2 Table). Inhaling 100 ppm can be lethal according to the Emergency Response Planning Guideline (AIHA 2008).

Health impacts of H_2S are generally at higher concentrations than those which first produce odors. The California Office of Environmental Health Hazard Assessment (OEHHA) reference exposure levels for H_2S indicate that acute impacts of H_2S are experienced at levels of 30 ppb (for a 1-hour exposure).

Many volatile compounds found in oil and gas (e.g., pentane, n-pentane, hexane, ethane, and longer chain hydrocarbons) typically have petroleum or gasoline odors with varying odor thresholds. The most odiferous of these compounds are hexane, which has an odor threshold of between 68 and 248 ppm, and pentane, which has an odor threshold of 2 ppm (New Jersey 2004).

4.3.1.4 Valley Fever

Valley fever is caused by Coccidioides, a fungus that lives in soil in the southwestern United States and parts of Mexico, Central America, and South America. Inhaling the airborne fungal spores can cause an infection called coccidioidomycosis, which is also known as “cocci” or “valley fever.” Most people who are exposed to the fungus do not get sick, but some people develop flu-like symptoms that may last for weeks to months. In a very small proportion of people who get valley fever, the infection can spread from the lungs to the rest of the body and cause more severe conditions, such as meningitis or even death. Valley fever cannot spread from person to person (CDC 2014).

Most cases of valley fever in the US occur in people who live in or have traveled to the southwestern United States, especially Arizona and California. The coastal areas of California are considered "suspected endemic" (CDC 2014).

Although Valley Fever concerns are not addressed by the SLOCAPCD, they may be a concern for projects that generate a lot of fugitive dust, thereby potentially increasing the incidence of Valley Fever in workers and nearby residents if proper dust control methods are not followed. As fugitive dust is addressed in this section of the EIR, Valley Fever issues have also been addressed here.

4.3.1.5 Greenhouse Gases

The California legislature concluded that global climate change poses significant adverse effects to the environment (Assembly Bill [AB] 32, the California Global Warming Solutions Act of 2006). In addition, the global scientific community has expressed a high confidence that climate change is man-made (i.e., caused by humans) and that climate change could lead to adverse changes around the globe (Intergovernmental Panel on Climate Change Climate, IPCC 2007, 2014). Consequently, the following sections analyze potential climate change emissions that may occur while implementing the Rail Spur Project.

Global climate change is a change in the average weather of the earth, measured by wind patterns, storms, precipitation, and temperature. Although historical records show that dramatic fluctuations in temperature 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 both rate and magnitude (AEP 2007, IPCC 2014).

Global climate change caused by greenhouse gases (GHG) is currently one of the most widely debated scientific, economic, and political issues in the United States. Although many groups agree with the conclusions of the Intergovernmental Panel on Climate Change and the CARB, many groups feel the work is lacking. However, in terms of California Environmental Quality Act (CEQA) analysis, jurisdictions have developed significance criteria and directed CEQA documents to analyze emissions of GHG.

Climate Change Background

GHG include any gas that absorbs infrared radiation in the atmosphere. GHG include, but are not limited to, water vapor, carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and fluorocarbons. The warming potential of different types of GHG varies. The global warming potential (GWP) is the potential of a gas or aerosol to trap heat in the atmosphere. Since GHG absorb different amounts of heat, a common reference gas, CO_2, is used to relate the amount of heat absorbed to the amount of the gas emissions, referred to as CO_2 equivalent, or CO_2e. CO_2e is the amount of GHG emitted multiplied by the global warming potential. The global warming potential of CO_2 is therefore defined as one.

The increase of GHG emissions has lead to the trapping and buildup of heat in the atmosphere near the earth's surface, commonly known as the greenhouse effect. Put another way, the amount of GHG in the atmosphere regulates the earth's temperature. Without natural GHG, the earth's surface would be cooler (CARB 2006). Emissions from human activities, such as electricity production and vehicle operation, have increased the emissions of these gases into the atmosphere. Emissions of GHG in excess of natural ambient concentrations are thought to be responsible for the enhancement of the greenhouse effect and acceleration of climate change. Unlike criteria air pollutants and TAC, which are pollutants of regional and local concern, GHG are global pollutants and climate change is a global issue.

Climate changes could lead to various changes in weather and rainfall patterns over time. According to the CARB, potential climate change impacts in California may include loss in snow pack, sea level rise, more extreme heat days per year, more high ozone days, more large forest fires, and more drought years (CARB 2006, 2007). The California State Assembly Select Committee Sea Level Rise and the California Economy issued a report in 2014 (CSA 2014) indicating that sea level rise could total 1.4 to 5.5 feet by 2100 in Southern California, giving rise to impacts on infrastructure, saltwater intrusion, and coastal erosion.

In the Findings and Declarations for AB 32, the Legislature found that: "The potential adverse impacts of global warming include the exacerbation of air quality problems, a reduction in quality and supply of water to the state from the Sierra snowpack, a rise in sea levels resulting in the displacement of thousands of coastal businesses and residences, damage to the marine ecosystems and the natural environment, and an increase in the incidences of infectious diseases, asthma, and other health-related problems."

Warming of the climate system is unequivocal, and many of the changes now being observed from the 1950s to present day are unprecedented over decades to millennia. The atmosphere and ocean have warmed, the amounts of snow and ice have diminished, and sea level has risen (IPCC 2014).

The linear warming trend over the years from 1951 to 2012 (0.12 degrees Celsius per decade) is nearly twice that for the 100 years from 1906 to 2005. Over the period 1901 to 2010, global mean sea level rose by 8 inches (IPCC 2014).

AB 32 addresses the results of these studies conducted by the Intergovernmental Panel on Climate Change (IPCC 2001, 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.

The IPCC Studies indicate that "In order to stabilize the concentration of GHGs in the atmosphere, emissions would need to peak and decline thereafter. The lower the stabilization level, the more quickly this peak and decline would need to occur." The studies also found that stabilization of atmospheric CO_2 concentrations at less than 450 ppm would limit temperature rise to less than 3.6 degrees Fahrenheit by the year 2100 and would require global anthropogenic CO_2 emissions to drop below year 1990 levels within a few decades (by 2020). If GHG emissions, and atmospheric CO_2 levels, were to be kept to this "low" or "Category I" level, impacts to gross domestic product (GDP) would be projected to "produce market benefits in some places and sectors while, at the same time, imposing costs in other places and sectors" (IPCC 2007, 2014). Higher levels of CO_2 could cause a reduction in global GDP of more than 5 percent, with substantially higher regional losses. Scenarios that are likely to maintain warming at below 3.6 degrees Fahrenheit are characterized by a 40 percent to 70 percent reduction in GHG emissions by 2050, relative to 2010 levels, and an emissions level near zero or below in the year 2100.

Therefore, stabilizing GHG emissions levels at 1990 levels over the next two decades, and reducing GHG emissions by between 50 and 85 percent by the year 2050, would reduce the impacts of climate change to "Category 1" levels that would produce nominal changes in global average GDP and would be less than significant.

Types of Greenhouse Gases

Water vapor is the most abundant and variable GHG in the atmosphere. It is not considered a pollutant; in the atmosphere it maintains a climate necessary for life. Evaporation from the oceans is the main source of water vapor (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 (CO_2)is an odorless, colorless GHG with a GWP of 1. Natural sources include decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungus; evaporation from oceans; and volcanoes. Man-made sources of carbon dioxide include burning fuels, such as coal, oil, natural gas, and wood. The interaction of man-made sources and natural sources of GHG and how they contribute to the atmospheric levels of GHG is a complex issue. Current concentrations of CO_2 in the atmosphere are approximately 400 parts per million (ppm).

Methane, (CH_4) a gas, is the main component of natural gas used in homes and has a GWP of approximately 25 (as per 40 CRF Table A-1 to Subpart A of Part 98—Global Warming Potentials, dated January 2014). Decaying organic matter in forests and oceans is a natural source of methane. Man-made sources include landfills, fermentation of manure, and cattle. Geological deposits known as natural gas fields contain methane, which is extracted for fuel.

Nitrous oxide (N_2O), also known as laughing gas, is a colorless gas with a GWP of approximately 298. Nitrous oxide is produced by microbial processes in soil and water, including reactions that occur in fertilizer containing nitrogen. In addition to agricultural sources, some industrial processes (e.g., nylon production, nitric acid production) also emit N_2O. Nitrous oxide is used in rocket engines, as an aerosol spray propellant, and in race cars. During combustion, NO_x (NO_x is a generic term for mono-nitrogen oxides, NO and NO_2) is produced as a criteria pollutant and is not the same as N_2O. Very small quantities of N_2O may be formed during fuel combustion by the reaction of nitrogen and oxygen (API 2004).

Fluorocarbons (CFC, HCFC, HFC) are synthetic gases formed by replacing all hydrogen atoms in methane or ethane with chlorine or fluorine atoms. Chlorofluorocarbons and their substitutes Hydrochlorofluorocarbons (HCFCs) and Hydrofluorocarbons (HFCs), are nontoxic, nonflammable, insoluble, and chemically nonreactive in the troposphere (the level of air at the earth's surface). Chlorofluorocarbons were first synthesized in 1928 as refrigerants, aerosol propellants, and cleaning solvents. However, they destroy stratospheric ozone and the Montreal Protocol stopped their production in the 1990s, with phase-out of HCFCs by 2030 and accepted use of HFCs.

Sulfur hexafluoride (SF_6) is an inorganic, odorless, colorless, nontoxic, nonflammable gas. Its global warming potential of 22,800 is the highest of any gas. 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.

Table 4.3.5 shows a range of gases that contribute to GHG warming with their associated global warming potential. The table also shows their estimated lifetime in the atmosphere and the global warming potential.

Although ozone is a GHG, unlike the other GHG, ozone in the troposphere is relatively short-lived and therefore is not global in nature. According to the CARB, it is difficult to determine accurately the contribution of ozone precursors (NO_x and VOC) to global climate change (CARB 2006).

Table 4.3.5 Global Warming Potential of Various Gases

Gas	Life in the Atmosphere (years)	20-year GWP (average)
Carbon Dioxide	50-200	1
Methane	12	25
Nitrous Oxide	120	298
CFC, HCFC, HFCs	1.5-264	12-14,800
Sulfur Hexafluoride	3,200	22,800

Note: GWP = global warming potential
Source: *EPA 40 CFR Part 98, Subpart A, Table A-1, dated Nov 29, 2013*

Calculation of Greenhouse Gas Emissions

The quantification of GHG emissions associated with a Project can be complex and relies on a number of assumptions. GHG emissions are global because emissions from one location could affect the entire planet, and they are not limited to local impacts. Therefore, offsite impacts, such as vehicle emissions and other associated transportation emissions, are included.

Emissions are generally classified as either direct or indirect. Direct emissions are associated with the production of GHG emissions at the Project Site. These include the combustion of natural gas in heaters or stoves, the combustion of fuel in engines and construction vehicles, and fugitive emissions from valves and connections, which include methane as a component.

Indirect emissions include the emissions from vehicles (both gasoline and diesel) delivering materials and equipment to the site and the use of electricity. Electricity also produces GHG emissions because fossil fuels generate some electricity.

This report utilizes the California Air resources Board Mandatory Reporting of Greenhouse Gas Emissions method to calculate GHG emissions (CARB 2012).

To quantify the emissions associated with electrical generation, the CalEEMod factors for the San Luis Obispo area are used.

Indirect GHG emissions associated with trash hauling and other services that might visit the Rail Spur Project Site are incorporated through the inclusion of the travel of diesel trucks that would visit and service the Project Site.

National Greenhouse Gas Emissions

Fossil fuel combustion is responsible for the vast majority of the United State's GHG emissions, and CO_2 is the primary GHG. In 2011, total US GHG emissions were 6,702 million metric tons of carbon dioxide equivalent ($MMTCO_2E$). GHG emissions peaked at 7,263 in 2007. In 2011, approximately 26 percent of GHG emissions were associated with transportation, approximately 32 percent were associated with electricity generation and 12 percent were associated with industrial.

Statewide Greenhouse Gas Emissions

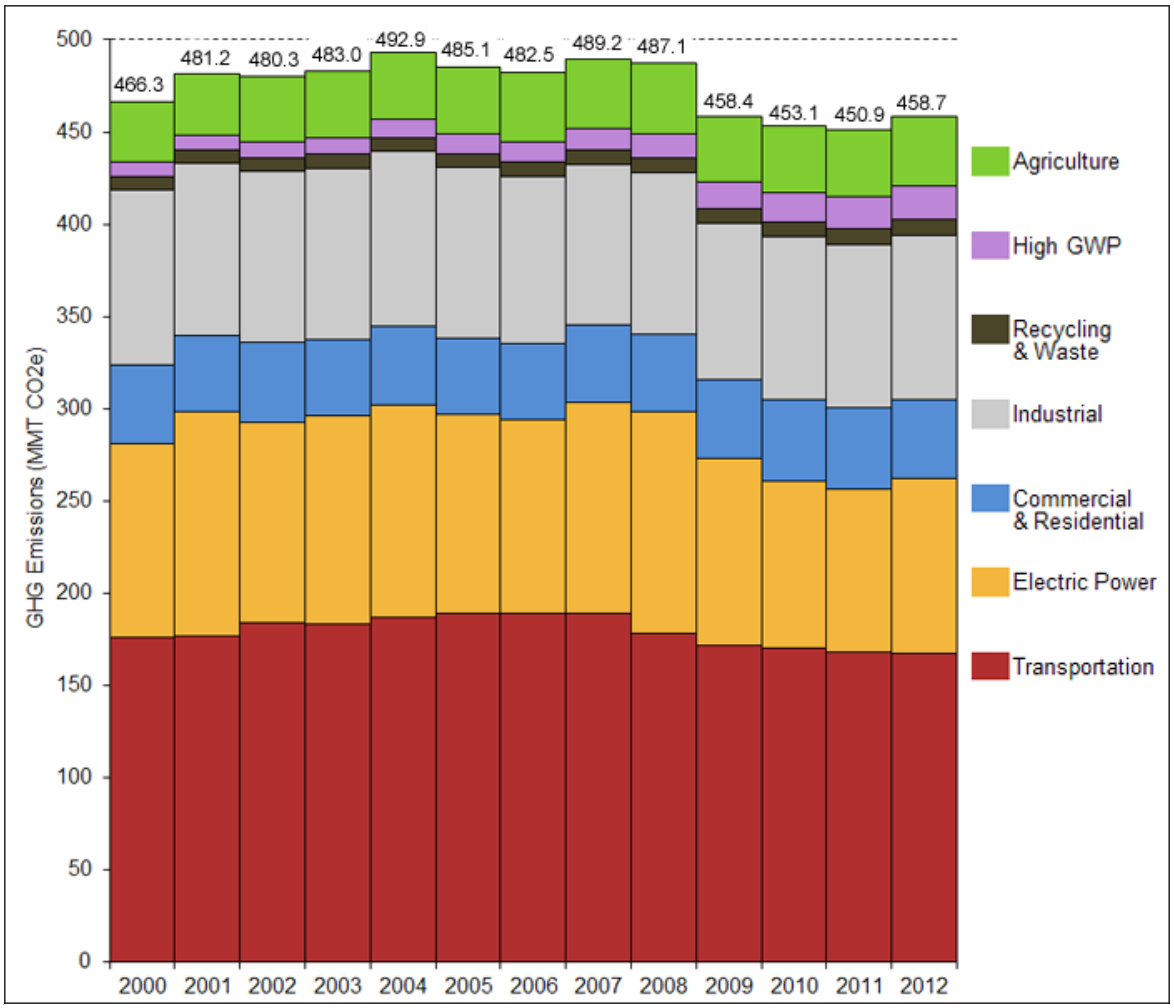
With a population of 38 million, California is the most populous state in the United States. In 2012, California produced 459 $MMTCO_2E$ of GHG emissions (CARB 2014). Figure 4.3-3 shows the breakdown of California GHG emissions since 2000. The transportation sector is the single largest contributor of California's GHG emissions in 2012, producing 37 percent of the State's total GHG emissions in 2010. In contrast, electrical generation produced 21 percent and industrial processes produced 19 percent.

Local Greenhouse Gas Emissions

In July 2008, the County Board of Supervisors made a commitment to calculating San Luis Obispo County's contribution to global climate change through the development of an Energywise Plan (Climate Action Plan) currently in draft form. The GHG Inventory estimates that the unincorporated areas of San Luis Obispo County emitted approximately 917,953 metric tons of CO_2-equivalent emissions in the baseline year 2006. The transportation sector was the

largest contributor to emissions (40 percent). Emissions from the commercial/industrial and residential sectors accounted for 24 and 15 percent of the total, respectively. Emissions from other sources, including livestock, select aircraft operations, and agricultural equipment, comprised the remaining 21 percent of the total.

Figure 4.3-3 California Greenhouse Gas Emissions



Source: CARB website 2014

4.3.1.6 Current Emissions from Refinery Operations

Emissions produce impacts associated with criteria pollutant emissions, emissions of GHG and emissions of toxic materials.

Santa Maria Refinery (SMR) Criteria Pollutant Emissions

Current operations at the Refinery produced criteria emissions associated with a range of equipment types and operations, including:

- Combustion sources, including diesel pumps and compressors, heaters, boiler, generators, incinerators and flares (emergency use only);
- Fugitive emissions from pumps, valves, and connections;
- Fugitive emissions from hydrocarbon tanks;
- Coke handling and storage; and
- Other miscellaneous sources, including solvent use, oily water treatment, cooling towers, and sulfur pit vents.

The Refinery reports emissions from these sources to the SLOCAPCD annually. Table 4.3.6 summarizes the emissions for these sources for the operations of the Refinery operating at the permit level of throughput (prior to the completion of the Throughput Increase Project, which would increase some equipment emissions by up to 10%).

Offsite criteria emissions include the emissions from vehicles used to transport employees and from vehicles used to transport coke, sulfur, and other materials delivered to or exported by the Refinery. These emissions include:

- Emissions from trucks and trains used to transport coke;
- Emissions from trucks used to transport sulfur;
- Emissions associated with transport of crude oil to the Santa Maria Pump Station to be delivered by pipeline to the Refinery;
- Emissions from trucks associated with normal materials shipments and employee duties; and
- Emissions from employee vehicles.

Table 4.3.7 shows emissions from offsite vehicle trips. Trucks delivering crude oil from several locations to the Santa Maria Pump Station create emissions. The weighted-average distance of these deliveries is 66 miles one way, from as far north as the San Ardo fields in Monterey County (83 miles) and south to Casmalia.

The Nipomo Mesa is located in an area that is impacted by periods of high particulate matter concentrations. The SLOCAPCD has been investigating the source of the high particulate matter concentrations on the Nipomo Mesa for the past decade.

Several studies performed by the SLOCAPCD in the Nipomo Mesa area have shown the source of the elevated particulate matter (PM) pollution to be windblown dust from the open sand areas of the Oceano Dunes State Vehicular Recreation Area (SVRA). The studies provided a comprehensive picture of the characteristics of a typical dust event. On November 16, 2011, the APCD Board approved the Coastal Dunes Dust Control Rule 1001 to require implementation of dust control measures on coastal dunes where vehicle activity occurs, to mitigate the impacts of the blowing dust. Mitigation efforts are currently underway.

Table 4.3.6 Refinery Emissions Permit Level – Annual and Daily

Annual Emissions, Tons/Year								
Equipment Description	**TOG**	**ROG**	**CO**	**NOx**	**SO2**	**PM**	**PM-10**	**PM-2.5**
Diesel Pumps and Compressors	0.1	0.1	0.3	1.3	0.0	0.1	0.1	0.1
Crude Heaters B2A/B	3.6	1.8	0.0	16.0	33.2	2.5	2.4	2.3
Vacuum Heaters B62A/B	0.6	0.3	0.3	2.1	2.9	0.4	0.4	0.4
Coke Heaters B102A/B	3.9	1.9	0.1	18.3	39.5	2.7	2.6	2.5
Steam Superheaters B201A/B	0.2	0.1	0.0	1.8	1.9	0.1	0.1	0.1
Boilers B504/506	3.7	1.8	1.1	12.0	21.0	2.5	2.5	2.5
Boiler Steam Generators B505	1.0	0.5	2.2	12.1	18.8	2.1	2.1	2.1
Boiler B507	2.1	1.0	1.0	6.5	12.0	1.4	1.4	1.4
Sulfur Plant Incinerator B602A/B	0.2	0.1	1.6	1.9	28.2	0.1	0.1	0.1
Tail Gas Combustor B702	0.2	0.1	1.7	2.0	2.0	0.2	0.2	0.2
Flare Stack C451	0.4	0.1	0.9	0.2	0.0	0.0	0.0	0.0
Kilns (Rotary and Cold Stack) - Carbon Plant	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0
Oily water treatment system	6.0	5.8	0.0	0.0	0.0	0.0	0.0	0.0
Cooling towers	2.8	2.8	0.0	0.0	0.0	0.0	0.0	0.0
Sulfur pit vents	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fugitive Emissions: non-crude tank	6.5	6.0	0.0	0.0	0.0	0.0	0.0	0.0
Fugitive Emissions: crude tank	9.0	8.2	0.0	0.0	0.0	0.0	0.0	0.0
Coke Storage - Carbon Plant	0.0	0.0	0.0	0.0	0.0	0.3	0.1	0.0
Rail car loading, baghouse	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Coke handling and conveying	0.0	0.0	0.0	0.0	0.0	0.4	0.2	0.1
Cooler Stack to Wet Scrubber	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Misc Sources (solvent use, etc)	0.3	0.3	0.0	0.1	0.0	0.0	0.0	0.0
Total, tons/yr	***40.5***	***31.0***	***9.2***	***74.3***	***160***	***12.8***	***12.2***	***11.9***
Average Daily Emissions, lbs/day								
Equipment Description	**TOG**	**ROG**	**CO**	**NOx**	**SO2**	**PM**	**PM-10**	**PM-2.5**
Diesel Pumps and Compressors	0.6	0.4	1.5	7.1	0.1	0.5	0.5	0.5
Crude Heaters B2A/B	19.8	9.9	0.0	87.5	182.1	13.7	13.0	12.7
Vacuum Heaters B62A/B	3.3	1.6	1.5	11.6	16.1	2.2	2.1	2.1
Coke Heaters B102A/B	21.3	10.7	0.3	100.5	216.3	14.7	14.0	13.7
Steam Superheaters B201A/B	1.0	0.5	0.0	10.0	10.6	0.7	0.7	0.7
Boilers B504/506	20.1	10.1	6.0	65.9	115.1	13.9	13.9	13.9
Boiler Steam Generators B505	5.4	2.7	12.3	66.2	102.8	11.4	11.4	11.4
Boiler B507	11.5	5.7	5.7	35.7	65.7	7.9	7.9	7.9
Sulfur Plant Incinerator B602A/B	1.1	0.6	8.6	10.2	154.4	0.8	0.8	0.8
Tail Gas Combustor B702	1.2	0.6	9.1	10.9	11.1	0.8	0.8	0.8
Flare Stack C451	2.0	0.7	5.2	1.0	0.1	0.0	0.0	0.0
Kilns (Rotary and Cold Stack) - Carbon Plant	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0
Oily water treatment system	32.7	31.7	0.0	0.0	0.0	0.0	0.0	0.0
Cooling towers	15.5	15.5	0.0	0.0	0.0	0.0	0.0	0.0
Sulfur pit vents	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fugitive Emissions: non-crude tank	35.4	32.9	0.0	0.0	0.0	0.0	0.0	0.0
Fugitive Emissions: crude tank	49.3	45.0	0.0	0.0	0.0	0.0	0.0	0.0
Coke Storage - Carbon Plant	0.0	0.0	0.0	0.0	0.0	1.6	0.8	0.2
Rail car loading, baghouse	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Coke handling and conveying	0.0	0.0	0.0	0.0	0.0	2.0	1.0	0.3
Cooler Stack to Wet Scrubber	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Misc Sources (solvent use, etc)	1.7	1.7	0.1	0.5	0.0	0.0	0.0	0.0
Total, lbs/day	***221.9***	***170.1***	***50.4***	***407.0***	***874***	***70.3***	***67.0***	***65.1***

Source: Phillip66 Throughput Increase EIR current (2013) permit level (44,500bpd) without throughput increase.

Table 4.3.7 Offsite Vehicle Emissions – Within and Outside of San Luis Obispo County

	Peak Day Emissions, lbs/day						Total Emissions, Tons or Tons/yr								
Source	ROG	CO	NO_X	SO_2	PM_{10}	$PM_{2.5}$	ROG	CO	NO_X	SO_2	PM_{10}	$PM_{2.5}$	N2O	CH4	CO2
Within SLO County															
Workers/Visitors weekdays	1.45	41.72	4.65	0.05	0.48	0.23	0.19	5.42	0.60	0.01	0.06	0.03	0.03	0.05	617
Workers/Visitors weekends	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.01	0.00	0.00	0.00	0.00	0.00	15
LDT trucks - misc refinery deliveries	0.17	4.72	0.60	0.00	0.03	0.02	0.03	0.86	0.11	0.00	0.01	0.00	0.01	0.01	63
HHDT Trucks - coke export	8.22	41.16	173.83	0.23	6.51	5.44	1.50	7.51	31.72	0.04	1.19	0.99	0.07	0.07	4531
HHDT Trucks - sulfur export	0.83	4.15	17.53	0.02	0.66	0.55	0.15	0.76	3.20	0.00	0.12	0.10	0.01	0.01	457
HHDT Trucks - crude deliveries to SM	2.29	11.48	48.50	0.07	1.82	1.52	0.42	2.10	8.85	0.01	0.33	0.28	0.02	0.02	1264
Locomotives to Long Beach- SLOC	0.72	2.10	12.86	0.00	0.44	0.40	0.01	0.04	0.26	0.00	0.01	0.01	0.00	0.00	16
Total	***13.68***	***105.33***	***257.97***	***0.37***	***9.94***	***8.16***	***2.31***	***16.82***	***44.77***	***0.07***	***1.72***	***1.41***	***0.13***	***0.15***	***6962***
Kern County															
HHDT Trucks - sulfur export	0.63	3.17	13.40	0.02	0.50	0.42	0.12	0.58	2.45	0.00	0.09	0.08	0.01	0.01	349
HHDT Trucks - coke export	10.96	54.87	231.77	0.31	8.68	7.26	2.00	10.01	42.30	0.06	1.58	1.32	0.09	0.09	6041
Total	***11.59***	***58.05***	***245.17***	***0.33***	***9.18***	***7.68***	***2.11***	***10.59***	***44.74***	***0.06***	***1.68***	***1.40***	***0.09***	***0.10***	***6390***
Santa Barbara County															
HHDT Trucks - crude deliveries to SM	0.51	2.57	10.86	0.01	0.41	0.34	0.09	0.47	1.98	0.00	0.07	0.06	0.00	0.00	283
Locomotives to Long Beach- SBC	16.13	47.32	290.04	0.01	10.04	9.03	0.33	0.97	5.97	0.00	0.21	0.19	0.03	0.01	359
Total	***16.65***	***49.90***	***300.90***	***0.02***	***10.45***	***9.37***	***0.43***	***1.44***	***7.95***	***0.00***	***0.28***	***0.25***	***0.03***	***0.01***	***643***
Monterey County															
HHDT Trucks - crude deliveries to SM	0.69	3.44	14.54	0.02	0.54	0.46	0.13	0.63	2.65	0.00	0.10	0.08	0.01	0.01	379
Ventura County															
Locomotives to Long Beach- VC	8.65	25.37	155.48	0.00	5.38	4.84	0.18	0.52	3.20	0.00	0.11	0.10	0.02	0.01	193
Los Angeles County															
Locomotives to Long Beach- LAC	8.32	24.39	149.50	0.00	5.17	4.66	0.17	0.50	3.08	0.00	0.11	0.10	0.02	0.00	185
Total Emissions All Counties	59.56	266.47	1123.57	0.75	40.66	35.17	5.32	30.51	106.40	0.13	3.99	3.34	0.29	0.28	14,751

Source: Data derived from SLOCAPCD and Phillips 66 Refinery Throughput EIR. Refinery is operating at the permit level of throughput in 2013 (44,500 bpd) without throughput increase.

SMR Operations Greenhouse Gas Emissions

Operations at the Refinery in the baseline year produced GHG emissions associated with a range of equipment types and operations, as shown in Table 4.3.6. Table 4.3.8 summarizes Refinery GHG emissions, which the Refinery voluntarily submits to the SLOCAPCD.

Table 4.3.8 Greenhouse Gas Emissions - Refinery Operations at Permit Level, metric tonnes

Source Type	CO_2	N_2O	CH_4	SF_6	Total CO_2 Equivalent Emissions
Refinery					
Stationary Combustion	238,905	0.4	4.0	0.0	239,129
Coke Processing (Calciner)	0	0.0	0.0	0.0	0
Mobile Combustion	751	0.0	0.0	0.0	780
Refrigerant Usage	0	0.0	0.0	0.0	20
Sulfur Recovery	8,743	0.0	0.0	0.0	8,743
Water Processes	0	0.2	1.5	0.0	105
VOC Fugitives	0	0.0	0.5	0.0	11
SF6 Usage	0	0.0	0.0	0.0	0
Purchased Electricity	6,256	0.0	0.0	0.0	6,265
TOTAL REFINERY	254,655	0.7	6.1	0.0	255,052
Offsite Mobile					
Workers commuting	568	0.0	0.0	0.0	577
LDT trucks - misc Refinery deliveries	57	0.0	0.0	0.0	60
HHDT Trucks - coke export	9,514	0.1	0.1	0.0	9,560
HHDT Trucks - sulfur export	725	0.0	0.0	0.0	729
HHDT Trucks - crude deliveries to SMPS	1,734	0.0	0.0	0.0	1,742
Locomotives to Long Beach	678	0.1	0.0	0.0	696
TOTAL MOBILE	13,276	0.3	0.3	0.0	13,362
TOTAL					268,415

Notes: Mobile combustion is emission related to Refinery operations, including employees, equipment or materials delivery, transport and movement of crude oil to the SMPS. Data is derived from 2009 Offsite Mobile data for this part of the table. The Calciner shut down in 2007. Emissions estimated at the refinery permit level from 2007 data.
Source: SLOCAPCD spreadsheets with data derived from Phillips 66 submittals. Permit level is the 44,500 bpd before the Refinery throughput modifications.

GHG emissions associated with employees commuting and offsite movement of sulfur, coke, and miscellaneous materials are not included in the inventories submitted to the SLOCAPCD. These emissions levels, also shown in Table 4.3.8, are calculated separately.

SMR Toxic Emissions

Toxic emissions are associated with operations at the Refinery as well as emissions from diesel trucks operating along area roadways. Refinery emissions of toxic materials are estimated by the Refinery and submitted to the SLOCAPCD along with modeling of cancer, acute, and chronic impacts at locations near the Refinery. These estimates are required by regulation, particularly the AB2588 requirements.

A toxic emission inventory was developed for the Refinery in 2004, which included only stationary sources at the SMR and also included operations such as the calciner, which have since been shut down. The 2004 inventory was used in a 2007 health risk assessment prepared by Phillips 66 (previously ConocoPhillips) which utilized the California Air Resources Board's Hotspots Analysis and Reporting Program model to assess the cancer, chronic, and acute health risk impacts.

The primary cause of health risk impacts at the Refinery in 2004 was determined to be the diesel-cooling water pump. In 2005, a diesel oxidation catalyst (DOC) was reportedly installed on the diesel cooling water pump to reduce diesel particulate emissions by 30 percent. The installation of the DOC and shutdown of calcining operations resulted in a reduction in health risk levels to 15 cancer cases per one million at the Refinery boundary (ConocoPhillips 2007).

Since 2004, several additional changes at the Refinery have reduced toxic emissions, including shutting down the calciner, installation of various DOC and diesel particulate filters (DPF) on several diesel engines, and reductions in fugitive emissions with a more rigorous fugitive emissions control program. Additionally, the SLOCAPCD reported that the diesel cooling water pump has been replaced by a natural gas engine with catalyst, which has reduced risk levels by at least 80 percent. This would reduce cancer health risk levels to approximately five cases per one million. The estimation of cancer risk levels is based upon a person being exposed to the air toxin at one location from the third-trimester of pregnancy through the 70^{th} year of life, and assumes that the person is at this same location for an average of about 73 percent of the time.

As part of the Phillips 66 Throughput Increase FEIR, the Applicant prepared and submitted a revised HRA utilizing 2010 emission data and assumptions about the operating characteristics of the Refinery if it were to operate at the increased throughput levels. The revised HRA indicated that the highest cancer risks at the facility fence line would be 2.1 in a million, and that chronic and acute risks would be 0.02 and 0.38, respectively. These levels are less than the health risk thresholds of 10 in one million (for cancer) and 1.0 HI for acute and chronic impacts and would be less than significant. The main driver in this health risk assessment was diesel particulate emissions associated with diesel engines at the refinery.

The Phillips 66 Throughput Project EIR assessed the health risks associated with truck traffic to and from the SMR. Health risks were estimated at 5 to 6 cases per million along Highway 1 near Willow Road. Since the Throughput EIR, the Willow Road/Highway 101 interchange has been completed and the SMR traffic utilized that route instead of the Highway 1 route to the south. This would shift the health risks associated with the SMR truck traffic to along Willow Road instead of Highway 1 south of Willow Road. An average of 49 round truck trips per day at the SMR was used in the baseline analysis, as per the Throughput EIR.

The California Office of Environmental Health Hazard Assessment, which produces the guidelines for conducting health risk assessments and the HARP model, released a report in 2012 (OEHHA 2012) which updated health risk exposure assessment methods related to health risk assessments to account for the increased sensitivity and breathing rates of children and younger adults. The report defined updated breathing rates on a per kilogram basis for children which caused an increase in health risk for children by over 2.7 times as much as the previous model. The OEHHA report also added an age sensitivity factor to account for children ranging in age

from between 3 and 10. The report also adjusted the "fraction of time at home" value to be age dependant, although for children whose school is located within the 1 in a million risk level from a facility are assumed to be at home 100 percent of the time (OEHHA 2015). In combination, these adjustments caused the cancer risk estimates to increase substantially. A finalized HRA Guidance Document was released in early 2015 (OEHHA 2015) along with a revised version of the HARP modeling program (HARP2, currently model version 15197) which was used in this analysis in the FEIR. The OEHHA adjustments do not affect the acute and chronic risk assessments.

The HARP2 model was used (version 15197) to estimate the current refinery and associated mobile sources impacts. The cancer risk would be 18.1 in a million at the nearest sensitive receptor (assuming a 30 year exposure duration, as per OEHHA Guidelines, and a Tier 1 assessment assuming all children under 16 years of age are at home 100 percent of the time as Lopez Continuation High School and the Mesa Middle School are located within the proposed Project 1 in a million cancer contour), which is above the SLOCAPCD threshold. This receptor is affected primarily by trucks entering and leaving the SMR. The cancer risk contours for the existing SMR are shown in Figure 4.3-4.

SMR Odor Emissions

Several activities at the SMR, including sulfur handling, combustion of sulfurous gases, and fugitive emissions from leaking components, could produce odors in the surrounding residential and industrial areas. The SMR was under an Abatement Order from 1989 to 1993 from the SLOCAPCD. As a result of that order, plant and process modifications were made to significantly reduce emissions and odors. A fugitive emissions program implemented in 2007 reduced emissions from leaking components. The 2007 shutdown of the Calciner Plant also reduced the combustion and emissions of sulfurous gases.

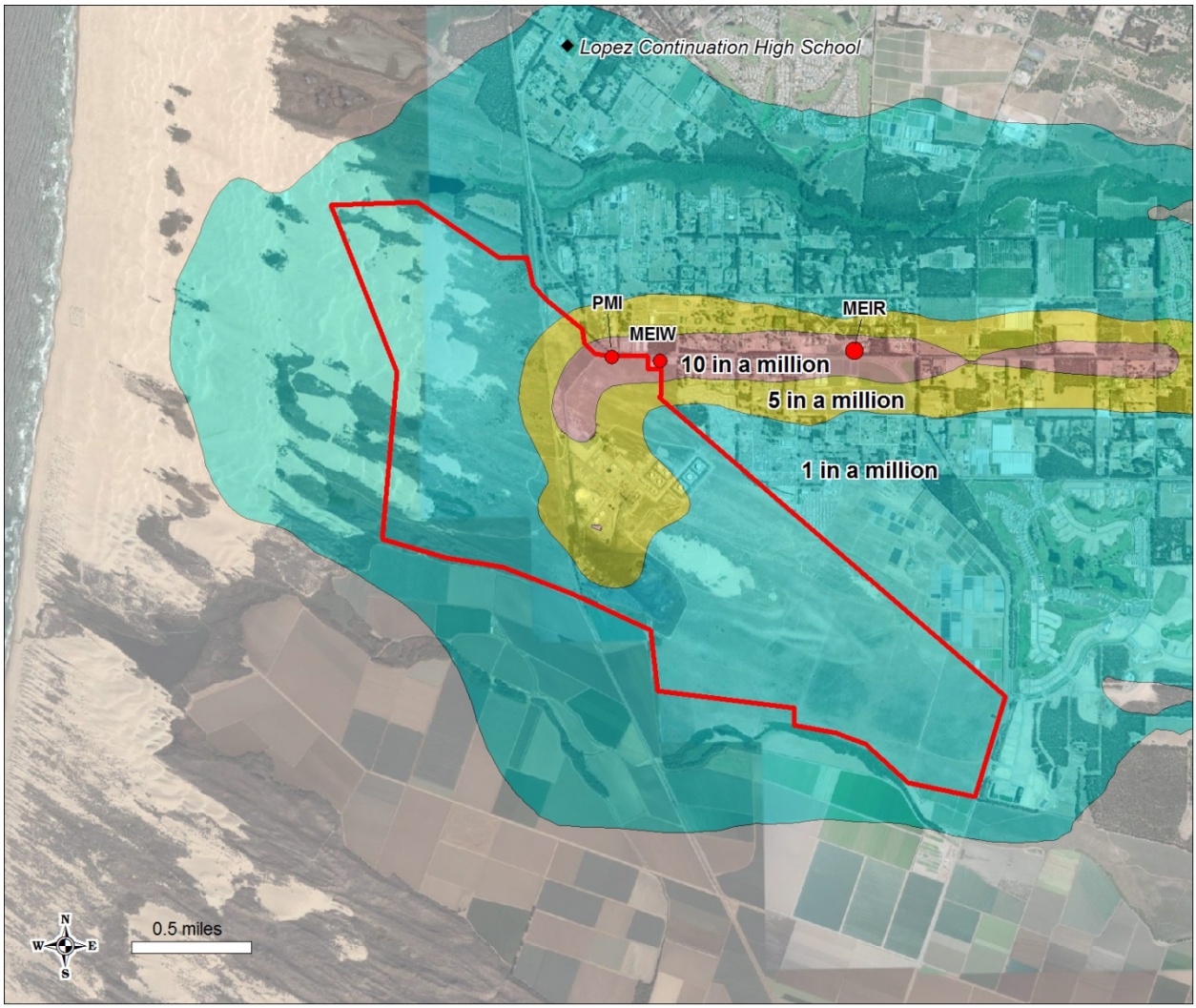
The SLOCAPCD investigates and compiles odor complaints for the SMR. Over the past 12 years, the SLOCAPCD recorded approximately 7.5 complaints per year on average, and SLOCAPCD staff verified 3.3 per year were attributable to the SMR. Complaints peaked at 20 in 2008, when the SLOCAPCD verified 11 complaints. In addition, the SMR has received, on average, 2.8 SLOCAPCD notices of violation per year over the past 17 years, for issues ranging from failure to submit appropriate plans to emissions levels that exceed permit values. One notice of violation was issued for odor nuisance in 17 years.

Santa Maria Pump Station Criteria Pollutant Emissions

Current operations at the Santa Maria Pump Station (SMPS) produced criteria emissions associated with a range of equipment types and operations, including:

- Unloading of crude oil trucks;
- Emergency standby engines;
- Tank heater boilers;
- Tank storage of crude oil (80,000 bbls) from truck offloading only; and
- Fugitive emissions from pumps, valves, and connections.

Figure 4.3-4 Cancer Health Risk Baseline Current Operations



PMI-Point of Maximum Impact
MEIR- Maximally Exposed Individual Resident
MEIW- Maximally Exposed Individual Worker
Mesa Middle School is located off the north side of the map about 1 mile northeast of Lopez Continuation High School.
Based upon HARP2 model version 15197.

According to the Santa Barbara County APCD permits (PTO 08218r9) and annual emission reports (for 2010), the SMPS has a permit truck unloading throughput limit of 21,859 barrels per day (bpd) as well as limits on the boiler heat inputs (502 mmbtu/day). Permit limits on NO_x and ROC are 12.35 and 26.82 lbs/day, respectively. In 2010, the maximum average monthly throughput at the SMPS was 6,847 bpd of crude oil through the truck unloading rack.

4.3.2 Regulatory Setting

Federal, state, and local agencies have established standards and regulations that govern the Rail Spur Project. The following sections summarize the regulatory setting for air quality that apply to new development within the local air basin and the historic and most recent efforts on addressing GHG emissions.

4.3.2.1 Air Quality

Federal Regulations

The Clean Air Act of 1970 directs attainment and maintenance of the National Ambient Air Quality Standards (NAAQS). The 1990 Amendments to this Act included new provisions that address air pollutant emissions that affect local, regional, and global air quality. The EPA is responsible for implementing the Clean Air Act and establishing the NAAQS for criteria pollutants. In 1997, the EPA adopted revisions to the Ozone and Particulate Matter Standards in the Clean Air Act. These revisions included 8-hour ozone standards and particulate matter standards for $PM_{2.5}$. However, in May of 1999 the US Court of Appeals for the District of Columbia remanded the ozone standards. In January 2001, the EPA issued a "Proposed Response to Remand" that declared the revised ozone standard should remain at 0.08 ppm, as established with the 1997 revisions. In March 2001, the US Supreme Court upheld the constitutionality of the Clean Air Act as the EPA interpreted it, setting health-protective air quality standards for ground-level ozone and particulate matter. In April 2004, the EPA issued its Final Nonattainment Area Designations for Eight-Hour Ozone Standard.

Air Quality Management Plan

Under the provisions of the Clean Air Act, the EPA requires each state that has not attained the NAAQS to prepare an Air Quality Management Plan, which is a separate local plan detailing how to meet the federal standards. The governor of each state designates a local agency to prepare these plans, which are then incorporated into a State Implementation Plan.

Emission Standards for Non-Road Diesel Engines

To reduce emissions from non-road diesel equipment, the EPA established a series of increasingly strict emission standards for new non-road diesel engines. Tier 1 standards were phased in from 1996 to 2000 (year of manufacture), depending on the engine horsepower category. Tier 2 standards were phased in from 2001 to 2006. Tier 3 standards were phased in from 2006 to 2008. Tier 4 standards were phased in from 2008 until 2015, and generally apply to all model years after 2014. These standards will apply to construction equipment.

Project-Specific Rules

Federal rules applicable to the Rail Spur Project are outlined in the Refinery Title 5 permit, pages iii-iv PTO 44-50.

Federal Regulation of Locomotives

Section 213 of the Federal Clean Air Act directs EPA to adopt emissions standards applicable to new locomotives and new engines used in locomotives. EPA promulgated the regulation in 1998 (Title 40 part 1033) with an update in 2008. The regulation establishes emission standards consisting of several tiers (Tier 0 through 4), applicable to remanufactured and new locomotives

as specified in the Final EPA National Locomotive Rule, with the tiers being phased in over a number of years. Locomotive engines are required to meet the specific Tier level when they are either originally manufactured or are remanufactured. The Tier level is a function of the locomotive original manufacture date. The 2008 Revised regulation Tier levels are labeled a "+" (such as Tier 0+) to indicate the updated 2008 levels. For example, for a locomotive originally manufactured in 1995 and remanufactured in 2006, it would have to meet the Tier 0 standard. A locomotive originally manufactured in 2003 and remanufactured in 2011 would have to meet the Tier 1+ standard.

State Regulations

California Air Resources Board

The CARB has jurisdiction over all air pollutant sources in the state; it delegated responsibility for stationary sources to local air districts and retained authority over emissions from mobile sources. The County's local air district is the San Luis Obispo County Air Pollution Control District (SLOCAPCD). The California Air Resources Board (CARB) established the California Ambient Air Quality Standards (CAAQS). Comparing the criteria pollutant concentrations in ambient air to the CAAQS determines state attainment status for criteria pollutants in a given region. The CARB, in partnership with local California air quality management districts, developed a pollutant-monitoring network to aid attainment of CAAQS. The network consists of numerous monitoring stations throughout California that monitor and report various pollutants' concentrations in ambient air.

California Clean Air Act

The California Clear Air Act (CCAA) went into effect in January 1, 1989, and was amended in 1992 (California Health and Safety Code, Division 26). The CCAA mandates achieving the health-based CAAQS at the earliest practical date.

Air Toxics "Hot Spots" Information and Assessment Act of 1987

The Air Toxics "Hot Spots" Information and Assessment Act of 1987 (AB2588) requires an inventory of air toxics emissions from individual facilities, an assessment of health risk, and notification of potential significant health risk (California Health & Safety Code, Division 26, Part 6).

California Diesel Fuel Regulations

With the California Diesel Fuel Regulations, the CARB set sulfur limitations for diesel fuel sold in California for use in on-road and off-road motor vehicles. The rule initially excluded harbor craft and intrastate locomotives, but it later included them with a 2004 rule amendment. Under this rule, diesel fuel used in motor vehicles, except harbor craft and intrastate locomotives, has been limited to 500-ppm sulfur since 1993. This sulfur limit was later reduced to 15-ppm, effective September 1, 2006.

Locomotive Regulations and MOUs

California developed and adopted the 1994 California State Implementation Plan ("1994 SIP") to attain the federal ozone air quality standard in the South Coast Nonattainment Area and certain other areas of California. Measure M14 of the 1994 SIP anticipates that locomotive fleets operating in the South Coast Nonattainment Area in 2010 and later will emit on average no more than the 5.5 grams per brake horsepower hour ("g/bhp hr") Tier 2 (2005 and later) new

locomotive oxides of nitrogen ("NOx") emission standard included in the Final EPA National Locomotive Rule. The Measure M14 resulted in a Memorandum Of Mutual Understandings And Agreements - South Coast Locomotive Fleet Average Emissions Program on July 2, 1998 between CARB, Burlington Northern and Santa Fe Railway Company and Union Pacific Railroad Company.

On November 18, 2004, the CARB approved new requirements for fuel used in intrastate locomotives. Beginning January 1, 2007, diesel fuel sold for use in intrastate diesel-electric locomotives operating in California must meet the specifications of CARB diesel fuel. Intrastate (diesel-electric) locomotives are defined as those locomotives that operate and fuel primarily (at or greater than 90% of annual fuel consumption, mileage, and/or hours of operation) within the boundaries of the state of California.

The Statewide Rail Yard Agreement between ARB, UPRR, and BNSF was adopted in June 2005 and required UPRR and BNSF to reduce diesel particulate matter emissions in and around UPRR and BNSF rail yards throughout the state by up to 20 percent between 2005 and 2008. The Statewide Rail Yard Agreement required the preparation of health risk assessments and mitigation plans, placed limits on the idling of locomotives to 15 consecutive minutes, and use of low sulfur fuels.

CARB also publishes data that indicates the national locomotive mix of UPRR between the emission tiers. In 2009 (the most recent data available), approximately 70% of the locomotive mix of UPRR was Tier 0 or below, with 14% Tier 1 and 16% Tier 2 (CARB 2013).

4.3.2.2 Local

In 1967, California passed legislation that placed the primary responsibility for controlling air pollution at the local level. In April 1970, the San Luis Obispo County Board of Supervisors formed the SLOCAPCD, which included a decision-making body known as the SLOCAPCD Board of Directors. Over the past 30 years, the District has adopted and implemented nearly 100 rules and currently has nearly 1,070 individual permits and agricultural registrations, and it operates 850 facilities. In 1994, revisions to state law changed the composition of the Board of Directors to include all five County supervisors plus one city council member from each of the seven incorporated cities.

As part of the California Clean Air Act, the SLOCAPCD is required to develop a plan to achieve and maintain the state ozone standard by the earliest practicable date. To this end, the SLOCAPCD developed the Clean Air Plan (CAP). The latest CAP is dated 2001 CAP, adopted by the SLOCAPCD at a hearing on March 26, 2002, which addresses state requirements by updating the 1991 CAP (SLOCAPCD 2001). The 1991 CAP, adopted by the SLOCAPCD in 1992, contained a comprehensive set of control measures designed to reduce ozone precursor emissions from a wide variety of stationary and mobile sources. The 2001 CAP, similar to the 1998 CAP, is mainly a continuation of the 1995 CAP and proposed no new control measures.

Control measures proposed in the CAP include vapor recovery, solvent content reduction, improved fuel combustion, fuel switching or electrification, chemical or catalytic reduction, reduced vehicle use, and new source reviews.

The SLOCAPCD also issues annual reports that address issues such as air quality summaries for each year as well as air quality trends.

The SLOCAPCD developed a number of rules that are potentially applicable to the Rail Spur Project, including:

- Rule 204 – Requirements (new source review);
- Rule 219 – Toxics new source review;
- Rule 401 – Visible emissions;
- Rule 402 – Nuisance;
- Rule 403 – Particulate matter emission standards;
- Rule 405 – Nitrogen oxides emission standards, limitations, and prohibitions;
- Rule 406 – Carbon monoxide emission standards and limitations;
- Rule 407 – Organic material emission standards;
- Rule 412 – Airborne toxic control measures;
- Rule 417 – Control of fugitive emissions of volatile organic compounds;
- Rule 419 – Petroleum pits, ponds, sumps, well cellars and wastewater separators;
- Rule 420 – Cutback asphalt paving materials;
- Rule 425 – Storage of volatile organic compounds;
- Rule 430 – Control of oxides of nitrogen from industrial, institutional, commercial boilers, steam generators, and process heaters;
- Rule 431 – Stationary internal combustion engines; and
- Rule 433 – Architectural coatings.

4.3.2.3 Greenhouse Gas Emissions Regulations

International Regulations

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 5 percent from 1990 levels during the first commitment period from 2008 until 2012. However, while the US is a signatory to the Kyoto Protocol, Congress has not ratified it; therefore, the US is not bound by the Protocol's commitments.

Climate Change Technology Program

In lieu of the Kyoto Protocol's mandatory framework, the US has opted for a voluntary and incentive-based approach toward emissions reductions. This approach, the Climate Change

Technology 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.

Federal Regulations

Clean Air Act

In the past, the US EPA has not regulated GHG under the Clean Air Act. However, the US Supreme Court recently held that the 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 EPA to regulate GHG as a pollutant pursuant to the Clean Air Act (US 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 EPA's reason for not regulating GHG was insufficiently grounded.

40 CFR Section 98 specifies mandatory reporting requirements for a number of industries. The final 40 CFR part 98 applies to 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 metric tonnes of CO_2 equivalent per year.

Clean Power Plan

Signed into law in August, 2015, the Clean Power Plan establishes national standards that address carbon pollution from power plants, establishing interim and final CO_2 emission performance rates for different types of power plants and is estimated to reduce carbon emissions from power plants in 2030 by 32 percent below 2005 levels.

State Regulations and Programs

Executive Order S-3-05

The 2005 California Executive Order S-3-05 established the following GHG emission-reduction targets 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 Order. Emission reduction strategies or programs developed by the Climate Action Team to meet the emission targets are outlined in a March 2006 report (CalEPA 2006). The Climate Action Team also provided strategies and input to the CARB Scoping Plan.

Assembly Bill 1493

In 2002, the 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 will 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 EPA, which was granted in June 2009.

Assembly Bill 32
AB 32 codifies California's GHG emissions target and requires the state to reduce global warming emissions to 1990 levels by 2020. It further directs the CARB to enforce the statewide cap that would begin phasing in 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.
- January 1, 2012 - GHG emission limits and reduction measures become enforceable.

Since the passage of AB 32, the CARB published 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.

California Senate Bill 1368
In 2006, the California legislature passed SB 1368, which requires the Public Utilities Commission (PUC) to develop and adopt a "greenhouse gases emission performance standard" by March 1, 2007, for private electric utilities under its regulation. The PUC 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.

Senate Bill 97 – CEQA: Greenhouse Gas Emissions

In August 2007, Governor Schwarzenegger signed into law SB 97 – CEQA: Greenhouse Gas Emissions stating, "This bill advances a coordinated policy for reducing greenhouse gas emissions by directing the Office of Planning and Research and the Resources Agency to develop CEQA guidelines on how state and local agencies should analyze, and when necessary, mitigate greenhouse gas emissions." Specifically, SB 97 requires 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. The Resources Agency would be required to certify and adopt those guidelines by January 1, 2010. 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 determine whether GHG may be generated by a proposed project, and if so, quantify or estimate the GHG emissions by type and source. Second, the lead agency must assess whether those emissions are individually or cumulatively significant. When assessing whether a project's effects on climate change are cumulatively considerable, 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. Finally, if the lead agency determines that the GHG emissions from the Rail Spur Project are potentially significant, it must investigate and implement ways to avoid, reduce, or otherwise mitigate the impacts of those emissions.

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 greenhouse gas 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 Resources Board: Scoping Plan
On December 11, 2008, the CARB adopted the Scoping Plan as directed by AB 32 (CARB 2008). The Scoping Plan proposes a set of actions designed to reduce overall GHG emissions in California. Measures include a cap-and-trade system, car standards, low carbon fuel standards, landfill gas control methods, energy efficiency, green buildings, renewable electricity standards, and refrigerant management programs.

Since 2008, ARB has 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 $MMTCO_2E$. ARB subsequently derived an updated estimate of emissions by considering the influence of the recent recession and reduction measures that are already in place. The 2011 Scoping plan estimates the year 2020 emissions at 507 $MMTCO_2E$ (as the BAU estimate).

The 2011 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% reduction (CARB 2011a). The 2011 Scoping Plan sets forth the expected GHG emission reductions from a variety of measures, including the Pavley I automobile standards and the Renewables Portfolio Standard, neither of which were assumed in the 2008 Scoping Plan (CARB, 2011b).

AB 32 requires that the Scoping Plan be revised every five years; the first five-year revision was approved by CARB in May 2014. This first revision 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 affect on future emissions' forecasting. It also addresses post-2020 goals, including Executive Order S-3-05.

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 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 Proposed Mandatory Reporting Regulation
The Air Resources Board 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 25,000 metric tonnes of CO_2 equivalent per year.

California Air Resource Board Proposed Cap-and-Trade Regulation
The California Air Resource Board has recently adopted a rule to develop a cap-and-trade type system applicable to specific industries that emit more than 25,000 metric tonnes of CO_2

equivalent per year. The AB 32 Scoping Plan identifies a cap-and-trade program as one of the strategies California will employ to reduce the greenhouse gas (GHG) emissions that cause climate change. Under cap-and-trade, an overall limit on GHG emissions from capped sectors will be established by the cap-and-trade program and facilities subject to the cap will 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 for 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 metric tonnes of CO_2 equivalent 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 non-covered entity or for transportation fuels. Facilities subject to cap and trade are not automatically exempt from the significant evaluation under CEQA. Proposed projects must quantify GHG emissions and determine the significance of a project's environmental impact.

Executive Order B-30-15
The 2015 California Executive Order B-30-15 established a 2030 GHG emissions target of reducing greenhouse gas emissions by 40 percent below 1990 levels.

Senate Bill 350
The 2015 Clean Energy and Pollution Reduction Act was signed into law on October 10, 2015, and requires that the amount of electricity generated and sold to retail customers from renewable energy resources be increased to 50% by December 31, 2030, and that a doubling of statewide energy efficiency savings in electricity and natural gas by retail customers be achieved by January 1, 2030.

Local Regulations and Programs

County Climate Action Plan
The County adopted a Climate Action Plan (EnergyWise Plan) on November 22, 2011, as a blueprint for reducing greenhouse gas emissions. Additionally, a Green Building Ordinance to improve energy efficiency in new and existing development effective January 1, 2013. The CAP focuses on local actions to reduce GHG emissions through energy efficiencies, including: retrofitting existing buildings; reversing rural sprawl; and increasing use of non-fossil fuels such as solar and wind energy (SLOC 2011).

County General Plan, Conservation, and Open Space Element
The County Board of Supervisors in 2010 adopted a comprehensive Conservation and Open Space Element with a focus on reducing GHG emissions, increasing energy efficiency, and using local renewable energy. The County's EnergyWise Plan (adopted in 2011) included an inventory of GHG. The EnergyWise Plan is required by the Conservation and Open Space Element of the General Plan. The Inventory found that the unincorporated San Luis Obispo community emitted 917,700 metric tons of carbon dioxide equivalent ($MTCO_2e$) in 2006.

SLOCAPCD
The SLOCAPCD adopted GHG thresholds on March 28, 2012, and updated their CEQA Handbook in April 2012, to incorporate the new thresholds.

4.3.3 Significance Criteria

According to the April 2012 SLOCAPCD CEQA Air Quality Handbook, project impacts may be considered significant if one or more of the following special conditions cannot be met:

- Consistency with the most recent Clean Air Plan for San Luis Obispo County;
- Consistency with a plan for the reduction of greenhouse gas emissions that has been adopted by the jurisdiction in which the project is located and that, at a minimum, complies with State CEQA Guidelines Section 15183.5.
- Comparison of predicted ambient criteria pollutant concentrations resulting from the project to state and federal health standards, when applicable;
- Comparison of calculated project emissions to SLOCAPCD emission thresholds;
- The evaluation of special conditions which apply to certain projects; or
- Construction emissions would exceed the SLOCAPCD Thresholds.

The CEQA Air Quality Handbook defines thresholds for long-term operational emissions and short-term construction related emissions. Depending on the level of exceedance of a defined threshold, the SLOCAPCD has established varying levels of mitigation.

4.3.3.1 Operational Thresholds

Table 4.3.9 shows the threshold criteria established by the SLOCAPCD to determine a Project's significance and appropriate mitigation level for long-term operational emissions (i.e., vehicular and area source emissions).

Table 4.3.9 SLOCAPCD Thresholds of Significance for Operational Emissions Impacts

Pollutant	Daily	Annual
ROG + NO_x	25 pounds	25 tons
Diesel Particulate Matter	1.25 pounds	-
Fugitive Dust Particulate Matter (PM_{10})	25 pounds	25 tons
CO	550 pounds	-

Source: SLOCAPCD 2012

Emissions that equal or exceed the designated threshold levels within SLO County are considered potentially significant and shall be mitigated. For projects requiring air quality mitigation, the SLOCAPCD has developed a list of both standard and discretionary mitigation strategies tailored to the type of Project proposed: residential, commercial, or industrial.

Generally, the SLOCAPCD utilizes thresholds (see below) to ensure that ambient air quality standards are not exceeded. However, industrial and large commercial projects that have high emissions above the thresholds and are in close proximity to receptors are sometimes required to

perform air quality dispersion modeling if the SLOCAPCD determines that project emissions may have the potential to cause an exceedance of these standards.

4.3.3.2 Construction Thresholds

Use of heavy equipment and earth-moving operations during project construction generates fugitive dust and combustion emissions that may have substantial temporary impacts on local air quality. Fugitive dust emissions would result from land clearing, demolition, ground excavation, cut and fill operations, and equipment traffic over temporary roads. Combustion emissions, such as NO_x and ROG, are most significant when using diesel-fueled equipment, such as loaders, dozers, haul trucks, compressors, and generators. Table 4.3.10 lists construction thresholds.

Table 4.3.10 SLOCAPCD Thresholds of Significance for Construction Emissions Impacts

Pollutant	Daily	Quarterly Tier 1	Quarterly Tier 2
ROG + NO_x	137 pounds	2.5 tons	6.3 tons
Diesel Particulate Matter	7 pounds	0.13 tons	0.32 tons
Fugitive Dust Particulate Matter (PM_{10})	-	2.5 tons	-

Source: SLOCAPCD 2012

Exceeding Tier 1 emissions thresholds requires the implementation of a listing of standard mitigation measures and best available control technologies (BACT). Tier 2 requires the implementation of a construction activity management plan in addition to Tier 1 requirements. If emission levels cannot be decreased to less than the Tier thresholds, then offsite mitigation may be necessary.

4.3.3.3 Greenhouse Gases Thresholds

For land use development projects, the GHG threshold is:

- Compliance with a qualified GHG Reduction Strategy; OR
- Annual emissions less than 1,150 metric tons per year (MT/yr) of CO_2e; OR
- Annual emissions less than 4.9 MT CO_2e/service population (SP)/yr (residents + employees).

Land use development projects include residential, commercial and public land uses and facilities. This includes amortization of the construction emissions (50 years for residential projects and 25 years for commercial projects).

For stationary-source projects, the threshold is 10,000 metric tons per year (MT/yr) of CO_2e. Stationary-source projects include land uses that would accommodate processes and equipment that emit GHG emissions and would require an SLOCAPCD permit to operate. This threshold is applied to emissions within SLO County.

For construction, the GHG emissions from construction are amortized over the life of the project (50 years for residential projects and 25 years for commercial and industrial projects) and added to the operational GHG emissions.

4.3.3.4 Air Toxic Health Risk Thresholds

SLOCAPCD Rule 219, Toxics New Source Review, defines acceptable levels of health risk for regulated sources. Rule 219 identifies significance thresholds as follows:

> *The facility-wide risk from any source shall not exceed ten (10.0) in a million for cancer or a health hazard index (HI) of one (1.0) for either chronic non-cancer or acute health impacts, unless that facility is included in the Air Toxics Hot Spots program by the District, and the source simultaneously develops and implements an APCO-approved airborne toxic risk reduction audit and plan, as codified in Chapter 6, Facility Toxic Air Contaminant Risk Reduction Audit and Plan, of the California Health and Safety Code.*

These thresholds were utilized to evaluate facility-wide risk following the implementation of TBACT, which could include the use of cleaner diesel engines and implementing California verified diesel emission control strategies, such as the installation of catalysts. As per SLOCAPCD Rule 219, impacts are assessed at the "maximum exposed individual and the nearest receptor" with a receptor being a residence, school, health-care facility or off-site worksite. Acute impacts are based on the offsite location where any member of the public has reasonable access (defined in this EIR as the SMR boundary). As per SLOCAPCD and the CAPCOA Guidance (CAPCOA 2009), for CEQA, the thresholds apply to all facilities including vehicle emissions, and road related emissions.

4.3.3.5 Special Conditions

Special conditions are defined in the Handbooks for construction as the following:

- Sensitive receptors: The proximity of sensitive individuals (receptors) to a construction site constitutes a special condition, and the handbook indicates that construction sites within 1,000 feet of sensitive receptors may require a more aggressive implementation of mitigation measures;
- Diesel idling restrictions: limits on diesel idling within 1,000 feet of sensitive receptors;
- Naturally Occurring Asbestos (NOA): Requires the development of an Asbestos Dust Mitigation Plan for construction within areas that may contain NOA;
- Asbestos Material in Demolition: removal of materials that may contain asbestos shall have additional handling requirements;
- Development burning: prohibition on burning;
- Special permits for some equipment.

Some of these construction related special conditions are currently managed by federal, state or local rules and regulations, such as diesel idling, handling of asbestos materials, etc.

For operational phases of the project, special conditions include:

- The potential to emit toxic pollutants (see toxic threshold below);
- Emissions from agricultural operations;
- Fugitive dust emissions (incorporated into the thresholds below);
- Nuisance Impacts (odor): If a project has the potential to cause an odor or other nuisance problem which could impact a considerable number of people, then it may be considered significant.

4.3.4 Project Impacts and Mitigation Measures

The Rail Spur Project would generate air emissions due to the following activities:

- Construction equipment internal combustion engines;
- Construction equipment fugitive dust from earth moving and vehicle travel;
- Operational onsite internal combustion engines (e.g., locomotives);
- Operational fugitive emissions (e.g., valves, pumps, vapor recovery canisters);
- Operational offsite internal combustion engines (e.g., locomotives);
- Offsite electrical generation (from electrical loads and use of steam from existing boilers)
- Vehicle emissions from automobile and truck engines (both onsite and offsite); and
- Vehicle fugitive dust emissions due to travel on paved, dirt and gravel roads.

The Applicant has proposed a number of mitigation measures to address air quality impacts. As appropriate, these mitigation measures have been included in the project impact analysis.

The remainder of this section discusses the impact associated with the construction and operational emissions air emissions related to criteria, toxic and GHG emissions, as well as operational emissions related to potential odor impacts.

4.3.4.1 Construction Air Emissions

Air emissions of criteria pollutants (CO, ROG, NO_x, SO_2 and PM) during construction would result from construction equipment with internal combustion engines (e.g., backhoes, cranes), and offsite vehicles (e.g., construction employee commuter vehicles and trucks delivering equipment and materials). Earth moving activities would also generate fugitive dust emissions.

Toxic emissions associated with construction would be temporary in nature and would not be located close to sensitive receptors. Therefore, toxic emissions associated with construction would be less than significant.

GHG emissions associated with construction activities would be generated from onsite construction equipment internal engines and from offsite vehicle travel to and from the site. GHG emissions would total 970 metric tonnes of CO_2 equivalent ($MTCO_2e$). These emissions are amortized over 25 years and added to the operational GHG emissions tabulated below to determine significance. See the operations section below.

Impact #	Impact Description	Phase	Impact Classification
AQ.1	Construction activities associated with the Rail Spur project would generate criteria pollutant emissions that exceed SLOCAPCD thresholds.	Construction	Class II

Air emissions from construction equipment were estimated using the emission factors and equations from the CalEEMod 2013.2 software models for both onsite and offsite emissions, and the assumptions on the duration and personnel detailed in Section 2.0, Project Description. Appendix B includes details on the construction equipment and periods of operation for each equipment piece.

During construction, a large portion of PM_{10} emissions typically arises from large pieces of equipment and vehicles traveling on disturbed soil, unpaved surfaces, and various earth-moving activities, such as grading and clearing. These emissions are known as "fugitive dust", and depend heavily on the size of the graded area, volume of soil moved, the number of vehicles and construction machinery required, and the duration of construction. The fugitive PM_{10} emissions are estimated based on a disturbed area as provided by the Applicant. Emission factors were used from CalEEMod program for soil moving and road dust.

Table 4.3.11 summarizes construction air emissions. CalEEMod inputs are summarized below:

- Wind Speed and Precipitation data used the SLO County defaults;
- Climate Zone data used the SLO County defaults;
- The utility was selected as Pacific Gas and Electric Company;
- Construction equipment listings and horsepower are based on equipment listings provided by the Applicant and verified by the EIR preparer;
- Equipment load factors were updated with Carl Moyer 2011 values;
- Mobile sources used the defaults; and
- Mitigations for construction included watering exposed areas 3 times per day for 61% fugitive dust control, reduced vehicle speeds to 15 mph and the use of Tier 3 engines with DPM on construction equipment above 100 hp.

Table 4.3.11 Construction Emissions

Pollutant	SLOCAPCD Thresholds			Project Daily, pounds	Project Quarterly, tons
	Daily	Quarterly Tier 1	Quarterly Tier 2		
ROG + NO_x	137 pounds	2.5 tons	6.3 tons	240.6	5.51
Diesel Particulate Matter	7 pounds	0.13 tons	0.32 tons	8.5	0.23
Fugitive Dust Particulate Matter (PM_{10})	-	2.5 tons	-	-	0.47

Notes: Source is CalEEMod. See Appendix B for CalEEMod output files.

The construction project was divided into the following phases in CalEEMod:

- Demolition of tracks with removal of 1,000 yds^3 of materials;
- Onsite soil and roadway distribution;
- Grading of the site;
- Site preparation and construction of the rail lines, including delivery of rail, rail base gravel;
- Site preparation and construction of the pipeline;
- Construction of the unloading area and buildings including delivery of steel, and processing equipment; and,
- Commissioning.

For all of these construction phases there are associated offsite vehicle trips for workers and the delivery and removal of equipment and supplies. The emissions from construction activities would exceed the SLOCAPCD thresholds for the daily emissions of NO_x and ROG, the quarterly emissions of NO_x and ROG Tier 1, the daily emissions of diesel particulate matter, and the quarterly emissions of diesel particulate matter Tier 1. Therefore, impacts would be potentially significant. There would be no exceedances of the construction thresholds for fugitive dust emissions.

The project site is located in an area that is designated as requiring a Naturally-occurring asbestos analysis. As NOA could be present in the soils, and could cause impacts as it would be associated with the generation of fugitive dust from activities, an Asbestos NOA Air Toxics Control Measure (ATCM), a Work Plan, Asbestos Dust Control Plan and a Health and Safety Plan would be required.

Valley fever is also a potential threat to workers and offsite areas if construction dust is not controlled.

Although it is not anticipated, demolition of railroad items, building or piping could encounter asbestos containing materials (ACM) and would require special handling. During grading or demolition, hydrocarbon contaminated soils could be encountered and special handling of these soils would be required.

Mitigation measures to reduce emissions are associated with addressing fugitive dust through measures such as site watering, vehicle speed limits, maintaining minimum soil moisture, etc. Measures to reduce diesel particulate matter are associated with the installation of diesel particulate catalysts or the use of Tier 3 engines.

Mitigation Measures

AQ-1a Prior to issuance of grading and construction permits, and throughout project construction, as applicable, the Applicant shall implement the following construction emission reduction measures:

a. Properly maintain all construction equipment according to manufacturer's specifications;

b. Fuel all off-road and portable diesel powered equipment with CARB-certified motor vehicle diesel fuel (non-taxed version suitable for use off-road);

c. Applicant shall include the following, in addition to complying with state Off-Road Regulations, in order to reduce peak daily/quarter ROG+NOx emissions: 1) Use CARB Tier 4 certified diesel construction equipment off-road heavy-duty diesel engines and 2) Stagger the construction schedule to prevent peak day/quarter emissions from exceeding the threshold (for example, no site preparation during grading and soil transport);

d. Use CARB 2010 or cleaner certified on-road heavy-duty diesel trucks to the extent feasible and comply with state On-Road Regulations;

e. If construction or trucking companies that are awarded the bid or are subcontractors for the project do not have equipment to meet the above two measures, the impacts from the dirtier equipment shall be addressed through SLOCAPCD approved off-site or other mitigation measures;

f. All on- and off-road diesel equipment shall not idle for more than 5 minutes. Signs shall be posted in the designated queuing areas and job sites to remind drivers and operators of the 5 minute idling limit;

g. Diesel idling within 1,000 feet of sensitive receptors is not permitted (Sensitive receptors are defined in the SLOCAPCD Handbook as people that have an increased sensitivity to air pollution or environmental contaminants. Sensitive receptor locations include schools, parks and playgrounds, day care centers, nursing homes, hospitals, and residential dwelling units);

h. Staging and queuing areas shall not be located within 1,000 feet of sensitive receptors;

i. Equipment shall be electrified when feasible;

j. Substitute gasoline-powered or diesel hybrids in place of diesel-powered equipment, where feasible; and

k. Use alternatively fueled construction equipment on-site where feasible, such as compressed natural gas (CNG), liquefied natural gas (LNG), propane, or biodiesel.

AQ-1b *Prior to issuance of grading and construction permit, the Applicant shall ensure SLOCAPCD regulations that prohibit developmental burning of vegetative material within San Luis Obispo County are followed for the life of the project.*

AQ-1c *Prior to issuance of grading and construction permit, the Applicant shall ensure that portable equipment and engines 50 horsepower or greater, used during grading and construction activities must have a California portable equipment registration (issued by the ARB) or a SLOCAPCD permit. Proof of registration must be provided to the SLOCAPCD prior to the start of grading or construction or a permit secured from the SLOCAPCD prior to the start of grading or construction. The following list is as a guide to equipment and operations that may have permitting requirements, but it is not exclusive:*

a. Power screens, conveyors, diesel engines, and/or crushers;

b. Portable generators and equipment with 50-horsepower or greater engines;

c. Internal combustion engines;

d. Unconfined abrasive blasting operations;

e. Concrete batch plants;

f. Rock and pavement crushing;

g. Tub grinders; and

h. Trommel screens.

AQ-1d *Prior to issuance of grading and construction permit, the Applicant shall ensure that all grading and construction equipment greater than 100 bhp be equipped with CARB Level 3 diesel particulate filters (DPF), or equivalent, to achieve an 85 percent reduction in diesel particulate emissions from an uncontrolled engine. If CARB verified Level 3 DPFs cannot be secured for all of the equipment greater than 100 hp then the applicant will offset the added DPM with measures including but not limited to schedule modifications, implementation of no idling requirement, or other applicable measures providing a total reduction equivalent to an 85 percent reduction from uncontrolled engines as approved by the SLOCAPCD.*

AQ-1e *Prior to issuance of grading and construction permits, or during construction, if emissions of ROG+NO_x with the above mitigations still exceed the thresholds, the Applicant shall secure SLOCAPCD-approved onsite or off-site reductions in ROG + NO_x emissions to ensure that ROG + NO_x emissions do not exceed the SLOCAPCD quarterly thresholds. Coordination with the SLOCAPCD should begin at least six (6) months prior to issuance of grading and/or construction permits for the Project to allow time for refining calculations and for the SLOCAPCD to review and approve the Construction Activity Management Plan (CAMP) and on-site or off-site mitigation approach.*

AQ-1f *Prior to issuance of applicable grading permit, the Applicant shall prepare a Dust Control Plan to be approved by the APCD and County Health and include*

requirements in the SLOCAPCD CEQA Handbook identified as fugitive dust mitigation measures and shall include a combination of the following, as approved by the SLOCAPCD and County Health:

a. Reduce the amount of the disturbed area where possible.

b. Use of water trucks or sprinkler systems in sufficient quantities to prevent airborne dust from leaving the site. An adequate water supply source must be identified. Increased watering frequency would be required whenever wind speeds exceed 15 mph. Reclaimed (non-potable) water should be used whenever possible.

c. All dirt stockpile areas should be sprayed daily as needed, covered, or a SLOCAPCD-approved alternative method will be used. (90 percent reduction from no dust control).

d. Permanent dust control measures identified in the approved Project revegetation and landscape plans should be implemented as soon as possible following completion of any soil disturbing activities and shall use native species that have been shown to reduce particulate emissions to the extent feasible.

e. Exposed ground areas that will be reworked at dates greater than one month after initial grading should be sown with a fast-germinating non-invasive grass seed and watered until vegetation is established.

f. All disturbed soil areas not subject to revegetation should be stabilized using approved chemical soil binders, jute netting, or other methods approved in advance by the SLOCAPCD.

g. All roadways, driveways, etc. to be paved should be completed as soon as possible. In addition, equipment pads should be laid as soon as possible after grading unless seeding or soil binders are used.

h. Vehicle speed for all construction vehicles shall not exceed 15 mph on any unpaved surface at the construction site.

i. All trucks hauling dirt, sand, soil, or other loose materials are to be covered or should maintain at least 2 feet of freeboard (minimum vertical distance between top of load and top of trailer) in accordance with CVC Section 23114.

j. Install wheel washers where vehicles enter and exit unpaved roads onto streets, or wash off trucks and equipment leaving the site.

k. Sweep streets at the end of each day if visible soil material is carried onto adjacent paved roads. Water sweepers with reclaimed water should be used where feasible

l. Apply water every 3 hours to disturbed areas within the construction site in order to achieve a 61 percent reduction in particulate emissions. In addition, when drought conditions are present, fugitive dust control measures need to be modified by

utilizing soil binders or other equivalent measures, to conserve water resources while still providing the necessary emission reductions.

m. *In support of APCD standard fugitive dust mitigation measures, the applicant shall designate a Visible Emission Evaluation certified person or persons to monitor the fugitive dust emissions and enhance the implementation of the measures as necessary to minimize nuisance violations from dust complaints (Rule 402) and to reduce visible emissions below the APCD's Rule 401 requirement that opacity not exceed 20% for greater than 3 minutes in any 60 minute period. Their duties shall include holidays and weekend periods when work may not be in progress. The name and telephone number of the designated monitor shall be provided to the SLOCAPCD Compliance Division and the Department of Planning and Building prior to the start of any grading, earthwork, or demolition.*

n. *All PM_{10} mitigation measures required shall be shown on grading and building plans.*

o. *Between June 1 and November 30, when Valley Fever rates of infection are the highest, additional dust suppression measures (such as additional water or the application of additional soil stabilizer) will be implemented prior to and immediately following ground disturbing activities if wind speeds exceed 15 miles per hour (mph) or temperatures exceed 95 degrees Fahrenheit for three consecutive days. The additional dust suppression will continue until winds are 10 mph or lower and outdoor air temperatures are below 90 degrees for at least two consecutive days. The additional dust suppression measures will be incorporated into the Final Dust Control Plan. The Plan will be submitted to the County for review and approval.*

p. *The primary project construction contractor will prepare and implement a worker training program that describes potential health hazards associated with Valley Fever, common symptoms, proper safety procedures to minimize health hazards, and notification procedures if suspected work-related symptoms are identified during construction. The worker training program will identify safety measures to be implemented by construction contractors during construction. Safety measures will include: 1) Providing HEPA-filtered air-conditioned enclosed cabs on heavy equipment. 2) Train workers on proper use of cabs, such as turning on air conditioning prior to using the equipment. 3) Providing communication methods, such as two-way radios, for use by workers in enclosed cabs. 4) Providing personal protective equipment (PPE), such as half-mask and/or full-mask respirators equipped with particulate filtration, to workers active in dusty work areas. 5) Providing separate, clean eating areas with hand-washing facilities for construction workers. 6) Cleaning equipment, vehicles, and other items before they are moved offsite to other work locations. 7) Providing training for construction workers so they can recognize the symptoms of Valley Fever and promptly report suspected symptoms of work-related Valley Fever to a supervisor. 8) Directing workers that exhibit Valley Fever symptoms to immediately seek a medical evaluation.*

q. *Construction activities that will generate dust shall be limited to periods when good air quality is forecasted to the maximum extent feasible. The 6 day forecast for the CDF forecast zone shall be utilized as available from the APCD website, slocleanair.org. This information should be used by all on-site workers to plan construction activities for days when the air quality is forecast to be good.*

AQ-1g Prior to issuance of applicable grading permit, the Applicant shall submit a geologic evaluation under the CARB ATCM for Construction, Grading, Quarrying, and Surface Mining Operations, to determine if Naturally Occurring Asbestos (NOA) is present within the area that will be disturbed. NOA has been identified as a toxic air contaminant by the CARB. If NOA is not present, an exemption request must be filed with the SLOCAPCD. If NOA is found at the site, the Applicant must 1) comply with all requirements outlined in the Asbestos ATCM. This may include development of an Asbestos Dust Mitigation Plan and an Asbestos Health and Safety Program for approval by the SLOCAPCD; and 2) conduct a geological evaluation prior to any grading. Technical Appendix 4.4 of the SLOCAPCD CEQA Handbook includes a map of zones throughout the County where NOA has been found. More information on NOA is available at http://www.slocleanair.org/business/asbestos.php.

AQ-1h Prior to issuance of demolition permits, if required, the Applicant shall comply with asbestos containing material (ACM) requirements. Demolition activities can have potential negative air quality impacts, including issues surrounding proper handling, demolition, and disposal of ACM. ACM could be encountered during demolition or remodeling of existing buildings. Asbestos can also be found in utility pipes and pipelines (transite pipes or insulation on pipes). If utility pipelines are scheduled for removal or relocation or a building(s) is proposed to be removed or renovated, various regulatory requirements may apply, including the requirements stipulated in the National Emission Standard for Hazardous Air Pollutants (40CFR61, Subpart M - asbestos NESHAP). These requirements include but are not limited to: (1) notification to the SLOCAPCD; (2) an asbestos survey conducted by a Certified Asbestos Inspector; and (3) applicable removal and disposal requirements of identified ACM. More information on asbestos is available at http://www.slocleanair.org/business/asbestos.php.

AQ-1i Should hydrocarbon contaminated soil be encountered during construction activities, the SLOCAPCD must be notified as soon as possible and no later than 48 hours after affected material is discovered to determine if an SLOCAPCD Permit will be required. In addition, the following measures shall be implemented immediately after contaminated soil is discovered: 1) Covers on storage piles shall be maintained in place at all times in areas not actively involved in soil addition or removal; 2) Contaminated soil shall be covered with at least six inches of packed uncontaminated soil or other TPH –non-permeable barrier such as plastic tarp. No headspace shall be allowed where vapors could accumulate; 3) Covered piles shall be designed in such a way to eliminate erosion due to wind or water. No openings in the covers are permitted; 4) During soil excavation, odors shall not be evident to such a degree as to cause a public nuisance; and, 5) Clean soil must be segregated from contaminated

soil. The notification and permitting determination requirements shall be directed to the SLOCAPCD Enforcement Division

Residual Impacts

Implementation of fugitive dust measures would reduce fugitive dust emissions. Implementation of construction equipment controls for diesel particulate matter would reduce DPM to levels below the thresholds (see Table 4.3.12). Emissions of ROG+NO_x would remain above the daily and quarterly thresholds without offsite reductions or the staggering of the construction schedule. Staggering of the construction schedule to prevent rail spur construction from occurring at the same time as grading and soil transport would reduce the peak daily ROG+NOx to 77 lbs/day (below the thresholds). Extending the grading and soil transport activities to 5 months, instead of 4, would reduce the quarterly ROG+NOx emissions to 2 tons/quarter and below the thresholds. With the implementation of offsite reductions through mitigation measure AQ-1e or scheduling staggering (AQ-1a), impacts would be *less than significant with mitigation (Class II).*

Table 4.3.12 Construction Emissions- Mitigated

Pollutant	SLOCAPCD Thresholds			Project Daily, pounds	Project Quarterly, tons
	Daily	Quarterly Tier 1	Quarterly Tier 2		
ROG + NO_x	137 pounds	2.5 tons	6.3 tons	153.3	2.96
Diesel Particulate Matter	7 pounds	0.13 tons	0.32 tons	4.9	0.12
Fugitive Dust Particulate Matter (PM_{10})	-	2.5 tons	-	-	0.20

Notes: Source is CalEEMod. See Appendix B for CalEEMod output files. The emission levels do not include the emissions reductions due to construction schedule staggering. Staggering reduces ROG+NOx to 77 lbs/day and 2.0 tons/qrtr. See Appendix B for details.

The funds identified for ROG+NOx offsite mitigation conditions are used to fund eligible, quantifiable emission reduction projects through emission reduction programs approved by the SLOCAPCD Board. When offsite mitigation is needed, applicants secure SLOCAPCD-approved off-site mitigation projects or provide SLOCAPCD the approved funding necessary to fully mitigate the project's pollutants to a level of insignificance and those emission reductions are validated by the SLOCAPCD. If the applicant elects to have SLOCAPCD secure the off-site mitigation measures, the applicant shall provide an additional 15% to the SLOCAPCD to administer the emission reduction. The use of off-site mitigation is a useful tool for project proponents to secure necessary emission reductions and ensure the project's overall air quality impacts are fully mitigated. Offsite mitigation projects undertaken by the SLOCAPCD could occur anywhere within SLO County. It is also possible that Phillips 66 could use existing on site emissions credits that they have secured with the SLOCAPCD resulting from past changes in the operations at the SMR.

4.3.4.2 Operational Air Emissions

Air emissions of criteria pollutants (CO, ROG, NO_x, SO_2 and PM) during operations would result from the operation of locomotives (both onsite and offsite), fugitive emissions from components and from the vapor recovery carbon canisters, and from vehicles associated with

employees and the transportation of materials. These activities would generate emissions of criteria pollutants, toxic emissions, the potential for odors, and GHGs. Operational sources may require multiple SLOCAPCD permits.

Emissions are calculated using spreadsheets included in Appendix B. Emissions from locomotives are based on emission factors associated with the EPA Regulatory requirements, EPA estimated average emission factors (EPA 2009) and the UPRR mix of locomotive engines that could visit the site (CARB 2013). As there is a large range of emission levels that the current population of locomotives exhibit, for the peak day, the worst case locomotive emissions are used. For the annual average, an average emission level is used. CARB has data on the UPRR mix of locomotives in the year 2009. The UPRR locomotive mix in 2009 was 24% uncontrolled locomotives, 46% Tier 0, 14% Tier 1 and 16% Tier 2. Therefore, for the worst case day, it was assumed that all of the locomotives operated by UPRR would be "uncontrolled", or not regulated by the Federal locomotive requirements (as they have not been remanufactured yet and are older than the 1998 rule).

For the annual average, it was assumed that the locomotives that are operated for the unit trains would reflect the UPRR average mix using the average emission factors for that Tier locomotive as defined by the EPA (EPA 2009). This approach is very similar to the approach used by EMFAC2011 in estimating on-road emissions from autos and trucks. Calculations demonstrating the peak and average emission factors are shown in Appendix B.

Below are the assumptions associated with locomotive operations that were used in estimating the air emissions:

- Three line haul engines used on the mainline operating at an average load of 28%;
- Two extra line haul engines are used on the mainline between Santa Margarita and San Luis Obispo operating an average 18% load (mostly for dynamic braking coming downhill with a low load);
- Line haul engine size of 4,300 hp;
- Average line haul speed of 40 mph;
- Two locomotives used to conduct switching at the project site;
- Average load during switching of 20% based on EPA data (EPA 1998); and
- The fleet mix of locomotives used to calculate annual average emissions would be the same as the UPRR fleet mix submitted to CARB in 2009.
- The peak day assumes uncontrolled pre-Tier 0 engines.

Trains servicing the refinery could come from the south or the north along UPRR tracks. Emissions were calculated for multiple routes to the refinery. Line haul speeds and load factors for the locomotives are based on EPA (2009), and studies conducted for the Ports of Seattle and Long Beach (POS 2011, POLB 2011). Details are provided in the Air Quality Appendix (see Appendix B).

Fugitive emissions are calculated for the following components:

- Unit Train Cars;
- Train Cars Offloading Lines;
- Unit train car top valves opened during unloading;
- Offloading Collection Headers & Meters;
- Drain & Crude Drain;
- Carbon canisters (95% removal efficiency as per manufacturers information); and
- Pipeline components and delivery to the crude oil storage tanks at the SMR.

Fugitive component emission factors are based on CAPCOA (CAPCOA 1999) and EPA AP-42.

Emissions would also be associated with the carbon capture canisters, which are used to reduce ROG emissions from the unloading operation by capturing vapors originating in the loading lines and equipment during pumping and pump start-up operations. The Applicant provided estimates of vapor emissions based on loading lines volume and number of operations, assuming a crude oil vapor entrainment fraction during pumping and the volume of air entrained based on the volume of the loading lines.

Fugitive emissions from rail tank car top valve could occur if the pumping process is not continuous (thereby not producing continuous draw into the rail car tank) or the valve is left open when pumping stops. This emission source was treated as an open-ended line for a period of 5 minutes for each tank car as a worst case estimate. The EPA AP-42 emission factor for light crude oil was used as a conservative estimate for crude oils that are medium API (over API 20).

Fugitive dust would be generated during operations due to the use of vehicles on the dirt road accessing the eastern end of the rail spur. These emissions have been included in the operation emissions estimates.

Offsite vehicle emissions are calculated based on EMFAC2011 model with the following assumptions:

- Aggregate year 2013;
- Distances based on CalEEMod for SLO County (13 miles one way);
- Trucks are a T7 construction trucks with trailer (as a worst case); and,
- Average speeds of 55 mph.

The operational truck trips assumed for the air emissions includes 2 miscellaneous truck trips per week (with a peak of one per day), which would include the removal and delivery of the carbon canisters as well as delivery of diesel fuel and other miscellaneous deliveries.

The SMR is designed to handle heavy sour crude, to only partially refined crude oil to extract intermediates and gases, and uses the heavier crude oil components to produce petroleum coke.

The SMR refinery operates on an air permit from the SLOCAPCD (permit #44-52, dated November 6, 2013). This permit sets crude throughput limits for the refinery as well as emission and operational limits for the majority of the equipment at the refinery. For example, the permit sets operating emission limits on combustion devices and heat release limits on fired heaters and boilers at the refinery.

The SMR, as with all refineries, is similar to other manufacturing facilities that regularly evaluate their principal manufacturing feedstocks in terms of availability, suitability, and economics. This is certainly true of the crude oil feedstock used at the SMR. The refinery processes a range of crude oils from different sources, and the crudes have varied over time. In addition, the refinery often blends crudes from multiple sources prior to processing to assure the crude is within the processing design limits of the refinery and consistent with the limits specified in the SLOCAPCD permit.

For the SMR, key crude slate parameters that could impact air emissions include the percent of BTEX[1], vacuum resid, sulfur and metals in the crude oil. Table 4.3.13 provides the key properties of the typical crude blend and range of major crudes processed at the SMR as well as a range of typical crudes that could be delivered by rail.

Table 4.3.13 Properties of Current and Potential Future Crude Oils at the Santa Maria Refinery

Property	Unit of Measure	Current SMR Operations		Potential Crude by Rail Sources	
		Typical Crude Blend	Range of Major Crude Sources	Access Western Blend	Peace River Heavy
API Gravity	^{o}API	18.6	12.2-21.0	22.8	20.4
BTEX Percentage	Volume %	0.81	0.8-0.89	1.25	0.99
Vacuum Resid Percentage	Volume %	43	33-47	42	43
Sulfur Concentration	Weight %	4.2	2.1-5.2	4.0	5.0
Vanadium Concentration	wppm	208	41-400	190	167
Nickel Concentration	wppm	85	71-118	73	56
Total Acid Number (TAN)	mgKOH/g	1.0	0.4-4.0	1.7	2.5

1. Vacuum Resid percentages based upon available distillation curves.
2. Typical blend properties based upon 3-year average.
3. Range of major crudes represent the major sources of current crudes to the refinery and include a number of OCS and local onshore sources.
4. Both potential crudes by rail are Canadian.

Source: Data provided by Phillips 66, 2014.

An increase in the volatility of the crude oil could cause an increase in the fugitive emissions from crude oil tanks at the SMR. As the API gravity of the crude is expected to remain in the mid to heavy range, the fraction of volatile compounds is not expected to increase and fugitive emissions would be similar under a changed crude oil slate.

[1] BTEX-An acronym that stands for benzene, ethylbenzene, toluene, and xylenes. These compounds are some of the volatile organic compounds (VOCs) found in crude oil and other petroleum products.

BTEX are volatile organic compounds that are emitted as part of the fugitive emissions from the refinery and are an air toxic component that is addressed in the health risk assessment (see below). Higher levels of BTEX emissions can result in an increase in the health risk from the refinery. As the data in Table 4.3.13 shows, the BTEX levels could increase with the potential crude oil sources that would be delivered by rail.

The percentage of vacuum resid is a measure of the amount of coke that could be produced at the refinery. Coke generated at the refinery is transported from the refinery via truck and rail. Increasing levels of vacuum resid would result in increased trucking and rail transport from the refinery. As shown in Table 4.3.13 the expected percentage of vacuum resid would remain about the same as the current operations. Therefore, coke production would not be expected to increase over current operations with the implementation of the Rail Spur Project changes in crude.

A by-product of the refinery operations is elemental sulfur. The elemental sulfur that is produced by the refinery is trucked offsite. The potential crude delivered by rail could have slightly higher sulfur content then the typical crude blend that is currently being run by the refinery. However, the sulfur would be in the range of the major crude sources used at the refinery. This slight increase in sulfur content would not be expected to increase emissions from the sulfur plant, which has strict emission limits within the SLOCAPCD permit.

It is possible that with the rail project crude there would be an increase in sulfur truck trips. The truck trips for sulfur were 1,624 in 2013. The refinery is limited to a maximum of 14 truck trips per day for sulfur. They are currently averaging about 6 truck trips per day assuming five days per week for trucking sulfur. Assuming an increase of 0.8% sulfur in the crude by weight the number of additional truck trips for sulfur would be about 309 per year (about one additional truck trip per day). This potential increase in sulfur truck trips would be within the truck trips currently allowed for the refinery (14 truck trips per day).

Vapor pressure of crude oil processes at the SMR is reported to the APCD approximately annually. Rule 425 requires tanks that contain liquids above 11 psia vapor pressure to be fixed roof tanks. Historical vapor pressure ranges of the SMR crude have ranged from 1.8 to 5.3 psi between 2004 - 2014 (communication with Dean Carlson, SLOCAPCD 5/8/2015). According to Enbridge reports (Enbridge 2014), Access Western Blend crude oil, a potential crude oil that could be delivered to the SMR as part of the proposed Project, has a vapor pressure of 7 psi (True Vapor Pressure, TVP). This potential for increase in vapor pressure, if it occurs, could increase crude tank ROC emissions by about 4 pounds per day from all crude oil tanks, which would be a nominal increase in SMR fugitive emissions of about 4 percent.

Impact #	Impact Description	Phase	Impact Classification
AQ.2	Operational activities associated with the Rail Spur Project within SLOC (i.e., on the project site (SMR) and on the mainline within SLOC) would generate criteria pollutant emissions that exceed SLOCAPCD thresholds.	Operations	Class I

Criteria pollutant emissions from operational equipment at the SMR and along the mainline within SLOC are tabulated in Table 4.3.14. A summary of the criteria pollutant emissions at the refinery and along the mainline within SLOC and the corresponding SLOCAPCD thresholds is shown in Table 4.3.15. Emissions include fugitive dust from trucks operating on the rail spur road, fugitive emissions from rail operations, canister emissions from unloading, locomotive emissions, vehicle emissions and the estimated increase in sulfur trucks associated with the potential changes in crude oil.

Emissions of ROG+NO_x would be exceeded for both the daily and the annual emissions thresholds, which would be considered a significant impact. Diesel particulate emissions would exceed the daily threshold, which would be considered a significant impact. Both fugitive dust and CO emissions would be emitted at levels below the thresholds. The primary source of the emissions of ROG+NO_x and diesel particulate is the diesel powered train locomotives while operating on the refinery site and along the mainline within SLOC.

Mitigation measures to reduce emissions would have to be focused on locomotive emissions as these are the largest source of emissions associated with the project. There is a large population of locomotives throughout the country that might be used to haul the unit trains with varying degrees of emissions levels. It is possible that contractually, the Applicant could require the use of lower emission locomotives such as Tier 4 locomotives. Otherwise, SLOCAPCD approved emission reduction credits would be required.

Mitigation Measures

AQ-2a *Prior to issuance of Notice to Proceed, the Applicant shall provide a mitigation, monitoring and reporting plan updated annually. The plan shall investigate methods for reducing the onsite and offsite emissions, both from fugitive components and from locomotives or from other SMR activities (such as the diesel pumps, trucks, and compressors to reduce DPM). In addition, locomotive emissions shall be mitigated to the extent feasible through contracting arrangements that require the use of Tier 4 locomotives or equivalent emission levels. The plan shall indicate that, on an annual basis, if emissions of ROG+NO_x and DPM with the above mitigations still exceed the thresholds, as measured and confirmed by the SLOCAPCD, the Applicant shall secure SLOCAPCD-approved onsite and/or offsite emission reductions in ROG + NO_x emissions or contribute to new or existing programs to ensure that project-related ROG + NO_x emissions within SLO County do not exceed the SLOCAPCD thresholds. Coordination with the SLOCAPCD should begin at least six (6) months prior to issuance of the Notice to Proceed for the Project to allow time for refining calculations and for the SLOCAPCD to review and approve any required ROG+NO_x emission reductions.*

AQ-2b Prior to issuance of Notice to Proceed, the Applicant shall implement a program, including training and procedures, to limit all locomotive onsite idling to no more than 15 consecutive minutes except when idling is required for safety purposes. Locomotive idling records shall be maintained and provided to the SLOCAPCD on an annual basis, along with training materials and training records.

Table 4.3.14 Operational Emissions within SLOC, Peak Day and Annual

Source	Peak Day Emissions, lbs/day					
	ROG	**CO**	**NO_x**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Fugitive Dust	-	-	-	-	1.32	0.20
Fugitives	4.00	-	-	-	-	-
Canister	2.24	-	-	-	-	-
Locomotives Onsite	24.18	21.18	214.05	2.92	8.15	7.90
Locomotives Offsite within SLOC	28.00	34.13	346.64	1.60	16.00	15.52
Vehicles (autos and trucks and additional sulfur trucks)	0.12	1.65	2.11	0.00	0.07	0.07
Total Emissions at the SMR	*30.43*	*21.18*	*214.05*	*2.92*	*9.47*	*8.10*
Total Emissions within SLOC	***58.55***	***56.97***	***562.80***	***4.52***	***25.54***	***23.68***
Source	**Annual Emissions, tons/year**					
	ROG	**CO**	**NO_x**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Fugitive Dust	-	-	-	-	0.17	0.03
Fugitives	0.73	-	-	-	-	-
Canister	0.28					
Locomotives Onsite	1.30	2.65	20.25	0.36	0.56	0.54
Locomotives Offsite within SLOC	1.30	4.27	28.26	0.20	0.87	0.84
Vehicles (autos and trucks and additional sulfur trucks)	0.01	0.19	0.15	0.00	0.01	0.00
Total Emissions at the SMR	*2.31*	*2.65*	*20.25*	*0.36*	*0.73*	*0.56*
Total Emissions within SLOC	***3.63***	***7.10***	***48.66***	***0.56***	***1.60***	***1.41***

Note: See Appendix B for detailed emission calculations. These emissions estimates do not include potential credits associated with SLOCAPCD approved emission reduction credits.

Table 4.3.15 Operational Emissions within SLOC and Thresholds

Pollutant	SLOCAPCD Thresholds		Project Daily, lbs	Project Annual, tons
	Daily	Annual		
ROG + NO_x	25 pounds	25 tons	621.4	52.3
Diesel Particulate Matter	1.25 pounds	-	24.2	-
Fugitive Dust (PM_{10})	25 pounds	25 tons	1.32	0.17
CO	550 pounds	-	57.0	-

Residual Impacts

The Environmental Protection Agency (EPA) has established emission standards for oxides of nitrogen (NO_x), hydrocarbons (HC), carbon monoxide (CO), diesel particulate matter (DPM) and smoke for newly manufactured and remanufactured locomotives. These standards, which are

codified at 40 CFR part 1033, include several sets of emission standards with applicability dependent on the date a locomotive is first manufactured. The first set of standards (Tier 0) applies to most locomotives originally manufactured or rebuilt before 1993, Tier 1 to 1993-2004, Tier 2 to those manufactured or rebuilt from 2004-2011, Tier 2+ or Tier 3 to those manufactured or rebuilt from 2012 to 2014 and the most stringent set of standards (Tier 4) applies to locomotives originally manufactured or rebuilt in 2015 and later.

Limits on idling would align the locomotive operations onsite with the CARB Railroad Agreement from 2005, which placed a limit on locomotive idling of 15 consecutive minutes within rail yards. Implementation of this mitigation measure would reduce the idling emissions by about 65% at the refinery. Table 4.3.16 provides an estimate of the criteria pollutant emissions at the refinery with the implementation of the mitigation measures (Tier 4 locomotive and limiting idling to no more than 15 consecutive minutes). A summary of the mitigated emissions at the refinery and the corresponding SLOCAPCD thresholds is shown in Table 4.3.17.

Use of Tier 4 engines for the locomotives and limiting idling time at the refinery to no more than 15 consecutive minutes reduces the annual ROG+NO_x and DPM emissions. Even with this mitigation ROG+NO_x and DPM emissions would remain significant for the peak day emissions.

Table 4.3.16 Mitigated Operational Emissions within SLOC, Peak Day and Annual

Source	Peak Day Emissions, lbs/day					
	ROG	**CO**	**NO_x**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Fugitive Dust	-	-	-	-	1.32	0.20
Fugitives	4.00	-	-	-	-	-
Canister	2.24	-	-	-	-	-
Locomotives Onsite	2.37	19.13	29.67	1.48	0.72	0.70
Locomotives Offsite within SLOC	3.73	40.00	34.66	1.60	0.80	0.78
Vehicles (autos and Trucks)	0.12	1.65	2.11	0.00	0.07	0.07
Total Emissions at the SMR	8.62	19.13	29.67	1.48	2.05	0.90
Total Emissions within SLOC	***12.47***	***60.78***	***66.45***	***3.08***	***2.92***	***1.74***
Source	**Annual Emissions, tons/year**					
	ROG	**CO**	**NO_x**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Fugitive Dust	-	-	-	-	0.17	0.03
Fugitives	0.73	-	-	-	-	-
Canister	0.28					
Locomotives Onsite	0.22	2.39	3.34	0.18	0.07	0.07
Locomotives Offsite within SLOC	0.13	4.27	3.33	0.20	0.05	0.05
Vehicles (autos and Trucks)	0.01	0.19	0.15	0.00	0.01	0.00
Total Emissions at the SMR	1.23	2.39	3.34	0.18	0.24	0.10
Total Emissions within SLOC	***1.38***	***6.85***	***6.83***	***0.38***	***0.30***	***0.15***

Note: See Appendix B for detailed emission calculations.

Table 4.3.17 Mitigated Operational Emissions within SLOC and Thresholds

Pollutant	SLOCAPCD Thresholds		Project Daily, lbs	Project Annual, tons
	Daily	Annual		
ROG + NO_x	25 pounds	25 tons	78.9	8.2
Diesel Particulate Matter	1.25 pounds	-	1.60	-
Fugitive Dust (PM_{10})	25 pounds	25 tons	1.32	0.17
CO	550 pounds	-	60.8	-

Even with these emission reductions the Applicant would still need to provide emission reduction credits for ROG+NO_x. With the implementation of the mitigation measures including the application of ROG+NO_x emission reduction credits, impacts for criteria ROG+NO_x pollutants would be reduced to less than significant. Impacts from DPM would remain above the thresholds.

As the area is currently impacted by fugitive dust emissions from the dunes areas, causing exceedances of the PM standard at area stations (such as the CDF station, see Table 4.3.2), additional emissions of particulate matter from the project site might cause additional days of exceedance. However, as per the SLOCAPCD Annual Report in 2013, the days which cause impacts from the dunes are associated with strong winds out of the northwest, with the strong winds generating high levels of dune dust and causing PM impacts. These periods would produce substantial dispersion of the diesel PM emissions from the project site and would not correlate with the same meteorological conditions that would be associated with maximum impacts from the rail spur operations. Therefore, rail spur operations are not anticipated to contribute to additional exceedances of the PM standard.

UPRR maintains a large number of locomotives (more than 8,000 nationwide) with a wide range of emissions characteristics and Tier levels. The UPRR 2009 fleet-average emission factors were used in this analysis for the annual emissions in order to accurately assess the potential impacts when the proposed project would be operating. Since UPRR would own and operate the locomotives and they are used for interstate commerce, the requirement to use only Tier 4 locomotives may be preempted by Federal law, and therefore may not be a feasible mitigation measure. In addition, the availability of these cleaner locomotives and the ability of the applicant to ensure their use is uncertain since the locomotives are owned and operated by UPRR.

If the use of only Tier 4 locomotives cannot be implemented, then the Applicant would have to provide a larger amount of emission reduction credits for ROG+NO_x. Offsite mitigation project undertaken by the SLOCAPCD could occur anywhere within SLO County. It is also possible that Phillips 66 could use existing on site emissions credits that they have secured with the SLOCAPCD resulting from past changes in the operations at the SMR. Information from the SLOCAPCD (SLOCAPCD 2014) indicate that about 190 tons annually (greater than 1,000 pounds per day) of ROG+NOx of reduction credits are available in SLOC, with the credits associated with the SMR calciner shutdown in 2007 (66 tons) limited in use to the SMR only.

In March 2008, EPA finalized a three part program that will dramatically reduce emissions from diesel locomotives of all types -- line-haul, switch, and passenger rail. The rule will cut PM

emissions from these engines by as much as 90 percent and NOx emissions by as much as 80 percent when fully implemented. The standards are based on the application of high-efficiency catalytic after treatment technology for freshly manufactured engines built in 2015 and later.

EPA standards also apply for existing locomotives when they are remanufactured. Requirements are also in place to reduce idling for new and remanufactured locomotives. EPA has estimated that by 2041 the average nationwide emission factors for mainline locomotives would meet the Tier 4 standards (EPA 2009). This means that even if the County is preempted by Federal law from implementing the Tier 4 mitigation measure as part of the project for the locomotive emissions along the mainline, that over time the locomotive emissions will still achieve this level due to the EPA emission control requirements for locomotives.

The use of all Tier 1 locomotives would provide about a 15 percent reduction in ROG+NO_x switching emissions and no reduction in DPM over the project estimated locomotive emissions at the refinery. Use of all Tier 4 locomotives would provide about a 92 percent and 96 percent reduction in switching ROG+NO_x and DPM emissions, respectively.

The use of the rail spur to import crude oil could potentially displace crude oil from other sources that are currently being used to supply crude oil to the SMR. The majority of crude oil currently being delivered to the SMR is from offshore, Outer Continental Shelf (OCS) sources, which are delivered to the SMR by pipeline and electrically powered pumps. Some of the crude oil is delivered to the SMR via truck through the SMPS. The emissions associated with these trucks (see Table 4.3.7) are estimated to total about 51 lbs/day and 9.2 tons/year of ROG+NO_x and 1.8 lbs/day DPM within SLO County. Even if these sources of crude oil were completely displaced, and their resulting emissions eliminated, the emissions from the rail spur and associated importation of crude oil by rail would exceed the SLOCAPCD thresholds for operational ROG+NO_x emissions. DPM emissions, with this credit, would be reduced to below the thresholds with mitigation. However, these DPM emissions may still continue to be emitted within SLOC as the crude oil from these other sources may be transported to other refining locations.

Since the operation of the crude oil trains at the SMR would be on Phillips 66 property and the trains would be operated by Phillips 66, the emissions at the SMR would not be preempted, and the County can require that ROG+NO_x emissions within the SMR associated with the trains be mitigated using other onsite/offsite emission reduction credits. DPM emissions would remain significant since the SLOCAPCD does not have an emissions reduction program for DPM, and there is insufficient DPM reductions that could occur at the existing SMR operations to offset the Rail Spur DPM emissions. The daily average DPM emission reduction that could occur for the existing SMR operations would be about 0.2 pounds per day. This assumes that the 13 existing diesel engines at the SMR would be converted to natural gas.

For the mainline rail emissions in SLOC it is possible that contractually the Applicant could require the use of lower emission locomotives such as Tier 4 locomotives. However, since these are operated by UPRR on UPRR track a requirement that the Applicant enter into this type of contractual provision may be preempted by Federal law. The County may also be preempted by Federal law from requiring emission reduction credits for main line rail emissions. Due to the possible preemption by Federal law which could prevent the mitigation measures from being

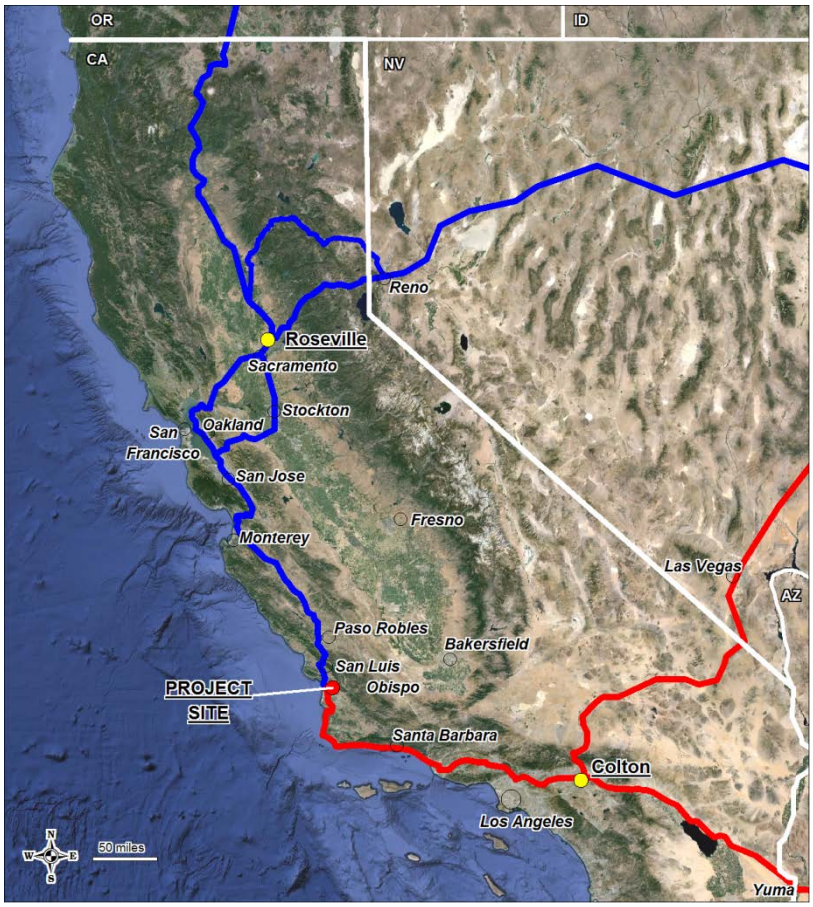
implemented (outside of the SMR facility boundary), emission reduction credits and reductions in DPM through the use of Tier 4 locomotives might not be achievable and impacts from criteria pollutant emissions within SLOC would remain *significant and unavoidable (Class I).*

Impact #	Impact Description	Phase	Impact Classification
AQ.3	Operational activities of trains along the mainline rail route outside of SLOC associated with the Rail Spur Project would generate criteria pollutant emissions that exceed thresholds.	Operations	Class I

Trains traveling to the Refinery could come from the north or the south using the UPRR coastal track. Figure 4.3-5 shows the rail routes that a train traveling to and from the Refinery would be most likely to follow. The reasons for selecting these routes are provided in Chapter 2.0, Project Description.

From the UPRR Roseville Yard, the train could follow a number of different routes through the Bay Area as discussed in the project description and shown in Figure 4.3-5.

Figure 4.3-5 Rail Routes to the Refinery



From the UPRR Colton Yard, the train is likely to follow the route shown in Figure 4.3-5. The exact route the train would take from points beyond the Roseville and Colton Yard is speculative since there are a number of routes that could be taken to get to these yards from the California border.

Mainline rail emissions are calculated for each Air District along the rail route from SMR to the UPRR Yards in the south (i.e., Colton, California, near Los Angeles) or in the north (i.e., Roseville, California, northeast of Sacramento).

Beyond the two UPRR Yards, trains could travel any number of routes (refer to Figure 2-8). Also, crude oil delivered to California by UPRR would generally pass through either of these two rail yards in route to the SMR. While the exact route the trains would take to get to these two rail yards is speculative, additional emission estimates are provided for points beyond these yards to the California border at the end of this impact discussion.

Criteria pollutant emissions from the mainline operations are tabulated in Table 4.3.18 by Air District (see Table 4.3.22 for a comparison with each of air district thresholds). As shown in Tables 4.3.18. Emissions of ROG and NOx would be emitted at levels above the daily CEQA thresholds established by most of the air districts along the route. The source of these emissions would be the diesel powered locomotives. This would be considered a significant impact.

Air Emissions beyond Roseville and Colton Yards

As discussed in the Project Description (Chapter 2.0), there are multiple routes that a crude oil unit trains could take to get from the California border to the Roseville or Colton rail yards. The route that would be taken would depend upon a number of factors including the source location of the crude.

Table 4.3.19 provides an estimate of the additional air emissions that would be associated with a crude oil unit train traveling along some of these routes between the California border and the Roseville or Colton rail yards. These emissions would add to an impact that was already found to be significant as discussed above.

Depending upon the source of the crude oil, crude oil trains could use any portion of the UPRR network outside of California. (See Figure 2-8 for a map of the UPRR rail routes in the United States.) Here again, the exact route that would be taken would depend upon a number of factors, that could include source of the crude oil, weather conditions, train traffic conditions, etc. Travel along rail routes outside of California would generate additional air emissions. Table 4.3.19 provides the estimated air emissions outside of California for a hypothetical route between the Northern California border and the Canadian border.

Table 4.3.18 Mainline Rail Emissions, Peak Day and Annual

Route/Air District	Peak Day Emissions, lbs/day					
	ROG	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$
Northern Route Via Oakland						
Placer	0.38	0.46	4.65	0.02	0.21	0.21
Sacramento Metro	6.44	7.85	79.69	0.37	3.68	3.57
Yolo Solano	13.41	16.35	166.05	0.77	7.66	7.43
Bay Area	57.82	70.49	715.87	3.30	33.04	32.05
Monterrey Bay	47.37	57.74	586.43	2.71	27.07	26.25
Total	***125.4***	***152.9***	***1,552.7***	***7.2***	***71.7***	***69.5***
Northern Route Via Stockton						
Placer	0.38	0.46	4.65	0.02	0.21	0.21
Sacramento Metro	15.83	19.29	195.94	0.90	9.04	8.77
San Joaquin Valley	20.95	25.54	259.34	1.20	11.97	11.61
Bay Area	37.50	45.72	464.34	2.14	21.43	20.79
Monterrey Bay	47.37	57.74	586.43	2.71	27.07	26.25
Total	***122.0***	***148.7***	***1,510.7***	***7.0***	***69.7***	***67.6***
Southern Route						
Santa Barbara	45.19	55.09	559.54	2.58	25.83	25.05
Ventura	24.13	29.42	298.80	1.38	13.79	13.38
South Coast	36.79	44.85	455.55	2.10	21.03	20.39
Total	***106.1***	***129.4***	***1,313.9***	***6.1***	***60.6***	***58.8***
Route/Air District	**Annual Emissions, tons/year**					
	ROG	**CO**	**NO_x**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Northern Route Via Oakland						
Placer	0.02	0.06	0.38	0.00	0.01	0.01
Sacramento Metro	0.30	0.98	6.50	0.05	0.20	0.19
Yolo Solano	0.62	2.04	13.54	0.10	0.42	0.40
Bay Area	2.68	8.81	58.37	0.41	1.79	1.74
Monterrey Bay	2.20	7.22	47.82	0.34	1.47	1.42
Total	***5.8***	***19.1***	***126.6***	***0.9***	***3.9***	***3.8***
Northern Route Via Stockton						
Placer	0.02	0.06	0.38	0.00	0.01	0.01
Sacramento Metro	0.73	2.41	15.98	0.11	0.49	0.48
San Joaquin Valley	0.97	3.19	21.15	0.15	0.65	0.63
Bay Area	1.74	5.71	37.86	0.27	1.16	1.13
Monterrey Bay	2.20	7.22	47.82	0.34	1.47	1.42
Total	***5.7***	***18.6***	***123.2***	***0.9***	***3.8***	***3.7***
Southern Route						
Santa Barbara	2.10	6.89	45.62	0.32	1.40	1.36
Ventura	1.12	3.68	24.36	0.17	0.75	0.72
South Coast	1.71	5.61	37.14	0.26	1.14	1.10
Total	***4.9***	***16.2***	***107.1***	***0.8***	***3.3***	***3.2***

Note: See Appendix B for detailed emission calculations.
Annual emissions within each route assume all 250 trains per year use that route.

Table 4.3.19 Mainline Rail Emissions Pass the Roseville and Colton Rail Yards, Peak Day and Annual

Route/Air District	Peak Day Emissions, lbs/day					
	ROG	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$
Roseville to Nevada						
Placer	36.9	45.0	456.6	2.1	21.1	20.4
Nevada	12.3	15.0	152.6	0.7	7.0	6.8
Total	***49.2***	***60.0***	***609.2***	***2.8***	***28.1***	***27.3***
Roseville to Oregon						
Placer	9.3	11.4	115.4	0.5	5.3	5.2
Feather River	11.0	13.4	136.2	0.6	6.3	6.1
Butte	19.1	23.3	236.2	1.1	10.9	10.6
Tehama	16.9	20.7	209.8	1.0	9.7	9.4
Shasta	30.0	36.6	371.9	1.7	17.2	16.7
Siskiyou	37.3	45.5	462.1	2.1	21.3	20.7
Total	***123.7***	***150.8***	***1,531.7***	***7.1***	***70.7***	***68.6***
Colton to Nevada						
South Coast	8.9	10.8	109.8	0.5	5.1	4.9
Mojave	83.9	102.2	1,038.4	4.8	47.9	46.5
Total	***92.7***	***113.1***	***1,148.3***	***5.3***	***53.0***	***51.4***
California Border to Canadian Border	***200.5***	***244.4***	***2,482.3***	***11.5***	***114.6***	***111.1***
Route/Air District	**Annual Emissions, tons/year**					
	ROG	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$
Roseville to Nevada						
Placer	1.7	5.6	37.2	0.3	1.1	1.1
Nevada	0.6	1.9	12.4	0.1	0.4	0.4
Total	***2.3***	***7.5***	***49.7***	***0.4***	***1.5***	***1.5***
Roseville to Oregon						
Placer	0.4	1.4	9.4	0.1	0.3	0.3
Feather River	0.5	1.7	11.1	0.1	0.3	0.3
Butte	0.9	2.9	19.3	0.1	0.6	0.6
Tehama	0.8	2.6	17.1	0.1	0.5	0.5
Shasta	1.4	4.6	30.3	0.2	0.9	0.9
Siskiyou	1.7	5.7	37.7	0.3	1.2	1.1
Total	***5.7***	***18.9***	***124.9***	***0.9***	***3.8***	***3.7***
Colton to Nevada						
South Coast	0.4	1.4	9.0	0.1	0.3	0.3
Mojave	3.9	12.8	84.7	0.6	2.6	2.5
Total	***4.3***	***14.1***	***93.6***	***0.7***	***2.9***	***2.8***
California Border to Canadian Border	***40.7***	***133.6***	***885.5***	***6.3***	***27.1***	***26.3***

Note: See Appendix B for detailed emission calculations.
Annual emissions within each route assume all 250 trains per year use that route.
California border to Canadian Border assumes a hypothetical route via the Midwest.

Mitigation Measures

AQ-3 *Prior to issuance of the Notice to Proceed, the Applicant shall provide a mitigation, monitoring and reporting plan. The plan shall investigate methods for reducing the locomotive emissions through contracting arrangements that require the use of Tier 4 locomotives or equivalent emission levels. The plan shall indicate that, on an annual basis, if the mainline rail emissions of ROG+NO_x with the above mitigations still exceed the applicable Air District thresholds, the Applicant shall secure emission reductions in ROG + NO_x emissions or contribute to new or existing programs within each applicable Air District, similar to the emission reduction program utilized by the SLOCAPCD, to ensure that the main line rail ROG + NO_x emissions do not exceed the Air District thresholds for the life of the project. The Applicant shall provide documentation from each Air District to the San Luis Obispo County Planning and Building Department that emissions reductions have been secured for the life of the project prior to issuance of the Notice to Proceed.*

Residual Impacts

Implementation of the use of Tier 4 engines in mitigation measures AQ-3 would serve to reduce emissions on the mainline track. Tables 4.3.20 and 4.3.21 provide an estimate of the mainline emissions with the implementation of mitigation measures requiring the use of Tier 4 locomotives.

With the implementation of the use of Tier 4 engines annual mainline rail ROG and NOx emissions would be reduced. Even with these reductions the criteria emissions associated with the mainline rail operations would remain significant in some air districts and would be reduced to below the respective thresholds in other air districts (see Table 4.3.22). The remaining ROG and NOx emissions could be mitigated by obtaining emission credits within each of the Air Districts where their respective thresholds would still be exceeded.

However, it is unknown if these other Air Districts could require emission credits since train travel through their jurisdiction does not require any permitting action. Also it is unknown, if all of the potentially affected Air Districts have available emission reduction credits that can be purchased.

UPRR maintains a large number of locomotives (more than 8,000 nationwide) with a wide range of emissions characteristics and Tier levels. Since UPRR would own the locomotives, which are used for interstate commerce, the requirement to use only Tier 4 locomotives and obtain emission credits is likely preempted by Federal law, and therefore may not be feasible mitigation measures.

The availability of these cleaner (Tier 4) locomotives and the ability of the Applicant to ensure their use are somewhat speculative since Union Pacific controls the locomotives and they would be traveling interstate.

Table 4.3.20 Mitigated Mainline Rail Emissions, Peak Day

Route/Air District	Peak Day Emissions, lbs/day					
	ROG	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$
Northern Route Via Oakland						
Placer	0.05	0.54	0.47	0.02	0.01	0.01
Sacramento Metro	0.86	9.20	7.97	0.37	0.18	0.18
Yolo Solano	1.79	19.16	16.61	0.77	0.38	0.37
Bay Area	7.71	82.60	71.59	3.30	1.65	1.60
Monterrey Bay	6.32	67.67	58.64	2.71	1.35	1.31
Total	***16.72***	***179.16***	***155.27***	***7.17***	***3.58***	***3.48***
Northern Route Via Altamont						
Placer	0.05	0.54	0.47	0.02	0.01	0.01
Sacramento Metro	2.11	22.61	19.59	0.90	0.45	0.44
San Joaquin Valley	2.79	29.92	25.93	1.20	0.60	0.58
Bay Area	5.00	53.58	46.43	2.14	1.07	1.04
Monterrey Bay	6.32	67.67	58.64	2.71	1.35	1.31
Total	***16.27***	***174.31***	***151.07***	***6.97***	***3.49***	***3.38***
Southern Route						
Santa Barbara	6.03	64.56	55.95	2.58	1.29	1.25
Ventura	3.22	34.48	29.88	1.38	0.69	0.67
South Coast	4.91	52.56	45.55	2.10	1.05	1.02
Total	***14.15***	***151.60***	***131.39***	***6.06***	***3.03***	***2.94***
Route/Air District	**Annual Emissions, tons/year**					
	ROG	**CO**	**NO_x**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Northern Route Via Oakland						
Placer	0.00	0.06	0.04	0.00	0.00	0.00
Sacramento Metro	0.03	0.98	0.77	0.05	0.01	0.01
Yolo Solano	0.06	2.04	1.60	0.10	0.02	0.02
Bay Area	0.28	8.81	6.88	0.41	0.10	0.10
Monterrey Bay	0.23	7.22	5.64	0.34	0.08	0.08
Total	***0.60***	***19.11***	***14.93***	***0.90***	***0.22***	***0.22***
Northern Route Via Altamont						
Placer	0.00	0.06	0.04	0.00	0.00	0.00
Sacramento Metro	0.08	2.41	1.88	0.11	0.03	0.03
San Joaquin Valley	0.10	3.19	2.49	0.15	0.04	0.04
Bay Area	0.18	5.71	4.46	0.27	0.07	0.06
Monterrey Bay	0.23	7.22	5.64	0.34	0.08	0.08
Total	***0.58***	***18.59***	***14.53***	***0.87***	***0.22***	***0.21***
Southern Route						
Santa Barbara	0.22	6.89	5.38	0.32	0.08	0.08
Ventura	0.11	3.68	2.87	0.17	0.04	0.04
South Coast	0.18	5.61	4.38	0.26	0.07	0.06
Total	***0.51***	***16.17***	***12.63***	***0.76***	***0.19***	***0.18***

Note: See Appendix B for detailed emission calculations.
Annual emissions within each route assume all 250 trains per year use that route.

Table 4.3.21 Mitigated Mainline Rail Emissions Past the Roseville and Colton Rail Yards, Peak Day and Annual

Route/Air District	Peak Day Emissions, lbs/day					
	ROG	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$
Roseville to Nevada						
Placer	4.9	52.7	45.7	2.1	1.1	1.0
Nevada	1.6	17.6	15.3	0.7	0.4	0.3
Total	6.6	70.3	60.9	2.8	1.4	1.4
Roseville to Oregon						
Placer	1.2	13.3	11.5	0.5	0.3	0.3
Feather River	0.6	6.2	5.4	0.2	0.1	0.1
Butte	0.9	9.5	8.2	0.4	0.2	0.2
Tehama	2.5	27.3	23.6	1.1	0.5	0.5
Shasta	2.3	24.2	21.0	1.0	0.5	0.5
Siskiyou	4.0	42.9	37.2	1.7	0.9	0.8
Total	5.0	53.3	46.2	2.1	1.1	1.0
Colton to Nevada						
South Coast	1.2	12.7	11.0	0.5	0.3	0.2
Mojave	11.2	119.8	103.8	4.8	2.4	2.3
Total	12.4	132.5	114.8	5.3	2.6	2.6
California Border to Canadian Border	***26.7***	***286.4***	***248.2***	***11.5***	***5.7***	***5.6***
Route/Air District	**Annual Emissions, tons/year**					
	ROG	**CO**	**NO_x**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Roseville to Nevada						
Placer	0.2	5.6	4.4	0.3	0.1	0.1
Nevada	0.1	1.9	1.5	0.1	0.0	0.0
Total	0.2	7.5	5.9	0.4	0.1	0.1
Roseville to Oregon						
Placer	0.0	1.4	1.1	0.1	0.0	0.0
Feather River	0.0	0.7	0.5	0.0	0.0	0.0
Butte	0.0	1.0	0.8	0.0	0.0	0.0
Tehama	0.1	2.9	2.3	0.1	0.0	0.0
Shasta	0.1	2.6	2.0	0.1	0.0	0.0
Siskiyou	0.1	4.6	3.6	0.2	0.1	0.1
Total	0.2	5.7	4.4	0.3	0.1	0.1
Colton to Nevada						
South Coast	0.0	1.4	1.1	0.1	0.0	0.0
Mojave	0.4	12.8	10.0	0.6	0.1	0.1
Total	0.4	14.1	11.0	0.7	0.2	0.2
California Border to Canadian Border	***1.0***	***30.6***	***23.9***	***1.4***	***0.4***	***0.3***

Note: See Appendix B for detailed emission calculations.
Annual emissions within each route assume all 250 trains per year use that route.
California border to Canadian Border assumes a hypothetical route via the Midwest.

In March 2008, EPA finalized a three part program that will dramatically reduce emissions from diesel locomotives of all types -- line-haul, switch, and passenger rail. The rule will cut PM emissions from these engines by as much as 90 percent and NOx emissions by as much as 80 percent when fully implemented. The standards are based on the application of high-efficiency catalytic after treatment technology for locomotives built in 2015 and later.

EPA standards also apply for existing locomotives when they are remanufactured. Requirements are also in place to reduce idling for new and remanufactured locomotives. EPA has estimated that by 2041 the average nationwide emission factors for mainline locomotives would meet the Tier 4 standards (EPA 2009). This means that even if the County is preempted by Federal law from implementing the Tier 4 mitigation measure as part of the project, that over time the locomotive emissions will achieve this level due to the EPA emission control requirements for locomotives.

Since AQ-3a may not be implemented due to Federal preemption, and it is uncertain if the other Air Districts could require emission reduction credits, the impacts associated with the mainline rail operation would remain *significant and unavoidable (Class I).*

Health Impacts of Significant and Unavoidable Emissions

As discussed under impact AQ.3, emissions of NO_x would remain above the significance thresholds within all Air Districts except Yolo/Solano. As these emissions would remain above the thresholds even after mitigation, an analysis is presented below to clarify the potential health impacts of these emissions. NO_x is a criteria pollutant that reacts in the atmosphere, along with ROGs, to produce ozone. Ozone has a number of health impacts including loss of pulmonary function. Increases in NO_x and ROG emissions associated with the proposed project could cause incremental increases in the ozone concentrations which could cause an increase in the ppm concentrations and the number of days per year exceeding the ambient air quality standards. NO_x emissions from the proposed project would be emitted in a number of Air Districts (see Table 4.3.18), contributing to the pollutants measured at basin-wide monitoring stations. Ozone formation is a complex and complicated phenomena where emissions from one area could contribute to increased ozone levels at different locations depending on meteorology and atmospheric chemistry. The respective Districts have established thresholds of pollutant emissions from new projects that are based on modeling of the projected emissions basin-wide and the resulting impact on pollutant concentrations at the monitoring stations. The Districts, through their respective Management Plans, are pursuing actions that can be implemented over the next few years to work towards meeting the 8-hour ozone standards.

In order to estimate the potential health effects of the proposed projects mainline emissions on the population, the projects emissions are compared to the district-wide emissions and are assumed to generate an equivalent amount of ozone on a tons/year basis (a linear relationship in ozone generation to emissions). District-wide emissions of NO_x and VOC/ROG are shown in Table 4.3.22. The proposed project total NO_x+ROG emissions would total a small percentage of the total daily emissions within each district. This level would cause an increase in the ozone concentration of up to 0.05 ppb (for districts in non-attainment) and would not produce a change in the number of days of exceedance annually in the applicable Districts air quality standards.

Table 4.3.22 Health Impacts of Significant Emissions

Air District	Thresholds of Significance						Incremental Increase in ozone, ppb	Mortality per 1,000 persons	Morbidity per 1,000 persons
	NO_X		VOC/ROG		Significant?*				
	Daily (lbs)	Annual (tons)	Daily (lbs)	Annual (tons)	NOx	ROG /VOC			
SCAQMD	55		55		Y/N	N/N	0.00	0.01	0.01
VCAPCD	25		25		Y/Y	N/N	0.01	0.03	0.05
SBCAPCD	240	-	240	-	Y/N	N/N	0.04	0.13	0.15
SLOAPCD	25	25	25	25	Y/N	Y/N	0.02	0.06	0.06
MBUAPCD	137		137		Y/N	N/N	0.02	0.06	0.08
SMAQMD	65		65		Y/N	N/N	0.01	0.02	0.03
SJVAPCD		10		10	Y/N	N/N	0.00	0.01	0.01
YSAQMD		10		10	N/N	N/N	0.06	0.18	0.23
BAAQMD	80	15	80	15	Y/N	N/N	0.01	0.02	0.02
PCAPCD	82		82		Y/N	N/N	0.05	0.17	0.19
N. Sierra	25 .		25 .		Y/N	N/N	0.02	0.08	0.08
Feather R	25 .		25 .		Y/N	N/N	0.00	0.01	0.01
Butte	25 .		25 .		Y/N	N/N	0.03	0.17	0.13
Tehama	25 .		25 .		Y/N	N/N	0.05	0.26	0.21
Shasta	25 .		25 .		Y/Y	Y/N	0.04	0.20	0.17
Siskiyou	25 .		25 .		Y/Y	Y/N	0.09	0.46	0.36
Mojave	137 .	25	137 .	25	Y/N	N/N	0.04	0.13	0.17

* for unmitigated/mitigated emissions. Incremental ozone and mortality/morbidity based on unmitigated emissions. Mitigated emissions include the use of Tier 4 locomotives.
SCAQMD-South Coast Air Quality Management District ;VCAPCD-Ventura County Air Pollution Control District; SBCAPCD-Santa Barbara County Air Pollution Control District; SLOAPCD-San Luis Obispo County Air Pollution Control District; MBUAPCD-Monterey Bay Unified Air Pollution Control District; SMAQMD –Sacramento Metropolitan Air Quality Management District; SJVAPCD-San Joaquin Valley Air Pollution Control District; Yolo-Solano Air Quality Management District; BAAQMD-Bay Area Air Quality Management District; PCAPCD-Placer County Air Quality Management District.

The California Air Resources Board (CARB) evaluated potential health impacts associated with incremental differences in ozone concentrations (CARB, 2005). Most of the epidemiologic studies used in this EIR have 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 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 health effect predicted from the higher exposure relative to some baseline exposure. Health effect estimates presented in a given study as RR for a specified change in ozone, Δ O3, were converted into an estimated beta using the equation:

$\beta = \ln (RR) / \Delta O3$

The daily change in ozone at each monitoring site i.e., the difference between current ozone and the standard (= ΔO3) was used to calculate RR:

$RR = \exp(\beta \Delta O3)$

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 (ozone pollution in our case) 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 incidence 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 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. Their meta-estimates indicate a relative risk of 1.003 (95% CI = 1.001 – 1.004) for a 10 μg/m3 change in 8-hour ozone. The WHO estimate implies a 0.44% change in daily mortality (95% CI = 0.15 – 0.59%) per 10 ppb change in 1-hour maximum ozone. Making the conversions, the WHO estimate implies a 1.13% 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 % (95% CI = 0.19 – 1.32) per 10-ppb change in 24-hour ozone. Potential changes in potential morbidity 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/m3 change in ozone. This converts to 2.05% per 10 ppb change in 1-hour maximum ozone.

Following the methodology described by the CARB (2005), project-related ozone increases are shown in Table 4.3.22. Adverse human health impacts that are likely to result from the proposed project's air quality impacts include an increase in ozone, morbidity, and mortality.

Impact #	Impact Description	Phase	Impact Classification
AQ.4	Operational activities at the Refinery associated with the Rail Spur Project would generate toxic emissions that exceed SLOCAPCD thresholds.	Operations	Class I

Operational activities would produce emissions of toxic materials from fugitive emissions sources containing Benzene, Toluene, etc, and from the diesel combustion used for the

locomotives. As part of the EIR analysis a health risk assessment (HRA), utilizing the HARP2 (version 15197) modeling program, was conducted to estimate the impacts of the fugitive and locomotive diesel emissions, in combination with the existing SMR and truck traffic emissions, on nearby offsite worker and agricultural areas and residential parcels. The HARP2 model is a health risk assessment model and is recommended in CARB's Health Risk Assessment Guidance for Rail Yard and Intermodal Facilities (CARB, 2006a) as well as the CAPCOA HRA Guidelines for Land Use projects (mentioned in the SLOCAPCD CEQA Guidelines). A detailed report on the HARP2 analysis in the format recommended by OEHHA is presented in Appendix B.2.

Assumptions made in the HRA include the following:

- Used regulatory default options in the dispersion modeling;
- Used volume sources for locomotive switching placed end-to-end along the rail spur line;
- Used point sources for the idling locomotive engines with upward plume velocity and buoyancy;
- Receptors located at a spacing of 100 meters out to 6 km;
- The emissions associated with unloading were arranged to be concentrated near the unloading activities. Emissions associated with locomotive switching and idling associated with train re-arrangement activities were assigned along the rail spur based upon the train sequencing discussed in Project Description (Chapter 2 of the EIR).

The HRA was prepared in accordance to the methodology in Health Risk Assessments for Proposed Land Use Projects (CAPCOA 2009), Health Risk Assessment Guidance for Analyzing Cancer Risks from Mobile Source Diesel Emissions (SCAQMD, 2002), and ARB Health Risk Assessment Guidance for Rail Yard and Intermodal Facilities (CARB, 2006a). The estimation of cancer risk levels is based upon a person being exposed to the air toxin at one location from the third-trimester of pregnancy through the 30^{th} year of life. See Appendix B.2 for details on the modeling assumptions.

Meteorological data utilized were from the Nipomo station for 5 years (2008-2012) obtained from the SLOCAPCD. HARP files from the 2011 HRA were obtained as a starting point for the analysis.

The BTEX levels, which are part of the volatile organic compounds, in the potential rail delivery crudes could increase from current operations, which could increase the impacts associated with air toxic emissions. An assumed increase in BTEX fraction from 0.81 to 1.25% was assumed to occur at the refinery (see Table 4.3.13), affecting fugitive emissions from tanks and components. This increase was included in the HARP2 modeling runs.

The data in Table 4.3.13 shows that both the vanadium and nickel concentration in the Canadian crudes would be less than the typical crude blend currently being processed at the SMR. Both of these heavy metals end up in the coke, which is produced at the refinery. The coke is stored in piles prior to being loading on to trucks or rail cars. As specified in the Memorandum of Agreement for Coke and Sulfur Storage and Handling Plan, dated May 11, 2011, the coke piles

must be kept moist to prevent any dust. As such, the change in heavy metal content of the crude would not result in any change in the fugitive dust composition for the coke piles. Therefore, the impact from any increase in vanadium and nickel concentration would be nominal.

Health risks associated with exposure to carcinogenic compounds can be defined in terms of the probability of developing cancer as a result of exposure to a chemical at a given concentration. Consistent with the OEHHA guidance, the cancer risk was calculated using an exposure duration of 30 years for residential and 25 years for offsite (non-SMR) workers. The analysis utilized the OEHHA Tier 1 approach (see Appendix B.2) as there are schools located within the 1 in a million cancer contour.

Health risks associated with the acute and chronic non-cancer risks are adverse health effects evaluated by comparing the contaminant concentration of each compound with the appropriate Reference Exposure Level (REL). The most recent (July 2015) REL's promulgated by OEHHA were considered in the assessment (and included in the HARP2 model health database version HEALTH15076). To quantify non-carcinogenic impacts, the hazard index approach was used. To calculate the hazard index from pollutant exposure, the modeled concentration of pollutant is divided by the chronic REL by the HARP2 model to generate the hazard index. Acute impacts were determined in a similar method by the HARP2 model. When the hazard index equals or exceeds one, a health hazard is presumed to exist.

Current regulations associated with diesel locomotives and currently being implemented would produce substantial emission reductions in locomotives over the next few decades. As the cancer risks examine the exposure to DPM over a 30 year timeframe, an accurate depiction of the risk levels must address the changing DPM emissions over the 30 year timeframe. The EPA (EPA 2009) estimates the average emission factors through the year 2040. The long-term average emission factor was calculated and was used to estimate the cancer risks in the HARP2 model (see Appendix B). For acute and chronic risks, the current emission factors were used instead of the long-term average. See Appendix B.2 for more details.

For diesel trucks entering and leaving the facility as part of the current/baseline conditions, the current fleet average emission factor was calculated and was used to estimate the cancer risks in the HARP2 model (see Appendix B.2). For acute and chronic risks, the current fleet average emission factors were also used. Truck volumes included the increase in sulfur trucks trips discussed above.

DPM impacts for cancer and chronic emissions utilized the OEHHA assessments for DPM included in the HARP2 model. For acute impacts, the DPM was speciated and the HARP2 model was run separately for the acute impacts to address the potential acute impacts from DPM (OEHHA does not have a reference exposure level for acute DPM exposure).

The HARP model was run for two different scenarios:

1. Scenario 1 - No Mainline: The current SMR operations + the Rail Spur Project + the trucks entering and leaving the SMR (and traveling offsite along Highway 1 and Willow) + increased BTEX levels but excluding the mainline locomotive emissions.

2. Scenario 2 - With Mainline: The current SMR operations + the Rail Spur Project + the trucks entering and leaving the SMR (and traveling offsite along Highway 1 and Willow) + increased BTEX levels + the mainline locomotive emissions.

As per SLOCAPCD and the CAPCOA Guidance (CAPCOA 2009), for CEQA, the thresholds apply to all facilities including vehicle emissions, which would be Scenario 2 above. Therefore, Scenario 2 impacts are those used to determine significance. Because mainline emissions mitigation may be preempted by Federal law, Scenario 1 was also included to address potential impacts without the mainline emissions.

For the current+rail spur operations (for both Scenario 1 and Scenario 2), the results of the HRA showed that acute impacts would have a health index (HI) of less than 1.0 at all parcel boundary points and at residential receptors and the offsite worker receptors located to the north and at the agricultural fields to the south of the SMR (peak acute of 0.48 at the parcel boundary and 0.28 at the closest residence).

For the current+rail spur operations (for both Scenario 1 and Scenario 2), the results of the HRA showed that chronic impacts would have a health index (HI) of less than 1.0 at all parcel boundary and residential receptors and the worker receptors located at the agricultural fields to the south (peak chronic of 0.07 at the parcel boundary).

As a note, the increase in BTEX at the facility affects acute and chronic health hazard index minimally (0.04 and 0.003 increases respectively). The results of the HARP2 modeling for cancer are shown in Table 4.3.23 for scenarios 1 and 2.

Table 4.3.23 Health Risk HARP Modeling Results: Proposed Project Cancer Risk, Risk per Million

Scenario	PMI	MEIR	Offsite Worker	Louise Ln	Trilogy Prkwy	Monadella St.	Olivera Ave	Sig?
Scenario 1 - Rail Spur + SMR + trucks	134.6	23.9	1.59	4.7	3.2	21.4	23.9	Yes
Scenario 2 - Rail Spur + SMR + trucks+ Mainline	139.0	26.5	1.67	4.9	3.3	26.5	25.5	Yes

SMR emissions include the increased fraction of BTEX to 1.25% from 0.81%
See Appendix B for detailed emission calculations.
Use of HARP2 model version 15197
PMI -Point of Maximum Impact, the highest value along the facility fenceline.
MEIR-Maximally Exposed Individual Resident

For Scenarios 1 and 2, the highest cancer risks (Point of Maximum Impact; PMI) occur at the SMR parcel boundary immediately south of the rail spur location due to the diesel emissions from the rail spur operations. This is not a significant impact because no residential receptors are located there. Offsite worker risks to the south of the SMR would be less than 10 and would be acceptable (see Table 4.3.23). As per SLOCAPCD Rule 219, impacts are assessed at the "maximum exposed individual and the nearest receptor". The highest cancer risk at a residential or sensitive receptor occurs to the north of the facility. Residences along Louise Lane, Trilogy Parkway, Olivera Ave and Monadella Street are shown in Table 4.3.23. Residential risk values

are above the SLOCAPCD threshold (the threshold is 10.0 in a million as per SLOCAPCD CEQA Air Quality handbook and Rule 219).

Although agricultural fields are located immediately next to the SMR parcel boundary, the closest offsite (non-SMR) worker location where workers assemble and might be in one place for any length of time was determined to be the agricultural assembly site located to the south-west of the rail spur approximately 1,900 feet from the rail spur location or at the Fire Station located near the entrance to the SMR. The offsite worker cancer risk values would not exceed the SLOCAPCD threshold.

Proposed project related sulfur truck trip increases increased peak cancer risk by 0.2 cancer cases per million for the unmitigated case. Potential BTEX increases increased cancer risk by 0.1 cancer cases per million.

Figure 4.3-6 shows the cancer health risk contours for Scenario 2 (which includes the mainline rail emissions). The impacts would be above the APCD thresholds for residential receptors and would be significant. Impacts for chronic, acute and worker cancer risks would be less than the thresholds.

As the OEHHA Guidance and the HARP2 model have been released since the issuance of the October 2014 Recirculated Draft EIR (RDEIR) for this project, the model changes have produced changes to the estimated risk values. In the RDEIR, as the OEHHA HARP2 model had not been released, the effects of the 2012 OEHHA guidance documents on the modeling risk levels (from the earlier HARP model) were estimated with adjustment factors. In addition, the models used to estimate the air dispersion have changed from the ISC model used in earlier HARP version to the AERMOD model used in HARP2.

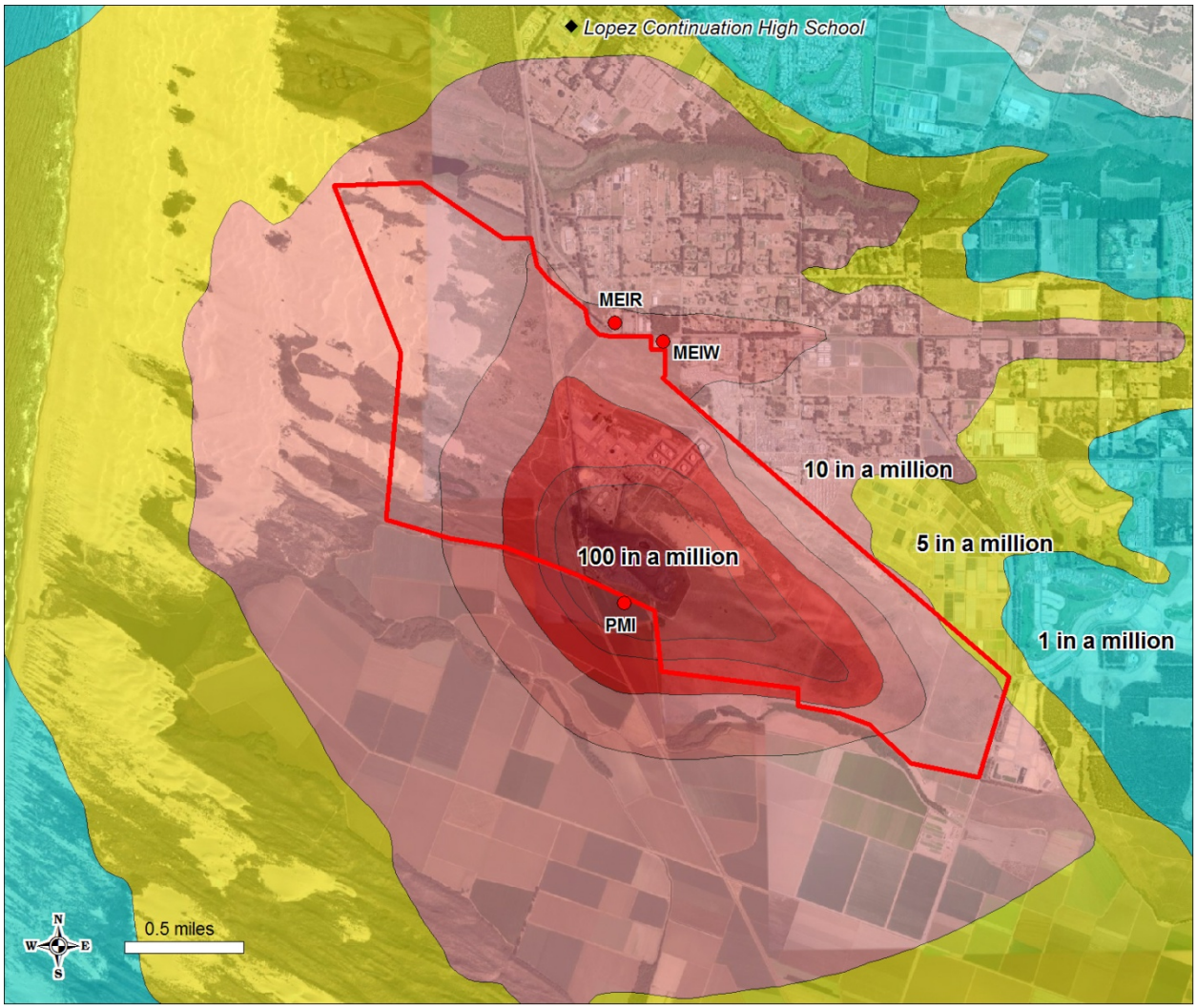
In addition, the EIR preparers worked extensively with the SLOCAPCD to define the modeling inputs and these changed from the RDEIR as well, utilizing the urban/rural factors within the meteorological data instead of the urban/rural designation located within the dispersion model (the RDEIR utilized a rural setting, whereas the FEIR utilizes the AERMOD default values). Although the peak facility boundary cancer risk increased, this is more due to the distribution of the cancer risk as opposed to an increase in the total cancer levels throughout the area, as the use of the AERMOD default model setting causes cancer risks to spread out more than the RDEIR modeling settings.

Mitigation Measures

AQ-4a *Implement measures AQ-2a and AQ-2b.*

AQ-4b *All trucks under contract to the SMR for moving coke and sulfur shall meet EPA 2010 model year NOx and PM emission requirements and a preference for the use of rail over trucks for the transportation of coke shall be implemented to the extent feasible in order to reduce offsite emissions. Annual truck trips associated with refinery operations and their associated model year and emissions shall be submitted to the SLOCAPCD annually.*

Figure 4.3-6 Rail Spur Project Cancer Health Risk with Mainline – Unmitigated



PMI-Point of Maximum Impact
MEIR- Maximally Exposed Individual Resident
MEIW- Maximally Exposed Individual Worker
Based upon HARP2 model version 15197.

AQ-4c *If mitigation measure AQ-2a (the use of Tier 4 locomotives only) is not implemented, then crude oil train unloading and switching activities at the SMR shall be limited to the period of 7 a.m. to 7 p.m. to reduce the emissions during periods of calm meteorological conditions. Reports shall be submitted to the County and APCD indicating the time of arrival, the start and end time of train switching break-apart and unloading and departure time. These time limits do not apply to pull-in of the unit trains from the mainline. When a unit train is pulled in between 7 p.m. and 7 a.m., the locomotives shall shut down until the allowed unloading time starting at 7 a.m. No switching or breaking apart of trains or any other locomotive activity is allowed between 7 p.m. and 7 a.m. except for the minimum activity needed to move the unit train onto the SMR property.*

Residual Impacts

The use of all Tier 4 locomotives (AQ-2a) and limits on locomotive idling time (AQ-2b) would reduce DPM emissions, which are the main driver of the health risk cancer impacts. As part of the Throughput EIR project, the SMR is beginning to implement mitigation measure AQ.1-2 from the Throughput EIR, which required the use of newer model year trucks. Mitigation measure AQ-4b above is an extension of this mitigation measure to ensure that trucks utilize the most recent, cleanest engines. Truck emissions were estimated utilizing the EMFAC model (see Appendix B.2). The meteorological stations indicate that calm meteorological conditions occur during the nighttime periods at the SMR. During these calm periods, emissions from the SMR activities impact a larger area due to the reduced mixing, thereby increasing cancer risks. By limiting activities to daytime hours, the cancer risks are reduced.

Cancer risk levels are shown in Table 4.3.24 assuming the use of Tier 4 locomotives, limits on locomotive idling time and cleaner model year diesel trucks (AQ-2a, 2b and 4b), which would allow for the unloading of rail cars 24 hours per day. In addition, due to the uncertainties associated with the preemption and the Tier 4 locomotives, the cancer risk levels with only the reduced idling, no nighttime unloading and cleaner model year diesel trucks mitigation AQ-2b, AQ-4b and AQ-4c (with no Tier 4 mitigation) are also provided in Table 4.3.24. The no nighttime unloading mitigation measure AQ-4c would only be required if the required use of Tier 4 locomotives are preempted as the cancer risk levels would be less than significant with the use of all Tier 4 locomotives (see Table 4.3.24).

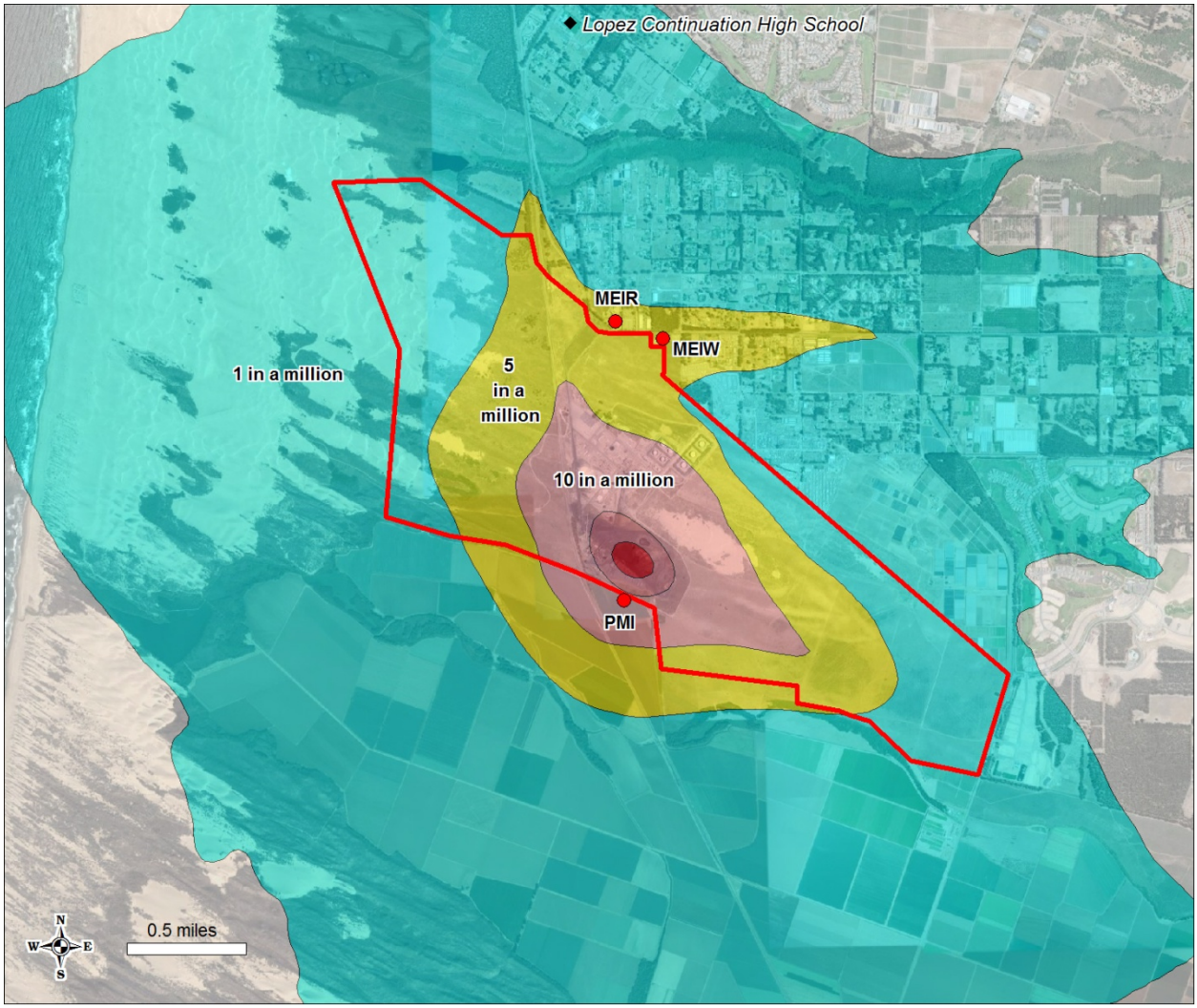
Table 4.3.24 Mitigated Health Risk HARP Modeling Results: Cancer Risk

Scenario	PMI	MEIR	Worker	Louise Ln	Trilogy Prkwy	Monadella Street	Olivera Ave	Sig?
Mitigation: Tier 4 Locomotives, idling restrictions, clean trucks (AQ-2a, 2b and 4b)								
Scenario 1 - Rail Spur + SMR + trucks	23.2	6.0	0.27	1.1	1.0	5.1	3.8	No
Scenario 2 - Rail Spur + SMR + trucks+ Mainline	24.4	6.5	0.31	1.1	1.0	6.5	4.2	No
Partial Mitigation: idling restrictions, daytime unloading only and clean trucks (AQ-2b, 4b, 4c)								
Scenario 1 - Rail Spur + SMR + trucks	54.7	10.4	0.63	2.5	1.8	9.6	9.6	Yes
Scenario 2 - Rail Spur + SMR + trucks+ Mainline	58.0	13.6	0.69	2.6	1.9	13.6	10.9	Yes

See Appendix B for detailed emission calculations.
SMR emissions include the increased fraction of BTEX to 1.25% from 0.81%
Use of HARP2 model version 15197
PMI -Point of Maximum Impact, the highest value along the facility fenceline.
MEIR-Maximally Exposed Individual Resident

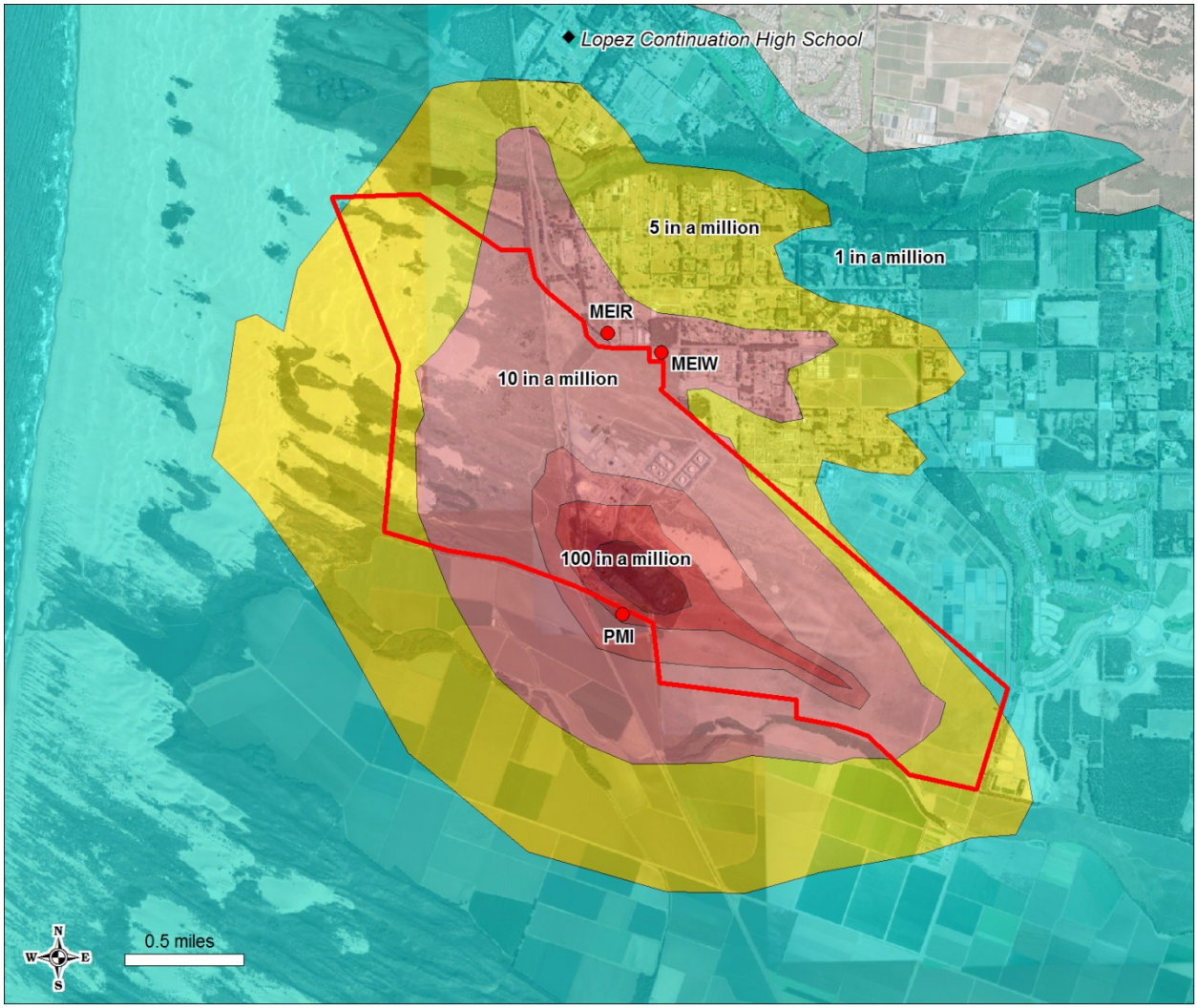
Figure 4.3-7 shows the cancer health risk contours for Scenario 2 (including the mainline rail emissions) with mitigation including the use of only Tier 4 locomotives (mitigation measures AQ-2a, AQ-2b, AQ-4b). Figure 4.3-8 shows the cancer risk contours for Scenario 2 without the use of Tier 4 locomotives (mitigation measure AQ-2b, AQ-4b and AQ-4c only), including limits on nighttime unloading.

Figure 4.3-7 Rail Spur Project Cancer Health Risk with Mainline –Mitigation with Tier 4 Locomotives and 24 Hour Unloading (Mitigation Measures AQ-2a, 2b, 4b)



PMI-Point of Maximum Impact
MEIR- Maximally Exposed Individual Resident
MEIW- Maximally Exposed Individual Worker
Based upon HARP2 model version 15197.

Figure 4.3-8 Rail Spur Project Cancer Health Risk with Mainline –Mitigation without Tier 4 Locomotives and Daytime Only Unloading (Mitigation Measures AQ-2b, 4b, 4c)



PMI-Point of Maximum Impact
MEIR- Maximally Exposed Individual Resident
MEIW- Maximally Exposed Individual Worker
Based upon HARP2 model version 15197.

UPRR maintains a large number of locomotives (more than 8,000 nationwide) with a wide range of emissions characteristics and Tier levels. Since UPRR would own the locomotives and they are used for interstate commerce the requirement to use only Tier 4 locomotives may be preempted by Federal law, and therefore may not be a feasible mitigation measure.

In addition, the availability of these cleaner locomotives and the ability of the Applicant to ensure their use are somewhat speculative since Union Pacific controls the locomotives and they would be traveling interstate.

In March 2008, EPA finalized a three part program that will dramatically reduce emissions from diesel locomotives of all types -- line-haul, switch, and passenger rail. The rule will cut DPM emissions from these engines by as much as 90 percent and NO_x emissions by as much as 80 percent when fully implemented. The standards are based on the application of high-efficiency catalytic after treatment technology for freshly manufactured engines built in 2015 and later.

EPA standards also apply for existing locomotives when they are remanufactured. Requirements are also in place to reduce idling for new and remanufactured locomotives. EPA has estimated that by 2041 the average nationwide emission factors for mainline locomotives would meet the Tier 4 standards (EPA 2009). This means that even if the County is preempted by Federal law from implementing the Tier 4 mitigation measure as part of the project, that over time the locomotive emissions will achieve this level due to the EPA emission control requirements for locomotives.

In 2015, the SMR began implementing a portion of mitigation measure AQ-4b and indicates that the use of model year 2010 truck is feasible and the trucks are available. This mitigation measure reduces the contribution of trucks to the cancer risks along the area roadways to the north of the SMR.

With the implementation of mitigation, including the Tier 4 locomotives, idling restrictions and the use of 2010 trucks (mitigation measures AQ-2a, AQ-2b and AQ-4b), the cancer risks would be reduced to below the thresholds. However, with just the limits on locomotive idling time, the cleaner trucks and the limits on nighttime unloading (AQ-2b, AQ-4b and AQ-4c), if the Tier 4 locomotives mitigation measure AQ-2a is preempted and cannot be implemented, even with daytime unloading only, the highest cancer risk at a residential or sensitive receptor would be *significant and unavoidable (Class I).*

Impact #	Impact Description	Phase	Impact Classification
AQ.5	Operational activities of trains along the mainline rail route associated with the Rail Spur Project would generate toxic emissions that exceed thresholds.	Operations	Class I

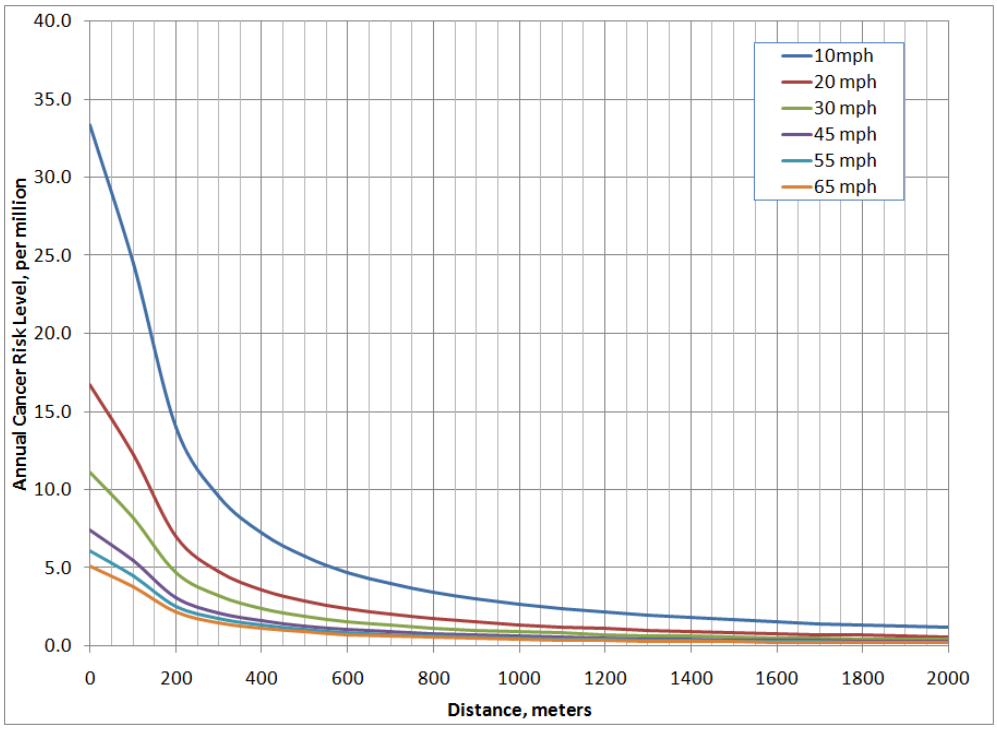
Movement of the locomotives on the mainline to and from the SMR would also contribute to health risks along the mainline due to the emissions of DPM. Modeling of rail emissions was conducted for a hypothetical rail mainline for a range of locomotive speeds and distances from

the mainline (all for a unit train with 3 locomotives and five trains per week). The results are shown in Figure 4.3-9 and show that for trains traveling about 30 mph or greater the cancer risk would be below the SLOCAPCD threshold for areas outside of the railroad right-of-way.

For slower speeds (when more emissions occur per length of rail due to the slower speeds), cancer risks would exceed the SLOCAPCD thresholds beyond the railroad right-of-way. 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 the City of San Luis Obispo, trains are limited to a speed of 25 miles per hour. In the City of Davis, there are stretches of track that are limited in speed to 10 mph. In these areas where there are permanent speed limits for trains that are below 30 mph and they are located in proximity to sensitive receptors, the health risk impacts could be significant.

For most of the mainline route trains are expected to have an average speeds between 30 and 40 mph, and in these areas the health risk impact would be less than significant. This average speed is consistent with the speed limits in the USDOT proposed rulemaking for crude oil unit trains, which is proposing speeds between 30 and 50 miles per hour depending on location and tank car design (USDOT 2014).

Figure 4.3-9 Mainline Locomotive Cancer Risk, by speed and distance from Mainline



Notes: Based on 3 locomotives per train, 250 round train trips per year, Nipomo meteorological dataset (1994-1996) and 30 year average locomotive emission factor (as per EPA). Includes OEHHA 2015 methodology.

Mitigation Measures

AQ-5 Implement measures AQ-3.

Residual Impacts

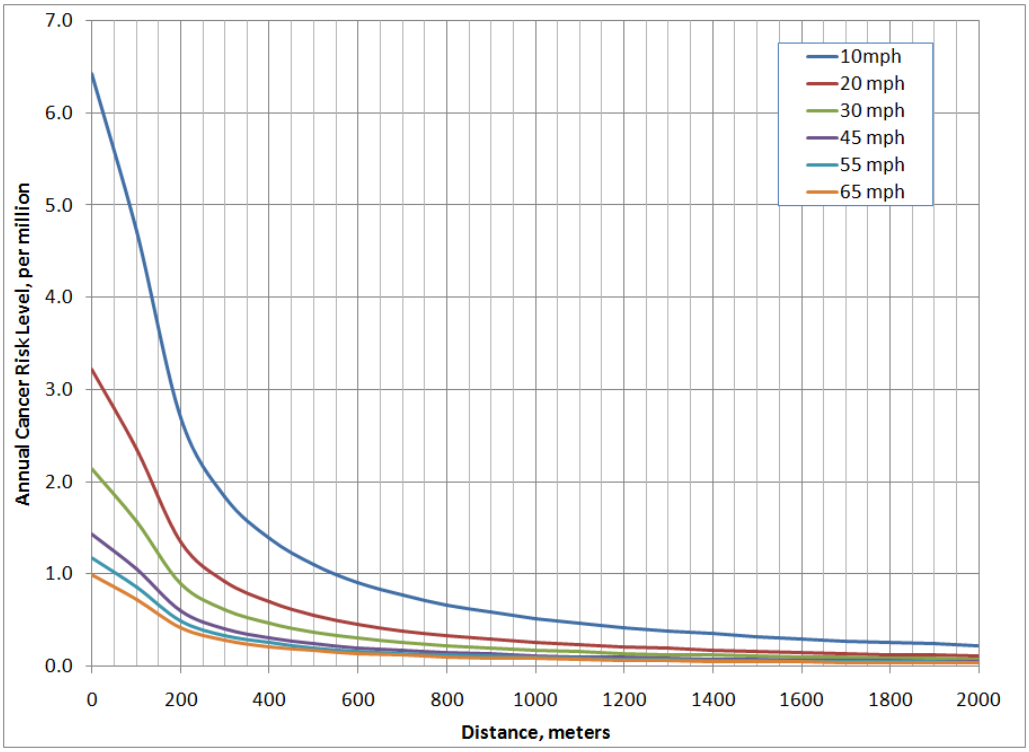
The use of Tier 4 locomotives would serve to reduce the toxic emissions associated with the locomotive operations along the mainline. The use of all Tier 4 locomotives would reduce DPM emissions, which are the main driver of the health risk impacts.

Figure 4.3-10 shows the health risk impacts along the mainline as a function of speed and distance with the use of Tier 4 locomotives. With this mitigation the health risk would be less than the SLOCAPCD threshold for all speeds.

UPRR maintains a large number of locomotives (more than 8,000 nationwide) with a wide range of emissions characteristics and Tier levels. Since UPRR would own and locomotives and they are used for interstate commerce the requirement to use only Tier 4 locomotive may be preempted by Federal law, and therefore may not be a feasible mitigation measures.

In addition, the availability of these cleaner locomotives and the ability of the Applicant to ensure their use are somewhat speculative since Union Pacific controls the locomotives and they would be traveling interstate.

Figure 4.3-10 Mitigated Mainline Locomotive Health Risk, by speed and distance from Mainline



Notes: Based on 3 locomotives per train, 250 round train trips per year, Nipomo meteorological dataset (1994-1996) and Tier 4 locomotive emission rate. Includes OEHHA 2015 methodology.

In March 2008, EPA finalized a three part program that will dramatically reduce emissions from diesel locomotives of all types -- line-haul, switch, and passenger rail. The rule will cut PM emissions from these engines by as much as 90 percent and NO_x emissions by as much as 80 percent when fully implemented. The standards are based on the application of high-efficiency catalytic after treatment technology for freshly manufactured engines built in 2015 and later.

EPA standards also apply for existing locomotives when they are remanufactured. Requirements are also in place to reduce idling for new and remanufactured locomotives. EPA has estimated that by 2041 the average nationwide emission factors for mainline locomotives would meet the Tier 4 standards (EPA 2009).

This means that even if the County is preempted by Federal law from implementing the Tier 4 mitigation measure as part of the project, that overtime the locomotive emissions will achieve this level due to the EPA emission control requirements for locomotives.

Given that the County may be preempted by Federal law from requiring the use of Tier 4 locomotives, the health risk impacts along the mainline rail routes would be *significant and unavoidable (Class I).* This would apply to all areas along the mainline where train speeds are limited to less than 30 mph and the mainline rails are in close proximity to sensitive receptors.

Impact #	Impact Description	Phase	Impact Classification
AQ.6	Operational activities associated with the Rail Spur Project would generate GHG emissions that exceed SLOCAPCD thresholds.	Operations	Class I

Emissions of GHG at the refinery and along the mainline would result from onsite activities (locomotives, etc.), vehicles (employee automobiles and occasional truck deliveries of materials), locomotives along the mainline, and from electricity consumption (to run pumps and other equipment). Table 4.3.25 shows the GHG emissions associated with the Rail Spur Project.

The total GHG emissions within SLOC associated with the Rail Spur Project would not exceed the SLOCAPCD thresholds for GHG emissions. However, emissions within California would exceed the thresholds and therefore would be considered significant. Since the State does not have a GHG threshold, this EIR has used the SLOCAPCD threshold for determining the significance of GHG emissions.

Changes in crude oil quality can change the amount of GHG emissions at a refinery by increasing the energy consumption for processing each barrel of oil. Replacing conventional crude oil with heavy oil and tar sand oil can increase the amount of energy needed to process each barrel of oil, thereby increasing CO_2 emissions, the major component of GHG emissions. The higher CO_2 emissions come from burning more fuel to process each barrel of crude (Karras, 2010).

Table 4.3.25 Operational GHG Emissions , metric tonnes

Source	CO_2	CH_4	N_2O	$MTCO_2E$
Emissions within SLOC				
Construction Amortized	38.4	0.01	0.00	38.6
Fugitives	0.0	0.01	0.00	0.3
Locomotives onsite	800.1	0.06	0.02	807.7
Locomotives along mainline within SLOC	1,472.0	0.1	0.0	1,486.0
Electricity	676.2	0.03	0.01	678.9
Vehicles (autos and trucks and sulfur trucks)	44.7	0.0	0.0	45.1
Project Total at SMR only	***1,514.7***	***0.12***	***0.03***	***1,525.5***
Project Total within SLOC	***3,031.3***	***0.2***	***0.1***	***3,056.6***
Route Totals (including SLOC emissions)				
Northern Route via Oakland	10,063.9	0.8	0.2	10,156.3
Northern Route via Altamont Pass	9,885.6	0.8	0.2	9,976.3
Southern Route	7,682.6	0.6	0.2	7,752.3
Within California[1]	16,568.9	1.3	0.4	16,723.3
Within United States[2]	66,248.5	5.2	1.7	66,880.7

1. Assumes northern route via Oakland to Washington State Boarder, which is the longest route.
2. Assumes a hypothetical route to the Canadian border via the Midwest, which would be the longest route.

See Appendix B.1 for detailed GHG emission calculations.

$MTCO_2E$-metric tons CO_2 equivalent.

Making light, hydrogen-rich motor fuels from the carbon-dense, hydrogen-poor components of crude requires rejecting carbon and adding hydrogen. This requires aggressive processing that uses lots of energy. As the crude oil gets heavier refiners have to put a larger share of the denser, heavier crude barrel through energy-intensive carbon rejection, hydrogen addition, and supporting processes (Karras, 2011).

The SMR is somewhat unique for a refinery in California since it does not produced any finished motor grade fuels. The refinery was designed to process the heavy sour crude from the Santa Maria Basin and the Santa Barbara OCS into intermediate products (naphtha and gas oils). As such the refinery does not have any processing equipment that adds hydrogen to the heavier oil components.

Hydrogen addition process such as hydrocracking and hydrotreating of gas oil and resid oil are aggressive hydrogen addition processes, which add hydrogen to make fuels and remove sulfur and other refinery process catalyst poisons. These hydrogen adding processes are major consumers of energy and emitters of GHG emissions. (Karras 2011).

In a 2011 paper on Refinery CO_2 performance measurements California refineries were estimated to generate an average of between about 120 and 140 pounds of CO_2 per barrel of oil produced (Karras, 2011). In 2007 the SMR generated about 37 lbs of CO_2 per barrel processed based upon the SLOCAPCD GHG Inventory and the throughput at the SMR. Based upon data in the EIR prepared for the Throughput Increase Project at the SMR the CO_2 emission rate per barrel of oil processed is expect to be reduce slightly to about 34 lbs. (SLOC, 2012). This reduction is primarily a result of the permanent shutdown of the calciner unit in 2007.

The CO_2 emissions per barrel of oil processed is lower for the SMR than the other California refineries since the SMR does not have a lot of the aggressive processing that is need to produce light, hydrogen-rich motor fuels. Therefore, the fuel use per barrel processed is lower.

As the data in Table 4.3.13 shows, the SMR historically has processed and currently processes primarily heavy, sour crudes, although these are sometimes blended with other lighter, sweeter crudes in small amounts.

Phillips 66 expects to continue to receive, blend and process a comparable range of crudes in the future, and will select future crude to be delivered by rail based upon a number of factors including availability, suitability, and economics. The potential range of crudes that could be delivered by rail (see Table 4.3.13) have very similar properties in terms of sulfur and vacuum resid, which are the two key drivers in fuel use at the refinery (fuel use is the primary source of CO_2 emissions). Since the level of sulfur and vacuum resid in the crude oil that would be delivered by train would be similar to the historic crude mix that has been processed at the SMR, the CO_2 emissions would not be expect to change.

The use of the rail spur to import crude oil could potentially displace crude oil from other sources that are currently being used to supply crude oil to the SMR. The majority of crude oil currently being delivered to the SMR is from offshore, OCS sources, which are delivered to the SMR by pipeline and electrically powered pumps. Some of the crude oil is delivered to the SMR via truck through the Santa Maria Pump Station (SMPS). The GHG emissions associated with these trucks (see Table 4.3.8) are estimated to total about 1,742 $MTCO_2e$ per year and indirect emissions (electricity) associated with pumping from the OCS ranging from 5,000-10,000 MTCO2e per year. However, it is speculative as to whether these trucks trips or OCS production would be eliminated as the crude oil from these sources might just be re-directed to locations in Los Angeles or Bakersfield.

Mitigation Measures

AQ-6 *Prior to issuance of the Notice to Proceed, the Applicant shall provide a GHG mitigation, monitoring and reporting plan. The plan shall indicate that, on an annual basis, if GHG emissions exceed the thresholds, the Applicant shall provide GHG emission reduction credits for all of the project GHG emissions. Coordination with the San Luis Obispo Planning and Building Department should begin at least six (6) months prior to issuance of operational permits for the Project to allow time for refining calculations and for the San Luis Obispo Planning and Building to review and approve the emission reduction credits.*

Residual Impacts

Since the operation of the crude oil trains at the SMR would be on Phillips 66 property and the trains would be operated by Phillips 66, the County can require that GHG emissions within the SMR associated with the trains be mitigated using emission reduction credits.

For the mainline rail GHG emissions it is possible that contractually the Applicant could require GHG emission reduction credits. However, the County may also be preempted by Federal law from requiring emission credits for main line rail GHG emissions. Due to the possible preemption by Federal law which could prevent the mitigation measure from being implemented

(outside of the SMR facility boundary), emission reduction credits might not be achievable and impacts would remain *significant and unavoidable (Class I).*

Impact #	Impact Description	Phase	Impact Classification
AQ.7	Operational activities associated with the Rail Spur Project could generate odors.	Operations	Class II

Sources of odors from the facility would be related to emissions of hydrocarbons, hydrogen sulfide and emissions of diesel exhaust. Emissions of fugitive hydrocarbons from the Rail Spur Project would be substantially less than that from the existing refinery (1 tons/yr verses 33 tons/year). The Applicant indicates the expected H_2S content of the crude oil vapor could be about one percent by weight (refer to Table 4.3.13). The release of material that contains even small amounts of sulfur compounds (H_2S) or hydrocarbons produces an odor. Sulfur compounds, found in oil and gas, have very low odor threshold levels. For instance, H_2S can be detected by humans at concentrations from 0.5 parts per billion [ppb] (detected by 2 percent of the population) to 40 ppb, qualified as annoying by 50 percent of the population. Above these levels, H_2S would be detected by most people (AIHA 1989). A conservative H_2S odor limit of 2 ppb has been used in this analysis with a significant impact being assigned to levels that could exceed the 50% odor threshold (1 ppb).

As crude oil vapors would be mixed with entrained air before the canisters, crude oil vapors would only constitute about 500 ppm of the canister input stream (with remaining composition being entrained air). With a 1% weight percent H2S, this would lead to an H_2S concentration of the vapor going to the carbon canisters of about 4.8 ppmV. The carbon canisters would remove at least 95% of this H_2S vapor. Therefore, emissions of odiferous H_2S from the canisters would be very low and would not produce offsite H_2S levels that could produce odors.

Crude oil vapors from fugitive components, however, would not be mixed with air and would therefore have a potentially substantial amount of H_2S, leading to a source of odors. SCREEN3 modeling indicates that, assuming a 1% H_2S concentration and worst case meteorological parameters (F stability and 1 m/s), fugitive emissions would produce H_2S levels at the nearby property line (the agricultural areas south of the SMR) of between 1 - 1.7 ppb (for 60 minute and 3 minute averaging times, respectively). As the odor threshold of H_2S ranges down to a few ppb, this level would be on the edge of producing odor impacts. Therefore, under worst case meteorological conditions and high H_2S levels, fugitive emissions could cause odor impacts offsite and odor emissions would be potentially significant. Note that at residences to the north and east, located farther away, impacts would be less than 1 ppb and would not produce potential odor impacts due to the rail spur fugitive emissions.

Odors could also result from accidents (spills of crude oil) or maintenance operations, such as removing materials by vacuum truck or line openings. Railcar unloadings could also produce odors if rail tank car unloading procedures are not followed correctly (i.e., top valves are left open when the unloading pumps are shut-down). Any of these maintenance procedures, if not conducted properly with respect to odor minimizations, could cause offsite odors.

Mitigation Measures

AQ-7 *Prior to issuance of Notice to Proceed, the Applicant shall ensure that any new odor sources be added to the existing Refinery Odor Control Plan and submitted to the SLOCAPCD for review and approval before the start of construction. Mitigation shall include carbon canisters on all vacuum trucks, arrival and pre-departure inspection of all rail cars for fugitive leaks, monitoring of rail car top vents during unloading, and methods to reduce and eliminate odors associated with maintenance activities. Monitoring of odors from the rail facility and the other portions of the SMR potentially affected by a change in crude oil slate, shall be included in the Plan and shall be conducted by an independent third party monitor, retained by the County of San Luis Obispo Department of Planning, for the first three months of operation during each unit train visit. The APCD shall be notified of monitoring and unit train activity. Monitoring activities can be reduced, in coordination and agreement with the APCD, after the facility startup if odors are not determined to affect areas offsite. In addition to monitoring, the amended Odor Control Plan shall also detail control measures and/or operating procedures that will be implemented to reduce odor impacts if odors are a concern. The Plan shall also include an implementation schedule for incorporating additional measures if needed. The Plan measures shall include leak detection (if not already implemented), lower leak detection and repair threshold limits (to 100 ppm), increased component monitoring frequency (monthly), component replacement with lower leak levels and improved vapor control systems and these measures shall be discussed in the Odor Control Plan.*

Residual Impacts

Hydrogen sulfide within the crude oil is not expected to produce substantial impacts beyond possible OSHA related worker exposure issues or potential odor issues. OSHA related worker issues are outside the scope of the EIR. As per Applicant submittals, H_2S levels in crude vapors could be substantial and potentially could produce offsite odor issues. If H_2S levels are elevated, additional measures would be addressed under the Refinery Odor Control Plan to reduce the emissions from valves and components. Leak detection reduces emission by an estimated 80%. Addition measures, such as lower leak detection and repair thresholds or monitoring frequency, would reduce emissions by an additional 40% (from 80% to 88% control), reducing offsite impacts to less than significant. Odor impacts associated with the project would therefore be *less than significant with mitigation (Class II).*

Impact #	Impact Description	Phase	Impact Classification
AQ.8	Cumulative criteria pollutant and GHG emissions at the SMR could exceed SLOCAPCD thresholds.	Operations	Class II

The Throughput Increase Project would increase criteria, toxic pollutants, and GHG emissions over the current baseline. Table 4.3.26 provides a summary of the Throughput Increase and Rail Spur Project emissions combined. The cumulative emissions for the two projects would exceed the daily SLOCAPCD threshold for ROG+NO_x and diesel particulate matter, and the annual threshold ROG+NO_x and GHG.

The permit issued for the Throughput Increase Project requires that: (1) best available technology (BACT) be installed on the crude heaters, coke heaters and boiler, vacuum heaters and superheaters; (2) trucks meet EPA 2010 or 2007 model year NO_x and DPM emission requirements to the extent feasible; and (3) any emissions that remain above the threshold must be mitigated using offsite mitigation per the SLOCAPCD guidelines.

Mitigation measures AQ-2a and AQ-2b require the Applicant to reduce ROG+NO_x and DPM emissions through the use of Tier 4 engines and reduced idling and on-site refinery measures. Any remaining ROG+NO_x emissions would be mitigated by either onsite or offsite emissions credits. Therefore, with the mitigation required by the Throughput Increase permit and the mitigation required for the Rail Spur Project, cumulative criteria pollutant emissions would be less than significant.

As shown in Table 4.3.26 the cumulative annual GHG emissions would exceed the SLOCAPCD threshold, primarily due to the Throughput Increase Project. The permit issued for the Throughput Increase Project requires the Applicant to implement: (1) a program to increase efficiency of the refinery stationary combustion devices; (2) use of more efficient model year trucks or alternative fueled vehicles for hauling vehicles; and (3) off-site mitigation of GHG emissions such that the additional GHG emissions associated with the Throughput Increase Project is less than 10,000 metric tonnes per year.

Table 4.3.26 Cumulative Criteria Pollutant and GHG Emissions at the SMR and Thresholds

Project	Peak Day Emissions (lbs/day)				
	ROG+NO_x	CO	Diesel Particulate Matter	Fugitive Dust (PM_{10})	$MTCO_2E$
Throughput Increase Project	128.1	22.1	2.7	0.1	--
Rail Spur Project	244.5	21.2	8.1	1.3	--
Total	372.6	43.3	10.8	1.4	--
SLOCAPCD Threshold	25	550	1.25	25	--
Significant?	Yes	No	Yes	No	--
Project	**Annual Emissions (tons/year)**				
	ROG+NO_x	CO	Diesel Particulate Matter	Fugitive Dust (PM_{10})	$MTCO_2E$
Throughput Increase Project	23.4	--	--	0.02	20,470
Rail Spur Project	22.6	--	--	0.17	3,057
Total	46.0	--	--	0.19	23,527
SLOCAPCD Threshold	25	--	--	25	10,000
Significant?	Yes	--	--	No	Yes

Emissions for Throughput Increase Project from Final EIR 2012. GHG Emissions within SLOC

Given that the Throughput Increase permit only requires the GHG emissions to be reduced to less than 10,000 metric tonnes per year, any increase in GHG emissions associated with the Rail Spur Project would be considered cumulatively significant.

The cumulative health risk associated with the Rail Spur and Throughput Increase Projects are discussed below in the cumulative analysis.

Mitigation Measures

AQ-8 *Prior to issuance of the Notice to Proceed, the Applicant shall provide a GHG mitigation, monitoring and reporting plan. The plan shall investigate methods to bring the Rail Spur Project GHG emissions at the refinery to zero for the entire project each year. The plan shall indicate that, on an annual basis, if after all onsite mitigations are implemented, the GHG emissions from the Rail Spur Project still exceed zero, then SLOCAPCD-approved off-site mitigation will be required. Methods could include the contracting arrangement that increases the use of more efficient locomotives, or through other, onsite measures. Coordination with the SLOCAPCD should begin at least six (6) months prior to issuance of operational permits for the Project to allow time for refining calculations and for the SLOCAPCD to review and approve the mitigation approach.*

Residual Impacts

The residual cumulative criteria pollutant emissions at the refinery would be *less than significant (Class III)*. The residual impacts associated with the cumulative GHG emissions are the refinery would be *less than significant with mitigation (Class II).*

4.3.5 Cumulative Analysis

The Phillips 66 Pipeline Project, Freeport-McMoRan Oil & Gas Oil Field Expansion, and the Guadalupe Oil Field Remediation would all generate construction and operational criteria pollutant air emissions that would likely be significant. Trucking NOx and ROG emissions associated with the Guadalupe Project are required to be offset through an agreement with SLOCAPCD. Regional operational impacts from the other cumulative projects could be realized since multiple projects would emit into the South Central Coast Air Basin at the same time. All of the cumulative projects are within the South Central Coast Air Basin and most of these projects are also within the South County planning area. All projects within the South Coast planning area are subject to the air quality impact program as detailed in the Air Quality Handbook (SLOCAPCD 2012) through standard mitigation measures and off-site mitigation which identifies improvements that will help reduce some of the cumulative air quality impacts.

All cumulative projects within SLOC must comply with SLOCAPCD rules and regulations that include air emission reduction strategies for the basin. These, in concert with individual project mitigation measures, will help reduce air quality impacts. However, until the San Luis Obispo area as a whole attains all federal and state standards, it is likely that the criteria pollutant air emissions from the cumulative projects would be regionally significant and unavoidable.

The Rail Spur Project would be required to provide emission reduction credits for all the significant construction and operational criteria pollutant emissions at the refinery, the County may be preempted from mitigating the mainline rail emissions within San Luis Obispo County. These additional project related criteria pollutant emissions would be considered cumulatively significant and unavoidable since the area is in non-attainment with some of the federal and state standards air quality standards.

Most of the cumulative projects outside of the refinery are far enough from the project site to not result in overlapping toxic emissions that would impact the health risk near the refinery.

However, the Guadalupe Project trucking along Willow Road would add additional toxic emissions in the project area. HARP2 was used to analyze the Guadalupe Project trucking health risk impacts along Highway 1 and Willow Road based on the trucking emissions in the 2014 Guadalupe Trucking Addendum EIR. Impacts at the closest residence along Willow Road were estimated to add 1.5 in a million cancer cases due to the Guadalupe Trucking project only. The combined cancer risk for the Rail Spur Project and Guadalupe Trucking would therefore be less than the cumulative threshold of 89 in a million (see Table 4.3.27).

Table 4.3.27 Cumulative Health Risk HARP Modeling Results: Cancer Risk

Scenario	PMI	MEIR	Worker	Louise Ln	Trilogy Prkwy	Monadella Street	Olivera Ave
Baseline[1]	21.9	18.1	0.62	1.33	1.57	10.8	4.2
Baseline + Proposed Project Mitigated[2]	58.0	13.6	0.69	2.6	1.9	13.6	10.9
Throughput Increase[3]	0.0	0.2	0.0	0.0	0.0	0.2	0.1
Guadalupe Trucking Project	-	1.5	-	1.2	0.7	0.4	0.8
Combined Risk Levels	58.0	14.2[4]	0.69	4.8	2.6	14.0	11.7
Cumulative Significance Threshold[5]	-	89.0	89.0	89.0	89.0	89.0	89.0
Cumulatively Significant?[5]	-	No	No	No	No	No	No

Notes: 1) Baseline includes SMR, trucks and coke trains. Does not include any mitigation. 2) Mitigation includes clean trucks, locomotive idling restrictions, and daytime only crude rail car unloading. Proposed project includes BTEX increase, rail spur related mainline locomotives and sulfur trucks. 3) Increased cancer risk from the Throughput increase project only. Includes additional trucks and increased use of specific refinery equipment. 4) MEIR is the maximum combined resident, which occurs at different locations for the project and the cumulative Guadalupe trucks. 5) Cumulative significance is based on the SLOCAPCD threshold of 89 in a million for Type B projects (see SLOCAPCD 2012). Impacts associated with emissions associated with only the SMR (SMR baseline, Rail Spur Project and the Throughout Project) are compared to the thresholds of 10 in a million for Type A projects.

Toxic emissions associated with the Throughput Increase Project were determined in the Throughput Project's FEIR to be less than significant. As part of the Throughput Increase EIR an updated HRA utilizing 2010 emission data was developed. The HRA indicated that the highest cancer risks at the facility fence line would be 2.1 in a million, and that chronic and acute risks would be 0.02 and 0.38, respectively, associated with the Throughput Increase operations.

HARP2 modeling was conducted as part of this EIR with the SMR operating at the Throughput Increase Project permit level along with the rail spur project, including increases in BTEX and additional sulfur trucks. Most of the SMR health risk levels for the current operations are from the diesel engines (fire water pumps, backup generators). Operation of the fire water pump and backup generators would not change with the Throughput Increase Project and therefore risk levels from the SMR associated with the Throughput Increase Project would be similar to the Proposed Project risk levels. The Throughput Increase Project included an increase in trucking (about 6 percent). This increase in trucking was added to the proposed Rail Spur Project risk levels and produced a peak increase in cancer risk of 0.2 cancer cases per million under the mitigated case. As the impacts associated with the Rail Spur Project would be significant and unavoidable, with the addition of the Rail Spur Project, the cumulative health risk impact with the Throughput Project would also be significant and unavoidable for the SMR site.

There is the potential for cumulative impacts associated with the crude by rail projects discussed in Chapter 3. The Valero Benicia and Kinder Morgan crude by rail projects could use the same UPRR tracks as the Rail Spur Project from the Roseville Yard to the Bay Area if the trains servicing the SMR come from the north. These two projects could have up to three unit trains per day. Assuming the air emissions for each train are similar to the unit trains for the Rail Spur Project, then the air emission from these trains would exceed the NO_x emission significance thresholds in the Bay Area Quality Management District (BAAQMD), Yolo-Solano Air Quality Management District (YSAQMD), Sacramento Metropolitan Air Quality Management District (SMAQMD), Placer County Air Quality Management District (PCAPCD), and the cumulative impacts within the Sacramento and Bay Area Basins would be significant. In addition, trains servicing the Alon, Targa, and Plains crude by rail projects would also pass through some of these same air districts on their way south to the San Joaquin Valley contributing additional NO_x emissions to the Sacramento basin. For ROG/VOC emissions the cumulative impacts of the crude by rail projects could be cumulatively significant in the BAAQMD since the combined ROG/VOC emissions would exceed the daily threshold of 80 lbs per day.

With the cumulative crude by rail projects an additional eight one-way crude trains per day would be added to the section of track between the northern Bay Area and Sacramento. An additional 16 one-way crude trains would be added to the mainline track from Sacramento to Roseville and along the mainline track from Roseville to Oregon or Nevada depending upon the route taken. These cumulative rail trips (including those from the proposed Project) would generate between 604 and 3,551 pounds per day of NO_x in different air districts along the routes, and a total of 93,000 MTCO2e within California.

Cumulative toxic air emission for trains operating on the same tracks could be potentially significant and unavoidable. On the stretch of track west of the Roseville rail yard there could be as many as about 2,800 crude oil trains per year (7.7 trains per day). Even where the train travels at the maximum speed limit of 55 mph, the 30-year cancer risk would be above the threshold of 10 in a million out as far as 2,000 feet from the tracks and would be considered significant and unavoidable. For train travel below 45 mph, this level of train traffic would also exceed the cumulative threshold (89 in a million as the SLOCAPCD threshold). Utilizing only Tier 4 locomotives, risk levels would be below the cumulative threshold at all speeds and below the 10 in a million threshold at 300 feet (at 55 mph).

None of the other cumulative crude by rail projects would use tracks within the Ventura County Air Pollution Control District VCAPCD, Santa Barbara County Air Pollution Control District (SBCAPCD), San Luis Obispo County Air Pollution Control District (SLOCAPCD), and Monterey Bay Unified Air Pollution Control District (MBUAPCD).

For the Rail Spur Project mitigation measure have been provided that would require the Applicant to obtain emission credits for all main line rail NO_x emissions. If these emission credits were obtained then the Rail Spur Project's contribution to the cumulative NO_x and ROG/VOC emission impacts would be less than significant.

However, the County may be preempted by Federal law from mitigating rail emissions outside of the SMR, and therefore may not have the authority to require offsite emission credits for the UPRR mainline emissions. In this case the Rail Spur Project's contribution to cumulative NO_x

emissions associated with the URPP mainline emissions would also be significant and unavoidable in all of the air basins that the train would cross. The Rail Spur Project's ROG/VOC emissions would be cumulatively significant in the Bay Area and the San Luis Obispo County air basins.

The California Air Pollution Control Officers Association consider greenhouse gas (GHG) emissions impacts to be exclusively cumulative impacts (CAPCOA, 2008); as such, assessment of significance is based on a determination of whether the GHG emissions from a project represent a cumulatively considerable contribution to the global atmosphere. The Rail Spur Project would result in a net increase of 16,723 metric tonnes carbon dioxide equivalents (CO_2e) per year within the State of California (of which 1,570 would be at the SMR and 15,153 tonnes would be from mainline rail operations). The Applicant would be required to provide emission reduction credits for the GHG emissions at the SMR. A mitigation measure is also proposed that would require the Applicant to provide emissions reduction credits for all GHG emissions within California.

However, the County may be preempted by Federal law from mitigating rail emissions outside of the SMR, and therefore may not have the authority to require offsite emission credits for the UPRR mainline emissions. Therefore, when compared to the SLOCAPCD significance threshold of 10,000 metric tonnes CO_2e, the Project's contribution to GHG impacts would be cumulatively considerable, and there would be a significant cumulative GHG impact associated with the Project.

The additional crude oil supplied by northern Santa Barbara County oil fields would be transported by both trucks and pipeline from the oil fields to the SMR. Installation of the ERG Pipeline would increase the amount of crude oil transported by pipeline. Additional crude oil production at other onshore fields might utilize the SMPS unloading facility if the crude oil is delivered by truck instead of pipeline, and could cause the permit limits at the SMPS to be exceeded. This might cause some displacement of crude oil to other refineries if the SMPS permit limits are exceeded. However, historical operations at the SMPS indicate that there is plenty of excess capacity at the SMPS and within the pipelines to handle additional crude oil (a permit limit of 26,000 bpd of truck unloading at the SMPS with 2010 throughput levels of less than 7,000 bpd).

Combined crude oil production from northern Santa Barbara County fields as well as SLOC fields (Freeport-McMoRan Oil & Gas Oil Field Expansion) could increase area crude oil production by 20-30,000 bpd. With the two pipeline projects from the Arroyo Grande Field and the Cat Canyon Field, emissions from truck trips would most likely not increase under the cumulative scenarios. However, until the San Luis Obispo area as a whole attains all federal and state standards, it is likely that the criteria pollutant air emissions from the cumulative projects at the respective oil fields would increase and be regionally significant and unavoidable. Criteria pollutant emissions from the Freeport-McMoRan Oil & Gas Oil Field Expansion project, for example, would increase ROG + NOx emissions by more than 300 pounds/day.

If Phillips 66 elects to utilize the rail spur to its capacity, there would only be about a remaining 12,000 bpd of capacity at the SMR. This could then redirect some crude oil from proposed area projects to other destinations, most likely south to Los Angeles, via a reversal of the Sisquoc

pipeline to allow for transportation of crude oil to Los Angeles area refineries via the All American Pipeline (a Sisquoc Pipeline reversal project was proposed in 2001). Transportation of crude oil by pipeline to Los Angeles would continue to involve movement of trucks to the SMPS and offloading of crude oil at the SMPS, as is currently the case for trucked crude oil. Additional trucking to the SMPS associated with these projects would increase emissions. However, until the San Luis Obispo area as a whole attains all federal and state standards, it is likely that the criteria pollutant air emissions from the cumulative projects would be regionally significant and unavoidable.

Although reversal of the Sisquoc pipeline is the most likely scenario, it is possible that crude oil development projects would utilize trucks to transport crude oil to Bakersfield or Los Angeles. This would equate to up to 120 truck trips per day (round trips). These truck trips could generate up to 948 lbs/day of NOx and close to 24,000 MTCO2e annually, if all of the crude oil were transported to Los Angeles area refineries. This would also increase emissions in the area and would also be a cumulatively significant impact.

4.3.6 Mitigation Monitoring Plan

Mitigation Measure	Plan Requirements and Timing	Compliance Verification		
		Method	Timing	Responsible Party
AQ-1a	Prior to issuance of grading and construction permits, and throughout project construction, as applicable, the Applicant shall implement the following construction emission reduction measures: a. Properly maintain all construction equipment according to manufacturer's specifications; b. Fuel all off-road and portable diesel powered equipment with CARB-certified motor vehicle diesel fuel (non-taxed version suitable for use off-road); c. Applicant shall include the following, in addition to complying with state Off-Road Regulations, in order to reduce peak daily/quarter ROG+NOx emissions: 1) Use CARB Tier 4 certified diesel construction equipment off-road heavy-duty diesel engines and 2) Stagger the construction schedule to prevent peak day/quarter emissions from exceeding the threshold (for example, no site preparation during grading and soil transport); d. Use CARB 2010 or cleaner certified on-road heavy-duty diesel trucks to the extent feasible and comply with state On-Road Regulations; e. If construction or trucking companies that are awarded the bid or are subcontractors for the project do not have equipment to meet the above two measures, the impacts from the dirtier equipment shall be addressed through SLOCAPCD approved off-site or other mitigation measures; f. All on- and off-road diesel equipment shall not idle for more than 5 minutes. Signs shall be posted in the designated queuing areas and job sites to remind	Review of construction plan documents Site Inspection	Prior to grading permits	SLO County Planning and Building SLOCAPCD

Mitigation Measure	Plan Requirements and Timing	Compliance Verification		
		Method	Timing	Responsible Party
	drivers and operators of the 5 minute idling limit; g. Diesel idling within 1,000 feet of sensitive receptors is not permitted (Sensitive receptors are defined in the SLOCAPCD Handbook as people that have an increased sensitivity to air pollution or environmental contaminants. Sensitive receptor locations include schools, parks and playgrounds, day care centers, nursing homes, hospitals, and residential dwelling units); h. Staging and queuing areas shall not be located within 1,000 feet of sensitive receptors; i. Equipment shall be electrified when feasible; j. Substitute gasoline-powered or diesel hybrids in place of diesel-powered equipment, where feasible; and k. Use alternatively fueled construction equipment on-site where feasible, such as compressed natural gas (CNG), liquefied natural gas (LNG), propane, or biodiesel.			
AQ-1b	Prior to issuance of grading and construction permit, the Applicant shall ensure SLOCAPCD regulations that prohibit developmental burning of vegetative material within San Luis Obispo County are followed for the life of the project.	Review of design documents and plans Site Inspection	Prior to grading permits	SLO County Planning and Building SLOCAPCD
AQ-1c	Prior to issuance of grading and construction permit, the Applicant shall ensure that portable equipment and engines 50 horsepower or greater, used during grading and construction activities must have a California portable equipment registration (issued by the ARB) or a SLOCAPCD permit. Proof of registration must be provided to the SLOCAPCD prior to the start of grading or construction or a permit secured from the SLOCAPCD prior to the start of grading or construction. The following list is as a guide to equipment and operations that may have permitting requirements, but it is not exclusive: a. Power screens, conveyors, diesel engines, and/or crushers; b. Portable generators and equipment with 50-horsepower or greater engines; c. Internal combustion engines; d. Unconfined abrasive blasting operations; e. Concrete batch plants; f. Rock and pavement crushing; g. Tub grinders; and h. Trommel screens.	Review of construction plan documents Site Inspection	Prior to grading permits	SLO County Planning and Building SLOCAPCD
AQ-1d	Prior to issuance of grading and construction permit, the Applicant shall ensure that all grading and construction equipment greater than 100 bhp be equipped with CARB Level 3 diesel particulate filters (DPF), or equivalent, to achieve an 85 percent reduction in diesel particulate emissions from an uncontrolled engine. If CARB verified	Review of construction plan documents Site	Prior to grading permits	SLO County Planning and Building SLOCAPCD

Mitigation Measure	Plan Requirements and Timing	Compliance Verification		
		Method	Timing	Responsible Party
	Level 3 DPFs cannot be secured for all of the equipment greater than 100 hp then the applicant will offset the added DPM with measures including but not limited to schedule modifications, implementation of no idling requirement, or other applicable measures providing a total reduction equivalent to an 85 percent reduction from uncontrolled engines as approved by the SLOCAPCD.	Inspection		
AQ-1e	Prior to issuance of grading and construction permits, or during construction, if emissions of ROG+NOx with the above mitigations still exceed the thresholds, the Applicant shall secure SLOCAPCD-approved onsite or off-site reductions in ROG + NOx emissions to ensure that ROG + NOx emissions do not exceed the SLOCAPCD quarterly thresholds. Coordination with the SLOCAPCD should begin at least six (6) months prior to issuance of grading and/or construction permits for the Project to allow time for refining calculations and for the SLOCAPCD to review and approve the Construction Activity Management Plan (CAMP) and on-site or off-site mitigation approach.	Review of construction plan documents Site Inspection	Prior to grading permits During construction	SLO County Planning and Building SLOCAPCD
AQ-1f	Prior to issuance of applicable grading permit, the Applicant shall prepare a Dust Control Plan to be approved by the APCD and County Health and include requirements in the SLOCAPCD CEQA Handbook identified as fugitive dust mitigation measures and shall include a combination of the following, as approved by the SLOCAPCD and County Health: a. Reduce the amount of the disturbed area where possible. b. Use of water trucks or sprinkler systems in sufficient quantities to prevent airborne dust from leaving the site. An adequate water supply source must be identified. Increased watering frequency would be required whenever wind speeds exceed 15 mph. Reclaimed (non-potable) water should be used whenever possible. c. All dirt stockpile areas should be sprayed daily as needed, covered, or a SLOCAPCD-approved alternative method will be used. (90 percent reduction from no dust control). d. Permanent dust control measures identified in the approved Project revegetation and landscape plans should be implemented as soon as possible following completion of any soil disturbing activities and shall use native species that have been shown to reduce particulate emissions to the extent feasible. e. Exposed ground areas that will be reworked at dates greater than one month after initial grading should be sown with a fast-germinating non-invasive grass seed and watered until vegetation is established. f. All disturbed soil areas not subject to revegetation should be stabilized using approved chemical soil	Review of construction plan documents Site Inspection	Prior to grading permits	SLO County Planning and Building County Health SLOCAPCD

Mitigation Measure	Plan Requirements and Timing	Compliance Verification		
		Method	Timing	Responsible Party
	binders, jute netting, or other methods approved in advance by the SLOCAPCD. g. All roadways, driveways, etc. to be paved should be completed as soon as possible. In addition, equipment pads should be laid as soon as possible after grading unless seeding or soil binders are used. h. Vehicle speed for all construction vehicles shall not exceed 15 mph on any unpaved surface at the construction site. i. All trucks hauling dirt, sand, soil, or other loose materials are to be covered or should maintain at least 2 feet of freeboard (minimum vertical distance between top of load and top of trailer) in accordance with CVC Section 23114. j. Install wheel washers where vehicles enter and exit unpaved roads onto streets, or wash off trucks and equipment leaving the site. k. Sweep streets at the end of each day if visible soil material is carried onto adjacent paved roads. Water sweepers with reclaimed water should be used where feasible l. Apply water every 3 hours to disturbed areas within the construction site in order to achieve a 61 percent reduction in particulate emissions. In addition, when drought conditions are present, fugitive dust control measures need to be modified by utilizing soil binders or other equivalent measures, to conserve water resources while still providing the necessary emission reductions. m. In support of APCD standard fugitive dust mitigation measures, the applicant shall designate a Visible Emission Evaluation certified person or persons to monitor the fugitive dust emissions and enhance the implementation of the measures as necessary to minimize nuisance violations from dust complaints (Rule 402) and to reduce visible emissions below the APCD's Rule 401 requirement that opacity not exceed 20% for greater than 3 minutes in any 60 minute period. Their duties shall include holidays and weekend periods when work may not be in progress. The name and telephone number of the designated monitor shall be provided to the SLOCAPCD Compliance Division and the Department of Planning and Building prior to the start of any grading, earthwork, or demolition. n. All PM10 mitigation measures required shall be shown on grading and building plans. o. Between June 1 and November 30, when Valley Fever rates of infection are the highest, additional dust suppression measures (such as additional water or the application of additional soil stabilizer) will be implemented prior to and immediately following			

Mitigation Measure	Plan Requirements and Timing	Compliance Verification		
		Method	Timing	Responsible Party
	ground disturbing activities if wind speeds exceed 15 miles per hour (mph) or temperatures exceed 95 degrees Fahrenheit for three consecutive days. The additional dust suppression will continue until winds are 10 mph or lower and outdoor air temperatures are below 90 degrees for at least two consecutive days. The additional dust suppression measures will be incorporated into the Final Dust Control Plan. The Plan will be submitted to the County for review and approval. p. The primary project construction contractor will prepare and implement a worker training program that describes potential health hazards associated with Valley Fever, common symptoms, proper safety procedures to minimize health hazards, and notification procedures if suspected work-related symptoms are identified during construction. The worker training program will identify safety measures to be implemented by construction contractors during construction. Safety measures will include: 1) Providing HEPA-filtered air-conditioned enclosed cabs on heavy equipment. 2) Train workers on proper use of cabs, such as turning on air conditioning prior to using the equipment. 3) Providing communication methods, such as two-way radios, for use by workers in enclosed cabs. 4) Providing personal protective equipment (PPE), such as half-mask and/or full-mask respirators equipped with particulate filtration, to workers active in dusty work areas. 5) Providing separate, clean eating areas with hand washing facilities for construction workers. 6) Cleaning equipment, vehicles, and other items before they are moved offsite to other work locations. 7) Providing training for construction workers so they can recognize the symptoms of Valley Fever and promptly report suspected symptoms of work related Valley Fever to a supervisor. 8) Directing workers that exhibit Valley Fever symptoms to immediately seek a medical evaluation. q. Construction activities that will generate dust shall be limited to periods when good air quality is forecasted to the maximum extent feasible. The 6 day forecast for the CDF forecast zone shall be utilized as available from the APCD website, slocleanair.org. This information should be used by all on-site workers to plan construction activities for days when the air quality is forecast to be good.			
AQ-1g	Prior to issuance of applicable grading permit, the Applicant shall submit a geologic evaluation under the CARB ATCM for Construction, Grading, Quarrying, and Surface Mining Operations, to determine if Naturally	Review of geological evaluation	Prior to grading permits	SLO County Planning and Building

Mitigation Measure	Plan Requirements and Timing	Compliance Verification		
		Method	Timing	Responsible Party
	Occurring Asbestos (NOA) is present within the area that will be disturbed. NOA has been identified as a toxic air contaminant by the CARB. If NOA is not present, an exemption request must be filed with the SLOCAPCD. If NOA is found at the site, the Applicant must 1) comply with all requirements outlined in the Asbestos ATCM. This may include development of an Asbestos Dust Mitigation Plan and an Asbestos Health and Safety Program for approval by the SLOCAPCD; and 2) conduct a geological evaluation prior to any grading. Technical Appendix 4.4 of the SLOCAPCD CEQA Handbook includes a map of zones throughout the County where NOA has been found. More information on NOA is available at http://www.slocleanair.org/business/asbestos.php.	Review of Plan and Program Site Inspection		SLOCAPCD
AQ-1h	Prior to issuance of demolition permits, if required, the Applicant shall comply with asbestos containing material (ACM) requirements. Demolition activities can have potential negative air quality impacts, including issues surrounding proper handling, demolition, and disposal of ACM. ACM could be encountered during demolition or remodeling of existing buildings. Asbestos can also be found in utility pipes and pipelines (transite pipes or insulation on pipes). If utility pipelines are scheduled for removal or relocation or a building(s) is proposed to be removed or renovated, various regulatory requirements may apply, including the requirements stipulated in the National Emission Standard for Hazardous Air Pollutants (40CFR61, Subpart M - asbestos NESHAP). These requirements include but are not limited to: (1) notification to the SLOCAPCD; (2) an asbestos survey conducted by a Certified Asbestos Inspector; and (3) applicable removal and disposal requirements of identified ACM. More information on asbestos is available at http://www.slocleanair.org/business/asbestos.php.	Review of asbestos survey Site Inspection	Prior to demolition permits	SLO County Planning and Building SLOCAPCD
AQ-1i	Should hydrocarbon contaminated soil be encountered during construction activities, the SLOCAPCD must be notified as soon as possible and no later than 48 hours after affected material is discovered to determine if an SLOCAPCD Permit will be required. In addition, the following measures shall be implemented immediately after contaminated soil is discovered: 1) Covers on storage piles shall be maintained in place at all times in areas not actively involved in soil addition or removal; 2) Contaminated soil shall be covered with at least six inches of packed uncontaminated soil or other TPH – non-permeable barrier such as plastic tarp. No headspace shall be allowed where vapors could accumulate; 3) Covered piles shall be designed in such a way to eliminate erosion due to wind or water. No openings in the covers are permitted; 4) During soil	Site Inspection	During construction	SLO County Planning and Building SLOCAPCD

Mitigation Measure	Plan Requirements and Timing	Compliance Verification		
		Method	Timing	Responsible Party
	excavation, odors shall not be evident to such a degree as to cause a public nuisance; and, 5) Clean soil must be segregated from contaminated soil. The notification and permitting determination requirements shall be directed to the SLOCAPCD Enforcement Division.			
AQ-2a	Prior to issuance of Notice to Proceed, the Applicant shall provide a mitigation, monitoring and reporting plan updated annually. The plan shall investigate methods for reducing the onsite and offsite emissions, both from fugitive components and from locomotives or from other SMR activities (such as the diesel pumps, trucks, and compressors to reduce DPM). In addition, locomotive emissions shall be mitigated to the extent feasible through contracting arrangements that require the use of Tier 4 locomotives or equivalent emission levels. The plan shall indicate that, on an annual basis, if emissions of ROG+NOx and DPM with the above mitigations still exceed the thresholds, as measured and confirmed by the SLOCAPCD, the Applicant shall secure SLOCAPCD-approved onsite and/or offsite emission reductions in ROG + NOx emissions or contribute to new or existing programs to ensure that project-related ROG + NOx emissions within SLO County do not exceed the SLOCAPCD thresholds. Coordination with the SLOCAPCD should begin at least six (6) months prior to issuance of the Notice to Proceed for the Project to allow time for refining calculations and for the SLOCAPCD to review and approve any required ROG+NOx emission reductions.	Review of operational plan documents Signing of agreement with the Applicant that covers emission reduction credits	Prior to notice to proceed	SLOCAPCD
AQ-2b	Prior to issuance of Notice to Proceed, the Applicant shall implement a program, including training and procedures, to limit all locomotive onsite idling to no more than 15 consecutive minutes except when idling is required for safety purposes. Locomotive idling records shall be maintained and provided to the SLOCAPCD on an annual basis, along with training materials and training records.	Review of operational plan documents Site Inspections	Prior to notice to proceed	SLOCAPCD
AQ-3	Prior to issuance of the Notice to Proceed, the Applicant shall provide a mitigation, monitoring and reporting plan. The plan shall investigate methods for reducing the locomotive emissions through contracting arrangements that require the use of Tier 4 locomotives or equivalent emission levels. The plan shall indicate that, on an annual basis, if the mainline rail emissions of ROG+NOx with the above mitigations still exceed the applicable Air District thresholds, the Applicant shall secure emission reductions in ROG + NOx emissions or contribute to new or existing programs within each applicable Air District, similar to the emission reduction program utilized by the SLOCAPCD, to ensure that the main line rail ROG + NOx emissions do not exceed the Air District thresholds for the life of the project. The Applicant shall provide	Review of operational plan documents Signing of agreement with the Applicant that covers emission reduction credits. Letter from other Air	Prior to notice to proceed	County Planning and Building

Mitigation Measure	Plan Requirements and Timing	Compliance Verification		
		Method	Timing	Responsible Party
	documentation from each Air District to the San Luis Obispo County Planning and Building Department that emissions reductions have been secured for the life of the project prior to issuance of the Notice to Proceed.	Districts covering emission reduction credits		
AQ-4a	Implement measures AQ-2a and AQ-2b.	Review of operational plan documents Site Inspections	Prior to notice to proceed	SLOCAPCD
AQ-4b	All trucks under contract to the SMR for moving coke and sulfur shall meet EPA 2010 model year NOx and PM emission requirements and a preference for the use of rail over trucks for the transportation of coke shall be implemented to the extent feasible in order to reduce offsite emissions. Annual truck trips associated with refinery operations and their associated model year and emissions shall be submitted to the SLOCAPCD annually.	Review of annual truck emission data	Prior to notice to proceed Annually during operations	SLOCAPCD County Planning and Building
AQ-4c	If mitigation measure AQ-2a (the use of Tier 4 locomotives only) is not implemented, then crude oil train unloading and switching activities at the SMR shall be limited to the period of 7 a.m. to 7 p.m. to reduce the emissions during periods of calm meteorological conditions. Reports shall be submitted to the County and APCD indicating the time of arrival, the start and end time of train switching break-apart and unloading and departure time. These time limits do not apply to pull-in of the unit trains from the mainline. When a unit train is pulled in between 7 p.m. and 7 a.m., the locomotives shall shut down until the allowed unloading time starting at 7 a.m. No switching or breaking apart of trains or any other locomotive activity is allowed between 7 p.m. and 7 a.m. except for the minimum activity needed to move the unit train onto the SMR property.	Review of operational plan documents Review of train unloading logs	Prior to Operation Ongoing during operations	County Planning and Building
AQ-6	Prior to issuance of the Notice to Proceed, the Applicant shall provide a GHG mitigation, monitoring and reporting plan. The plan shall indicate that, on an annual basis, if GHG emissions exceed the thresholds, the Applicant shall provide GHG emission reduction credits for all of the project GHG emissions. Coordination with the San Luis Obispo Planning and Building Department should begin at least six (6) months prior to issuance of operational permits for the Project to allow time for refining calculations and for the San Luis Obispo Planning and Building to review and approve the emission reduction credits.	Review of operational plan documents Site Inspections	Prior to notice to proceed	County Planning and Building
AQ-7	Prior to issuance of Notice to Proceed, the Applicant shall ensure that any new odor sources be added to the existing Refinery Odor Control Plan and submitted to the	Review of Odor Control Plan	Prior to construction	SLOCAPCD

Mitigation Measure	Plan Requirements and Timing	Compliance Verification		
		Method	Timing	Responsible Party
	SLOCAPCD for review and approval before the start of construction. Mitigation shall include carbon canisters on all vacuum trucks, arrival and pre-departure inspection of all rail cars for fugitive leaks, monitoring of rail car top vents during unloading, and methods to reduce and eliminate odors associated with maintenance activities. Monitoring of odors from the rail facility and the other portions of the SMR potentially affected by a change in crude oil slate, shall be included in the Plan and shall be conducted by an independent third party monitor, retained by the County of San Luis Obispo Department of Planning, for the first three months of operation during each unit train visit. The APCD shall be notified of monitoring and unit train activity. Monitoring activities can be reduced, in coordination and agreement with the APCD, after the facility startup if odors are not determined to affect areas offsite. In addition to monitoring, the amended Odor Control Plan shall also detail control measures and/or operating procedures that will be implemented to reduce odor impacts if odors are a concern. The Plan shall also include an implementation schedule for incorporating additional measures if needed. The Plan measures shall include leak detection (if not already implemented), lower leak detection and repair threshold limits (to 100 ppm), increased component monitoring frequency (monthly), component replacement with lower leak levels and improved vapor control systems and these measures shall be discussed in the Odor Control Plan.	Site Inspection		
AQ-8	Prior to issuance of the Notice to Proceed, the Applicant shall provide a GHG mitigation, monitoring and reporting plan. The plan shall investigate methods to bring the Rail Spur Project GHG emissions at the refinery to zero for the entire project each year. The plan shall indicate that, on an annual basis, if after all onsite mitigations are implemented, the GHG emissions from the Rail Spur Project still exceed zero, then SLOCAPCD-approved off-site mitigation will be required. Methods could include the contracting arrangement that increases the use of more efficient locomotives, or through other, onsite measures. Coordination with the SLOCAPCD should begin at least six (6) months prior to issuance of operational permits for the Project to allow time for refining calculations and for the SLOCAPCD to review and approve the mitigation approach.	Review of operational plan documents Signing of agreement with the Applicant that covers emission reduction credits.	Prior to notice to proceed	County Planning and Building

4.3.7 References

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4.4 Biological Resources

The following section describes the biological resources found within the Biological Study Area (BSA), which includes the Rail Spur Project area, and a minimum 100 foot buffer area around the applicant's proposed disturbance area. This section also evaluates the potential of these biological resources to be impacted by the modification to the existing rail spur, unloading facility, on-site transfer conveyance (pipelines), restroom facilities, and road improvements to the Emergency Vehicle Access (EVA) route between the eastern end of the rail spur and Highway 1. The analysis evaluates potential biological impacts resulting from construction and projected use, and recommends mitigation measures where appropriate. The section also provides a discussion of cumulative biological impacts, and potential impacts that may arise from the proposed use of the existing UPRR mainline routes.

The information provided below is a compilation of botanical and wildlife data gathered by the applicant's consultant Arcadis U.S., Inc. (Arcadis), and field verification of this data conducted by the EIR consultant team SWCA Environmental, Inc. (SWCA) and Leidos, Inc. (Leidos). The information within this section also includes a review of information from federal, state, and local resource agencies.

Previous project-related studies reviewed during the EIR analysis include:

- *Phillips 66 Botanical Assessment, Santa Maria Refinery Rail Project, San Luis Obispo County, California* (Arcadis, June 13, 2013). (A copy of this document is included as Appendix C.1.)
- *Phillips 66 Wildlife and Habitat Assessment, Santa Maria Refinery Rail Project, San Luis Obispo County, California* (Arcadis, June 17, 2013). (A copy of this document is included as Appendix C.2.)
- *Phillips 66 Nesting Burrowing Owl Survey Report, Santa Maria Refinery Rail Project, San Luis Obispo County, California* (Arcadis, August 25, 2013). (A copy of this document is included as Appendix C.3.)
- *Phillips 66 Sensitive Resources Report – Vegetation, Santa Maria Refinery Rail Project, San Luis Obispo County, California* (Arcadis, February 2015; revised March 2015). (A copy of this document is included as Appendix C.6)
- *Phillips 66 Sensitive Resources Report – Botanical Addendum, Santa Maria Refinery Rail Project, San Luis Obispo County, California* (Arcadis, July 2015). (A copy of this document is included as Appendix C.6)
- *Phillips 66 Project, Verification of Arcadis 2015 Sensitive Resources Report – Vegetation.* (Leidos, April 17, 2015 and November 6, 2015). (Copies of these documents are included as Appendix C.7)
- *2015 Nipomo Lupine (Lupinus nipomensis) Survey Results Associated with the Proposed Rail Spur Project* (Arcadis, April 2015). (A copy of this document is included as Appendix C.8)

SWCA biologists conducted a peer review of the Applicant-submitted reports listed above as well as conducted onsite field work to verify the information in the reports. Additional field verification was conducted by Leidos in March 2015. Results of the Leidos field verification are provided in Appendix C.7.

4.4.1 Environmental Setting

The Nipomo Mesa and the Central Coast region in general occur in an important biological transition zone between the moister communities of central and northern California and the more arid communities of southern California. The Project Site is defined as the entire parcel owned by Phillips 66 (P66). The topography of the Project Site and surrounding area consists of relatively flat to gradually undulating terrain. Oceano sands underlay the Project Site, which are well drained and predominate in old stabilized sand dunes in several locations along the Central Coast. The average elevation is 60 feet.

Yearly precipitation is estimated at 16.96 inches (Western Regional Climate Center 2013), as measured from nearby Pismo Beach, and primarily falls between October and April. The local weather pattern of mild, wet winters and warm, dry summers is characteristic of Mediterranean climate regions, and the effect of the dry summers on plant life is ameliorated somewhat by the presence of summer fog. Temperatures at the Project Site are generally mild, with a mean annual temperature of 58.0 degrees Fahrenheit (°F), with an average maximum temperature of 68.2 °F and an average minimum temperature of 47.7 °F (Western Regional Climate Center 2013).

The Oceano Dunes State Vehicular Recreation Area (SVRA) is located along the beach immediately west of the Project Site. The 3,600-acre (1,456 ha) park has 5.5 miles (8.8 km) of beach access with 1,500 acres (607 ha) of sand dunes open for vehicle and recreational vehicle use. The park is the only California State Park facility that allows vehicles to be driven on the beach. The Oso Flaco Lake Natural Area is also part of the Oceano Dunes SVRA. The Lake area is off-limits to vehicles and is primarily used by the public for viewing plants, wildlife, and scenic landscapes. The Oso Flaco Lake Natural Area offers a 1.5-mile (2.4 km) boardwalk path, including a span that crosses over the lake itself, which connects the parking lot at the west end of Oso Flaco Lake Road to the beach.

The County of Santa Barbara Parks Department manages the Rancho Guadalupe Dunes Preserve located approximately 5 miles south of the Project Site. The Rancho Guadalupe Dunes Preserve supports pristine sand dunes and offers fishing, hiking, wildlife viewing, picnicking, and other activities for the public. The preserve is used as a breeding location by two federal and state listed wildlife species; the snowy plover (*Charadrius alexandrines*) and California least tern (*Sterna antillarum*). Certain human activities within the park are seasonally restricted during the breeding season (March 1 through October 1) of these two listed wildlife species.

Black Lake Canyon is located approximately 1 mile north of the Project Site. Black Lake Canyon represents a significant natural resource, containing habitat for a number of rare plant and wildlife species including federally listed threatened California red-legged frog (*Rana draytonii*). The Project Site does not support suitable habitat for this species.

4.4.1.1 Upland Vegetation Types

The distribution of vegetation types is determined by topography, soils and geology, hydrology, slope exposure, climate, and land use history. Vegetative types have been classified utilizing the classification system described within *A Manual of California Vegetation, Second Edition* (Sawyer et al 2009). The emphasis of the vegetation classification is at the alliance level, which is the best for considering vegetation at a regional and statewide level because it is based on a tangible number of floristic categories, defined by well-known plant species, some of which are widespread throughout the state. Below the alliance level is the association level, which recognizes combinations of plant species that typically have more local specificity. Ranking of alliances according to their degree of imperilment (as measures by rarity, trends, threats) follow NatureServes's Heritage Methodology, in which all alliances are listed with a G (global) and S (state) rank (Sawyer et al 2009).

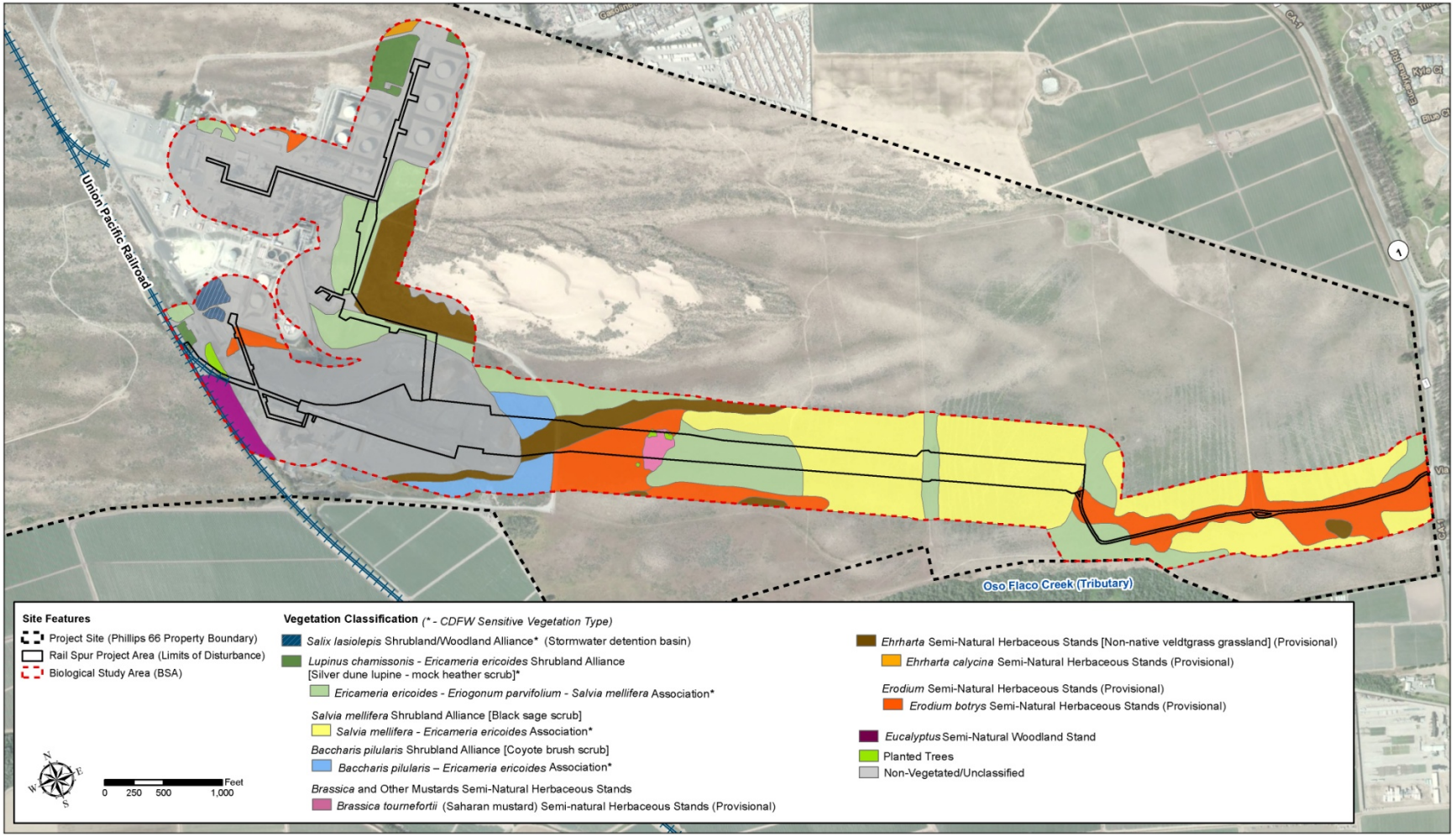
It is important to note that the most current vegetation classifications at the alliance and association levels (Sawyer et al 2009) may also describe similar vegetation types (e.g., Central Dune Scrub) that have been previously defined using legacy classification systems such as the *Preliminary Description of Terrestrial Natural Communities of California* (Holland 1986). The Holland (1986) classification system is used as the basis for the California Department of Fish and Wildlife (CDFW) List of California Terrestrial Natural Communities Recognized by the Natural Diversity Data Base (CDFW 2013). CDFW recognizes that the Holland legacy classification system does not match the current standards of today. However, in most cases, no recent surveys have been made of the old CDFW Natural Community elements. Therefore, CDFW will not remove these elements from the CNDDB until they have been assessed and reclassified in terms of the currently accepted state and national standards (CDFW 2014). Where applicable, references to the Holland classification system have been mentioned below. Plant species that were identifiable were classified based on *The Jepson Manual: Higher Plants of California* (Baldwin et al 2012) and *Vascular Plants of San Luis Obispo County* (Hoover 1970).

The following alliances and their associations are based on habitat mapping efforts conducted by Arcadis in January and February 2015, and field verified by Lauren Brown, Senior Botanist, of Leidos Inc. on March 9, 2015 (refer to Appendix C.6 and C.7, respectively). The purpose of the vegetative mapping efforts in 2015 was to address any inconsistencies in nomenclature that were identified during the public review process of the RDEIR, which was based on mapping efforts from Arcadis in 2013. The following vegetative types below are described using the classification system from *A Manual of California Vegetation, Second Edition* (Sawyer et al 2009). Classifications from Holland (1986) have been referenced where appropriate.

***Lupinus chamissonis – Ericameria ericoides* Shrubland Alliance [Silver dune lupine – mock heather scrub]**

The *Lupinus chamissonis – Ericameria ericoides* Shrubland Alliance and its associations discussed below (i.e., *Ericameria ericoides – Eriogonum parvifolium – Salvia mellifera* Association) are present in two areas within the central portion of the Rail Spur Project area, within the portion of the Rail Spur Project area that comprises the EVA route, and within the area where the pipelines would be constructed from the Rail Spur unloading facility to the existing storage tanks as shown in Figure 4.4-1.

Figure 4.4-1 Habitat Map



Source: Adapted from Arcadis 2013 and 2015.

This alliance has a global rank of G3 and a state rank of S3 (10,000-50,000 acres [4,050-20,235 ha] global and statewide). Global G3 rank indicates that the alliance is "moderate risk of extinction or elimination due to a restricted range, relatively few populations or occurrences, recent and widespread declines, or other factors" globally.

State Rank S3 indicates that it is "vulnerable in the jurisdiction due to a restricted range, relatively few populations or occurrences, recent and widespread declines, or other factors making it vulnerable to extirpation."

The *Lupinus chamissonis – Ericameria ericoides* Shrubland Alliance is similar to Central Dune Scrub definition under the Holland legacy classification, and would therefore be considered sensitive by the CDFW.

Within the Lupinus chamissonis – Ericameria ericoides Shrubland Alliance there is one association identified within the BSA: Ericameria ericoides – Eriogonum parvifolium – Salvia mellifera Association - This association covers approximately 47.84 acres within the BSA and 8.65 acres within the Rail Spur Project area. This vegetative type is generally located within the middle portion of the proposed Rail Spur Project area, and along the length of the pipeline extending from the unloading facility to the existing storage tanks (see Figure 4.4-1).

The areas mapped as *Lupinus chamissonis – Ericameria ericoides* Shrubland Alliance have a low cover of shrub species and *Lupinus chamissonis* was notably absent, except for occasional seedlings (Leidos 2015). However, the areas mapped as this alliance did support the minimal cover of 10 percent shrubs primarily *Ericameria ericiodes*, and therefore meet the membership rule in *A Manual for California Vegetation, Second Edition* (Sawyer et al 2009), for this shrubland alliance.

It is recognized that vegetative types change with time and that the current vegetation types may change in in terms of composition and levels of dominance. Therefore, it should be recognized that associations such as Dune-Heather - Black Sage - Coffeeberry Association could occur within the *Lupinus chamissonis – Ericameria ericoides* Shrubland Alliance (refer to Figure 4.4-2) and is considered to be locally rare within the greater Guadalupe-Nipomo Dunes (Chipping 2014). According to the CNPS, this association is considered to be under-explored, unique and poorly recorded (Chipping 2014). Although, this association was not identified individually within the Rail Spur Project area by Arcadis, SWCA, or Leidos; the presence of all of the necessary species to form this association warrants consideration.

***Salvia mellifera* Shrubland Alliance [Black sage scrub]**

The *Salvia mellifera* Shrubland Alliance is present within the central portion of the BSA. This alliance has a global rank of G4 and a state rank of S4. Both rankings suggest that the alliance is "apparently secure." It also suggests that the alliance is "uncommon, but not rare; some cause for long-term concern due to declines or other factors."

Within the *Salvia mellifera* Shrubland Alliance there was one association identified within the BSA: *Salvia mellifera – Ericameria ericoides* Association [Black sage scrub – mock heather scrub] (Provisional) - This association covers approximately 70.20 acres within the BSA and

11.34 acres within the Rail Spur Project area. Based on the recommendations of Ms. Lauren Brown of Leidos, this provisional association is proposed as it more accurately defines the vegetation classification given the presence of *Ericameria ericoides* that was observed. *Salvia mellifera* dominated areas may be considered transitional to more inland scrub or chaparral types, and similar to the Central Dune Scrub definition under the Holland legacy classification and would therefore be considered sensitive by the CDFW.

***Baccharis pilularis* Shrubland Alliance [Coyote brush scrub]**
The *Baccharis pilularis* Shrubland Alliance dominates the central portion of the BSA. This alliance has a global rank of G5 and a state rank of S5. Both rankings suggest that the alliance is "secure" and "common, widespread and abundant."

Within the *Baccharis pilularis* Shrubland Alliance there is one association identified within the BSA: *Baccharis pilularis – Ericameria ericoides* Association (Provisional) – This provisional association covers approximately 7.51 acres within the BSA and 0.89 acres within the Rail Spur Project area. This association is considered provisional, as it is not included within *A Manual of California Vegetation, Second Edition* (Sawyer et al 2009) or the CDFW Natural Communities List. Based on the visual observation, *Baccharis pilularis* and *Ericameria ericoides* were co-dominant within the shrub layer and shrubs contributed more than 10 percent of the vegetative cover, within an understory dominated by veldt grass. Because the alliance did support the minimal cover of 10 percent shrubs, which included *Ericameria ericoides,* it was determined to be similar to the membership rule for *Lupinus chamissonis – Ericameria ericiodes* Shrubland Alliance and is considered a sensitive community.

***Brassica* and Other Mustards Semi-Natural Herbaceous Stands (Upland Mustards) (Provisional)**
The *Brassica (nigra)* and Other Mustards Semi-Natural Herbaceous Stands (Provisional) are present within the small portion of the BSA. This alliance has no global or state rarity ranking. Due to the dominance of *Brassica tournefotii* found within the BSA, the habitat type has been mapped within the BSA as the provisional classification of *Brassica tournefortii* (Saharan mustard) Semi-natural Herbaceous Stands. There is approximately 1.50 acres of this habitat within the BSA and 1.11 within the Rail Spur Project area. This community is not considered a sensitive community.

***Enharta* Semi-Natural Herbaceous Stands [Non-native veltgrass grassland] (Provisional)**
The *Enharta* Semi-Natural Herbaceous Stands (Provisional) are present within the westernmost portion of the BSA. This alliance has no global or state rarity ranking, as it is not an officially recognized habitat type under Sawyer et al (2009) or Holland (1986).

Due to the dominance of *Enharta calycina* found within the BSA, the habitat type has been mapped within the BSA using the suggested provisional classification of *Enharta calycina* Semi-Natural Herbaceous Stands. There are approximately 21.62 acres of this habitat within the BSA and 2.92 acres within the Rail Spur Project area.

In general, the Project Site east of the UPRR mainline has been historically grazed for over 30 years and invasive veldt grass (*Ehrharta calycina*) is abundant in many areas, especially in disturbed areas near slope bottoms. The presence of non-native grassland also usually suggests

prior clearing of native perennial vegetation, which then is largely replaced by invasive non-native grasses and forbs. Although veldt grass is common in all vegetation types at the Project Site, only areas with 50% or greater cover by veldt grass were mapped as this grassland type.

***Erodium* Semi-Natural Herbaceous Stands [Non-native stork's-bill disturbed scrublands and wasteplaces] (Provisional)**

The *Erodium* Semi-Natural Herbaceous Stands is present within the westernmost portion of the BSA. This alliance has no global or state rarity ranking, as it is not an officially recognized habitat type under Sawyer et al (2009) or Holland (1986). Due to the dominance of *Erodium botrys* found within the BSA, the habitat type has been mapped within the BSA using the suggested provisional classification of *Erodium botrys* Semi-Natural Herbaceous Stands. There is approximately 33.81 acres of this habitat within the BSA and 4.39 within the Rail Spur Project area. This is not considered a sensitive community.

***Eucalyptus* Semi-Natural Woodland Stands**

Semi-Natural Woodland Stands describe areas that are more than 80 percent dominated by a particular tree layer and generally refer to planted groves, windbreaks and naturalized trees. With respects to the BSA, *Eucalyptus* Semi-Natural Woodland Stands are present as a eucalyptus windrow located parallel to the existing UPRR mainline at the western boundary of the Rail Spur Project area. There is approximately 3.24 acres of this habitat within the BSA and none within the Rail Spur Project area.

This eucalyptus windrow consists of blue gum eucalyptus (*Eucalyptus globulus*) and provides suitable habitat for nesting and foraging raptors and migratory bird species. It is unlikely that the windrow also has the potential to provide habitat for overwintering monarch butterfly due to the exposure to frequent strong onshore winds. Furthermore, no overwintering monarch butterfly activity has been documented at this location to date.

Coast Live Oak and Monterey Pine Individuals

Three individual specimens of coast live oak (*Quercus agrifolia*) are present within the immediate vicinity of the Rail Spur Project area. These specimens have a diameter at breast height greater than five inches. Due to their distribution within the BSA, these individuals do not comprise oak woodland habitat, rather they are individuals that exist within the dune scrub and serve as sun and wind protection for cattle that have been grazing the property for at least 30 years. It is unclear if these oaks were planted or remnant oak habitat prior to the historical land use practices.

In addition to the coast live oak individuals, there are also isolated grouping of Monterey pine (*Pinus radiata*) within the BSA. It is reasonable to assume that these groupings of Monterey pine were planted to provide shading to livestock.

Together, the micro-habitat created by the individual coast live oak specimens and the Monterey pine stand provide foraging and nesting opportunities for a variety of wildlife species that occur in the area. The trees primarily serve as a perch for foraging raptors and other bird species. Evidence of great horned owl use was observed by SWCA biologists during the reconnaissance survey. No nesting activity was observed. The isolated stands of trees contribute woody debris

to the duff in the understory, which provides foraging areas for small mammals and microclimates suitable for reptiles and fungi. The trees also provide a food source for animal species, including acorn woodpecker (*Melanerpes formicivorus*), scrub jay (*Aphelocoma corulescens*), western gray squirrel (*Scirus griseus*), and black-tailed deer (*Odocoieus emionus*).

4.4.1.2 Wetland Communities

Areas with standing or flowing water or with seasonally or permanently saturated soils commonly support wetland communities. Freshwater wetlands are extremely complex and variable, and their species composition and overall structure are dependent on a number of factors.

***Salix lasiolepis* Shrubland/Woodland Alliance**

Within the BSA, a small patch of *Salix lasiolepis* Shrubland/Woodland Alliance, or Arroyo Willow Thicket, occurs between the existing coke plant facility and the UPRR mainline. The area is saturated as a result of stormwater drainage runoff from the existing facilities. Presence of *Salix lasiolepis* within the Coastal Zone would constitute a jurisdictional feature under the California Coastal Commission one-parameter definition of wetlands, and is considered a sensitive community. There are approximately 1.51 acres of this habitat within the BSA and none within the Rail Spur Project area. Verification of potentially jurisdictional features was not necessary as part of this analysis, as the habitat would not be impacted by the Rail Spur Project.

Although located outside of the BSA, it is important to note that a tributary to Oso Flaco Creek is located to the south of the Project Site and contains *Salix lasiolepis Shrubland/Woodland Alliance*, or Arroyo Willow Thicket. Oso Flaco Creek would also be considered a jurisdictional feature (per the definitions of California Coastal Commission, CDFW, and/or United States Fish and Wildlife Service [USFWS]).

4.4.1.3 Sensitive Biological Resources

A variety of sensitive habitats, plants, and wildlife species have recently or historically been known to occur within the vicinity of the Rail Spur Project area. The following subsections provide an analysis of sensitive biotic resources that have been documented within an approximate 10-mile radius of the Rail Spur Project area, as determined by review of previous studies, review of County mapping data, query of the CNDDB (2013), CNPS Online Inventory (2013), applicant prepared reports, discussion with local species experts and current regulatory information.

Sensitive Communities

Wetlands and other sensitive habitats recognized by the CDFW, the County, or other resource agencies as meriting protection or further study due to their rarity or value, are considered sensitive communities. According to the CNDDB a total of six sensitive Natural Communities occur within a 10-mile radius of the BSA. These Natural Communities include: Central Dune Scrub, Central Foredunes, Central Maritime Chaparral, Coastal and Valley Freshwater Marsh, Southern Vernal Pool, and Valley Needlegrass Grassland.

In addition to the CNDDB query, a review of the County vegetation mapping data (2009) was conducted. Based on a review of this mapping data, the entire BSA is currently mapped as Central (Lucian) Coastal Scrub. Central (Lucian) Coastal Scrub is considered state sensitive Natural Community by CDFW under the Holland legacy classification system.

As a result of the vegetation mapping efforts of Arcadis and Leidos, it was determined that the vegetation types within the BSA more closely resemble Central Dune Scrub rather than Central (Lucian) Dune Scrub, as currently mapped by the County. Central Dune Scrub is also considered a sensitive Natural Community under the Holland legacy classification system. This vegetation type considered to have a global ranking of G2 (imperiled) and state ranking of S2.2 (imperiled).

As described in Section 4.4.1.1, vegetative types were mapped according to the National Vegetation Classification system described in *A Manual of California Vegetation, Second Edition* (Sawyer et al 2009). Some sensitive vegetation types within this classification system can also be described sensitive Natural Communities under the Holland legacy system. For the purposes of this analysis, both are collectively referred to as sensitive communities herein.

Following the National Vegetation Classification system described in *A Manual of California Vegetation, Second Edition*, the results of field surveys determine the presence of the following vegetation types (including provisional vegetation types). These sensitive communities are shown in Figure 4.4-1:

- *Lupinus chamissonis – Ericameria ericoides* Shrubland Alliance
- *Ericameria ericoides – Eriogonum parvifolum – Salvia mellifera* Association
- *Baccharis pilularis – Ericameria ericcoides* Association (Provisional)
- *Salvia mellifera* Shrubland Alliance [Black sage scrub]
- *Salvia mellifera – Ericameria ericoides* Association

Sensitive Plant Species

For the purposes of this section, sensitive plant species are defined as the following:

- Plants listed or proposed for listing as threatened or endangered under the Federal Endangered Species Act (FESA) (50 Code of Federal Regulations [CFR] 17.12 for listed plants and various notices in the Federal Register for proposed species).
- Review of Native Species that are Candidates for Listing as Endangered or Threatened; Annual Notice of Finding on Resubmitted Petitions; Annual Description of Progress Listing Actions (Federal Register Vol. 77, No. 225, pp. 69994-70060, November 21, 2012).
- Plants that meet the definitions of rare or endangered species under the California Environmental Quality Act (CEQA) (State CEQA Guidelines, §15380).
- Plants considered by the CNPS to be "rare, threatened, or endangered" in California (Lists 1B and 2 in California Native Plant Society, 2006).
- Plants listed by CNPS as plants about which we need more information and plants of limited distribution (Lists 3 and 4 in California Native Plant Society, 2006).

- Plants listed or proposed for listing by the State of California as threatened or endangered under the California Endangered Species Act (CESA) (14 California Code of Regulations [CCR] 670.5).
- Plants listed under the California Native Plant Protection Act (California Fish and Game Code 1900 et seq.).
- Plants considered sensitive by other Federal agencies (i.e., United States Forest Service, Bureau of Land Management), state and local agencies, or jurisdictions.

Based on the CNDDB query, CNPS Online Inventory, and review of other background literature sources, a total of 46 sensitive plant species have been documented in the Oceano USGS quadrangle and surrounding 7 quadrangles (CNDDB 2013) (refer to Appendix C.4). The list of sensitive plant species considered in Appendix C.4 is regional; therefore, a preliminary analysis of the listed species was conducted to identify which species have the potential to occur in or near the BSA. The preliminary analysis evaluated the known range and habitat preferences of the species in comparison to the existing habitat type present/absent, elevation, and soils within the BSA. As a result of this preliminary analysis conducted by SWCA, it was determined that potentially suitable conditions occur within the BSA for the following 20 special-status plant species. Further discussion of each of these species and their potential to occur, or known presence, onsite is included in Appendix C.4:

- aphanisma *(Aphanisma blitoides)*
- Davidson's saltscale *(Atriplex serenana* var. *davidsonii)*
- coastal goosefoot *(Chenopodium littoreum)*
- straight-awned spineflower *(Chorizanthe rectispina)*
- surf thistle *(Cirsium rothophilum)*
- Gaviota tarplant *(Deinandra increscens subsp. villosa)*
- dune larkspur *(Delphinium parryi* subsp. *blochmaniae)*
- Blochman's leafy daisy (*Erigeron blochmaniae)*
- suffrutescent wallflower *(Erysimum suffrutescens)*
- mesa horkelia *(Horkelia cuneata* subsp. *puberula)*
- Kellogg's horkelia *(Horkelia cuneata* subsp. *sericea)*
- Nipomo Mesa lupine (*Lupinus nipomensis)*
- San Luis Obispo moneradella *(Monardella frutescens)*
- crisp monardella *(Monardella* subsp. *crispa)*
- California spineflower (*Mucronea californica)*
- sand almond (*Prunus fasciculata* var. *punctate)*
- black-flowered figwort *(Scropularia atrata)*
- rayless ragwort *(Senecio aphanactis)*
- Blochman's groundsel *(Senecio blochmaniae)*
- San Bernadino aster *(Symphyotrichum defoliatum)*

Focused botanical surveys were conducted within the BSA by Arcadis on October 9 and November 13, 2012, outside of the normal blooming period for many annuals. Additional focused botanical surveys were conducted by Arcadis on April 29 and June 11, 2013, in order to

identify native annuals during peak blooming season. An additional focused survey for Nipomo Mesa lupine was also conducted in March 2015, during the EIR review process.

Based on the efforts of Arcadis, a total of 73 vascular plant species were observed during the 2012 and 2013 surveys, including 49 native plant species and 24 non-native species. Of the native plant species identified, Arcadis biologists identified the presence of four sensitive plant species, including: California spineflower (*Mucronea californica*); sand almond (*Prunus fasciculate* var. *punctata*); Blochman's groundsel (*Senecio blochmaniae*); and, Blochman's leafy daisy (*Erigeron blochmaniae*). In addition to these species, Ms. Lauren Brown of Leidos Inc. identified dune larkspur (*Delphinium parryi* ssp. *blochmaniae*) within the BSA during a field verification of vegetation type mapping conducted in March 2015, during the EIR review process. No other special-status plant species were observed within the BSA.

Sensitive Animal Species

For the purposes of this section, special-status animal species are defined as the following:

- Animals listed or proposed for listing as threatened or endangered under the FESA (50 CFR 17.11 for listed animals and various notices in the Federal Register for proposed species).
- Review of Native Species that are Candidates for Listing as Endangered or Threatened; Annual Notice of Finding on Resubmitted Petitions; Annual Description of Progress Listing Actions (Federal Register Vol. 77, No. 225, pp. 69994-70060, November 21, 2012).
- Animals that meet the definitions of rare or endangered species under the CEQA (State CEQA Guidelines, §15380).
- Animals listed or proposed for listing by the State of California as threatened and endangered under the CESA (14 CCR 670.5).
- Animal species of special concern to the CDFW (Remsen, 1978 birds; Williams, 1986 mammals).
- Animal species that are fully protected in California (California Fish and Game Code, §3511 [birds], §4700 [mammals], and §5050 [reptiles and amphibians]).

Based on a CNDDB query and a review of existing literature, a total of 39 special-status wildlife species have been documented within an approximate 10-mile radius of the BSA (refer to Appendix C.4). The list of special-status animal species considered in Appendix C.4 is regional; therefore, an analysis of the range and habitat preferences of those species was conducted to identify which sensitive animal species have the potential to occur in or near the BSA. As a result of the analysis conducted by SWCA, it was determined that the following ten special-status animal taxa have the potential to occur within the BSA, including nesting migratory birds (Class Aves). Discussion of each of these species is included in Appendix C.4:

- Cooper's hawk (*Accipiter cooperii)*
- Bell's sage sparrow (*Amphispiza belli)*
- western burrowing owl (*Athene cunicularia)*
- ferruginous hawk (*Buteo regalis)*
- northern harrier (*Circus cyaneus)*

- loggerhead shrike (*Lanius ludovicianus)*
- coast horned lizard (*Phrynosoma coronatum)*
- silvery legless lizard (*Anniella pulchra pulchra)*
- monarch butterfly (*Danaus plexippus*)
- migratory bird species - Class Aves

Based on the wildlife surveys conducted by Arcadis, seven sensitive wildlife species were observed on the BSA. These species include: western burrowing owl (*Athene cunicularia*), loggerhead shrike (*Lanius ludovicianus*), northern harrier (*Circus cyaneus*), ferruginous hawk (*Buteo regalis*), Bell's sage sparrow (*Amphispiza belli*), Cooper's hawk (*Accipiter cooperii*) and monarch butterfly (*Danaus plexippus*). Arcadis conducted additional focused surveys for burrowing owl in 2013 to confirm whether the species was a year-round resident or overwintering individual. The results of this effort determined that the species was an overwintering individual. No other special-status wildlife species were observed or are expected within the BSA; however, the following two sensitive reptilian species are assumed to occupy the BSA due to the presence of suitable habitat, nearby documented occurrences: coast horned lizard (*Phrynosoma coronatum*) and silvery legless lizard (*Anniella pulchra pulchra*).

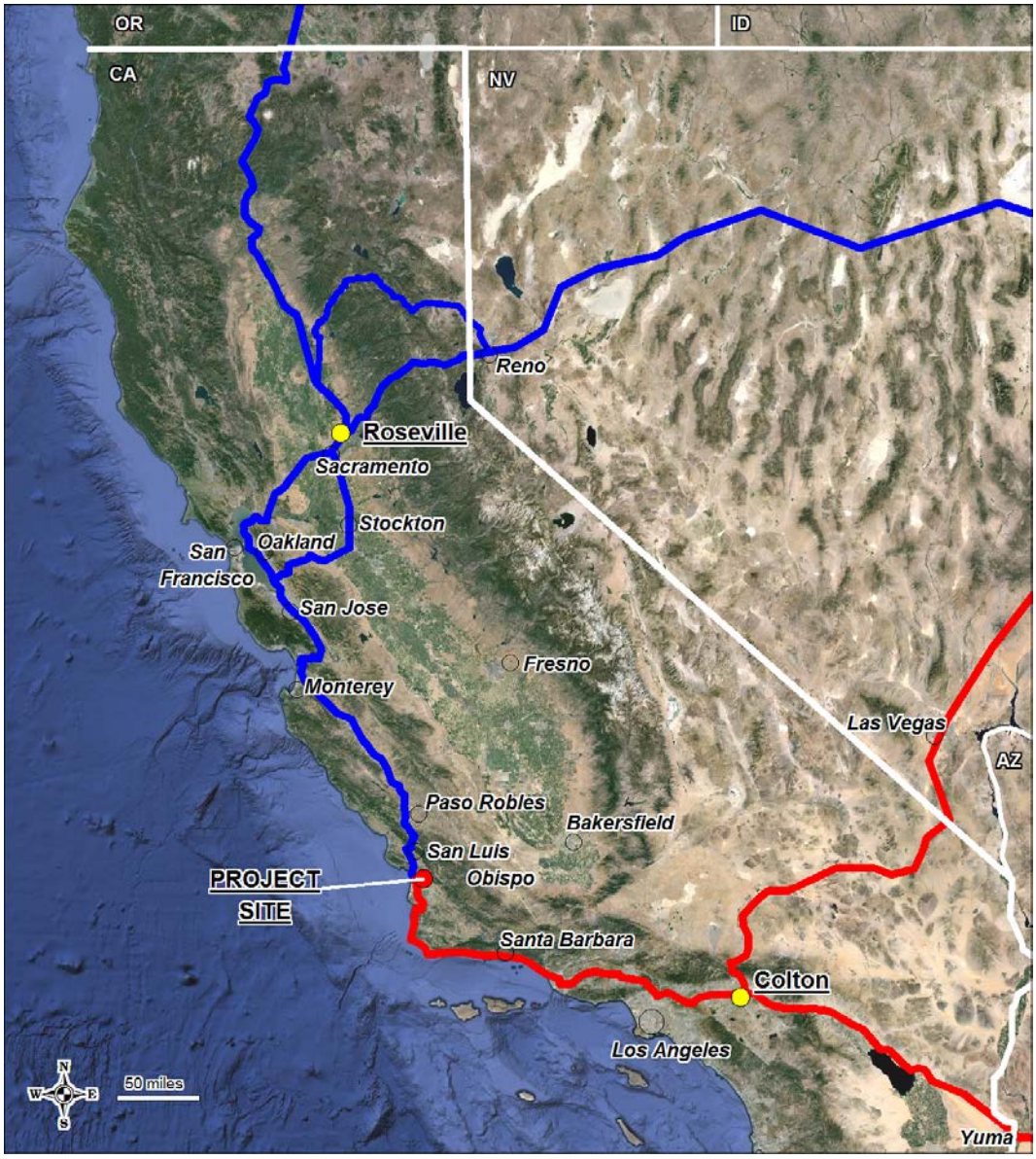
4.4.1.4 Mainline Rail Routes

Trains could enter California at least five different locations (one at the north end of the state from Oregon, two at the northeast from Nevada, one at the southeast from Nevada, and one at the south from Arizona). Figure 4.4-2 shows the main UPRR train routes from the California Boarder to the SMR.

Depending upon the route taken by the train they could arrive at the SMR site from the north or the south. It is unknown what route UPRR would use to deliver the trains to the SMR. Coming from the north the routes merge at the UPRR Roseville Rail Yard. From the south the routes merge at the Colton Rail Yard. Also, crude oil delivered to California by UPRR would generally pass through either of these two rail yards in route to the SMR. Depending upon the source of the crude oil, crude oil trains could use any portion of the UPRR network between Roseville/Colton and the source location for the crude oil. The exact route that would be taken would depend upon a number of factors, that could include the source of the crude oil, weather conditions, train traffic conditions, etc. Since the routes past Roseville and Colton to the California border are somewhat speculative, the EIR has discussed in a more qualitative nature the potential biological resources impacts of train traffic beyond these two rail yards.

Given the overall length of the UPRR mainline routes and the range of speculation related to prediction of the exact location in which the train derailment or crude spill may occur, a focused biological survey or delineation of these resources was not conducted as part of this evaluation. Biological resources along the mainline routes were evaluated based on database queries.

Figure 4.4-2 Mainline Rail Routes to the Santa Maria Refinery



Source: Adapted by MRS from UPRR maps.

Specifically, a query was conducted that includes a CNDDB review of all sensitive biological resources within 300 feet on each side of the rail line routes to develop a general list of potential plant and wildlife species that may be directly impacted by a derailment crude oil spill. In addition, the USGS National Hydrography Dataset (NHD) and the USFWS National Wetlands Inventory (NWI) were queried for waterbodies and wetlands. Local Coastal Plans (LCP) were reviewed to identify Environmentally Sensitive Habitat Areas (ESHA) that may be affected within those coastal counties located along the UPRR mainline routes. The California Essential Habitat Connectivity Project and was also queried for Essential Habitat Connectivity, which are

the best available data describing important areas for maintaining connectivity between large blocks of land for wildlife corridor purposes.

Transportation of crude oil along the UPRR mainline routes transects a very wide range of natural habitats and urban areas between Roseville to the north and Colton to the south. For the purposes of this analysis, sensitive resources are limited to those resources that are recorded within these databases. Sensitive resources include Sensitive Communities, sensitive plants species, sensitive animal species, wetland communities, and areas mapped as ESHA within coastal counties along the UPRR mainline.

Because the analysis of impacts to these resources is limited to available data, the documented occurrences are only intended to serve as a minimum baseline for describing the potential impact that could occur under a scenario of train derailment, fire, and oil spill. In addition to these resources, it is reasonable to assume that the UPRR mainline also transects additional sensitive resources that are not currently mapped along the entire route as a sensitive resource for a various reasons such as private property constraints. It cannot be overlooked that the UPRR mainline also transects a variety of "non-sensitive" habitats that may not be unique or threatened but serve as suitable habitat to a wide range of wildlife species for the purposes of foraging and breeding.

Figure 4.4-3 is a graphic depicting the number of recorded sensitive resources along the UPRR mainline routes by County. A complete list of resources resulting from the database query is included in Appendix C-5. Figure 4.4-4 is a graphic depicting the identified Essential Habitat Connectivity wildlife corridors. A complete list of these identified corridors is included in Table 4.4.1.

Sensitive Plant Species

Based on the database query along the UPRR mainline, there are currently a minimum of 167 sensitive plant species occurrences documented within 300 feet on each side of the rail. Approximately 35% of these species occur within San Luis Obispo and Santa Barbara counties alone. Appendix C-5 provides a listing of the sensitive plant species.

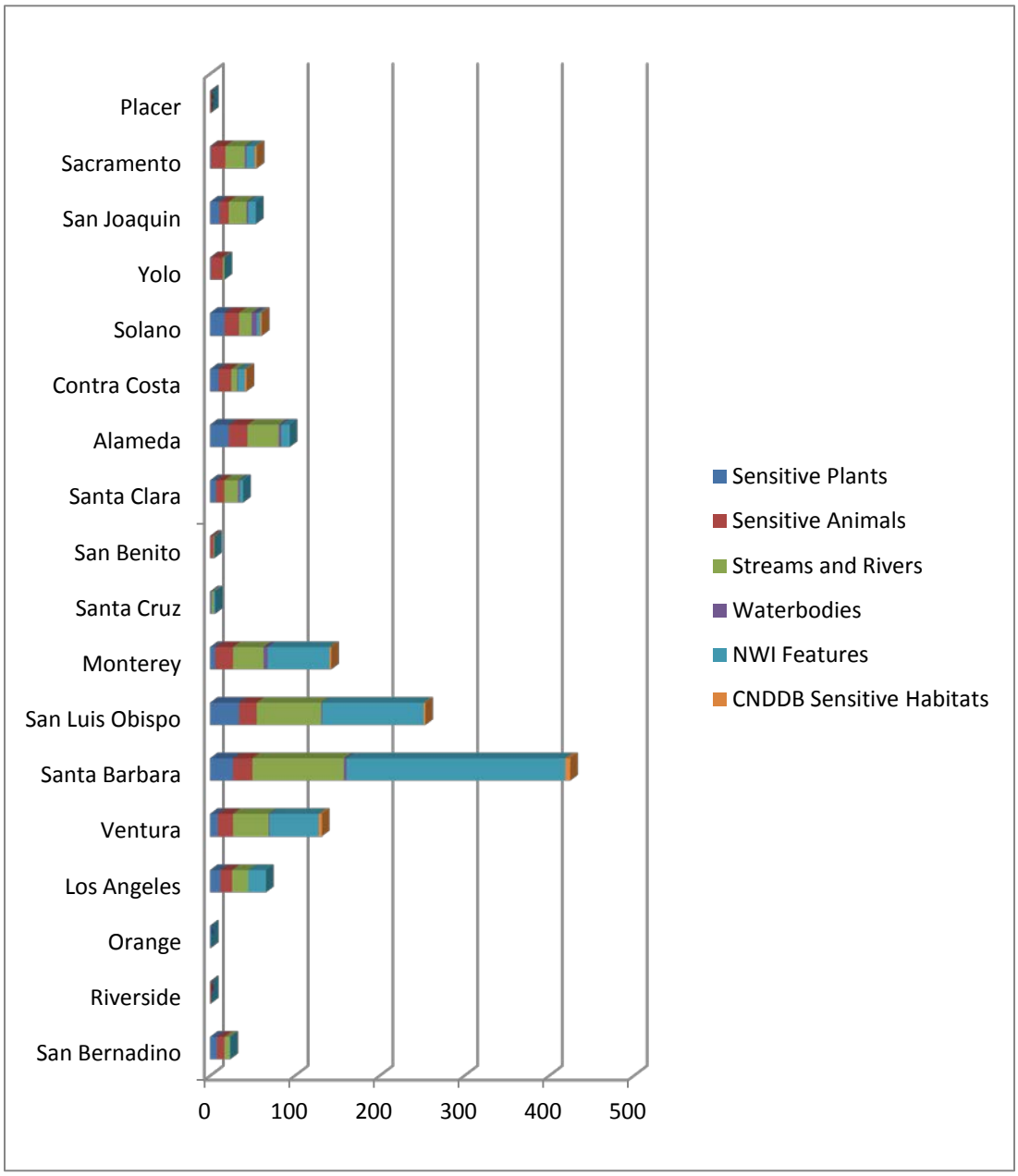
Sensitive Animals Species

Based on the database query among the UPRR mainline, there are currently a minimum of 219 sensitive animal species occurrences documented within 300 feet on each side of the rail. Based on the existing data, the distribution of these species is fairly uniform amongst counties along the UPRR mainline. Nearly half of the sensitive animal species documented along the route occur between Los Angeles to Monterey County. The other majority of the occurrences are from Contra Costa County to Sacramento County. Sensitive species include aquatic, semi-aquatic, and terrestrial animal species. Appendix C-5 provides a listing of the sensitive animal species.

Streams, Rivers, Wetlands and Other Waterbodies

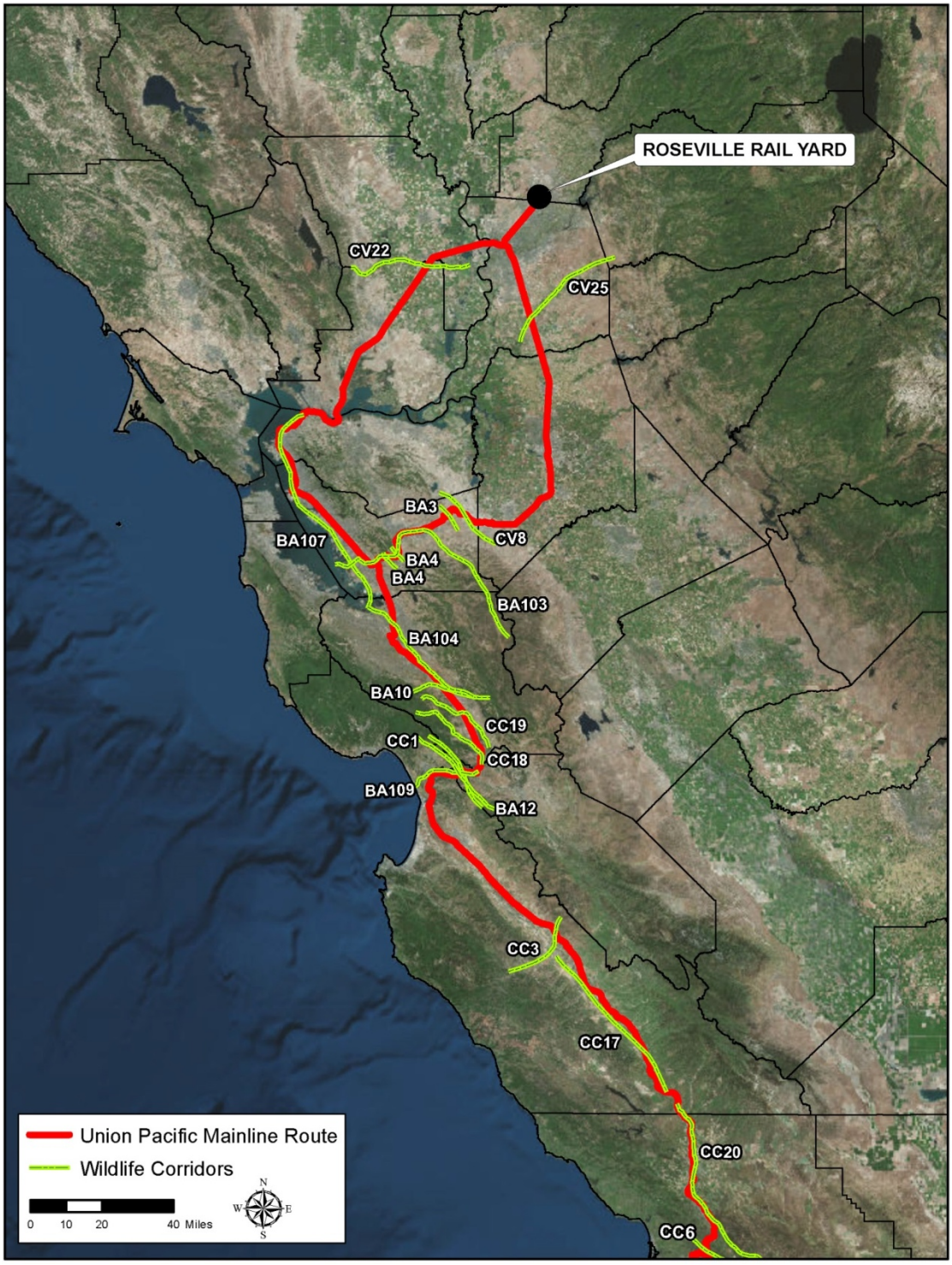
Based on the database query along the UPRR mainline, a minimum of 411 streams and rivers are located within 300 feet of the mainline, and a minimum of 26 waterbodies and 578 wetlands documented by the National Wetland Inventory (NWI). Based on the existing data, Santa Barbara County has the most streams and rivers identified along the mainline, a minimum of 108 in total.

Figure 4.4-3 Documented Occurrences of Sensitive Biological Resources along UPRR Mainline



See Appendix C-5 for a complete list of resources resulting from the database query used to generate this figure.

Figure 4.4-4 Essential Habitat Connectivity Wildlife Corridors along UPRR Mainline



See Table 4.4.1 for list of identified wildlife corridors.

Figure 4.4-4 Essential Habitat Connectivity Wildlife Corridors along UPRR Mainline (con't)

See Table 4.4.1 for list of identified wildlife corridors.

Table 4.4.1 Documented Essential Connectivity Areas along UPRR Mainline

Label	Name	EcoRegion	Type
BA10	Santa Cruz Mtn.- Hamilton Mtn.	Bay Area	Choke-point
BA103	Alameda Creek Watershed	Bay Area	Missing Link, Choke-point
BA104	Coyote Creek	Bay Area	Landscape Linkage, Choke-point
BA107	Bay Wetlands	Bay Area	linkages, stepping stones
BA109	Pajaro River	Bay Area	Landscape Linkage
BA12	Santa Cruz Mtns - Gavilan	Bay Area	Landscape Linkage, Choke-point
BA3	Altamont Hills	Bay Area	Choke-point
BA4	Vargas Plateau - Nile Canyon	Bay Area	Choke-point, Missing Link
BA4	Vargas Plateau - Nile Canyon	Bay Area	Choke-point, Missing Link
CC1	Santa Cruz - Mt. Hamilton	Central Coast	Landscape Linkage, Choke-point
CC17	Salinas River Riparian Corridor	Central Coast	Landscape Linkage
CC18	Uvas Creek	Central Coast	Choke-point
CC19	Llagas Creek	Central Coast	Missing Link
CC20	Lower N. Salinas River	Central Coast	Landscape Linkage
CC3	Santa Luciz - Gabilan, Ventana Wilderness	Central Coast	Choke point
CC6	Cuesta Grade	Central Coast	Landscape Linkage, Missing Link
CC7	Montana de Oro - Bald Mountain	Central Coast	Landscape Linkage, Choke-point
CV22	Putah Creek	Central Valley	Landscape Linkage
CV25	Cosummes River - Mather	Central Valley	Landscape Linkage
CV8	Carrizo Plain - W. San Joaquin Valley	Central Valley	Landscape Linkage, Choke-point
SC104	Somis: Las Posas Hills - South Mountain	South Coast	Missing Link
SC105	Alamos Canyon (Simi - Moorpark)	South Coast	Landscape Linkage, Choke-point
SC108	Santa Susana Pass	South Coast	Choke-point
SC115	Griffith Park - Verdugo Hills	South Coast	Missing Link
SC201	San Gabriel River	South Coast	Missing Link
SC203	Puente-San Jose-San Gabriel	South Coast	Missing Link, Choke-point
SC60	Santa Clara River	South Coast	Landscape Linkage

See Figure 4.4-4 for the location of the connectivity areas.

San Luis Obispo County is second, with a minimum total of 76 streams and crossings. Together, these two counties contain nearly 40% of the documented streams and drainages along the mainline.

Wildlife Movement Corridors

Based on the database query of the California Essential Habitat Connectivity Project (CEHC), a total of 27 Essential Connectivity Areas (ECAs) have been identified along the UPRR mainline. The ECAs help to establish the reported movement corridors for mammal species and assessed corridor quality at a landscape level. The location of these ECAs is intended to only be a broad scale representation of areas that provide essential connectivity. It is expected that additional linkages will be identified as new data becomes available for various species. For the purposes of this analysis, it is reasonable to assume that the various streams and drainages that transect the mainline (discussed above) also may be used by wildlife as movement corridors on a smaller scale.

Table 4.4.1 identifies those ECAs that intersect with the UPRR mainline, grouped into four main ecoregions: Bay Area, Central Coast, Central Valley, and South Coast. Based on the existing data, there are nine ECAs identified within the Bay Area, eight within the Central Coast, three within the Central Valley, and seven within the South Coast ecoregion. The locations of these ECAs are shown in Figure 4.4-4 above.

Types of linkages have been categorized and defined within the California Missing Linkages Project (a contributing study to the CEHC) by Penrod et al (2001) as the following:

- Landscape Linkages: Large regional connections between habitat blocks ("core areas") meant to facilitate animal movements and other essential flows between different sections of the landscape.
- Choke-Point: A narrow, impacted, or otherwise tenuous habitat linkage connecting two more habitat blocks ("core areas").
- Missing Link: A highly impacted area currently providing limited to no connectivity function (due to intervening development, roadways, etc.), but based on location that is critical to restore connectivity function.

In terms of wetlands, the two counties total a minimum of 378 documented wetland features. This consists of nearly 65% of the total wetland features along the mainline route. Additional information on the major water crossing is discussed in Section 4.13, Water Resources.

Sensitive Habitats and ESHA

Based on a database query of the CNDDB, a total of 20 sensitive habitats are documented within 300 feet on each side of the UPRR mainline. Examples of sensitive habitat include: Central Dune Scrub, Coastal and Valley Freshwater Marsh, Coastal Brackish Marsh, Southern Riparian Scrub, Southern Coastal Lagoon, and Southern Willow Scrub. Most of the sensitive species documented within the route occur between Ventura and Monterey counties, which account for 14 of the total 20 documented occurrences. The remaining occurrences are located in Contra Costa, Solano, and Sacramento counties. Overall, the database query results showing only 20

sensitive habitats is considered to be low and likely underestimated since the UPRR mainline transects numerous properties and habitat types that may have not been mapped and/or documented within the CNDDB.

With regards to ESHA within the coastal zone, a review of Local Coastal Plans for various counties identified several coastal ESHA's along the UPRR mainline. Below is a general summary of ESHA within each county as it relates the UPRR mainline (south to north):

- Ventura County - Within Ventura County, ESHA includes: tidepools and beaches, creek corridors, coastal dunes and wetlands. For tidepools and beaches, the mainline runs just east of several beaches, separated by Highway 1. The mainline also crosses several significant creeks, including Rincon Creek and many others. In terms of coastal dunes ESHA, the mainline is approximately 4 miles north of the Mandalay Beach coastal dune complex. Ventura County ESHA also includes viable dunes near McGrath Lake, which the mainline is approximately 5 miles east of. With regards to wetlands, the mainline crosses Santa Clara River 5 miles upstream of the mouth of the river. The mainline is also 5 miles east of McGrath Lake, as previously noted.

- Santa Barbara County – The UPRR mainline is within the coastal zone most of its path through Santa Barbara County. According to the Santa Barbara County Coastal Land Use Plan, environmentally sensitive habitats in the County's coastal zone include rare and endangered species habitats, wetlands, streams, near shore reefs, tide pools, offshore rocks, native plant communities, dunes, kelp beds, harbor seal rookeries and hauling out grounds, and seabird roosting and nesting areas. The mainline crosses the Santa Ynez River Mouth, considered dune and wetland ESHA, and runs approximately 0.8 mile east of the Point Conception ESHA. It also runs adjacent to the rocky intertidal areas between Point Conception and Ellwood and along the eastern border of the El Estero wetland area. According to an available GIS dataset from the County, the mainline also intersects 42 features labeled as ESHA, the majority of which are drainages. Included within these features are also monarch butterfly overwintering habitat and riparian areas.

- San Luis Obispo County – Within San Luis Obispo County, the mainline runs within the coastal zone between Pismo Beach and Guadalupe. According to the San Luis Obispo County LCP, ESHA includes unique plant habitats, rare and endangered animal habitats, wetlands, coastal streams, rocky points, intertidal areas, and kelp beds. Within the Pismo Beach area, the mainline crosses Pismo Creek and runs adjacent to the dunes and habitat at Pismo State Beach for approximately 1.5 miles. Within the area of Oceano, the mainline runs along the eastern border of ESHA terrestrial habitat for approximately 2.5 miles, adjacent to the Oceano Dunes State Vehicular Area. It also runs adjacent to a number of ESHA wetlands south of the Pismo Dunes Natural Preserve, the closest of which sits approximately 200 feet east of the mainline.

- Monterey County – Within Monterey County, the mainline runes within the coastal zone between just north of Castroville, through the Elkhorn Slough, and the coastal zone just south of Watsonville. According to the Monterey County LCP, ESHA includes: Monterey Bay, dunes and beaches, large sloughs, saltwater and freshwater marshes, riparian corridors, maritime chaparral, Monterey cypress and Gowan cypress forest communities, Del Monte

forest and coast, rocky intertidal areas, Carmel Coastal segment, and Big Sur coast. Of the various ESHA's, the mainline primarily transects the Elkhorn Slough, which is known sensitive habitat for a variety of species. The mainline at its most western point is 2.2 miles from Monterey Bay, dunes and beaches. The mainline is likely to cross several riparian corridors and marshes that would be considered ESHA within the coastal zone.

4.4.2 Regulatory Setting

4.4.2.1 Federal Policies and Regulations

Federal Endangered Species Act of 1973 (FESA)
FESA provides legislation to protect federally-listed plant and animal species. Impacts to listed species resulting from the implementation of a project would require the responsible agency or individual to formally consult with the USFWS or National Marine Fisheries Service (NMFS) to determine the extent of impact to a particular species. If USFWS or NMFS determine that impacts to a federally-listed species would likely occur, alternatives and measures to avoid or reduce impacts must be identified. USFWS and NMFS also regulate activities conducted in federal critical habitat, which are geographic units designated as areas that support primary habitat constituent elements for listed species.

Migratory Bird Treaty Act of 1918 (MBTA)
The MBTA protects all migratory birds, including their eggs, nests, and feathers. The MBTA was originally drafted to put an end to the commercial trade in bird feathers, popular in the latter part of the 1800s. The MBTA is enforced by the USFWS, and potential impacts to species protected under the MBTA are evaluated by the USFWS in consultation with other federal agencies.

Oil Spill Pollution Act (OSA) of 1990
The Oil Pollution Act (OPA) was signed into law in August 1990, largely in response to rising public concern following the Exxon Valdez incident. The OPA improved the nation's ability to prevent and respond to oil spills by establishing provisions that expand the federal government's ability, and provide the money and resources necessary, to respond to oil spills. The OPA also created the national Oil Spill Liability Trust Fund, which is available to provide up to one billion dollars per spill incident. One of the key provisions of the OSA is that it strengthens planning and prevention activities by: (1) by establishing spill contingency plans for all areas of the U.S.; (2) mandating the development of response plans for individual tank vessels and certain facilities for responding to a worst case discharge or a substantial threat of such a discharge; and (3) providing requirements for spill removal equipment and periodic inspections. The current regulations require that a basic oil spill response plan (OSRP) be developed for shipments having a capacity of 3,500 gallons per package or more, and a comprehensive OSRP be developed for oil shipments having a capacity of more than 42,000 gallons per package. As this applies to rail cars, the per package would be per rail car.

The purpose of the OSRP is to ensure that personnel are trained and available and equipment is in place to respond to an oil spill, and that procedures are established before a spill occurs, so

that required notifications and appropriate response actions will follow quickly when there is a spill. Neither the basic nor the comprehensive OSRP is required to address response on a vehicle- or location-specific basis. A nationwide, regional or other generic plan is acceptable, provided that it covers the range of spill scenarios that the owner or operator foreseeably could encounter. Thus, scenarios ranging from a minor discharge to a "worst-case discharge," must be addressed, as well as the range of topographical and climatological conditions the owner or operator may face. The OSRP also must describe the response when the discharge results from, or is accompanied by, a complicating condition, such as explosion or fire. A comprehensive OSRP must, at a minimum, address the following:

- Range of response scenarios that foreseeably could occur;
- Qualified individual, the alternate qualified individual, and all other personnel with a role in spill response;
- Training, including drills, required for each of these persons;
- Equipment necessary for response to the maximum extent practicable in each of the identified scenarios;
- Means by which the availability of personnel and equipment will be ensured to respond to a spill to the maximum extent practicable;
- Governmental officials and others to be notified in the event of a spill, and the notification procedure to be followed;
- Means for communicating among responsible personnel and between personnel and officials during a response; and
- Procedures to be followed during a response.

In July of 2014 the USDOT issued an advanced notice of proposed rulemaking covering oil spill response plans for high-hazard flammable trains. The advanced notice of proposed rulemaking would set a lower threshold for when a comprehensive OSRP is required for crude oil trains. Some of the thresholds that are suggested in the notice are 1,000,000 gallons or more per train (approximately 35 car loads), 20 or more car loads, or 42,000 gallons per train. The notice also discusses the possibility of having the OSRP approved by the Federal Rail Road Administration (FRA), conducting training, drills, and equipment testing, and placing oil spill response equipment along rail road tracks.

This advanced notice of proposed rulemaking is currently out for a 90-day comment period. It is expected that the USDOT will eventually issue a notice of proposed rulemaking and adopt some final regulation regarding oil spill response plans for high-hazard flammable trains.

4.4.2.2 State Policies and Regulations

California Endangered Species Act (CESA)

The CESA ensures legal protection for plants listed as rare or endangered, and wildlife species formally listed as endangered or threatened. The state also maintains a list of California Species of Special Concern (CSC). CSC status is assigned to species that have limited distribution, declining populations, diminishing habitat; or unusual scientific, recreational, or educational value. Under state law, the CDFW is empowered to review projects for their potential to impact special-status species and their habitats. Under CESA, CDFW reserves the right to request the

replacement of lost habitat that is considered important to the continued existence to CESA protected species.

Take of state-listed species would require a Section 2081 Incidental Take Permit from the CDFW. This process requires submittal of a sensitive species study and permit application package to CDFW as the regulatory and decision-making agency. It is likely that a Section 2081 Incidental Take Permit (ITP) will be required for potential impacts to the state listed Nipomo Mesa lupine.

Section 1602 of the Fish and Game Code

The CDFW is responsible for conserving, protecting, and managing California's fish, wildlife, and native plant resources. To meet this responsibility, the law requires any person, state or local government agency, or public utility proposing a project that may impact a river, stream, or lake to notify the CDFW before beginning the project. If the CDFW determines that the proposed project may adversely affect existing fish and wildlife resources, a Lake or Streambed Alteration Agreement is required. A Streambed Alteration Agreement lists the CDFW conditions of approval relative to the proposed project, and serves as an agreement between an applicant and the CDFW for a term of not more than five years for the performance of activities subject to this section of the Code. A Streambed Alteration Agreement from the CDFW would be required prior to any direct or indirect impact to streambeds, banks, channels or associated riparian resources.

Other Sections of the California Fish and Game Code

California Fish and Game Code Section 3511 includes provisions to protect Fully Protected (FP) species, such as: (1) Prohibiting take or possession "at any time" of the species listed in the statute, with few exceptions; (2) stating that "no provision of this code or any other law shall be construed to authorize the issuance of permits or licenses to "take" the species; and (3) stating that no previously issued permits or licenses for take of the species "shall have any force or effect" for authorizing take or possession. The CDFW is unable to authorize incidental take of "fully protected" species when activities are proposed in areas inhabited by those species. Sections 3503 and 3503.5 of the Fish and Game Code state that it is unlawful to take, possess, or destroy the nest or eggs of any bird, with occasional exceptions. In addition, Section 3513 states that it is unlawful to take or possess any migratory bird as designated in the MBTA or any part of such migratory birds except as provided by rules and regulations under provisions of the MBTA.

California Coastal Act

The California Coastal Act was enacted in 1976 to provide long-term protection of California's coastal resources. The Act's coastal resources management policies are based on recommendations contained in the California Coastal Plan. One such policy includes:

> "Protection, enhancement and restoration of environmentally sensitive habitats, including intertidal and nearshore waters, wetlands, bays and estuaries, riparian habitat, certain wood and grasslands, streams, lakes, and habitat for rare or endangered plants or animals."

The County must evaluate proposed impacts to these resources listed above. Any proposed impacts to these habitats must conform to Coastal Act/Local Coastal Plan requirements.

Senate Bill (SB) 1334 Oak Woodlands Conservation

Under SB 1334, county governments are responsible for conserving oak woodlands within their jurisdiction. During the CEQA review process, SB 1334 requires County governments to determine if a proposed project would result in the conversion of oak woodland. If the determination is made, the County is mandated to require implementation of specified mitigation as outlined in an oak woodland management plan. In San Luis Obispo County, oak woodlands are defined as areas containing greater than ten percent oak canopy cover. The County defines conversion as cutting or removing ten percent or more of the oak woodland canopy, or removing more than ten oak trees.

Senate Bill (SB) 861 Oil Spill Prevention and Response

In 2014, Governor Brown expanded California's oil spill prevention and response program to cover all statewide surface waters at risk of oil spills. This expansion provided funding for industry preparedness, spill response, and continued coordination with local, state and federal government along with industry and non-governmental organizations. Senate Bill 861 authorized the Office of Spill Prevention and Response (OSPR) with the statewide expansion and regulatory oversight. The key objectives are:

- Target critical locations to stage spill responders and equipment for the best response to rail and pipeline incidents;
- Develop effective regulations in close collaboration with local government, non-governmental organizations, and industry;
- Implement regulations that will guide industry, local and state government, and the public and build relationships with local governments through workshops and presentations;
- Create inland response plans that have the depth and breadth of the marine Area Contingency Plans; and,
- Work with communities to build a strong response spill team.

The changes would apply to railroads, pipelines, and oil well/production facilities. These facilities will be required to have oil spill contingency plans. The legislation also requires announced and unannounced drills to test response and cleanup operations, equipment, contingency plans, and procedures. All elements of the plan must be excised at least one very three years. Operators of covered facilities must be able to demonstrate financial resources to pay for spill response and damages based upon a reasonable worst case spill volume.

The regulation requires a six and one-half cent per barrel tax on crude oil and petroleum products received at refineries or marine terminals within California to cover the cost of the expanded oil spill response program. The current time line for adopting the final implementation regulations is fall of 2014 (OSPR 2014).

4.4.2.3 Local Policies and Regulations

San Luis Obispo County Coastal Plan Policies

The San Luis Obispo County Coastal Plan Policies (1988; revised 2007) provides general plan policies and identification of detailed land use recommendations in order to carry out the policies of the California Coastal Act of 1976. Related to biological resources, the Coastal Plan contains policies that are specific to environmentally sensitive habitat (Chapter 6), and coastal watershed (Chapter 9), which are mapped in the Land Use Element. Within Chapter 6 (Environmentally Sensitive Habitat) the Coastal Plan provides specific policies for the following areas mapped on the LUE combining designation maps: sensitive habitats, wetlands, coastal streams, terrestrial environments and marine habitats. None of these mapped designations are within the boundaries of the Rail Spur Project area. Chapter 9 (Coastal Watershed) includes streams, wetlands, and lakes. None of these resources are located within the Rail Spur Project area.

Coastal Zone Land Use Ordinance

As part of the proposed project, the Coastal Zone Land Use Ordinance (CZLUO) (1988; revised November 2013) standards and associated findings for mapped combining designations in the LUE must be considered. Applicable combining designations are identified and discussed within section of Chapter 7 of the CZLUO. For biological resource impact analysis, the following combining designations have been considered as they relate to the proposed project.

Sensitive Resource Area (SRA) (Section 23.07.160 through 23.07.166)

CZLUO Section 23.07.160 describes the Sensitive Resource Area combining designation as only applied by the Official Maps (Part III) of the Land Use Element to identify areas with special environmental qualities, or areas containing unique or endangered vegetation or habitat resources. The purpose of these combining designation standards is to require that proposed uses be designed with consideration of the identified sensitive resources, and the need for their protection, and, where applicable, to satisfy the requirements of the California Coastal Act. The standards of Sections 23.07.160 through 23.07.166 apply to uses requiring a land use permit that are located within a SRA combining designation. The South County Area Plan has been updated in August 2013 and does not indicate that the Rail Spur Project area is within a Sensitive Resource Area.

Environmentally Sensitive Habitat Area (Section 23.07.170)

CZLUO Section 23.07.170 describes the provisions that apply to development within or adjacent to (within 100 feet of the boundary of) and Environmentally Sensitive Habitat as defined by Section 23.11. Section 23.11 defines both Mapped ESHA and Unmapped ESHA. Although no mapped ESHA occurs within the Rail Spur Project area, the definition has still been included below for regulatory background purposes. ESHA occurs south of the UPRR mainline but is not within 100 feet of new development.

Mapped ESHA is defined as: "*A type of Sensitive Resource Area where plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could easily disturbed or degraded by human activities and development. They include wetlands, coastal streams and riparian vegetation, terrestrial and marine habitats and are mapped as Land Use Element combining designations. Is the same as an*

Environmentally Sensitive Habitat." No Mapped ESHA is located within the Rail Spur Project area.

Unmapped ESHA is defined as: *"A type of Sensitive Resources Area where plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could easily be disturbed or degraded by human activities and development. They include, but are not limited to, known wetlands, coastal streams and riparian vegetation, terrestrial and marine habitats that may not be mapped as Land Use Element combining designations. The existence of Unmapped ESHA is determined by the County at or before the time of application acceptance and shall be based on the best available information. Unmapped ESHA includes but is not limited to:*

a) Areas containing features or natural resources when identified by the County or County approved expert as having equivalent characteristics and natural function as mapped other environmental sensitive habitat areas;

b) Areas previously known to the County from environmental experts, documents or recognized studies as containing ESHA resources;

c) Other areas commonly known as habitat for species determined to be threatened, endangered, or otherwise needing protection."

Based on the best available information that was collected during the preparation of the EIR, the presence of sensitive communities, sensitive plants, and sensitive animal species suggests the potential for Unmapped ESHA. This is discussed in greater detail in Section 4.4.4 below.

Wetlands, Wetland Setbacks (Section 23.07.172)
As noted under CZLUO Section 23.07.172d (Wetlands, Wetland setbacks) "new development shall be located a minimum of 100 feet from the upland extent of all wetlands, except as provided by subsection d(2)", unless a biological report determines that a greater setback should be provided. Permitted uses within the 100-foot wetland setback include passive recreation and educational uses, which are applicable to a more passive level of design. Subsection d(2) (Wetland setback adjustment) allows a reduction to the 100-foot buffer setback (but no less than 25 feet) provided mitigation is identified and the following findings are adopted:

(1) The site would be physically unusable for the principal permitted use unless the setback is reduced.

(2) The reduction is the minimum that would enable a principal permitted use to be established on the site after all practical design modifications have been considered.

(3) That the adjustment would not allow the proposed development to locate closer to the wetland than allowed by using the stringline setback method pursuant to Section 23.04.118a of this title.

The nearest mapped wetland to the Rail Spur Project area is within Oso Flaco Creek. The Rail Spur Project area is approximately 500 feet from a tributary to the creek.

Stream and Riparian Vegetation (Section 23.07.174)
CZLUO Section 23.07.174 states that coastal streams and adjacent riparian areas are environmentally sensitive habitats. The provisions of this section are intended to preserve and protect the natural hydrological system and ecological functions of coastal streams. As stated above, the nearest wetland to the Rail Spur Project area would a tributary to Oso Flaco Creek approximately 500 feet from the Rail Spur Project, and is currently mapped as a coastal stream.

Terrestrial Habitat Protection (Section 23.07.176)
CZLUO Section 23.07.176 states that it is intended to preserve and protect rare and endangered species of terrestrial plants and animals by preserving their habitat. Emphasis for protection is on the entire ecological community rather than only the identified plant or animal. As noted within the section "development shall be sited to minimize disruption of habitat", and includes the following development standards:

(1) Revegetation. Native plants shall be used where vegetation is removed.

(2) Area of disturbance. The area to be disturbed by development shall be shown on a site plan. The area in which grading is to occur shall be defined on site by readily-identifiable barriers that will protect the surrounding native habitat areas.

(3) Trails. Any pedestrian or equestrian trails through the habitat shall be shown on the site plan and marked on the site. The biologist's evaluation required by Section 23.07.170a shall also include a review of impacts on the habitat that may be associated with trails.

The Rail Spur Project area is not located within an area that is currently within a Sensitive Habitat Protection combining designation. The nearest combining designation is located directly to the west of the UPRR mainline.

4.4.3 Significance Criteria

The significance of potential biological impacts are based on thresholds identified within Appendix G of the CEQA Guidelines and the County's Initial Study Checklist, which provide the following thresholds for determining impact significance with respect to biological resources. Biological impacts would be considered significant if the proposed project would:

- Substantially affect a rare or endangered species;
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community;
- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (CWA) and/or the Coastal Act;
- Interfere substantially with the movement of any resident or migratory species of wildlife or with established native resident or migratory wildlife corridors;
- Conflict with any local policies or ordinances protecting biological resources;

- Conflict with the provisions of an adopted Federal Habitat Conservation Plan, Natural Community Conservation Plan or other approved local, regional, or state Habitat Conservation Plan;
- Reduce the long term viability of native plant, fish, or wildlife populations;
- Reduce species diversity or numbers of species; or
- Introduce invasive plant or animal species.

For biological resources impacts due to an accidental crude oil spill would be potentially significant if operations would increase the probability or volume of oil spills into the environment depending upon the location and the resource effected.

Potential impacts are expected to occur where proposed construction or development activities or on-going operational activities would result in temporary or permanent modification of sensitive communities or habitats occupied or potentially occupied by special-status species. Where potential Project-related impacts to sensitive resources were identified, measures for avoiding or minimizing adverse effects to these resources are recommended.

4.4.4 Project Impacts and Mitigation Measures

Prior to conducting a reconnaissance survey of the BSA, SWCA Environmental Consultants (SWCA) conducted a review of the applicant prepared biological studies and queried the California Natural Diversity Data Base (CNDDB 2013) to determine which species are known to occur in the area. The database review focused on the U.S. Geologic Service (USGS) 7.5' quadrangle maps for Oceano and seven surrounding quadrangles (Pismo Beach, Arroyo Grande NE, Tar Spring Ridge, Nipomo, Santa Maria, Guadalupe, and Point Sal). Typically a nine quadrangle survey is conducted, but due to the coastal location of the BSA only eight quadrangles were used. The results of the records search were reviewed to evaluate the potential for occurrence of sensitive plants and wildlife within or near the BSA. The California Native Plant Society (CNPS) Online Inventory of Rare and Endangered Plants (CNPS 2013) were reviewed for additional special-status occurrence records in the region. Lastly, Natural Resource Conservation Service (NRCS) and County soil survey data, and previous SWCA studies conducted in the region were reviewed to determine potential sensitive species presence and habitat suitability within the site.

Following a review of the CNDDB and applicant prepared reports, SWCA biologists conducted reconnaissance field surveys. SWCA Natural Resources Team Leader, Jon Claxton and SWCA Senior Biologist, Travis Belt conducted surveys of the site on July 18, 2013, from 10:00 a.m. through 3 p.m. and on August 2, 2013 from 7 a.m. to 3 p.m. Weather during both survey dates was overcast and cool (65 to 70 °F). The purpose of the reconnaissance survey was to walk the entire BSA in order to verify the accuracy of the applicant-prepared data (referenced in Section 4.4.1). The survey area reviewed by SWCA is referred to herein as the Biological Study Area (BSA) and accounts for a 100-foot buffer beyond the applicant's proposed limits of disturbance near the rail spur and the proposed Emergency Vehicle Access route (EVA) to the southeast.

The reconnaissance survey evaluated the accuracy of the applicant-prepared data as it is related to existing conditions and sensitive biological resources (e.g., regulated habitats, special-status species, and sensitive habitats) that could be affected by the Rail Spur Project (refer to Figure 4.4-1). Specifically, field verification surveys focused on: 1) assessment of native and non-native plant communities and their ability to provide habitat for sensitive and common wildlife species, including the potential for bird nesting and foraging; 2) sensitive plant species identification to the extent feasible outside of the blooming period; and, 3) assessment of habitat mapping and the quality of habitat types present within the BSA.

Impact assessment for the proposed activities within the Rail Spur Project area focused on identifying potential project-related impacts associated with implementation of the project, and was based on details presented within the project description. Identified impacts represent a reasonable worst case scenario based on the provided conceptual project plans and preliminary grading plans for the Rail Spur Project improvements. Potential impacts within the Rail Spur Project area are expected to occur where proposed construction or development activities would result in temporary or permanent modification of sensitive communities or habitats occupied by sensitive species.

Impacts to biological resources within the BSA were evaluated by determining the sensitivity, significance, or rarity of each resource that would be adversely affected by the proposed project, and thresholds of significance were applied to determine if the impact constituted a significant impact. The significance threshold may be different for each habitat or species and is based on the resource's rarity or sensitivity and the level of impact that would result from the proposed project. Where potential project-related impacts to sensitive resources were identified, measures for avoiding or minimizing adverse effects to these resources are recommended.

In general, the Rail Spur Project has potential to impact a variety of biological resources within and adjacent to the Rail Spur Project area. Construction activities associated with project implementation have the potential to directly impact natural plant communities and sensitive plant and animal species. Aquatic resources located on the adjacent property could also be directly impacted by erosion and sedimentation, or an unforeseen hazardous materials spill. Wildlife areas have the potential to be impacted by fuel management, vegetation removal, increased human presence, increased night lighting, and by increased storm water runoff containing pollutants. Such pollutants may include residual hydrocarbons, and other chemicals that may be commonly used at the proposed facility.

Based on a search of the USFWS Habitat Conservation Plan (HCP) Database, there are no habitat conservation plans or natural community conservation plans (NCCP) that encompass the BSA that would be affected by the Rail Spur Project. The closest HCPs to the BSA are located in Los Osos and Morro Bay, over 20 miles away.

An HCP is currently being drafted by the California Department of Parks and Recreation (State Parks) for all state parks in the County, including the Oceano Dunes SVRA west of the Project Site. However, the HCP has not yet been adopted; therefore, no inconsistency would occur. Because the Rail Spur Project proposes modifications and improvements to its on-site processing operations only, it would not likely affect uses within the adjacent Oceano Dunes SVRA that

would have implications under any HCP ultimately adopted for the site. Therefore, impacts to HCP or NCCP are not discussed further in this section.

In addition, as currently proposed, the Rail Spur Project would have no impact on federally protected wetlands or marine environments. Therefore, impacts to federally protected wetlands and marine environments are not discussed further in this section.

The Rail Spur Project was evaluated for potential consistency with coastal policy law and policies including the California Coastal Act and the County's Local Coastal Program including Coastal Plan Policies, the South County Coastal Area Plan, and the Coastal Zone Land Use Ordinance. Appendix G contains the detailed preliminary policy consistency analysis. Presented below is a discussion of the potential for Environmentally Sensitive Habitat Areas (ESHA) to existing within the area of the Rail Spur Project site.

The Rail Spur Project is not located within any mapped combining designations for ESHA as currently shown in the South County Coastal Area Plan. The County also has not historically identified areas in the County as Unmapped ESHA.

Regardless, the site was evaluated to determine whether ESHA is present, per the ESHA Identification guidance of the California Coastal Commission (July 31, 2013), which states:

"*Pursuant to Section 30107.5, in order to determine whether an area constitutes an ESHA, and is therefore subject to the protections of Section 30240 of the Coastal Act, the California Coastal Commission has asked if either of the two conditions have been met:*

1) *There are rare species or habitat in the subject area;*
2) *There are especially valuable species or habitat in the area, which is determined based on:*
    a. *Whether any species or habitat that is present has a special nature, or;*
    b. *Whether any species or habitat that is present has a special role in the ecosystem.*"

When the Commission has found that either of these two conditions is met, it has assessed whether the habitat or species meeting these conditions is easily disturbed or degraded by human activities and developments. If they are, the Commission has found the area to be ESHA (CCC 2013).

To determine whether the Rail Spur Project area meets these guidelines for ESHA, or the County definition of Unmapped ESHA, the County reviewed the wildlife and botanical survey reports prepared by the applicant's consultant (Arcadis), conducted a site visit to review the reports content and accuracy, conducted independent review of existing literature, database queries, and mapping data, and corresponded with species experts.

Following the circulation of the Public Draft EIR, additional survey efforts were conducted in 2015 by Arcadis and Leidos to ensure accuracy and consistency with vegetation type mapping with the National Vegetation Classification system, as described within *A Manual of California Vegetation* (Sawyer et al 2009).

Based on the best available information, it was determined that the Rail Spur Project area:

1) Is not currently occupied by rare, threatened or endangered species protected under the California or Federal Endangered Species Act;
2) Is not currently occupied by "fully protected species", but does provide habitat for, and has been occupied by, "species of special concern" as defined by the California Department of Fish and Wildlife;
3) Is currently occupied by plant species that are listed as Rank 1B status by the California Native Plant Society; and,
4) Is currently occupied by sensitive communities recognized by the California Department of Fish and Wildlife.

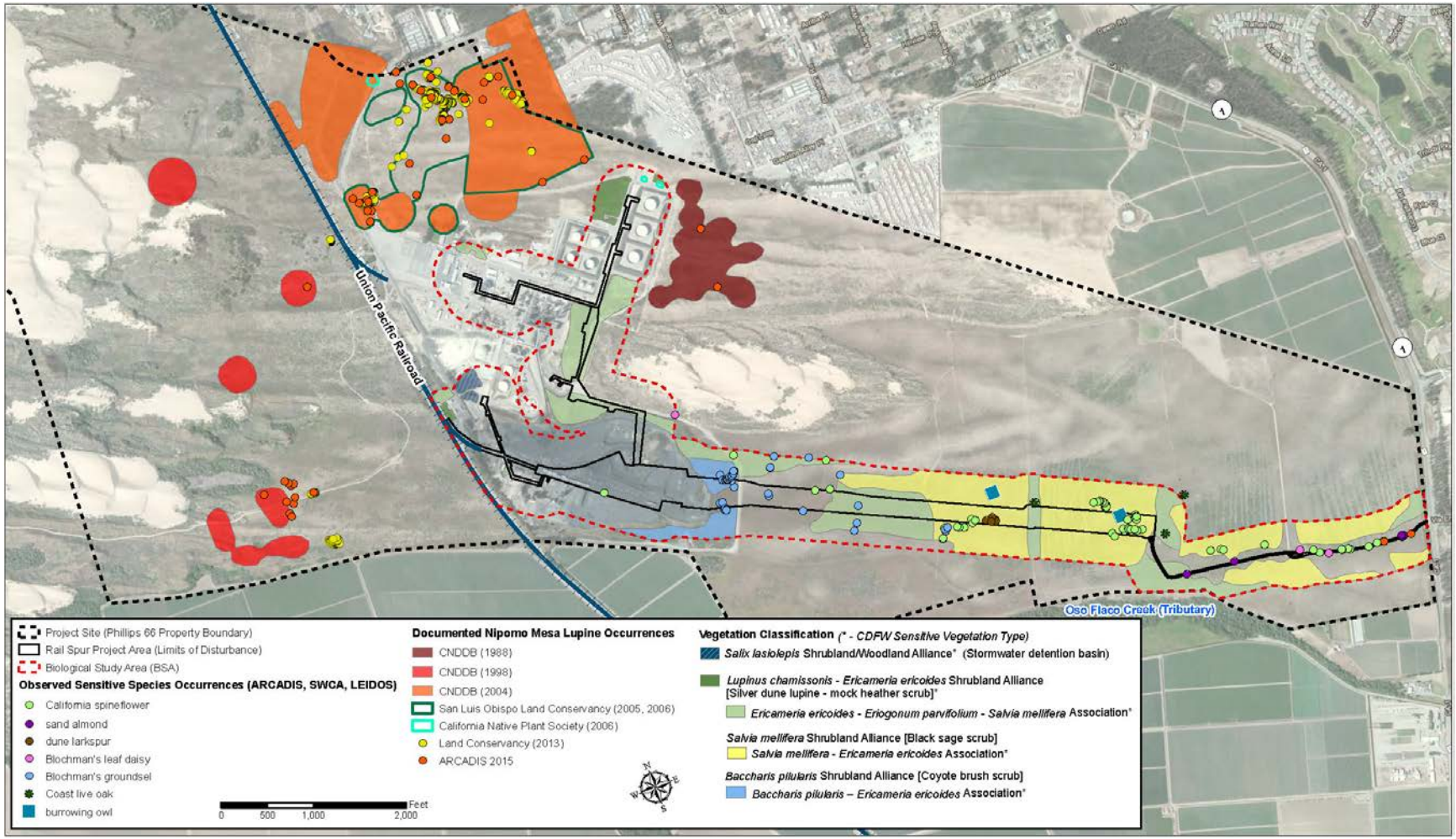
Due to these factors, the Rail Spur Project area meets the definition of ESHA as defined in the guidelines set forth by the California Coastal Commission for defining ESHA (CCC 2013). The Rail Spur Project site also appears to meet the definition of Unmapped ESHA in the County's LCP (CZLUO Section 23.11) since the area contains sensitive plant and animal species needing protection, which includes California Rare Plant Rank 1B species (i.e., Blochman's leafy daisy and dune larkspur), burrowing owls, and coast horn lizard. Utilizing this definition, and as discussed below in impact BIO.5, the Rail Spur Project would permanently impact approximately 20.88 acres of habitat that is considered sensitive by California Department of Fish and Wildlife (CDFW).

It is important to also consider that the Rail Spur Project area has been highly disturbed and degraded from agricultural, industrial, and human activities for several decades and does not appear to contain features that have an equivalent characteristic or natural function as other mapped ESHA. This conclusion is based on a qualitative comparison with ESHA habitat that is located to the west of the UPRR mainline, which contains a high habitat value and supports numerous special-status species. Removal of agricultural practices and large-scale restoration efforts would be necessary to restore the functions and values to the area. Similar efforts have shown to be successful in the area east of the UPRR east and north of the SMR and the area west of the UPRR.

Impact #	Impact Description	Phase	Impact Classification
BIO.1	Proposed construction of the Rail Spur Project has the potential to impact Nipomo Mesa lupine, a state and federally endangered plant species.	Construction	Class II

Nipomo Mesa lupine, a state and federally endangered plant species, is known to occur within the Phillips 66 property boundary, or Project Site. Based on CNDDB records, the nearest known occurrence of this species is located adjacent to existing tank facilities (refer to Figure 4.4-5).

Figure 4.4-5 Sensitive Species Map



Source: Adapted from Arcadis 2013.

Due to the proximity to this documented location and the presence of suitable habitat within portions of the Project Site that are currently undeveloped, Arcadis biologists specifically focused on identifying occurrences of this species during the surveys conducted in April 2013, during the typical blooming period for this species (December through May).

In accordance with CDFW survey guidelines, the survey effort included a review of recent records of known populations. Arcadis biologists then conducted a field verification to determine presence of blooming species. Following a positive identification of this species in bloom, a focused pedestrian survey of the BSA was conducted

Reference populations were visited prior to conducting the field survey to ensure the species was blooming (pers. comm., Greg McGowan). The results of this survey effort were negative for the presence of this species within the BSA.

An additional focused survey for Nipomo Mesa lupine was conducted in March 2015 during the EIR process. Results were also negative for Nipomo Mesa lupine within the BSA. Arcadis did observe and map locations of individuals within the Project Site that were located outside of the BSA in areas that are consistent with locations of known populations. Refer to Appendix C.6.

Based on discussions between SWCA and local species expert Mr. John Chesnut of CNPS, this endemic population is mapped on an annual basis by The Land Conservancy of San Luis Obispo through coordination with State Parks and Phillips 66.

As part of this EIR analysis, SWCA acquired the most recent data from Mr. Daniel Bohlman of The Land Conservancy. The population trend of Nipomo Mesa lupine has been studied for a 7 year period through coordination between The Land Conservancy and the Cheadle Center for Biodiversity and Ecological Restoration (CCBER) at the University of California at Santa Barbara (TLC 2013).

These studies have been limited to the northwestern portion of the Phillips 66 property and areas along the railroad and access roads within the dunes west of the railroad. Access to the remaining portions of the property has not been granted in the past. Therefore, the area of the Rail Spur Project has not been previously studied by the Land Conservancy or its affiliates.

According to existing data, there has been a fluctuation in the population trend from 2007 to 2013. In 2013, a population of 1,677 Nipomo Mesa lupine individuals was documented within the study area, which consists of State Parks and Phillips 66 property. Of this population 759 individuals had achieved seed set, resulting in a 45% effective population for the 2012-13 season. This is a notable increase from a population of 295 individuals in 2012, with an effective population of 180 which achieved seed set. This data provides supporting evidence of an existing seed bank within the property from previous blooming seasons.

Decreases in population seem to be driven by early season rains followed by a prolonged dry period mid-winter which greatly reduce survivorship of early germinating individuals (The Land Conservancy 2013).

Several actions are being taken by The Land Conservancy to ensure survivorship of this species, including employing chemical and mechanical control measures to help abate exotic competition of non-native plant species. Additionally, cattle have been employed as an invasive species control method (The Land Conservancy 2013). According to the CNPS, this methodology of cattle-grazing was not been successful (Chipping 2014).

According to Mr. Chesnut, ground disturbances are likely to produce a flush of Nipomo Mesa lupine in favorable (rainfall) years. Evidence of large populations of this species is generally associated with disturbed areas within the Phillips 66 property, State Parks property, and California Department of Transportation (CalTrans) Highway 1 right-of-way after a road realignment project (pers. comm. John Chesnut 2013). Therefore, there is a potential for this species to occur within the Rail Spur Project area as a result of grading and construction activities associated with the Rail Spur Project.

The current determination of presence/absence of Nipomo Mesa lupine within the Rail Spur Project area cannot be definitively determined based on the survey data from Arcadis (April 2013), and moreover as a result that verification by SWCA was not possible since reconnaissance surveys were outside of the normal blooming period for this species (December-May). Additionally, due to the drought level conditions of 2012/13 and 2013/14, a seed bank has the potential to persist within the Rail Spur Project area without producing any individuals. These concerns were also stated by local species expert Mr. John Chesnut and the USFWS through public comment letters to the County, in response to the NOP.

Although the presence of this species is unlikely due to the distance from historically mapped populations, the Rail Spur Project may result in potential impacts to Nipomo Mesa lupine, which would be considered a significant impact.

Mitigation Measures

BIO-1 *Prior to initiation of project activities, a floristic survey shall be conducted within the Rail Spur Project area in accordance with the California Department of Fish and Wildlife (CDFW) Protocol for surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities (2009) and the Guidelines for Conducting and Reporting Botanical Inventories for Federally listed, Proposed, and Candidate Species (USFWS 2000). The survey shall specifically focus on the presence/absence of Nipomo Mesa lupine and, if normal rainfall conditions are present during the survey, the findings would be only valid for a period of two years.*

The floristic survey shall be conducted during a blooming period with normal rainfall. A 'normal' rainfall period is equivalent to the monthly or annual average of precipitation over a 30 year time period for the area. The results of this survey shall be submitted to the County, United States Fish and Wildlife Service, and California Department of Fish and Wildlife within 30 days of completing the survey.

If 'normal' rainfall conditions have occurred prior to the initiation of the survey, and the results of this survey effort determine that Nipomo Mesa lupine is absent from the Rail Spur Project area, no further mitigation for this species shall be required at this time. Because it is well documented that Nipomo Mesa lupine may occur as a result of

site disturbance, floristic surveys shall be conducted on an annual basis until there is no further disturbance to the native soil as a result of construction activities. Should Nipomo Mesa lupine be identified during construction, or if Nipomo Mesa lupine is identified prior to the initiation of activities during 'normal' rainfall conditions, the project shall avoid the individual or population to the extent feasible. If avoidance is not feasible then the applicant would be required by law to coordinate with California Department of Fish and Wildlife to acquire a 2081 Incidental Take Permit for this species and comply with any conditions imposed by that permit. At a minimum, the applicant shall implement BIO-5a (Dune Habitat Restoration Plan) and include Conservation Measures to establish and monitor Nipomo Mesa lupine population(s) within the identified on-site mitigation area at a ratio of 3:1 for individuals. The mitigation area for Nipomo Mesa lupine may overlap with the mitigation area for sensitive community impacts, which shall be protected from any grazing activities in perpetuity.

Residual Impact

Although Nipomo Mesa lupine has not been documented within the BSA, there is a potential this species may occur. With implementation of the above mitigation measures, any potential impacts to Nipomo Mesa lupine will be identified during an appropriate blooming period under a 'normal' rainfall period. A 'normal' rainfall period is equivalent to the monthly or annual average of precipitation over a 30 year time period for the area. Should this species be identified within the Rail Spur Project area, direct impacts to Nipomo Mesa lupine would be *less than significant with mitigation (Class II).* Implementation of a Dune Scrub Habitat Restoration Plan would mitigate any significant impacts to the Nipomo Mesa lupine.

Impact #	Impact Description	Phase	Impact Classification
BIO.2	Proposed construction of the Rail Spur and associated Emergency Vehicle Access route would result in the removal of plant species considered to be rare by the California Native Plant Society.	Construction	Class II

A total of five sensitive plant species were identified within the BSA. These species include: California spineflower (*Mucronea californica*), sand almond (*Prunus fasciculata* var. *punctata*), Blochman's groundsel (*Senecio blochmaniae*), and Blochman's leafy daisy (*Erigeron blochmaniae*), and dune larkspur (*Delphinium parryi* ssp. *blochmaniae*). None of these species are state or federally listed; however, they are all considered rare by the CNPS.

Based on botanical surveys conducted by Arcadis in 2013, the BSA includes approximately three thousand individuals of California spineflower, three individuals of sand almond, fifty individuals of Blochman's groundsel, and a limited number of Blochman's leafy daisy. Although a specific number was not provided for Blochman's leafy daisy, SWCA identified less than fifty individuals within the BSA along the EVA route during the field survey conducted in

July 2013. Dune larkspur was also observed during a field verification survey in March 2015 by Leidos, Inc. Approximately 100 individuals were observed.

Avoidance of Blochman's leafy daisy individuals located along the EVA route may be avoided; however, it is expected that the population of all annual plant species will fluctuate in upcoming years depending upon rainfall and site conditions. Therefore, it is assumed that all five species of rare plants have the potential to be impacted.

The proposed impact would not likely result in any substantial adverse effect on the five rare plant species that were identified within the BSA. Many of the species within the Rail Spur Project area are of concern, but within a rarity category that is of lower concern than CNPS Rank 1 or 2. . Construction of the Rail Spur Project would impact CNPS Rank 1B species such as Blochman's leafy daisy and dune larkspur, which would be considered a potentially significant impact.

Therefore, impacts to plant species considered to be rare by the California Native Plant Society would be considered potentially significant.

Mitigation Measures

BIO-2 Prior to project activities, the total number of California spineflower (Mucronea californica), sand almond (Prunus fasciculata var. punctata), Blochman's groundsel (Senecio blochmaniae), Blochman's leafy daisy (Erigeron blochmaniae), and dune larkspur (Delphinium parryi ssp. blochmaniae) shall be accurately estimated during the implementation of BIO-1. These population estimates shall be utilized as the basis for the in-kind replacement of these species described in Mitigation Measure BIO-5e. Should any additional populations of sensitive plant species that are considered rare by the California Native Plant Society (and not formally listed under the Endangered Species Act) be identified during the implementation of BIO-1 that were not previously observed in 2013, these species will also be replaced in-kind as part of the Dune Habitat Restoration Program and replacement success would be held to the same performance standards.

Residual Impacts

Project impacts on plant species considered rare by the California Native Plant Society would occur as a result of the Rail Spur Project. Potential impacts may occur to species such as: California spineflower (*Mucronea californica*), sand almond (*Prunus fasciculata* var. *punctata*), Blochman's groundsel (*Senecio blochmaniae*), and Blochman's leafy daisy (*Erigeron blochmaniae*), and dune larkspur (*Delphinium parryi* ssp. *blochmaniae*). The population of these annual species is expected to fluctuate from year to year. However, given the estimated population and the relatively common occurrence of these species, with the implementation of mitigation measure BI)-2, residual impacts are considered to be *less than significant with mitigation (Class II).* Implementation of the Dune Habitat Restoration Plan (DHRP) (BIO-5a) would further reduce any impacts to these species.

Impact #	Impact Description	Phase	Impact Classification
BIO.3	Proposed construction and operational activities could result in disturbance and mortality to common ground-dwelling wildlife and sensitive ground-dwelling animal species.	Construction and Operations	Class II

Construction activities associated with the proposed Rail Spur Project could result in the potential loss of individuals of common ground-dwelling wildlife species and California Species of Special Concern, as defined by the CDFW. Impacts associated with ground disturbances, vegetation removal, noise, light, and increase human presence could include mortality to less-mobile reptile and rodent species inhabiting the Rail Spur Project Area. Sensitive ground-dwelling animal species that are assumed to occur within the dune scrub habitat include coast horned lizard, silvery legless lizard; both are considered by CDFW as California Species of Special Concern.

Impacts to common ground-dwelling wildlife (e.g., California ground squirrel) would occur; however, these impacts would be less than significant because common wildlife is generally more abundant and are well adapted to human activity. It is expected that these species would disperse to alternative habitats in the area. Suitable surrounding habitat includes the vast expanse of dune habitat to the east, north, and south of the Project Site.

Operational activities of the Rail Spur Project have the potential also impact sensitive and common species. It is unlikely that these species would occur within the Rail Spur Project area upon development, but species may create burrow systems at the margin of the development or use man-made objects for denning or cover.

Nighttime lighting from the proposed Rail Spur Project would also have both a positive and negative effect for the interaction between prey and predators that occur on-site. Depending upon the amount of light emitted, night lighting can compromise the advantage that predators seek during the night to forage for prey. However, lighting can also provide a larger prey base for species like bats, where many species can be attracted to the insect population that is drawn to the lighting. Night lighting may also cause nocturnal rodent species to be more vulnerable to being preyed upon by foraging owls or mammals. As currently proposed, the project includes Dark-sky compliant light fixtures and other recommended mitigation (refer to Section 4.1.6, AV-3a) and is expected to result in less than significant impacts to wildlife.

Mitigation Measures

BIO-3 Prior to issuance of grading and construction permits, a qualified wildlife biologist shall prepare a Sensitive Species Management Plan, which outlines the procedures and protocols for capturing and relocating sensitive animal species including coast horned lizard and silvery legless lizard during all phases of grading. This plan shall be approved by the County and California Department of Fish and Wildlife. Implementation of the Plan is required where impacts to sensitive animal species and their habitats are unavoidable and located within a minimum of 100 feet of the Disturbance Area (or greater as determined by the California Department of Fish and Wildlife). Within 30 days prior to mobilization, grading or construction, a qualified

wildlife biologist shall conduct a pre-construction survey of the area of impact to determine the presence of sensitive wildlife species. Individuals will be searched and captured using techniques appropriate to the species of concern and approved by the appropriate resource agencies. All captured individuals will be released as soon as possible into nearby suitable habitat that has been previously identified by the qualified wildlife biologist in consultation with the County and California Department of Fish and Wildlife. The size or age-class, location of capture, and the relocation site shall be recorded for each individual relocated from the site.

Residual Impacts

Construction and operational activities are expected to have impacts on common and sensitive wildlife species that are known to occur within the Rail Spur Project area. With implementation of the above mitigation measures, direct impacts to common fossorial wildlife and sensitive fossorial animals would be *less than significant with mitigation (Class II).*

Impact #	Impact Description	Phase	Impact Classification
BIO.4	Proposed construction activities could result in disturbance of American badger, potentially including mortality.	Construction	Class II

Evidence of American badger has been documented as occurring within the BSA by Arcadis and verified by SWCA observations. Construction activities associated with the Rail Spur Project may result in the potential loss of individuals of American badger a California Species of Concern, as defined by the CDFW.

Mitigation Measures

BIO-4 At a minimum, the following measures shall be incorporated in the Sensitive Species Management Plan:

1. *Prior to grading activities, a County-approved biologist shall conduct a survey to identify whether badgers are using any portion of the site near the area in which disturbance is proposed. The survey shall be conducted no less than 14 days and no more than 30 days prior to construction. The survey shall cover the boundaries of proposed disturbance and 100 feet beyond, including all access roads, and shall examine both old and new dens. If potential badgers dens are found, they shall be inspected to determine whether they are occupied by badgers. Occupation of the den shall be determined by one or more of the following methods:*

    a. *Use of a fiber-optic scope to examine the den to the end:*

    b. *Partially obstruct the den entrance with sticks, grass, and leaves for three consecutive nights and examine for signs that animals are entering or leaving the den;*

c. Dust the den entrance with a fine layer of dust or tracking medium for three consecutive nights and examine the following mornings for tracks.

2. *Inactive dens within construction areas shall be excavated by hand with a shovel to prevent re-use of dens during construction.*

3. *If badgers are found in dens between August and January, a qualified biologist shall establish a 50 foot diameter exclusion zone around the entrance. To avoid disturbance and the possibility of direct take of badgers, no construction, grading, or staging of equipment shall be conducted within the buffer area until the biologist has determined that the badger(s) have vacated the den.*

4. *If badgers are found in dens between February and July, nursing young may be present. Therefore, a County-approved biologist shall establish a 200-foot diameter buffer around the den. No construction, grading, or staging of equipment shall be conducted within the buffer area until the biologist has determined that the badgers have vacated the den.*

Residual Impacts

Construction activities are expected to have impacts on common and sensitive wildlife species that are known to occur within the Rail Spur Project area, including American badger. With implementation of the above mitigation measures, take of American badger can be avoided and direct impacts would be *less than significant with mitigation (Class II).*

Impact #	Impact Description	Phase	Impact Classification
BIO.5	Proposed construction of the Rail Spur Project could result in a permanent impact to approximately 20.88 acres of vegetation types that are considered sensitive communities by the California Department of Fish and Wildlife following the National Vegetation Classification.	Construction	Class II

Vegetation types within the BSA have been mapped according to protocols described *A Manual of California Vegetation, Second Edition* (Sawyer et al 2009), which follows the National Vegetation Classification System. As a result, it is determined that the Rail Spur Project could permanently impact three sensitive communities (or vegetation types) as currently recognized by the California Department of Fish and Wildlife under the most recent classification system: 1) *Ericameria ericoides-Erigonum parvifolium-Salvia mellifera* Association (part of the *Lupinus chamissonis-Ericameria ericoides* Shrubland Alliance [sensitive]); 2) *Salvia melliferia-Ericameria ericoides* Association (part of the *Salvia melliferia* Shrubland Alliance [sensitive]); and, 3) *Baccharis pilularis* Association (part of the *Baccharis pilularis* Shrubland Alliance [not sensitive in absence of *Ericameria ericoides)*). These three vegetation types may be also generally referred to as Central Dune Scrub which continues to be recognized by the CDFW as a sensitive community under the Holland (1986) legacy classification system. The total acreage of potential impacts to these sensitive communities is provided in Table 4.4.2.

Table 4.4.2 Potential Permanent Impacts to CDFW Sensitive Communities (Vegetation Types)

Sensitive Community (Vegetation Type)	Total Acres Present in BSA	Total Acres Permanently Impacted
Lupinus chamissonis-Ericameria ericoides Shrubland Alliance *Ericameria ericoides-Erigonum parvifolium-Salvia mellifera* Association	47.84	8.65
Salvia melliferia Shrubland Alliance *Salvia melliferia-Ericameria ericoides* Association	70.20	11.34
Baccharis pilularis Shrubland Alliance *Baccharis pilularis* Association	7.51	0.89
Total Acres (All Associations)	**125.55**	**20.88**
Source: Arcadis 2013, 2015		

Short-term impacts to these sensitive communities vegetation type within the boundaries of the Rail Spur Project would not be considered significant due to the lack of quality within the vegetation type. Specifically, the degraded condition of the habitat type has resulted from decades of livestock grazing and industrial land use practices. Many of these sensitive communities contain a large amount of invasive exotic species (e.g., veldt grass) within their understory. However, the long-term impacts to this vegetation type resulting from removal of vegetation and permanent loss of habitat resulting from construction of the Rail Spur Project would be potentially significant.

Mitigation Measures

BIO-5a Prior to issuance of any grading permits, the applicant shall retain a qualified biologist and/or botanist acceptable to the County to prepare a Dune Habitat Restoration Plan (DHRP) for review and approval by the County in consultation with the California Department of Fish and Wildlife (CDFW) and the United States Fish and Wildlife Service (USFWS). The DHRP shall be signed by the retained qualified biologist and/or botanist and shall detail the methods for restoring or enhancing a minimum of 41.76 acres (2:1 for permanent impacts) of vegetation types considered to be sensitive communities by CDFW, with an emphasis on restoring known rare plant associations found within the BSA and those associations considered locally rare to the Guadalupe-Nipomo Dunes. The restoration area(s) shall be located within the Phillips 66 property boundary and protected from any grazing activity. The DHRP shall focus on restoring and enhancing sensitive communities, known rare plant associations, and species of locally rare plant associations, by removing invasive species (iceplant, veldt grass, and other invasive species) and planting appropriate native species, including but not limited to: mock heather, purple nightshade, Blochman's ragwort, Blochman's leafy daisy, California spineflower, sand almond and suffrutescent wallflower.

Should Nipomo Mesa lupine be identified within the Rail Spur Project area as a result of BIO-1, and avoidance of this species is not feasible, the DHRP shall also include methods of restoring and enhancing Nipomo Mesa lupine at a ratio of 3:1 for permanent impacts to individuals. Regardless of whether Nipomo Mesa lupine is identified on-site as part of BIO-1, the DHRP shall also focus on restoring and

enhancing sensitive communities and rare plant associations immediately adjacent to known Nipomo Mesa lupine populations in order to promote expansion of the existing population.

At a minimum, the DHRP shall include the following elements:

a. *Identification of locations, amounts, size and types of plants to be replanted, as well as any other necessary components (e.g., temporary irrigation, amendments, etc.) to ensure successful reestablishment.*

b. *Provide for a native seed collection effort prior to ground disturbing activities. Collection of native seed shall be propagated by a County-approved contractor. Plants shall include but not be limited to California Native Plant Society (CNPS) listed plant species that may be affected.*

c. *Quantification of impact based on "as-built plans" and quantification of mitigation areas such that the replacement criteria are met (2:1 acreage ratio, or 3:1 for Nipomo Mesa lupine individuals).*

d. *A program schedule and success criteria for a minimum five year monitoring and reporting program that is structured to ensure the success of the DHRP.*

e. *Provide for the in-kind replacement of the following sensitive species that occur within the Rail Spur Project area, which may include: California spineflower (Mucronea californica), sand almond (Prunus fasciculata var. punctata), Blochman's groundsel (Senecio blochmaniae), Blochman's leafy daisy (Erigeron blochmaniae) and dune larkspur (Delphinium parryi ssp. blochmaniae). Should Nipomo Mesa lupine be identified onsite, in-kind replacement of this species shall also be included. Individuals that are removed or damaged shall be replaced in-kind at a 3:1 ratio (based on square feet cover) within the designated restoration area with 100% success in 5 years.*

f. *Identification of access and methods of materials transport to the restoration area, including personnel, vehicles, tools, plants, irrigation equipment, water, and all other similar supplies. Access shall not result in new or additional impacts to habitat and special-status species.*

g. *The required Dune Habitat Restoration Program shall incorporate an invasive species control program and be implemented by qualified personnel to ensure that the invasive species control program does not result in any additional impacts to Nipomo Mesa lupine, or other rare species.*

h. *The restoration area shall be protected in perpetuity by an easement. The easement shall either be an open space easement, or a conservation easement if required by the California Department of Fish and Wildlife and United States Fish and Wildlife Service, or if chosen by the Applicant. The easement shall be in a form approved by County Counsel and CDFW and/or USFWS if required by those agencies.*

i. Upon successful completion of the Dune Habitat Restoration Program and subsequent approval by the permitting resource agencies, the applicant shall consider providing non-profit organizations such as California Native Plant Society and The Land Conservancy with long term access to the restoration site for the purposes of education, and long-term maintenance of the restoration site. Long-term maintenance activities would only occur if permitted by the applicant, and would require coordination with California Department of Fish and Wildlife and United States Fish and Wildlife Service. Access to the site is not guaranteed as a result of this measure. Funding for any future long-term maintenance activities shall be facilitated by the non-profit organization.

BIO-5b Prior to initiation of construction, the applicant shall retain a qualified biologist or botanist acceptable to the County to supervise the implementation of the DHRP. The qualified biologist or botanist shall supervise plant salvage and/or seed collection (prior to construction), plant propagation, site preparation, implementation timing, species selected for planting, planting installation, maintenance, monitoring, and reporting of the restoration efforts. The qualified biologist or botanist shall prepare and submit four annual reports and one final monitoring report to the County for review and approval in consultation with California Department of Fish and Wildlife and United States Fish and Wildlife Service.. The annual and final monitoring reports shall include discussions of the restoration activities, project photographs, an assessment of success criteria attainment, and any remediation actions that may have been required in order to achieve the success criteria.

BIO-5c Prior to issuance of grading and construction permits, the applicant shall define and clearly mark construction zone boundaries adjacent to known sensitive species occurrences with high visibility construction fencing, and shall mark groups of individual plants located within potential disturbance areas with highly visible flagging or fencing.

BIO-5d Prior to construction (within 48 hours), the applicant's retained biologist or botanist shall provide instruction to construction personnel regarding avoidance of sensitive habitats and special-status plants located in the vicinities of areas experiencing ground disturbance. The training shall include presentation of photos of sensitive plant species and habitat, summary of regulations and conditions applicable to protection of the species, identification of areas where removal of the species is permitted pursuant to the final conditions of approval and DHRP, and any ramifications for non-compliance.

BIO-5e During construction, where disturbance to sensitive habitat and sensitive plant species is unavoidable (and permitted by the County upon approval of the project), the top four inches of surface material shall be salvaged and stockpiled for restoration use in consultation with the County, California Department of Fish and Wildlife and United States Fish and Wildlife Service. Existing native vegetation shall also be removed and included as mulch in order to capture any existing native seed material. The salvaged material shall be used as the finish layer on fill slopes and other disturbed areas that will not require regular vegetation maintenance.

BIO-5f During construction, the use of heavy equipment shall be restricted to within the identified work areas throughout the duration of construction activities and all construction personnel shall be advised of the importance of limiting ground disturbance and construction activities to within the identified work areas. A full-time biological monitor shall monitor shall map any populations or individual sensitive species that may bloom within, or directly adjacent to, areas of ground disturbance. Should Nipomo Mesa lupine be identified at any time during construction, the species shall be completely avoided and the County shall be contacted immediately. If avoidance is not feasible, or the species was inadvertently impacted during construction before identification by the biological monitor, the County and the applicant shall coordinate directly with the California Department of Fish and Wildlife and United States Fish and Wildlife Service. At a minimum, the impacts to any sensitive plant species shall be mitigated though implementation of BIO-5a.

Residual Impact

Although implementation of the project would result in the loss of 20.88 acres of CDFW sensitive communities (vegetation types), identified mitigation would require restoration of 41.76 acres of habitat (2:1 acreage ratio). The restoration efforts, and five years of monitoring, would be documented by a biologist or botanist approved by the County, pursuant to an approved plan. The restoration area would be protected in the long term consistent with required restoration plan. Therefore, with implementation of the above mitigation measures, direct impacts to CDFW sensitive communities (vegetation types) would be *less than significant with mitigation (Class II)*.

Impact #	Impact Description	Phase	Impact Classification
BIO.6	Proposed construction of the Rail Spur Project has the potential to impact individual specimens of coast live oak of 5-inch DBH or greater.	Construction	Class II

Based on current design plans for the Rail Spur Project, one mature coast live oak (*Quercus agrifolia*) may be impacted as part of the proposed Rail Spur Project. The specimen, along with other remnant oaks on the property, do not constitute an oak woodland, rather they are individual stands within dune scrub that serve as shading for cattle that have been grazing within the property for at least 30 years. Due to the lack of surrounding trees and the availability of foraging opportunities within the dune scrub, these oaks also provide optimal perching opportunities for foraging raptors, including red-tailed hawk and great horned owl, both of which have been regularly observed utilizing these trees. These trees also provide suitable nesting habitats, although no raptor nests were observed during any of the field surveys conducted by Arcadis and SWCA. The oak tree individual that may be impacted, is located directly on the project boundary of the impact area is a multi-branched coast live oak with diameters at breast height (dbh) of 5 inches or greater. Impacts to oak trees within the project are defined by the County of San Luis Obispo as follows:

If any of the following conditions occur, the tree is considered "impacted" under County of San Luis Obispo guidelines:

1. *More than 10% of the tree mass is removed, or any limb larger than 5"*
2. *New encroachment within the root zone of an oak tree. The root zone is defined as any area within the tree canopy edge/dripline before any oak branch trimming. Encroachment includes:*
    a. *Any cutting or trenching into soil (directional boring that is more than 24 inches below surface is exempt)*
    b. *Addition of fill material*
    c. *Compaction of soil from vehicle travel (one single pass within canopy footprint is exempt) or any other compacting activity*
    d. *Any grubbing that involves soil disturbance*
    e. *Any storage of materials or equipment*
    f. *Paving within dripline*
    g. *Irrigation/overspray within tree dripline*
    h. *Establishment of non-native, invasive understory plants*
3. *If 50% or more of the root zone is impacted or tree mass is removed, the tree will be considered "lost" and must be replaced at a 4:1 basis.*
4. *Storage of liquids or hazardous materials, including washout areas for concrete, etc., within the tree canopy edge/dripline; any spills or leaks of toxic substances within the canopy edge/dripline and 10 feet beyond the canopy edge/dripline would constitute an impacted tree, or potentially lost tree if the spill or leak is extensive.*

Since there is a potential that impacts to oak trees may exceed the criteria listed above, the impacts to oaks would be considered significant.

Mitigation Measures

BIO-6a *At the time of application for grading and/or construction permits, the applicant shall prepare an Oak Tree Inventory, Avoidance, and Protection Plan as outlined herein. The plan shall be reviewed by a County-approved arborist prior to approval of grading and/or construction permits, and shall include the following items:*

a. *Construction plans shall clearly delineate all trees within 50 feet of areas where soil disturbance would occur, and shall show which trees are to be impacted, and which trees are to remain unharmed. All inventoried trees shall be shown on maps. The species, diameter at breast height, location, and condition of these trees shall be documented in data tables.*

b. *Prior to any grading or grubbing, all trees that are within fifty feet of construction or grading activities shall be marked for protection and their root zone shall be fenced. The outer edge of the tree root zone to be fenced shall be outside of the canopy 1/2 again the distance as measured between the tree trunk and outer edge of the canopy (i.e., 1-1/2 times the distance from the trunk to the drip line of the tree), unless otherwise shown on the approved construction plans.*

c. Prior to any grading or grubbing, a certified arborist shall be retained by the applicant to identify at risk limbs and perform all necessary trimming of oak tree limbs that could be damaged by project activities. Pruning shall be conducted as needed along all access roads and construction areas, including paved portions of County roads used for project equipment access. All pruning shall be conducted prior to construction equipment passage to minimize the potential for inadvertent damage to oak tree limbs. Removal of larger lower branches should be minimized to 1) avoid making tree top heavy and more susceptible to "blow-overs", 2) reduce having larger limb cuts that take longer to heal and are much more susceptible to disease and infestation, 3) retain wildlife habitat values associated with the lower branches, 4) retain shade to keep summer temperatures cooler and 5) retain the natural shape of the tree. The certified arborist shall document all pruning impacts in a report submitted to the County San Luis Obispo.

d. A certified arborist shall be retained by the applicant to supervise all construction activities in areas containing oak trees in order to minimize disturbance to identified trees and their root zones wherever possible. The certified arborist will document all construction-related impacts to oak trees in an "as-built" report submitted to the County San Luis Obispo.

e. Immediately following submittal of the oak tree impact "as-built" report to the County San Luis Obispo, the applicant shall implement mitigation for all identified pruning and construction-related oak impacts per current County San Luis Obispo ratios and methods for oak tree mitigation and replacement. County oak tree replacement standards require a project proponent to prepare and implement an oak tree replacement plan. The plan shall provide for the in-kind replacement, at a 4:1 ratio, of all oak trees removed as a result of the project. In addition, the plan must provide for the in-kind planting, at a 2:1 ratio, of all oak trees impacted but not removed. The replacement trees must be monitored for seven years after planting.

BIO-6b Upon application for grading and construction permits, the applicant shall submit an Oak Tree Replacement, Monitoring, and Conservation Plan to the County Department of Planning and Building. The Plan shall include the following:

a. The County-approved arborist shall provide or submit approval of an oak tree replacement plan at a minimum 4:1 ratio for oak trees removed and a minimum replacement ration of 2:1 ratio for oak trees impacted (i.e., disturbance within the root zone area).

b. Replacement oak trees shall be from regionally or locally collected seed stock grown in vertical tubes or deep one-gallon tree pots. Four-foot diameter shelters shall be placed over each oak tree to protect it from deer and other herbivores, and shall consist of 54-inch tall welded wire cattle panels (or equivalent material) and be staked using T-posts. Wire mesh baskets, at least two feet in diameter and two feet deep, shall be use below ground. Planting during the warmest, driest months (June through September) shall be avoided. The plan shall provide a

species-specific planting schedule. If planting occurs outside this time period, an irrigation plan shall be submitted prior to permit issuance and implemented upon approval by the county.

c. *Replacement oak trees shall be planted no closer than 20 feet on center and shall average no more than four planted per 2,000 square feet. Trees shall be planted in random and clustered patterns to create a natural appearance. As feasible, replacement trees shall be planted in a natural setting on the north side of and at the canopy/dripline edge of existing mature native oak trees (if present); on north-facing slopes; within drainage swales (except when riparian habitat present); where topsoil is present; and away from continuously wet areas (e.g., lawns, irrigated areas, etc). Replanting areas shall be either in native topsoil or areas where native topsoil has been reapplied. A seasonally timed maintenance program, which includes regular weeding (hand removal at a minimum of once early fall and once early spring within at least a three-foot radius from the tree or installation of a staked "weed mat" or weed-free mulch) and a temporary watering program, shall be developed for all oak tree planting areas. A qualified arborist/botanist shall be retained to monitor the acquisition, installation, and maintenance of all oak trees to be replaced. Replacement trees shall be monitored and maintained by a qualified arborist/botanist for at least seven years or until the trees have successfully established as determined by the County Environmental Coordinator. Annual monitoring reports will be prepared by a qualified arborist/botanist and submitted to the County by October 15 each year.*

d. *The restored area shall be at a minimum equal in size to the area of oak habitat lost or disturbed.*

Residual Impacts

Implementation of identified mitigation would minimize potential impacts to oak trees, and will ensure that mitigation for all impacts will be conducted per County requirements, including replanting and long-term monitoring to ensure success. Therefore, potential impacts to coast live oak would be *less than significant with mitigation (Class II)*.

Impact #	Impact Description	Phase	Impact Classification
BIO.7	A rupture or leak from, pipelines, rails cars, or other facility related infrastructure during operation of the Rail Spur Project has potential to impact surrounding onsite sensitive habitats.	Operations	Class II

Implementation of the project could result in spills at the Rail Spur Project area due to mechanical failure, structural failure, corrosion, or human error during pipeline use and oil transportation to and from the Rail Spur. The Rail Spur and the proposed pipeline are immediately adjacent to sensitive coastal scrub habitat and approximately 500 feet from a tributary channel to Oso Flaco Creek. Crude oil or oily water spills during the rainy season have the potential to affect large areas of coastal scrub and adjacent property with riparian habitat.

Given the low speed the trains would be moving at the site (3 mph) it is unlikely that a tank car could be impacted enough to result in a spill. The estimated shell and head puncture velocity of the tank car design proposed for use by the Applicant are 8.3 and 10.3 miles per hour respectively (USDOT 2014). In addition, most of the rail spur would be below the surrounding grade (see grading plans in Appendix A). This would help to contain any oil spilled within the rail spur graded area. The most likely spill related event would be a release during the unloading process due to a loading line failure. The unloading racks are equipped with oil spill drain boxes which would feed below-grade 16-inch-diameter drain lines routed to three parallel 20,000 gallon rectangular storage tanks (approximately 60,000 gallons total volume) located in a vault for containment. The capacity of the storage tanks and drain boxes would be sufficient to hold three full tanker cars of oil. Spilled material collected in this containment system would remove via vacuum truck. This system would serve to prevent any spilled oil from impacting sensitive habitat. The unloading operations would be manned at all times, so if there were a failure in the loading lines the operation would be shutdown well before a tank car could be fully drained.

There is also the potential for a spill from the crude oil pipeline from the unloading area to the crude oil storage tanks. The worst case spill would be if the pipeline leaked or ruptured near the unloading rack since the pipeline increase in elevation as the line runs from the unloading area to the storage tanks. The worst case spill from this pipeline would be approximately 90,800 gallons. A spill near the unloading rack would drain into the spill drain boxes. Potential spills along the rest of the pipeline would be smaller in size due to the elevation change. As one moves up the pipeline toward the storage tanks, the maximum spill volumes decrease, with the smallest spill volumes being near the storage tanks. In the event of a release from the pipeline the oil would drain into the area around the pipeline and unloading racks (see grading plans in Appendix A).

The rail spur and unloading/pipeline system has been designed to contain oil spills within the facility boundaries, which would avoid impacts to surrounding sensitive habitats.

In the unlikely event that spilled oil did reach sensitive habitat, the oiled vegetation and soils would likely need to be removed and taken to a landfill. Cleanup activities that result in the removal of vegetation would require restoration of native habitat following cleanup. The level of impact would depend on the type, size, and location of the spill, the types of habitats and species affected, and cleanup methods. The potential for oil spills is already present within the existing SMR, but the potential to impact sensitive habitats would increase as the Rail Spur project would be located in close proximity to coastal scrub habitat. Even though the likelihood of oil impacting sensitive habitat is low, it would be considered a potentially significant impact.

Mitigation Measures

BIO-7 Prior to issuance of grading and construction permits, the existing Santa Maria Refinery Spill Prevention, Control and Countermeasure Plan (SPCCP) shall be amended and submitted for review and approval to the County Planning and Building Department and the California Department of Fish and Wildlife, Office of Spill Prevention and Response . The Plan shall address protection of sensitive biological resources and revegetation of any areas disturbed during an oil spill or cleanup activities. The Plan shall incorporate, at a minimum, the following:

a. An estimate of the worst case spill volume associated with the rail unloading operations.

b. A description of the spill containment equipment for the facility that clearly demonstrates that the worst case spill can be contained within the rail facility boundaries.

c. A description of the operating procedures for the rail unloading facilities that sever to prevent an oil spill.

d. Measures taken to assure that the crude oil pipeline shall be designed such that any spill from the pipeline shall drain back to rail unloading area or shall otherwise be contained within the access roadway.

e. Provide a list of onsite oil spill response equipment that is adequate to handle the worst case spill volume.

f. Identify training requirement for oil spill response personnel, which includes annual spill drills.

g. Identification and communication protocols and agreements for responsible parties tasked with emergency response, cleanup, and rehabilitation efforts of any wildlife species and habitat that may be impacted.

h. Identification of known sensitive resources within any area that may be impacted by a potential oil spill or cleanup activities, and identification of staging areas and predetermined access and egress routes that pose little or no threat to sensitive biological resources.

i. Identification of oil spill cost recovery procedures for state and local government agencies.

j. Specific measures to avoid impacts to native vegetation and wildlife habitats, plant and animal species, and environmentally sensitive habitat areas during oil spill response and cleanup operations. For Rail Spur construction and operation, the Plan shall specifically address measures to 1) prevent oil spills from entering the adjacent property which includes a tributary to Oso Flaco Creek, and 2) in case a spill does enter any of these water features, shall include measures to prevent a spill from reaching the waters of Oso Flaco Lake. The plan shall describe the worst case scenario for maximum oil spill volume.

k. When habitat disturbance cannot be avoided, the Plan shall provide protocol and methodologies for removing contaminated vegetation from sensitive areas. Low-impact site-specific techniques such as hand-cutting contaminated vegetation, hand raking, and shoveling of contaminated soils shall be specified to remove spilled material from particularly sensitive wildlife habitats.

l. When habitat disturbance cannot be avoided, the Plan shall provide stipulations for development and implementation of site-specific habitat restoration plans and to restore native plant communities to pre-spill conditions. Procedures for timely re-establishment of vegetation that replicates the habitats disturbed (or, in the case of disturbed habitats dominated by non-native species, replaces them with suitable native species) shall also be included.

Residual Impacts

With the implementation of mitigation measure BIO-7 and the design features of the rail spur and unloading racks, potential oil spill impacts within the SMR site would be *less than significant with mitigation (Class II).*

Impact #	Impact Description	Phase	Impact Classification
BIO.8	Proposed construction and operational activities could result in disturbance and mortality to nesting migratory bird species and overwintering burrowing owl.	Construction and Operations	Class II

Vegetation within the Rail Spur Project area provides suitable nesting habitat for a variety of ground-nesting and shrub nesting bird species. As a result of studies conducted by Arcadis, it has been determined that the Rail Spur Project area provides suitable habitat for wintering burrowing owls (Arcadis 2013). Spring and summer conditions at the Rail Spur Project area also appear suitable for potential breeding by this species; however, no evidence of breeding was found during the surveys conducted by Arcadis and is considered unlikely. Breeding by burrowing owls along the coast in Santa Barbara and San Luis Obispo Counties has not been documented since the late 1980's and possibly early 1990's (personal communication, Brad Schram). The entire Rail Spur Project area could be considered habitat for this species. Therefore, construction of the Rail Spur Project would result in a loss of 26.5 acres of available habitat for this species and operational project activities may also adversely affect these species. A staff report on burrowing owl mitigation has been prepared by CDFW which provides mitigation measures intended to offset the loss of habitat and slow or reverse further decline of the species and is incorporated below.

Grading activities are currently proposed during the winter season; however, the schedule may fluctuate upon implementation. Therefore, depending on the actual timing, the project may result in direct disturbance of breeding and nesting special-status bird species during vegetation removal and ground disturbance, and generation of noise and equipment use during grading and construction activities would impact adjacent breeding and nesting of special-status bird species. During the construction and operation phase, noise and lighting from the Rail Spur could deter bird species from nesting and foraging within the area.

Mitigation Measures

BIO-8a *Prior to and during construction, the applicant shall avoid disturbance of bird breeding and nesting activities if construction activities are scheduled to occur during the typical bird nesting season (February 15 and September 1). A qualified biologist shall also be retained to conduct a pre-construction survey on a weekly basis throughout the breeding season only during construction for the purpose of identifying potential bird nesting activity. Should construction continue to occur beyond September 1, a qualified biologist shall conduct a bi-weekly survey during the wintering season for overwintering use by burrowing owl. If no nesting activities or overwintering burrowing owl are detected within the proposed work area, noise-*

producing construction activities may proceed and no further mitigation is required. If nesting activity or overwintering burrowing owl are detected during pre-construction nesting surveys or at any time during the monitoring of construction activities, the following shall occur:

a. *Work activities within 300 feet (500 feet if raptors) shall be delayed. CDFW and/or USFWS shall be contacted to determine the appropriate biological buffer distance around active nest sites.*

b. *Construction activities will be prohibited within the buffer zone until a biologist determines that the young birds have fledged and left the nest, or overwintering burrowing owl is no longer utilizing the burrow. The results of the surveys shall be immediately submitted to the CDFW and the County, demonstrating compliance with the Migratory Bird Treaty Act of 1918.*

c. *If destruction of occupied burrows is unavoidable during the non-breeding season, or if burrowing owls must be translocated during the non-breeding season, a Burrowing Owl Exclusion Plan shall be developed by a qualified biologist following the guidance of the CDFW Staff Report on Burrowing Owl Mitigation (2012).*

BIO-8b To mitigate for the loss of burrowing owl habitat, a minimum of 26.5 acres of suitable burrowing owl foraging and nesting habitat shall be provided in perpetuity through an easement prior to any project construction activities. If feasible, the protected lands shall occur within the boundaries of the Phillips 66 property or lands immediately adjacent to any known burrow site. At a minimum, the mitigation lands shall include similar vegetative attributes as the impact area, be of sufficiently large acreage and include the presence of fossorial mammals. Mitigation lands for burrowing owl may overlap with lands which are designated for restoration under the Dune Habitat Restoration Plan. Should there be any overlap, neither mitigation effort should negatively affect the goals and success criteria of the other. The location of the protected lands shall be determined in coordination with CDFW.

Residual Impacts

Implementation of appropriate mitigation measures would reduce the potential for disturbance of nesting and breeding special-status birds, and therefore, this impact would be *less than significant with mitigation* (Class II).

Impact #	Impact Description	Phase	Impact Classification
BIO.9	Proposed construction activities could result in disturbance and the introduction or spread of invasive plant species.	Construction	Class II

Project construction activities would include a large amount of grading activities and stockpiling of soils within the boundaries of the Rail Spur Project area. Implementation of these project

elements would require removing and replacing soil that contains seeds of invasive plant species. Disturbance of the soil containing invasive species seeds could facilitate the spread of invasive species in and out of the Rail Spur Project area.

Mitigation Measures

BIO-9 Prior to issuance of grading and construction permits, the following measures shall be included on applicable plan sheets and the Dune Habitat Restoration Plan:

a. During construction, the applicant will make all reasonable efforts to limit the use of imported soils for fill. Soils currently existing on-site should be used for fill material. If the use of imported fill material is necessary, the imported material must be obtained from a source that is known to be free is invasive plant species; or the material must consist of purchased clean material such as crushed aggregate, sorted rock, or similar.

b. During construction, the contractor shall stockpile topsoil and redeposit the stockpiled soil within disturbed areas onsite after construction of the Rail Spur is complete, or transport the topsoil to a certified landfill or other allowable location for disposal if soil cannot be used within disturbed areas onsite.

c. All erosion control materials including straw bales, straw wattles, or mulch used on-site must be free of invasive species seed.

d. The required Dune Habitat Restoration Program shall incorporate an invasive species control program.

Residual Impacts

Implementation of mitigation measure BIO-9 would reduce the potential for the introduction and spread of invasive species; therefore, this impact would be considered *less than significant with mitigation (Class II).*

Impact #	Impact Description	Phase	Impact Classification
BIO.10	Long term air quality impacts could result in impacts to known overwintering monarch butterfly habitat located approximately one-mile east of the Rail Spur Project.	Operation	Class III

As described within Section 4.3 (Air Quality), there are potential air quality impacts associated with construction of the proposed project are considered to be less than significant with mitigation (Class II). Operational impacts have shown a potential for significant and unavoidable (Class I) or less than significant with mitigation (Class II). Regardless, these thresholds of significance used to determine the level of impacts to human health and do not take into consideration potential impacts to biological species such as monarch butterfly.

To evaluate the potential long-term impacts to monarch butterfly, Dr. Kingston Leong and Dr. Francis Villablanca were contacted to determine if scientific literature was available to evaluate

the potential impact. Dr. Leong confirmed that there is no scientific literature currently available which evaluates pollutants on monarch butterfly. Dr. Leong added that he has conducted unpublished research regarding the effects of smoke on monarch butterfly and has observed that smoke directly impacts the species causing the individuals to fall from their roosting location. Upon recovery, these individuals exhibited behavior indicating that they do not prefer to return to the existing roosting habitat at which the pollutant (smoke) was applied to them. Although the Rail Spur project would not result in any additional pollutants due to smoke, this unpublished observation by Dr. Leong supports that idea that the species may be affected by other environmental pollutants. Therefore, it is reasonable to assume that long-term impacts from pollutants cannot be discounted, although the effects are unknown.

Because of the unknown effects of pollutants on this species, impacts to this species have been inferred based existing conditions elsewhere along the UPRR route where diesel and particulates likely exceed the levels that are expected with construction and operations of the Rail Spur Project. For comparison purposes, the UPRR railroad is directly located adjacent to overwintering habitat located at the Pismo Preserve and at overwintering locations near Carpentaria. Given the level of short-term air and noise pollutants associated with operational activities along this route due to commuter rail traffic and cargo traffic, it is reasonable to assume that this short-term activity would expose monarchs to a higher level of pollutants than the long-term operation of the Rail Spur Project. Considering the long-term continued success of the overwintering populations at these locations given their proximity to pollutants from the UPPR mainline and the existing vehicle traffic adjacent to their locations, it is inferred that the potential impacts due to construction and operational activities of the Rail Spur Project would be less than significant (Class III).

Mitigation Measures

No mitigation measure is needed since the impact is less than significant.

Residual Impacts

Impacts from construction and operational activities on monarch butterfly are unknown due to a lack of sufficient scientific information. However, impacts to the species are expected to be *less than significant (Class III)* based on a qualitative comparison of nearby successful overwintering sites for monarch butterfly.

Impact #	Impact Description	Phase	Impact Classification
BIO.11	Crude oil transportation along the UPRR mainline could result in a crude oil spill that impacts sensitive plant and wildlife species and wetlands.	Operations	Class I

Transportation of crude oil along the UPRR mainline transects a very wide range of natural habitats and urban areas. Given the overall size of the UPRR mainline and the range of speculation related to prediction of the exact location in which the train derailment or cargo spill may occur, a focused biological survey or delineation of these resources was not conducted as

part of this evaluation. Project impacts were evaluated based on database queries for sensitive resources documented within 300 feet on each side of the UPRR mainline.

Because the analysis of impacts to these resources is limited to available data, the documented occurrences are only intended to serve as a minimum baseline for describing the potential impact that could occur under a scenario of train derailment and oil spill. In addition to these resources, it is reasonable to assume that the UPRR mainline also transects additional sensitive resources that are not currently mapped along the entire route as a sensitive resource for a various reasons such as private property constraints, etc. It cannot be overlooked that the UPRR mainline also transects a variety of "non-sensitive" habitats that may not be unique or threatened but serve as suitable habitat to a wide range of wildlife species for the purposes of foraging and breeding. In the event of a derailment and oil spill, a qualified biologist could develop resource-specific measures for further avoidance and minimization of biological resources and habitat within the vicinity of the accident; however, total avoidance in the event of a derailment and oil spill would not be feasible. Therefore, if biological resources or natural habitat are affected, the impact would be significant.

Sensitive Plant Species

Based on the database query among the UPRR mainline, there are currently a minimum of 167 sensitive plant species occurrences documented within 300 feet of the rail. Approximately 35% of these species occur within San Luis Obispo and Santa Barbara counties alone. In the event of a trail derailment or cargo spill, sensitive plant species could be either directly impacted by the spill, or incur secondary impacts associated with emergency response units and oil spill clean-up procedures. In the case of most sensitive plant species, it is unlikely that a train derailment or cargo spill would eliminate the entire population of the species, as most sensitive plant species populations occur in more than one location. However, highly localized species such as Nipomo Mesa lupine, a federally endangered species, there is a potential that the entire population could be permanently lost or severely damaged in a catastrophic event. However, a major spill along the mainline tracks in the vicinity of the SMR would be unlikely since the trains would be moving at speeds of about five miles per hour since they would be on the mainline siding positioning for entering or exiting the refinery. For a major spill that could affect the entire population of Nipomo Mesa lupine, there would have to be a puncture of the head or shell of a rail car. The estimated shell and head puncture velocity of the tank car design proposed for use by the Applicant are 8.3 and 10.3 miles per hour respectively (USDOT 2014). Direct impacts or secondary impacts to sensitive plants as a result of any trail derailment crude oil spill would be considered a significant impact.

Sensitive Animals Species

Based on the database query among the UPRR mainline, there are currently a minimum of 219 sensitive animal species occurrences documented within 300 feet of the rail. Based on the existing data, the distribution of these species is fairly uniform amongst counties along the UPRR mainline. Nearly half of the sensitive animal species documented along the route occur between Los Angeles to Monterey County. The other majority of the occurrences are from Contra Costa County to Sacramento County. Sensitive species include aquatic, semi-aquatic, and terrestrial animal species. In the event of a train derailment or oil spill it is reasonable to assume that the potential for impacts may be somewhat greater to semi-aquatic and aquatic

species do to the increased probability of contaminates are likely to gravity flow towards drainages, channels, waterbodies, wetlands, etc. Depending on the location and extent of any accident, avian and terrestrial species would likely have a greater potential to avoid impact due to greater mobility and ability to utilize surrounding habitats. Regardless, any train derailment or crude oil spill that would also require mobilization of emergency response units and equipment would have the potential to impact sensitive species and habitat utilized by these species. Therefore, oil spills along the UPRR mainline tracks could be significant depending upon the location of the spill.

Streams, Rivers, Wetlands and Other Waterbodies

Based on the database query among the UPRR mainline, a minimum of 411 streams and rivers are located within 300 feet of the mainline, and a minimum of 26 waterbodies and 578 wetlands documented by the National Wetland Inventory (NWI). Based on the existing data, Santa Barbara County has the most streams and rivers identified along the mainline, a minimum of 108 in total. San Luis Obispo County is second, with a minimum total of 76 streams and crossings. Together, these two counties contain nearly 40% of the documented streams and drainages along the mainline.

In terms of wetlands, the two counties total a minimum of 378 documented wetland features. This consists of nearly 65% of the total wetland features along the mainline route. As mentioned in the discussion above, in the event of a train derailment or crude oil spill it is reasonable to assume that crude oil would gravity flow towards drainages, channels, waterbodies, wetlands, etc. The footprint of the impacts is currently unknown and would greatly depend upon the amount of crude that is spilled, topographical features and other natural barriers, gradient of the channel, presence of water within the channel, etc. Regardless, any train derailment or oil spill would require mobilization of emergency response units and equipment would also have the potential to impact streams, rivers, wetlands and other waterbodies. Therefore, oil spills along the UPRR mainline tracks could be significant, depending upon the location of the spill.

Sensitive Habitats

Based on a database query of the CNDDB, a total of 20 sensitive habitats are documented within 300 feet of the UPRR mainline. Examples of sensitive habitat include: Central Dune Scrub, Coastal and Valley Freshwater Marsh, Coastal Brackish Marsh, Southern Riparian Scrub, Southern Coastal Lagoon, and Southern Willow Scrub. Most of the sensitive species documented within the route occur between Ventura and Monterey counties, which account for 14 of the total 20 documented occurrences. The remaining occurrences are located in Contra Costa, Solano, and Sacramento counties. Overall, the database query of only 20 sensitive habitats is considered to be low, and likely underestimated since the UPRR mainline transects numerous properties and habitat types that may have not been mapped and/or documented within the CNDDB.

Oil Spills

The probability of a crude oil train release incident exceeding 100 gallons would range between one every 45 years to once every 76 years depending upon the rail route used to get to the SMR. (See Appendix H.1 for a detailed discussion of the route specific accident rates.)

The topography or terrain in the area of the oil spill would affect the extent of the potential impacts. Hills, valleys, low areas, and other land features can affect how a release is contained or migrates over the ground surface. A release in an area with a steep slope can accelerate the rate of oil migration and cause the spill to cover a greater area. Releases near low areas or confined valleys could pool and contain the oil and reduce aerial coverage of the release. Spills that flow into a drainage ditch or channel might flow greater distances from the release site due to the funneling of the oil in the channel. Smaller drainage channels generally flow into larger channels, which potentially could empty to a surface water feature, thus increasing the impacts of the spill. A spill released to level, flat ground would generally not migrate as far from the release site. (US State Department, 2013).

In the event of a crude oil spill UPRR would rely first upon local emergency response agencies (police and fire). If needed, UPRR has standing contracts with emergency response firms that are available around the clock to manage any release of crude oil. UPRR maintains spill response contracts with companies throughout their rail network in California. All of the UPRR response firms are rated Oil Spill Response Organization (OSRO) by the State of California and classified Oil Spill Removal Organization by the United States Coast Guard. Depending upon the location, and extent of a spill local response teams, UPRR response personnel and State and Federal response agencies would be involved in the containment and cleanup operations. UPRR has a hazardous Materials Emergency Response Plan that covers their mainlines within the United States. However, this plan does not address the location and staging of any oil spill response equipment along their mainline tracks.

Depending upon the location of an oil spill along the UPRR mainline tracks, there may be no oil spill containment or cleanup equipment immediately available, and it could take some time for emergency response teams to mobilize adequate spill response equipment. Depending upon the location of the spill this could allow enough time for the spill to impact sensitive habitats, and plants and animal species that may occur within these habitats. Therefore, oil spills along the UPRR mainline tracks could be significant depending upon the location of the spill.

Spill Impacts beyond Roseville and Colton Yards

Beyond the two UPRR Yards, trains could travel any number of routes (refer to Figure 2-8). Also, crude oil delivered to California by UPRR would generally pass through either of these two rail yards in route to the SMR. Depending upon the source of the crude oil, crude oil trains could use any portion of the UPRR network between Roseville/Colton and the source location for the crude oil. The exact route that would be taken would depend upon a number of factors, that could include the source of the crude oil, weather conditions, train traffic conditions, etc.

While the exact route the trains would take to get to these two rail yards is speculative, all of the routes within and outside of California would traverse numerous sensitive biological areas, which would increase the probability of a spill impacting sensitive biological resources. In the event of a spill impacting sensitive biological resources along this portion of the route the impacts could be significant for the same reasons discussed above for the routes between Roseville/Colton and the SMR.

Mitigation Measures

BIO-11 The Applicant's contract with UPRR, shall include a provision to provide that UPRR has an Oil Spill Contingency Plan in place for all mainline rail routes in California that could be used for transporting crude oil to the SMR. The Oil Spill Contingency Plan shall at a minimum include the following:

1. *A set of notification procedures that includes a list of immediate contacts to call in the event of a threatened or actual spill. This shall include a rated oil spill response organization, the California Office of Emergency Services, California Department of Fish and Wildlife, Oil Spill Prevention and Response, and appropriate local emergency responders.*
2. *Identification of the resources that could be at risk from an oil spill equal to 20% of the train volume. The resources that shall be identified in the plan, and shown on route maps, include but are not limited to the following:*
    a. *Habitat types, shoreline types, and associated wildlife resources in those locations;*
    b. *The presence of state or federally-listed rare, threatened or endangered species;*
    c. *The presence of aquatic resources including state fish, invertebrates, and plants including important spawning, migratory, nursery and foraging areas;*
    d. *The presence of terrestrial animal and plant resources;*
    e. *The presence of migratory and resident state bird and mammal migration routes, and breeding, nursery, stopover, haul-out, and population concentration areas by season;*
    f. *The presence of commercial and recreational fisheries including aquaculture sites, kelp leases and other harvest areas.*
    g. *Public beaches, parks, marinas, boat ramps and diving areas;*
    h. *Industrial and drinking water intakes, power plants, salt pond intakes, and important underwater structures;*
    i. *Areas of known historical and archaeological sites (but not their specific description or location);*
    j. *Areas of cultural or economic significance to Native Americans (but not their specific description or location).*
    k. *A description of the response strategies to protect the identified site and resources at risk.*
    l. *A list of available oil spill response equipment and staging locations along the mainline tracks and shall include.*
    m. *A program for oil spill training of response staff and a requirement for annual oil spill drillings.*
3. *The oil spill contingency plan must be able to demonstrate that response resources are adequate for containment and recovery of 20% of the train's volume within 24*

hours. In addition, within six hours of the spill the response resources shall be adequate for containment and recovery of 50% of the spill, and 75% of the spill within 12 hours.

The Applicant's contract with UPRR, shall include provision that UPRR's Oil Spill Contingency Plan shall be reviewed and approved by California Department of Fish and Wildlife, Office of Spill Prevention and Response prior to delivery of crude oil by rail to the Santa Maria Refinery.

In addition, the Applicant's contract with UPRR, shall include provisions to provide a copy of UPRR's Oil Spill Contingency Plan to all first response agencies along the mainline rail routes in California that could be used by trains carrying crude oil to the Santa Maria Refinery for the life of the project. Only first response agencies that are able to receive security sensitive information as identified pursuant to Section 15.5 of Part 15 of Title 49 of the Code of Federal Regulations, shall be provided this information.

Residual Impacts

Implementation of mitigation measures BIO-11 and PS-4a through PS-4e would serve to reduce the likelihood of an oil spill and the ability of first response agencies to respond to a crude oil spill by having equipment properly staged, and workers properly trained in oil spill response. In particular, PS-4b would require the use of safer tank cars that would reduce the likelihood of a spill in the event of an accident. Even with implementation of these mitigation measures oil spill impacts to biological resources along the mainline rail routes would remain significant and unavoidable depending upon the location of the spill.

The County may be preempted by federal law from implementing this measure as they require particular contractual provisions that might be determined to improperly impact interstate commerce.

OSPR is currently in the process of implementing the requirements of SB 861, which will require railroads to have detailed oil spill response plans and to conduct oil spill response drills. Oil Spill Contingency Plans are due January 1, 2016. However, the timing of when the plans will have to be in place and the drill would start is not yet know. Portions of this legislation as it relates to railroads have been subject to litigation, and it is likely that further litigation by the railroads will occur, since the railroad claim the State is preempted by federal law. If implemented this legislation would improve oil spill response for train derailments that lead to spills.

In addition, the USDOT is evaluating proposed rules that would require rail operators of crude oil trains to have a comprehensive OSRP that addresses may of the same requirements as the plans required by SB 861. If the DOT adopts a final rule covering crude oil trains, it would improve oil spill response for train derailments that lead to spills.

The USDOT has new rules covering enhancements to tank car standards and operational controls for high-hazardous flammable trains, which include crude oil trains. These new rules would

serve to reduce the likelihood of a train derailment and release of crude oil. Section 4.7, Hazards and Hazardous Materials provides, additional information on the new USDOT rule.

If and when all these rules are adopted and in place, they would serve to reduce train derailments and improve emergency response in the event of an accident. However, even if all of these regulation are implemented, mainline rail oil spills impacts to biological resources along the UPRR mainline tracks could remain s*ignificant and unavoidable (Class I)*, depending upon the location of the spill.

Impact #	Impact Description	Phase	Impact Classification
BIO.12	Crude oil transportation along the UPRR mainline could result impacts to wildlife in the vicinity of the mainline.	Operations	Class III

The crude oil trains servicing the SMR would use existing mainline routes that are currently used by both freight and passenger trains. The mainline tracks handle between about 10 and 80 freight trains per day depending upon the location (Caltrans 2013). All of these existing freight trains have the potential to impact wildlife from noise, light and collisions. The addition of the Rail Spur Project would increase the annual freight train traffic on the mainline sections by 1.7 percent for the most heavily traveled mainlines (Colton to Nevada and Roseville to Nevada) and by about 13 percent for the lightest traveled mainline (SMR to Gilroy). The percent increase in rail traffic on the mainline would be substantially less in some areas if passenger train traffic is taken into account. These numbers are based upon the assumption that all the crude oil unit trains use the same route and includes ten one-way trips per week (five to the SMR and five from the SMR).

There are no established criteria relating train noise and animal behavior. However, some characteristics of train noise are similar to low overflights of aircraft, and researchers generally agree that high noise levels from aircraft overflights can have a disturbing effect on wildlife. Some animals get used to noise exposure while some do not. Documented effects range from simply taking notice and changing body position to taking flight in panic. Whether these responses represent a threat to survival of animals remains unclear, although panic flight may result in injuries to animals in rough terrain.

There is evidence of variation among species in their sensitivity to noise. Noise sensitivity may also differ with the type of noise, which varies in amplitude, frequency, temporal pattern, and duration. Duration may be particularly critical; most anthropogenic noise (manmade noise) is chronic and the effects of chronic noise may differ substantially from those of short-term noise in both severity and response type. For example, brief noise exposure may cause elevated heart rate and a startle response, whereas chronic noise may induce physiological stress and alter social interactions (Blickley 2011).

A sound exposure level (SEL) in excess of 100 dBA has a potential for effects on wildlife. (DOT 2012). The distance to an SEL of 100 dBA for a freight train is 75 feet where the warning horn is not sounded. This screening distance assumes a freight train consisting of two

locomotives and 100 railcars traveling at 50 mph, which is typical for trains on the UPRR tracks (California High-Speed Rail Authority, 2011). Since most railroad right-of-ways are 100 feet wide wildlife would have to be within approximately 25 feet of the edge of the right-of-way to experience noise effects above the recommended threshold. Given that the trains would use existing mainline routes, the limited distance that noise would impact wildlife, and the small increase in train traffic that would result from the project, the impact on wildlife of train noise on the mainline would be considered less than significant.

Light exposure from a train's headlight would only be present for a short period as the train passed any given location, and would only apply to trains moving at night. The train light would not be a permanent light source that would change the overall level of light during all nighttime hours. Given that the trains would use existing mainline routes that have existing trains traffic and that the light from a train is limited in duration at any given location, the impact on wildlife of train light on the mainline would be considered less than significant.

The frequency of wildlife crossing railway lines is influenced by a number of factors, the most significant of them are: (i) character of the surrounding landscape and concentration of mammals in the vicinity, (ii) grade level (height) of the railway in relation to the geomorphology of the surrounding terrain (large mammals run onto the railway particularly in those places where the grade level of the railroad is at the level of the surrounding terrain), (iii) age of the railway (mammals run more often onto newly constructed railways), and (iv) food and migration needs of mammals (Kusta 2011).

Increased train traffic on existing mainline routes can increase the impacts associated with barrier to movement and collisions with wildlife. While there is substantial data on collisions with wildlife, there exists very little data that addresses the probability of a train colliding with wildlife. A study conducted on the risk of moose-train collisions estimated the probability of a collision at about three percent (Gundersen 1998). Another study on the effect of transportation infrastructure on grizzly bears in northwestern Montana collected data on the number of trains and the number of bear crossings over a three year period (Waller 2005). Data in this study would indicate that over the study period there was less than a one percent probability of a bear being stuck and killed by a train.

The Rail Spur Project would use existing mainline rail routes that have been in service for long periods of time and carry substantial levels of existing freight and passenger train traffic. The addition of five trains per week (ten one-way trips per week) to these existing mainline routes would not be expected to substantially increase the incident of wildlife collisions since there would be such a small increase in hourly average train traffic. For example, the grizzle bear study discussed above had average hourly train traffic of 1.2 trains per hour. The addition of five trains per week would increase this hourly average to 1.25 trains, which is not a significant increase.

Given that the trains would use existing mainline routes, the relatively small increase in train traffic that would result from the project and the low estimated probabilities of collisions with wildlife, the impact of train-wildlife collisions on the mainline would be considered less than significant.

Mitigation Measures
No mitigation measure is needed since the impact is less than significant.

Residual Impacts
Impacts to wildlife of train operations on the mainline are considered to be less *than significant (Class III).*

4.4.5 Cumulative Analysis

The Rail Spur Project significantly increases human activity in portions of the Phillips 66 property that consist of sensitive coastal scrub habitat that has been historically used for cattle grazing. Although this area has been historically cattle grazed, the Rail Spur Project would result in permanent impacts to common and rare plant species and wildlife which utilize this habitat. The Rail Spur Project also increases the potential for oil and other materials spills within the property and along the UPRR mainline.

According to the list of cumulative projects (Table 3-1), no other similar developments are currently proposed in the area of the SMR that would also impact coastal scrub and suitable habitat for sensitive species, or the species directly. Therefore, impacts from the proposed project would not exacerbate any loss of habitat, impacts to Nipomo Mesa lupine, or western burrowing owl within implementation of these surrounding projects. Adjacent farming and residential uses are expected to continue with little biological effect from the project. Application of appropriate state and local development guidelines such as the Migratory Bird Treaty Act of 1918, and mitigation measures similar to those listed above would reduce cumulative impacts to a significant but mitigable level.

There is the potential for cumulative impacts associated with the crude by rail project discussed in Chapter 3. In conducting the cumulative analysis for crude by rail it has been assumed that the cumulative projects listed in Table 3.1 would use the same rail car tank design as the SMR Rail Spur Project, and that the cumulative crude by rail projects, with the exception of the Phillips Rail Spur Project, would transport a Bakken type crude, which is a worst case assumption.[1] It has also been assumed that all of the Rail Spur Project crude oil trains would use routes discussed below.

If all of the crude by rail projects travel via the UPRR Roseville Rail Yard, then up to eight crude oil trains per day could travel on the stretch of track between Sacramento and the California boarder (two for Valero, one for Kinder Morgan, two for Alon, one for Targa, one for Plains All American, and one for the SMR). From Roseville, rail traffic would likely follow two different routes; one following the I-80 corridor to Reno, Nevada, with the other heading north along the I-5 corridor to Oregon. A third route through the Feather River Canyon was not considered for further analysis.

[1] Canadian Crude, as specified in the Project Description, was assumed for the Phillips Rail Spur Project as part of the project and cumulative analysis.

From Sacramento the crude oil trains servicing the Valero Benicia and Kinder Morgan projects could use the same UPRR tracks as the Rail Spur Project from Sacramento to the Bay Area. This portion of track could have up to four crude oil trains per day (two for Valero, one for Kinder Morgan, and one for the SMR).

From Sacramento the crude oil trains servicing the Alon, Targa, and Plains All American projects could use the same tracks as the Rail Spur Project from Sacramento to Stockton a distance of about 46 miles. This portion of track could have up to five crude oil trains per day (two for Alon, one for Plains All American, one for Targa, and one for the SMR).

This level of crude oil train traffic would increase the probability of an oil spill along these mainline routes. Assuming all of the cumulative crude oil trains use the same route from Sacramento to the California border, the cumulative probability of a 100 gallon or greater oil spill would be about once every seven years for the route from the SMR to the Oregon border, and once every six years for the route from the SMR to the Nevada border. Both of these mainline rail route pass through a number sensitive biological areas including water body crossings. In the event of an oil spill along this stretch of the mainline rail route, sensitive biological resources could be impacted.

None of the other cumulative crude by rail projects would use the mainline tracks along the southern route thorough the Los Angeles Basin since the crude oil trains going to Bakersfield would use Tehachapi Pass via Barstow and would not travel has far west as Colton. However, up to four unit trains per day could share the route between Nevada and Barstow (two for Alon, one for Plains All American, and one for the SMR). Assuming these cumulative crude oil trains use the same route from Barstow to the California border, the cumulative probability of a 100 gallon or greater oil spill would be about once every 25 years for the southern route from the SMR to the Nevada border. This mainline rail route pass through a number sensitive biological areas including water body crossings. In the event of an oil spill along this stretch of the mainline rail route, sensitive biological resources could be impacted.

In the event of an accident along these stretches of mainline rail routes, a crude oil spill of significant amounts of transported crude could occur, potentially impact sensitive biological resources. Depending upon the location of an oil spill along the UPRR mainline tracks, there may be no oil spill containment or cleanup equipment immediately available, and it could take some time for emergency response teams to mobilize adequate spill response equipment. Depending upon the location of the spill this could allow enough time for the spill to impact sensitive habitats, and plants and animal species that may occur within these habitats. Therefore, oil spills along the UPRR mainline tracks could be cumulatively significant depending upon the location of the spill.

There are a number of cumulative oil development projects in Northern Santa Barbara County (see Table 3.1, Cumulative Project List) that plan to move oil to the Phillips 66 SMPS and then via pipeline to the SMR. In the short-term, depending upon the volume of crude oil received by rail, some of this oil could be displaced and might have to be trucked to other refinery destinations. Any displaced crude oil would likely be sold to other refineries in the Los Angeles basin. The amount, location, and destination of any displaced oil would be driven by market

forces. Given the dynamics of the crude oil market, it is speculative as to what if any local crude oil would be displaced, and what would happen to any oil if it were displaced.

It is possible that the OCS oil delivered to the SMR via the All American and Sisquoc Pipelines could be displaced. In this case the OCS oil would continue to use the All American Pipeline system to refinery markets in Los Angeles. If the OCS crude was displaced, than Phillips 66 could reverse the Sisquoc Pipeline allowing local producers to ship their crude oil via pipeline to Los Angeles. Such reversal of the pipeline flow direction would allow production from area producers to be transported to refinery destinations via pipeline instead of by truck if the SMR is not available. If the Sisquoc Pipeline is not reversed, and the local Northern Santa Barbara County crude oil cannot be processed at the SMR, then as much as 23,000 barrels of crude might have to be trucked to refineries in the Los Angeles Basin. This would equate to about 120 truck trips per day (round trips), which would increase the potential for crude oil spills from trucks. However, potential spill volumes from a truck would be substantially smaller than from a crude oil unit train.

Implementation of mitigation measures PS-4a through PS-4e identified for the Rail Spur Project would reduce the likelihood of an oil spill and the ability of first response agencies to respond to a crude oil spill. In particular, PS-4b would require the use of safer tank cars that would reduce the likelihood of a spill in the event of an accident by about 74 percent.

Implementation of the requirements specified in SB 861 could also serve to reduce the impacts of a spill by having equipment staged in places near sensitive biological resources, and improving the response activities to an oil spill.

Under Federal and State law, UPRR and the owner of the crude oil would be responsible for cleanup and remediation of any oil spill. SB 861 requires that operators demonstrate they have the financial resources to pay for spill response, cleanup, and damages based upon a reasonable worst case spill volume.

Depending upon the location of the spill, impacts may occur to sensitive biological resources that cannot be mitigated through oil spill response, remediation and restoration, and the impact of oil spills from rail cars and trucks would be significant and unavoidable.

The cumulative crude oil trains could increase freight traffic along the northern routes in California by about 17 percent assuming they all use the same mainline. This is highly unlikely since some of the crude oil trains would be operated by BNSF and some by UPRR. In some areas these railroads have they own tracks. The increase in mainline freight traffic from cumulative crude oil trains is more likely to be less than 10 percent taking into account the use different mainline routes. The percent increase would be less if existing passenger train traffic is included. These percentages are based on one-way trips for the cumulative crude oil trains.

This increase in crude oil trains could increase impacts to wildlife due to noise, light, movements and collisions. These impacts already exist for all of the mainline routes due to the existing freight and passenger trains. As discussed in Impact BIO.12 above, a sound exposure level (SEL) in excess of 100 dBA has a potential for effects on wildlife. The distance to an SEL of 100 dBA for a freight train is 75 feet where the warning horn is not sounded. This screening distance

assumes a freight train consisting of two locomotives and 100 railcars traveling at 50 mph, which is typical for trains on the UPRR tracks (California High-Speed Rail Authority, 2011). Since most railroad right-of-ways are 100 feet wide wildlife would have to be within approximately 25 feet of the edge of the right-of-way to experience noise effects above the recommended threshold. Given that the trains would use existing mainline routes, the limited distance that noise would impact wildlife, and the limited increase in overall rail traffic, the cumulative impacts to wildlife of train noise on the mainline would be considered less than significant.

Light exposure from a train's headlight would only be present for a short period as the train passed any given location, and would only apply to trains moving at night. The train light would not be a permanent light source that would change the overall level of light during all nighttime hours. Given that the trains would use existing mainline routes that have existing trains traffic and that the light from a train is limited in duration at any given location, the cumulative impact on wildlife of train light on the mainline would be considered less than significant.

Increased train traffic on existing mainline routes can increase the impacts associated with barrier to movement and collisions with wildlife. As discussed above under Impact BIO-12 a number of studies can be used to estimate the probability of collisions with wildlife. These probabilities ranged from less than one percent to about three percent. All of the cumulative crude by rail projects would use existing mainline rail routes that have been in service for long periods of time and carry substantial levels of existing freight and passenger train traffic. The addition of an average of seven trains per day to these existing mainline routes would not be expected to substantially increase the incident of wildlife collisions since there would be such a small increase in hourly average train traffic. For the route from Roseville to Nevada the average hourly traffic is about 3.3 trains. With the addition of the cumulative crude oil trains this would increase to about 3.9 trains per hour on average.

Given that the trains would use existing mainline routes, the relatively small increase in train traffic that would result from the project and the low estimated probabilities of collisions with wildlife, the impact of train-wildlife collisions on the mainline would be considered less than significant.

4.4.6 Mitigation Monitoring Plan

Mitigation Measure	Plan Requirements and Timing	Compliance Verification		
		Method	Timing	Responsible Party
BIO-1	Prior to initiation of project activities, a floristic survey shall be conducted within the Rail Spur Project area in accordance with the California Department of Fish and Wildlife (CDFW) Protocol for surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities (2009) and the Guidelines for Conducting and Reporting Botanical Inventories for Federally listed, Proposed, and Candidate Species (USFWS 2000). The survey shall specifically focus on the presence/absence of Nipomo Mesa lupine and, if	Conduct focused survey during non-drought year	Prior to ground disturbance	County approved biologist, County Planning and Building

Mitigation Measure		Plan Requirements and Timing	Compliance Verification		
			Method	Timing	Responsible Party
		normal rainfall conditions are present during the survey, the findings would be only valid for a period of two years. The floristic survey shall be conducted during a blooming period with normal rainfall. A 'normal' rainfall period is equivalent to the monthly or annual average of precipitation over a 30 year time period for the area. The results of this survey shall be submitted to the County, United States Fish and Wildlife Service, and California Department of Fish and Wildlife within 30 days of completing the survey. If 'normal' rainfall conditions have occurred prior to the initiation of the survey, and the results of this survey effort determine that Nipomo Mesa lupine is absent from the Rail Spur Project area, no further mitigation for this species shall be required at this time. Because it is well documented that Nipomo Mesa lupine may occur as a result of site disturbance, floristic surveys shall be conducted on an annual basis until there is no further disturbance to the native soil as a result of construction activities. Should Nipomo Mesa lupine be identified during construction, or if Nipomo Mesa lupine is identified prior to the initiation of activities during 'normal' rainfall conditions, the project shall avoid the individual or population to the extent feasible. If avoidance is not feasible then the applicant would be required by law to coordinate with California Department of Fish and Wildlife to acquire a 2081 Incidental Take Permit for this species and comply with any conditions imposed by that permit. At a minimum, the applicant shall implement BIO-5a (Dune Habitat Restoration Plan) and include Conservation Measures to establish and monitor Nipomo Mesa lupine population(s) within the identified on-site mitigation area at a ratio of 3:1 for individuals. The mitigation area for Nipomo Mesa lupine may overlap with the mitigation area for sensitive community impacts, which shall be protected from any grazing activities in perpetuity.			
	BIO-2	Prior to project activities, the total number of California spineflower (Mucronea californica), sand almond (Prunus fasciculata var. punctata), Blochman's groundsel (Senecio blochmaniae), Blochman's leafy daisy (Erigeron blochmaniae), and dune larkspur (Delphinium parryi ssp. blochmaniae*)* shall be accurately estimated during the implementation of BIO-1. These population estimates shall be utilized as the basis for the in-kind replacement of these species described in Mitigation Measure BIO-5e. Should any additional populations of sensitive plant species that are considered rare by the California Native Plant Society (and not formally listed under the Endangered Species Act) be identified during the implementation of BIO-1 that were not previously	Conduct focused survey during non-drought year	Prior to ground disturbance	County approved biologist, County Planning and Building

Mitigation Measure	Plan Requirements and Timing	Compliance Verification		
		Method	Timing	Responsible Party
	observed in 2013, these species will also be replaced in-kind as part of the Dune Habitat Restoration Program and replacement success would be held to the same performance standards.			
BIO-3	Prior to issuance of grading and construction permits, a qualified wildlife biologist shall prepare a Sensitive Species Management Plan, which outlines the procedures and protocols for capturing and relocating sensitive animal species including coast horned lizard and silvery legless lizard during all phases of grading. This plan shall be approved by the County and California Department of Fish and Wildlife. Implementation of the Plan is required where impacts to sensitive animal species and their habitats are unavoidable and located within a minimum of 100 feet of the Disturbance Area (or greater as determined by the California Department of Fish and Wildlife). Within 30 days prior to mobilization, grading or construction, a qualified wildlife biologist shall conduct a pre-construction survey of the area of impact to determine the presence of sensitive wildlife species. Individuals will be searched and captured using techniques appropriate to the species of concern and approved by the appropriate resource agencies. All captured individuals will be released as soon as possible into nearby suitable habitat that has been previously identified by the qualified wildlife biologist in consultation with the County and California Department of Fish and Wildlife. The size or age-class, location of capture, and the relocation site shall be recorded for each individual relocated from the site.	Review and approval of Sensitive Species Management Plan	Prior to issuance of grading and construction permits	California Department of Fish and Wildlife, County Planning and Building
BIO-4	At a minimum, the following measures shall be incorporated in the Sensitive Species Management Plan: 1. Prior to grading activities, a County-approved biologist shall conduct a survey to identify whether badgers are using any portion of the site near the area in which disturbance is proposed. The survey shall be conducted no less than 14 days and no more than 30 days prior to construction. The survey shall cover the boundaries of proposed disturbance and 100 feet beyond, including all access roads, and shall examine both old and new dens. If potential badgers dens are found, they shall be inspected to determine whether they are occupied by badgers. Occupation of the den shall be determined by one or more of the following methods: a. Use of a fiber-optic scope to examine the den to the end: b. Partially obstruct the den entrance with sticks, grass, and leaves for three consecutive nights and examine for signs that animals are entering or leaving the den;	Review and approval of Sensitive Species Management Plan	Prior to issuance of grading and construction permits	County approved biologist, County Planning and Building

Mitigation Measure	Plan Requirements and Timing	Compliance Verification		
		Method	Timing	Responsible Party
	c. Dust the den entrance with a fine layer of dust or tracking medium for three consecutive nights and examine the following mornings for tracks. 2. Inactive dens within construction areas shall be excavated by hand with a shovel to prevent re-use of dens during construction. 3. If badgers are found in dens between August and January, a qualified biologist shall establish a 50 foot diameter exclusion zone around the entrance. To avoid disturbance and the possibility of direct take of badgers, no construction, grading, or staging of equipment shall be conducted within the buffer area until the biologist has determined that the badger(s) have vacated the den. 4. If badgers are found in dens between February and July, nursing young may be present. Therefore, a County-approved biologist shall establish a 200-foot diameter buffer around the den. No construction, grading, or staging of equipment shall be conducted within the buffer area until the biologist has determined that the badgers have vacated the den.			
BIO-5a	Prior to issuance of any grading permits, the applicant shall retain a qualified biologist and/or botanist acceptable to the County to prepare a Dune Habitat Restoration Plan (DHRP) for review and approval by the County in consultation with the California Department of Fish and Wildlife (CDFW) and the United States Fish and Wildlife Service (USFWS). The DHRP shall be signed by the retained qualified biologist and/or botanist and shall detail the methods for restoring or enhancing a minimum of 41.76 acres (2:1 for permanent impacts) of vegetation types considered to be sensitive communities by CDFW, with an emphasis on restoring known rare plant associations found within the BSA and those associations considered locally rare to the Guadalupe-Nipomo Dunes. The restoration area(s) shall be located within the Phillips 66 property boundary and protected from any grazing activity. The DHRP shall focus on restoring and enhancing sensitive communities, known rare plant associations, and species of locally rare plant associations, by removing invasive species (iceplant, veldt grass, and other invasive species) and planting appropriate native species, including but not limited to: mock heather, purple nightshade, Blochman's ragwort, Blochman's leafy daisy, California spineflower, sand almond and suffrutescent wallflower. Should Nipomo Mesa lupine be identified within the Rail Spur Project area as a result of BIO-1, and avoidance of this species is not feasible, the DHRP shall also include methods of restoring and enhancing Nipomo Mesa lupine at a ratio of 3:1 for permanent impacts to	Review and Approval of Dune Habitat Restoration Plan	Prior to issuance of grading permits	County approved biologist or botanist, County Planning and Building

Mitigation Measure	Plan Requirements and Timing	Compliance Verification		
		Method	Timing	Responsible Party
	individuals. Regardless of whether Nipomo Mesa lupine is identified on-site as part of BIO-1, the DHRP shall also focus on restoring and enhancing sensitive communities and rare plant associations immediately adjacent to known Nipomo Mesa lupine populations in order to promote expansion of the existing population. At a minimum, the DHRP shall include the following elements: a. Identification of locations, amounts, size and types of plants to be replanted, as well as any other necessary components (e.g., temporary irrigation, amendments, etc.) to ensure successful reestablishment. b. Provide for a native seed collection effort prior to ground disturbing activities. Collection of native seed shall be propagated by a County-approved contractor. Plants shall include but not be limited to California Native Plant Society (CNPS) listed plant species that may be affected. c. Quantification of impact based on "as-built plans" and quantification of mitigation areas such that the replacement criteria are met (2:1 acreage ratio, or 3:1 for Nipomo Mesa lupine individuals). d. A program schedule and success criteria for a minimum five year monitoring and reporting program that is structured to ensure the success of the DHRP. e. Provide for the in-kind replacement of the following sensitive species that occur within the Rail Spur Project area, which may include: California spineflower (Mucronea californica), sand almond (Prunus fasciculata var. punctata), Blochman's groundsel (Senecio blochmaniae), Blochman's leafy daisy (Erigeron blochmaniae) and dune larkspur (Delphinium parryi ssp. blochmaniae). Should Nipomo Mesa lupine be identified onsite, in-kind replacement of this species shall also be included. Individuals that are removed or damaged shall be replaced in-kind at a 3:1 ratio (based on square feet cover) within the designated restoration area with 100% success in 5 years. f. Identification of access and methods of materials transport to the restoration area, including personnel, vehicles, tools, plants, irrigation equipment, water, and all other similar supplies. Access shall not result in new or additional impacts to habitat and special-status species. g. The required Dune Habitat Restoration Program shall incorporate an invasive species control program and be implemented by qualified personnel to ensure that the invasive species control program			

Mitigation Measure	Plan Requirements and Timing	Compliance Verification		
		Method	Timing	Responsible Party
	does not result in any additional impacts to Nipomo Mesa lupine, or other rare species. h. The restoration area shall be protected in perpetuity by an easement. The easement shall either be an open space easement or a conservation easement if required by the California Department of Fish and Wildlife and United States Fish and Wildlife Service, or if chosen by the Applicant. The easement shall be in a form approved by County Counsel and CDFW and/or USFWS if required by those agencies. i. Upon successful completion of the Dune Habitat Restoration Program and subsequent approval by the permitting resource agencies, the applicant shall consider providing non-profit organizations such as California Native Plant Society and The Land Conservancy with long term access to the restoration site for the purposes of education, and long-term maintenance of the restoration site. Long-term maintenance activities would only occur if permitted by the applicant, and would require coordination with California Department of Fish and Wildlife and United States Fish and Wildlife Service. Access to the site is not guaranteed as a result of this measure. Funding for any future long-term maintenance activities shall be facilitated by the non-profit organization.			
BIO-5b	Prior to initiation of construction, the applicant shall retain a qualified biologist or botanist acceptable to the County to supervise the implementation of the DHRP. The qualified biologist or botanist shall supervise plant salvage and/or seed collection (prior to construction), plant propagation, site preparation, implementation timing, species selected for planting, planting installation, maintenance, monitoring, and reporting of the restoration efforts. The qualified biologist or botanist shall prepare and submit four annual reports and one final monitoring report to the County for review and approval in consultation with California Department of Fish and Wildlife and United States Fish and Wildlife Service. The annual and final monitoring reports shall include discussions of the restoration activities, project photographs, an assessment of success criteria attainment, and any remediation actions that may have been required in order to achieve the success criteria.	Approval of biologist or botanist, for implementing Dune Habitat Restoration Plan	Prior to initiation of construction	County Planning and Building
BIO-5c	Prior to issuance of grading and construction permits, the applicant shall define and clearly mark construction zone boundaries adjacent to known sensitive species occurrences with high visibility construction fencing, and shall mark groups of individual plants located within potential disturbance areas with highly visible flagging or fencing.	Field verification of delineated construction zone boundaries	Prior to issuance of grading and construction permits	County Planning and Building

Mitigation Measure	Plan Requirements and Timing	Compliance Verification		
		Method	Timing	Responsible Party
BIO-5d	Prior to construction (within 48 hours), the applicant's retained biologist or botanist shall provide instruction to construction personnel regarding avoidance of sensitive habitats and special-status plants located in the vicinities of areas experiencing ground disturbance. The training shall include presentation of photos of sensitive plant species and habitat, summary of regulations and conditions applicable to protection of the species, identification of areas where removal of the species is permitted pursuant to the final conditions of approval and DHRP, and any ramifications for non-compliance.	Onsite review of environmental training	Prior to construction (max 48 hours)	County Planning and Building
BIO-5e	During construction, where disturbance to sensitive habitat and sensitive plant species is unavoidable (and permitted by the County upon approval of the project), the top four inches of surface material shall be salvaged and stockpiled for restoration use in consultation with the County, California Department of Fish and Wildlife and United States Fish and Wildlife Service. Existing native vegetation shall also be removed and included as mulch in order to capture any existing native seed material. The salvaged material shall be used as the finish layer on fill slopes and other disturbed areas that will not require regular vegetation maintenance.	Onsite verification that topsoil is retained	During construction	County Planning and Building
BIO-5f	During construction, the use of heavy equipment shall be restricted to within the identified work areas throughout the duration of construction activities and all construction personnel shall be advised of the importance of limiting ground disturbance and construction activities to within the identified work areas. A full-time biological monitor shall monitor shall map any populations or individual sensitive species that may bloom within, or directly adjacent to, areas of ground disturbance. Should Nipomo Mesa lupine be identified at any time during construction, the species shall be completely avoided and the County shall be contacted immediately. If avoidance is not feasible, or the species was inadvertently impacted during construction before identification by the biological monitor, the County and the applicant shall coordinate directly with the California Department of Fish and Wildlife and United States Fish and Wildlife Service. At a minimum, the impacts to any sensitive plant species shall be mitigated though implementation of BIO-5a.	Onsite verification that use of equipment is restricted to designated work area	During construction	County Planning and Building
BIO-6a	At the time of application for grading and/or construction permits, the applicant shall prepare an Oak Tree Inventory, Avoidance, and Protection Plan as outlined herein. The plan shall be reviewed by a County-approved arborist prior to approval of grading and/or construction permits, and shall include the following items:	Review and approval of Oak Tree Inventory, Avoidance, and Protection Plan	Prior to issuance of grading and construction permits	County Planning and Building

Mitigation Measure	Plan Requirements and Timing	Compliance Verification		
		Method	Timing	Responsible Party
	a. Construction plans shall clearly delineate all trees within 50 feet of areas where soil disturbance would occur, and shall show which trees are to be impacted, and which trees are to remain unharmed. All inventoried trees shall be shown on maps. The species, diameter at breast height, location, and condition of these trees shall be documented in data tables. b. Prior to any grading or grubbing, all trees that are within fifty feet of construction or grading activities shall be marked for protection and their root zone shall be fenced. The outer edge of the tree root zone to be fenced shall be outside of the canopy 1/2 again the distance as measured between the tree trunk and outer edge of the canopy (i.e., 1-1/2 times the distance from the trunk to the drip line of the tree), unless otherwise shown on the approved construction plans. c. Prior to any grading or grubbing, a certified arborist shall be retained by the applicant to identify at risk limbs and perform all necessary trimming of oak tree limbs that could be damaged by project activities. Pruning shall be conducted as needed along all access roads and construction areas, including paved portions of County roads used for project equipment access. All pruning shall be conducted prior to construction equipment passage to minimize the potential for inadvertent damage to oak tree limbs. Removal of larger lower branches should be minimized to 1) avoid making tree top heavy and more susceptible to "blow-overs", 2) reduce having larger limb cuts that take longer to heal and are much more susceptible to disease and infestation, 3) retain wildlife habitat values associated with the lower branches, 4) retain shade to keep summer temperatures cooler and 5) retain the natural shape of the tree. The certified arborist shall document all pruning impacts in a report submitted to the County San Luis Obispo. d. A certified arborist shall be retained by the applicant to supervise all construction activities in areas containing oak trees in order to minimize disturbance to identified trees and their root zones wherever possible. The certified arborist will document all construction-related impacts to oak trees in an "as-built" report submitted to the County San Luis Obispo. e. Immediately following submittal of the oak tree impact "as-built" report to the County San Luis Obispo, the applicant shall implement mitigation for all identified pruning and construction-related oak impacts per current County San Luis Obispo ratios			

Mitigation Measure	Plan Requirements and Timing	Compliance Verification		
		Method	Timing	Responsible Party
	and methods for oak tree mitigation and replacement. County oak tree replacement standards require a project proponent to prepare and implement an oak tree replacement plan. The plan shall provide for the in-kind replacement, at a 4:1 ratio, of all oak trees removed as a result of the project. In addition, the plan must provide for the in-kind planting, at a 2:1 ratio, of all oak trees impacted but not removed. The replacement trees must be monitored for seven years after planting.			
BIO-6b	Upon application for grading and construction permits, the applicant shall submit an Oak Tree Replacement, Monitoring, and Conservation Plan to the County Department of Planning and Building. The Plan shall include the following: a. The County-approved arborist shall provide or submit approval of an oak tree replacement plan at a minimum 4:1 ratio for oak trees removed and a minimum replacement ration of 2:1 ratio for oak trees impacted (i.e., disturbance within the root zone area). b. Replacement oak trees shall be from regionally or locally collected seed stock grown in vertical tubes or deep one-gallon tree pots. Four-foot diameter shelters shall be placed over each oak tree to protect it from deer and other herbivores, and shall consist of 54-inch tall welded wire cattle panels (or equivalent material) and be staked using T-posts. Wire mesh baskets, at least two feet in diameter and two feet deep, shall be use below ground. Planting during the warmest, driest months (June through September) shall be avoided. The plan shall provide a species-specific planting schedule. If planting occurs outside this time period, an irrigation plan shall be submitted prior to permit issuance and implemented upon approval by the county. c. Replacement oak trees shall be planted no closer than 20 feet on center and shall average no more than four planted per 2,000 square feet. Trees shall be planted in random and clustered patterns to create a natural appearance. As feasible, replacement trees shall be planted in a natural setting on the north side of and at the canopy/dripline edge of existing mature native oak trees (if present); on north-facing slopes; within drainage swales (except when riparian habitat present); where topsoil is present; and away from continuously wet areas (e.g., lawns, irrigated areas, etc). Replanting areas shall be either in native topsoil or areas where native topsoil has been	Review and approval of Oak Tree Replacement, Monitoring, and Conservation Plan	Prior to issuance of grading and construction permits	County Planning and Building

Mitigation Measure	Plan Requirements and Timing	Compliance Verification		
		Method	Timing	Responsible Party
	reapplied. A seasonally timed maintenance program, which includes regular weeding (hand removal at a minimum of once early fall and once early spring within at least a three-foot radius from the tree or installation of a staked "weed mat" or weed-free mulch) and a temporary watering program, shall be developed for all oak tree planting areas. A qualified arborist/botanist shall be retained to monitor the acquisition, installation, and maintenance of all oak trees to be replaced. Replacement trees shall be monitored and maintained by a qualified arborist/botanist for at least seven years or until the trees have successfully established as determined by the County Environmental Coordinator. Annual monitoring reports will be prepared by a qualified arborist/botanist and submitted to the County by October 15 each year. d. The restored area shall be at a minimum equal in size to the area of oak habitat lost or disturbed.			
BIO-7	Prior to issuance of grading and construction permits, the existing Santa Maria Refinery Spill Prevention, Control and Countermeasure Plan (SPCCP) shall be amended and submitted for review and approval to the County Planning and Building Department and the California Department of Fish and Wildlife, Office of Spill Prevention and Response . The Plan shall address protection of sensitive biological resources and revegetation of any areas disturbed during an oil spill or cleanup activities. The Plan shall incorporate, at a minimum, the following: a. An estimate of the worst case spill volume associated with the rail unloading operations. b. A description of the spill containment equipment for the facility that clearly demonstrates that the worst case spill can be contained within the rail facility boundaries. c. A description of the operating procedures for the rail unloading facilities that sever to prevent an oil spill. d. Measures taken to assure that the crude oil pipeline shall be designed such that any spill from the pipeline shall drain back to rail unloading area or shall otherwise be contained within the access roadway. e. Provide a list of onsite oil spill response equipment that is adequate to handle the worst case spill volume. f. Identify training requirement for oil spill response personnel, which includes annual spill drills. g. Identification and communication protocols and agreements for responsible parties tasked with	Review and approval of Spill Prevention and Response Plan / Emergency Response Action Plan	Prior to issuance of grading and construction permits	County Planning and Building California Department of Fish and Wildlife, Office of Spill Prevention and Response

Mitigation Measure	Plan Requirements and Timing	Compliance Verification		
		Method	Timing	Responsible Party
	emergency response, cleanup, and rehabilitation efforts of any wildlife species and habitat that may be impacted. h. Identification of known sensitive resources within any area that may be impacted by a potential oil spill or cleanup activities, and identification of staging areas and predetermined access and egress routes that pose little or no threat to sensitive biological resources; i. Identification of oil spill cost recovery procedures for state and local government agencies; j. Specific measures to avoid impacts to native vegetation and wildlife habitats, plant and animal species, and environmentally sensitive habitat areas during oil spill response and cleanup operations. For Rail Spur construction and operation, the Plan shall specifically address measures to 1) prevent oil spills from entering the adjacent property which includes a tributary to Oso Flaco Creek, and 2) in case a spill does enter any of these water features, shall include measures to prevent a spill from reaching the waters of Oso Flaco Lake. The plan shall describe the worst case scenario for maximum oil spill volume. k. When habitat disturbance cannot be avoided, the Plan shall provide protocol and methodologies for removing contaminated vegetation from sensitive areas. Low-impact site-specific techniques such as hand-cutting contaminated vegetation, hand raking, and shoveling of contaminated soils shall be specified to remove spilled material from particularly sensitive wildlife habitats. l. When habitat disturbance cannot be avoided, the Plan shall provide stipulations for development and implementation of site-specific habitat restoration plans and to restore native plant communities to pre-spill conditions. Procedures for timely re-establishment of vegetation that replicates the habitats disturbed (or, in the case of disturbed habitats dominated by non-native species, replaces them with suitable native species) shall also be included.			
BIO-8a	Prior to and during construction, the applicant shall avoid disturbance of bird breeding and nesting activities if construction activities are scheduled to occur during the typical bird nesting season (February 15 and September 1). A qualified biologist shall also be retained to conduct a pre-construction survey on a weekly basis throughout the breeding season only during construction for the purpose of identifying potential bird	Avoid nesting birds through timing or verification by survey	Prior to and during construction	County approved biologist, County Planning and Building

Mitigation Measure	Plan Requirements and Timing	Compliance Verification		
		Method	Timing	Responsible Party
	nesting activity. Should construction continue to occur beyond September 1, a qualified biologist shall conduct a bi-weekly survey during the wintering season for overwintering use by burrowing owl. If no nesting activities or overwintering burrowing owl are detected within the proposed work area, noise-producing construction activities may proceed and no further mitigation is required. If nesting activity or overwintering burrowing owl are detected during pre-construction nesting surveys or at any time during the monitoring of construction activities, the following shall occur: a. Work activities within 300 feet (500 feet if raptors) shall be delayed. CDFW and/or USFWS shall be contacted to determine the appropriate biological buffer distance around active nest sites. b. Construction activities will be prohibited within the buffer zone until a biologist determines that the young birds have fledged and left the nest, or overwintering burrowing owl is no longer utilizing the burrow. The results of the surveys shall be immediately submitted to the CDFW and the County, demonstrating compliance with the Migratory Bird Treaty Act of 1918. c. If destruction of occupied burrows is unavoidable during the non-breeding season, or if burrowing owls must be translocated during the non-breeding season, a Burrowing Owl Exclusion Plan shall be developed by a qualified biologist following the guidance of the CDFW Staff Report on Burrowing Owl Mitigation (2012).			
BIO-8b	To mitigate for the loss of burrowing owl habitat, a minimum of 26.5 acres of suitable burrowing owl foraging and nesting habitat shall be provided in perpetuity through an easement prior to any project construction activities. If feasible, the protected lands shall occur within the boundaries of the Phillips 66 property or lands immediately adjacent to any known burrow site. At a minimum, the mitigation lands shall include similar vegetative attributes as the impact area, be of sufficiently large acreage and include the presence of fossorial mammals. Mitigation lands for burrowing owl may overlap with lands which are designated for restoration under the Dune Habitat Restoration Plan. Should there be any overlap, neither mitigation effort should negatively affect the goals and success criteria of the other. The location of the protected lands shall be determined in coordination with CDFW.	Review and approval	Prior to issuance of grading and construction permits	County Planning and Building California Department of Fish and Wildlife
BIO-9	Prior to issuance of grading and construction permits, the following measures shall be included on applicable plan sheets and the Dune Habitat Restoration Plan: a. During construction, the applicant will make all	Review and approval of grading and construction	Prior to issuance of grading and construction	County Planning and Building

Mitigation Measure	Plan Requirements and Timing	Compliance Verification		
		Method	Timing	Responsible Party
	reasonable efforts to limit the use of imported soils for fill. Soils currently existing on-site should be used for fill material. If the use of imported fill material is necessary, the imported material must be obtained from a source that is known to be free is invasive plant species; or the material must consist of purchased clean material such as crushed aggregate, sorted rock, or similar. b. During construction, the contractor shall stockpile topsoil and redeposit the stockpiled soil within disturbed areas onsite after construction of the Rail Spur is complete, or transport the topsoil to a certified landfill or other allowable location for disposal if soil cannot be used within disturbed areas onsite. c. All erosion control materials including straw bales, straw wattles, or mulch used on-site must be free of invasive species seed. d. The required Dune Habitat Restoration Program shall incorporate an invasive species control program.	plans	permits	
BIO-11	The Applicant's contract with UPRR, shall include a provision to provide that UPRR has an Oil Spill Contingency Plan in place for all mainline rail routes in California that could be used for transporting crude oil to the SMR. The Oil Spill Contingency Plan shall at a minimum include the following: 1. A set of notification procedures that includes a list of immediate contacts to call in the event of a threatened or actual spill. This shall include a rated oil spill response organization, the California Office of Emergency Services, California Department of Fish and Wildlife, Oil Spill Prevention and Response, and appropriate local emergency responders. 2. Identification of the resources that could be at risk from an oil spill equal to 20% of the train volume. The resources that shall be identified in the plan, and shown on route maps, include but are not limited to the following: a. Habitat types, shoreline types, and associated wildlife resources in those locations; b. The presence of state or federally-listed rare, threatened or endangered species; c. The presence of aquatic resources including state fish, invertebrates, and plants including important spawning, migratory, nursery and foraging areas; d. The presence of terrestrial animal and plant resources; e. The presence of migratory and resident state	Review and approval of Spill Contingency Plan	Prior to operation of rail unloading facility	California Department of Fish and Wildlife, Office of Spill Prevention and Response

Mitigation Measure	Plan Requirements and Timing	Compliance Verification		
		Method	Timing	Responsible Party
	bird and mammal migration routes, and breeding, nursery, stopover, haul-out, and population concentration areas by season; f. The presence of commercial and recreational fisheries including aquaculture sites, kelp leases and other harvest areas. g. Public beaches, parks, marinas, boat ramps and diving areas; h. Industrial and drinking water intakes, power plants, salt pond intakes, and important underwater structures; i. Areas of known historical and archaeological sites (but not their specific description or location); j. Areas of cultural or economic significance to Native Americans (but not their specific description or location). k. A description of the response strategies to protect the identified site and resources at risk. l. A list of available oil spill response equipment and staging locations along the mainline tracks and shall include. m. A program for oil spill training of response staff and a requirement for annual oil spill drillings. 3. The oil spill contingency plan must be able to demonstrate that response resources are adequate for containment and recovery of 20% of the train's volume within 24 hours. In addition, within six hours of the spill the response resources shall be adequate for containment and recovery of 50% of the spill, and 75% of the spill within 12 hours. The Applicant's contract with UPRR, shall include provision that UPRR's Oil Spill Contingency Plan shall be reviewed and approved by California Department of Fish and Wildlife, Office of Spill Prevention and Response prior to delivery of crude oil by rail to the Santa Maria Refinery. In addition, the Applicant's contract with UPRR, shall include provisions to provide a copy of UPRR's Oil Spill Contingency Plan to all first response agencies along the mainline rail routes in California that could be used by trains carrying crude oil to the Santa Maria Refinery for the life of the project. Only first response agencies that are able to receive security sensitive information as identified pursuant to Section 15.5 of Part 15 of Title 49 of the Code of Federal Regulations, shall be provided this information.			

4.4.7 References

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4.5 Cultural and Historic Resources

This section discusses the cultural resources setting; specifically the existing prehistoric archaeological site (CA-SLO-1190), and historic-era structures and buildings associated with the Santa Maria Refinery (SMR) within the Project Site, and the potential for newly discovered archaeological resources, which could potentially be impacted by construction of the Rail Spur Project. Mitigation measures are identified for any significant impact. The section also discusses the cumulative cultural and historic resource impacts, and potential impacts that may arise from the proposed use of existing UPRR mainline routes which would be utilized to import crude oil to the Project Site.

The analysis in this section is based on direct consultation with the local Native American community and on the following technical reports and memorandum:

- Cultural Resources Assessment Report: Phillips 66 Santa Maria Refinery Rail Project, San Luis Obispo County, California (Arcadis 2013a)
- Cultural Resources Assessment Report for a Portion of Archaeological Site CA-SLO-1190, Phillips 66 Santa Maria Refinery Rail Project, San Luis Obispo County, California (Arcadis 2103b)
- Memorandum: Cultural Resources Assessment of the Phillips 66 Santa Maria Refinery (Arcadis 2013c)
- Extended Phase 1 Archaeological Inventory for the Phillips 66 Santa Maria Refinery Rail Project, San Luis Obispo, California (Applied Earthworks 2014)

These reports were peer reviewed as part of the EIR process and SWCA cultural resources staff attended a field visit to the Project Site on August 19, 2013 to verify the information provided in the reports. Due to the sensitive nature of archaeological resources, which can be damaged or destroyed through uncontrolled public disclosure of information, specific resource locations are not disclosed in the EIR. The reports, however, are on file with the County of San Luis Obispo and are available for review by qualified persons.

4.5.1 Project Site Environmental Setting

The Project Site is located within the coastal plain, along the eastern margin of the Oceano Dune complex. An isolated dune area that extends above the present surface elevation is located directly north of the Rail Spur Project and east of the proposed pipeline corridor. Cross-sections of these Aeolian deposits indicate windblown sands up to 200 feet deep.

The Project Site is within the South Coast Ranges physiographic province (Moratto 1984). According to paleontological records search data compiled by the Natural History Museum of Los Angeles County: “The entire proposed project area has surficial deposits composed of older

Quaternary dune sands" and "Older Quaternary or even Pliocene deposits probably underlie the Quaternary dune sands at relatively shallow depth" (McLeod 2012).

The Project Site is within the coastal plain, with the southern end of the Santa Lucia Range to the east (Sharp 1976). An unnamed tributary to Oso Flaco Creek is located immediately south of the Project Site. Oso Flaco Creek provides water to Little Oso Flaco Lake and Oso Flaco Lake to the west before emptying into the Pacific Ocean.

4.5.1.1 Regional Prehistory

The Project Site lies in what is generally described as the Central Coast Archaeological Region, which is one of eight arbitrary organizational divisions of the state (Moratto 1984). This region extends southward from Monterey Bay and includes most of San Luis Obispo County.

Several chronological sequences have been devised to understand cultural changes within the Central Coast Region subsequent to the Paleoindian (ca. 10,000 B.C.) and Milling Stone (ca. 6500 – 3500 B.C.) periods. The Milling Stone period was first described by Wallace as part of his synthesis of earlier studies and development of a comprehensive southern California coastal region sequence, a chronological scheme that is still widely used today (Wallace 1955, 1978). Initially, Central Coast researchers relied on the cultural sequences developed for the San Francisco Bay area to the north, the Central Valley to the east, and the Santa Barbara region to the south. Breschini and Haversat proposed the Sur and Monterey Patterns to describe Central Coast occupations dating younger than 5,000 years (Breschini and Haversat 1980). Jones and Jones and Waugh presented an integrated central coast sequence after the development of cultural resource management in the 1980s and ensuing excavations of numerous archaeological sites (Jones et al. 1994, Jones and Waugh 1995). Three periods are presented in their prehistoric sequence subsequent to the Milling Stone period: Early, Middle, and Late periods.

More recently, Jones and Ferneau updated the sequence following the Milling Stone period as follows: Early, Early-Middle Transition, Middle, Middle-Late Transition, and Late periods (Jones and Ferneau 2002). It has become apparent that the archaeology of the Central Coast Region subsequent to the Milling Stone period is distinct from that of the Bay Area and Central Valley, although the region has more in common with the Santa Barbara Channel area during the Middle and Middle-Late Transition periods, but few similarities during the Late period (Jones and Ferneau 2002).

4.5.1.2 Regional Ethnography

The Project Site was historically occupied by the northernmost subdivision of the Chumash, the Obispeño (after Mission San Luis Obispo de Tolosa) (Gibson 1983, Kroeber 1925). The precise location of the boundary between the Chumashan-speaking Obispeño Chumash and their northern neighbors, the Hokan-speaking Playanos Salinan, is currently the subject of debate (Milliken and Johnson 2005). Jones and Waugh state that "those boundaries may well have fluctuated through time in response to possible shifts in economic strategies and population movement" (Jones and Waugh 1995).

The term Chumash initially applied only to the people living on Santa Cruz Island. Chumash now refers to the entire linguistic and ethnic group of societies that occupied the coast between San Luis Obispo and northwestern Los Angeles County, including the Santa Barbara Channel Islands, and inland to the western edge of the San Joaquin Valley. Neighboring groups included the Salinan to the north, the Southern Valley Yokuts and Tataviam to the east, and the Gabrielino (Tongva) to the south. Chumash place names in the project vicinity include Pismu (Pismo Beach), Tematatimi (along Los Berros Creek), and Tilhini (near San Luis Obispo) (Greenwood 1978).

The effect of mission influence upon local native populations was devastating. The dissolution of their culture alienated them from their traditional subsistence patterns, social customs, and marriage networks. European diseases, against which they had no immunity, reached epidemic proportions, and Chumash populations were decimated (Johnson 1987). The increase in agriculture and the spread of grazing livestock into their collecting and hunting areas made maintaining traditional lifeways increasingly difficult. Although most Chumash eventually submitted to the Spanish and were incorporated into the mission system, some refused to give up their traditional existence and escaped into the interior regions of the state, as refugees living with other tribes. With the secularization of mission lands after 1834, traditional Chumash lands were distributed among grants to private owners. Only in the area of Mission Santa Barbara and Mission San Fernando del Rey were several small ranchos granted to neophytes of these missions, providing a secure home and gardens for a few people.

Most Chumash managed to maintain a presence in the area into the early twentieth century as cowboys, farm hands, and town laborers. The Catholic Church provided some land near Mission Santa Ynez for ex-neophytes. This land eventually was deeded to the US government in 1901 as a 127 acre reservation and is the sole Chumash reservation. Since the 1970s, Chumash descendants living in the City of Santa Barbara and the rural areas of San Luis Obispo, Santa Barbara, and Ventura counties have formed social and political organizations to aid in cultural revitalization, to protect sacred areas and archaeological sites, and to petition for federal recognition. Today, the Santa Ynez Band of Chumash Indians is the only federally recognized Chumash tribe.

4.5.1.3 History

The major historic periods for the California area are defined by key events documented by participants, witnesses, historians, and cartographers. Paramount among these was the transfer of political control over *Alta California*, including the Project Site specifically.

- Spanish Period (1769-1821)
- Mexican Period (1821-1848)
- American Period (1848-Present)

The historic era encompasses the period of occupation by European descendants. This period marked a time of disease, exploitation, and deculturation of the native peoples, beginning circa 1769 with the founding of the Mission San Diego de Alcalá. The occupation and control by the

Spanish was passed on to Mexico after the latter gained its independence in 1821. The Mexican period, in turn, gave way to control by the United States subsequent to the Mexican-American War and the Treaty of Guadalupe Hidalgo in 1848.

4.5.1.4 Project Site Historic Map and Aerial Photograph Review

Inspection of historic maps of the area (USGS 1897 Arroyo Grande 15-minute, 1942 Arroyo Grande 15-minute, and 1952 Arroyo Grande 15-minute) indicates the railroad and a minor road network in the area of the project. The communities of Arroyo Grande and Oceano are noted with additional single structures spread throughout the area. The Project Site is completely undeveloped with the exception of an east-west dirt road on the 1942 and 1952 maps.

The USGS 1965 Oceano 7.5-minute map illustrates the northern end of the refinery, the existing rail spur, the coke ovens, and coke piles much as they are today. The southern part of the refinery included pipelines, roads, and ponds, but lacks the current structural elements.

Review of aerial images between 1994 and 2011 indicate no development within the Project Site. The only discernible activity is within the coke yard.

4.5.2 Regulatory Setting

4.5.2.1 Federal Regulations and Policy

Cultural resources are considered during federal undertakings chiefly under Section 106 of the National Historic Preservation Act of 1966 (NHPA) (as amended) through one of its implementing regulations, 36 CFR 800 (Protection of Historic Properties), as well as the National Environmental Policy Act (NEPA). Properties of traditional religious and cultural importance to Native Americans are considered under Section 101(d)(6)(A) of NHPA. Other pertinent federal laws include the Archaeological Data Preservation Act of 1974, the American Indian Religious Freedom Act (AIRFA) of 1978, the Archaeological Resources Protection Act (ARPA) of 1979, and the Native American Graves Protection and Repatriation Act (NAGPRA) of 1990, among others.

Section 106 of the NHPA (16 United States Code 470f) requires federal agencies to take into account the effects of their undertakings on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register of Historic Places (NRHP) and to afford the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment on such undertakings (36 CFR 800.1). Under Section 106, the significance of any adversely affected cultural resource is assessed and mitigation measures are proposed to reduce any impacts to an acceptable level. Significant cultural resources are those resources that are listed on, or are eligible for listing on the NRHP per the criteria listed at 36 CFR 60.4 (ACHP 2000) below.

The quality of *significance* in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling and association and that:

(a) Are associated with events that have made a significant contribution to the broad patterns of our history; or

(b) Are associated with the lives of persons significant in our past; or

(c) Embody the distinctive characteristics of a type, period, or method of installation, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

(d) Have yielded, or may be likely to yield, information important in prehistory or history.

4.5.2.2 State Regulations and Policy

CEQA requires a lead agency to determine whether a project may have a significant effect on historical resources. Sections 21083.2 and 21084.1 of the Statutes of CEQA, PRC Section 5024.1, and Section 15064.5 of the CEQA *Guidelines* (2013) were used as the guidelines for the cultural resources study. PRC Section 5024.1 requires that any properties that can be expected to be directly or indirectly affected by a proposed project be evaluated for CRHR eligibility. The purpose of the register is to maintain listings of the state's historical resources and to indicate what properties are to be protected, to the extent prudent and feasible, from material impairment and substantial adverse change. The term "historical resources" includes a resource listed in, or determined to be eligible for listing in, the CRHR, a resource included in a local register of historical resources, and any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant (Section 15064.5[a] of the Guidelines). The criteria for listing properties in the CRHR were expressly developed in accordance with previously established criteria developed for listing in the NRHP.

According to PRC Section 5024.1(c)(1–4), a resource may be considered historically significant if it retains integrity and meets at least one of the following criteria. A property may be listed in the CRHR if the resource:

(1) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

(2) Is associated with the lives of persons important in our past;

(3) Embodies the distinctive characteristics of a type, period, region or method of installation, or represents the work of an important creative individual, or possesses high artistic values; or

(4) Has yielded, or may be likely to yield, information important in prehistory or history.

Under CEQA, if an archeological site is not a historical resource but meets the definition of a "unique archeological resource" as defined in PRC Section 21083.2, then it should be treated in

accordance with the provisions of that section. A *unique archaeological resource* is defined as follows:

> *An archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:*
>
> *(1) Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information;*
>
> *(2) Has a special and particular quality such as being the oldest of its type or the best available example of its type; or*
>
> *(3) Is directly associated with a scientifically recognized important prehistoric or historic event or person.*

Resources that neither meet any of these criteria for listing on the CRHR nor qualify as a "unique archaeological resource" under CEQA PRC Section 21083.2 are viewed as not significant. Under CEQA, "A non-unique archaeological resource need be given no further consideration, other than the simple recording of its existence by the lead agency if it so elects" (PRC Section 21083.2[h]).

Section 21084.1 of the PRC also states that the fact that a resource is not listed in, or determined to be eligible for listing in, the California Register of Historical Resources, not included in a local register of historical resources, or not deemed significant pursuant to criteria set forth in subdivision (g) of Section 5024.1 shall not preclude a lead agency from determining whether the resource may be an historical resource for purposes of this section.

Impacts that adversely alter the significance of a resource listed on or eligible for listing on the CRHR are considered a significant effect on the environment. Impacts to historical resources from the proposed project are thus considered significant if the project physically destroys or damages all or part of a resource, changes the character of the use of the resource or physical feature within the setting of the resource which contribute to its significance or introduces visual, atmospheric, or audible elements that diminish the integrity of significant features of the resource.

4.5.2.3 Local Regulations and Policy

The County of San Luis Obispo Coastal Zone Land Use Ordinance (CZLUO) includes ordinance requirements for the protection of known cultural resources, and implementation of mitigation measures to minimize potential impacts to known and unknown resources. In addition to General Plan and ordinance requirements, *Coastal Plan Policies* include policies for the protection of cultural resources consistent with the requirements of the California Coastal Act (1976).

4.5.3 Significance Criteria

CEQA guides lead agencies to protect and preserve resources with cultural, historic, scientific, or educational value. CEQA *Guidelines* Section 15064.5 provides significance threshold criteria for determining a substantial adverse change to the significance of a cultural resource. In addition, Appendix G of the CEQA Guidelines provides additional guidance in determining a project's impact on cultural resources. The information provided in the CEQA guidelines has been used to develop the significance criteria for cultural resources. The project would have a significant impact on cultural resources if:

- The project causes a substantial adverse change in the significance of an historical resource. This would include physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired.
- The project causes a substantial adverse change in the significance of an archaeological resource.
- If the project directly or indirectly destroys a unique paleontological resource or site or unique geologic feature.
- If the project disturbs any human remains, including those interred outside of formal 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, and even when fragmentary are considered significant.

4.5.4 Native American Consultation

Arcadis contacted the California Native American Heritage Commission (NAHC) by letter on requesting a review of the Sacred Lands File (SLF). The NAHC responded on indicating that the search of the SLF did not indicate the presence of Native American cultural resources in the project area or a ½ mile radius. The NAHC provided a list of 26 Native American contacts that may have additional information about the project area. SWCA mailed a letter requesting information concerning cultural resources in the area to each of these contacts on July 12, 2013. As a result of this additional consultation, three separate meetings were held with interested Native American parties on August 27, September 18, and September 19, 2013. At each of the meetings, topics including the preservation and protection of cultural resources, project modifications to avoid cultural resources, and the implementation of appropriate mitigation measures to avoid all impacts to cultural resources were discussed. The concerns and recommendations of the local Native American community were essential to the development of the cultural resources mitigation measures provided in the following Project Impacts and Analysis section.

4.5.5 Project Impacts and Mitigation Measures

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, vibration, unauthorized artifact collecting, and vandalism. As currently planned, the proposed project entails ground disturbance construction activities during the construction phase. The remainder of this section discusses the potential impacts to cultural resources from the construction and operation of the proposed project. Two cultural resources have been identified within the Project Area: the Santa Maria Refinery and a portion of prehistoric archaeological site CA-SLO-1190. Both the Refinery and the portion of CA-SLO-1190 within the emergency vehicle access road (EVA) have been evaluated and neither is considered a CRHR eligible resource (Arcadis 2013a, b).

No further mitigation for potential impacts to the Santa Maria Refinery is warranted and no further consideration of this resource is required under CEQA. While the same approach can be taken for impacts to the portion of CA-SLO-1190 that was determined ineligible, given the sensitive nature of prehistoric archaeological resources, and input from the local Native American community, mitigation measures for the avoidance of impacts to this resource are provided below.

Additionally, as the project proposes to transport crude oil to the project site via a nearly statewide train route, the potential exists for impacts to cultural resources in the event of a train derailment or oil spill. Given the vastness of the overall rail line route, and the range of speculation related to prediction of the exact location of this type of event (e.g., derailment, oil spill), a resource-specific analysis was not conducted for the preparation of this section. The presence of cultural resources is likely in the vicinity of the rail line route; however, identifying the locations of such resources, should they exist, does not further educate the development of feasible and verifiable measures to mitigate the potential impact(s) associated with rail accidents. More information on the possible train routes to the SMR is provided in Chapter 2.0, Project Description.

Impact #	Impact Description	Phase	Impact Classification
CR.1	Grading and excavation associated with the construction of the emergency vehicle access road (EVA) could result in the disturbance and destruction of a portion of CA-SLO-1190.	Construction (EVA)	Class II

Cultural resources survey and background research of the Project Site did not identify any previously recorded archaeological sites, newly identified cultural resources, or isolated artifacts within the Project Site. The cultural resource background research did reveal the presence of previously identified prehistoric archaeological site CA-SLO-1190 adjacent to the EVA route. The cultural resources survey confirmed the presence of artifacts associated with CA-SLO-1190 within the proposed EVA route (Arcadis 2013a). Based on available information, CA-SLO-1190

includes five distinct loci of concentrated artifacts. The proposed EVA would traverse and impact the outer limits of Locus C of CA-SLO-1190.

An evaluation of the portion of CA-SLO-1190 within the proposed EVA was conducted by Arcadis to determine if the portion of the resource within the impact area meets the criteria for inclusion in the CRHR. Based upon the results of the test excavations, the portion of archaeological site CA-SLO-1190 within the proposed EVA alignment is not recommended for inclusion in the CRHR due to the sparse recovery of artifacts, lack of temporally diagnostic artifacts and features, and evidence of disturbance (Arcadis 2013b). The remainder of Locus C and archaeological site CA-SLO-1190 were not evaluated and should, therefore, be assumed eligible until such time as data are acquired from which to evaluate their significance (Arcadis 2013b). The portion of CA-SLO-1190 within the EVA is not considered eligible for inclusion in the CRHR, and therefore no impacts to an eligible historical resource would occur as a result of the construction of the EVA, no further evaluation of this specific portion of the resource is required by CEQA.

CA-SLO-1190 consists of five distinct loci with concentrations of marine shell, lithic artifacts and debitage, fire affected rock (i.e., hearth stones), and midden soil. Only a small portion of Locus C is within the proposed EVA and this portion of the site is considered ineligible for listing in the CRHR. Ground disturbance within the site could result in the displacement and potential destruction of artifacts and features not identified during evaluative testing, and may impair the overall integrity of the site. Therefore impacts to this site are considered potentially significant.

Mitigation Measures

CR-1a *Prior to issuance of grading and construction permits, the Applicant shall submit plans showing a modified road alignment for the Emergency Vehicle Access (EVA) road to the Department of Planning and Building for review and approval. Grading and construction of the EVA shall avoid all ground disturbing activities within the previously identified boundary of CA-SLO-1190. The plans shall note the boundaries of the site as an Environmentally Sensitive Area (ESA) and shall include a 50-foot buffer around the ESA. No grading, storage of materials or equipment, or use of equipment shall occur within the ESA.*

CR-1b *Prior to issuance of grading and construction permits, the Applicant shall submit an Archaeological Monitoring Plan to the Department of Planning and Building for review and approval. The plan shall include, at minimum:*

- *a. List of personnel involved in the monitoring activities including a Native American monitor;*
- *b. Clear identification of what portions of the project area in relation to CA-SLO-1190 shall be monitored;*
- *c. Description of how the monitoring shall occur;*
- *d. Description of monitoring frequency;*

e. Description of resources expected to be encountered;

f. Description of circumstances that would result in the "work diversion," in the case of discovery, at the project site;

g. Description of procedures for diverting work on the site and notification procedures; and

h. Description of monitoring reporting procedures.

CR-1c A County approved archaeological monitor shall be present during all ground disturbing construction activities within intact native soil (i.e., undisturbed soils) within 300 feet of the previously identified boundary of CA-SLO-1190, and as noted in the approved Archaeological Monitoring Plan.

CR-1d Upon completion of all monitoring and mitigation activities required by CR-1 through CR-5, and prior to final inspection or occupancy, whichever occurs first, the Applicant shall submit to the Department of Planning and Building a report summarizing all monitoring and mitigation activities and confirming that all recommended mitigation measures have been met.

Secondary Impacts

Relocation of a portion of the roadway would have secondary impacts on agricultural resources and biological resources; however, these effects would be similar to the proposed project, and would be less than significant. The affected soil type is the same within the road and to the north (Oceano sand, 0 to 9 percent slopes, Farmland of Local Potential, Farmland of Statewide Importance). The habitat type is non-native Veldt Grassland. Mitigation measures applicable to the construction and operation of the roadway would apply to the project, including the roadway segment that would be affected by implementation of mitigation measures CR-1a above.

Residual Impacts

As proposed, implementation of the Rail Spur Project would impact a known prehistoric resource. As noted above, the affected portion of SLO-CA-1190 does not include components that appear to contribute to an eligibility determination for the site as a whole; however, pursuant to CEQA, avoidance of environmental resources is identified as the first mitigation option, when feasible. Therefore, avoidance is recommended, in addition to environmental monitoring. Realignment of a portion of the EVA would not result in an increased level of impact to other potential resources, including biological resources, agricultural resources, or geological resources. With implementation of the recommended mitigation measures, this impact would be considered *less than significant with mitigation (Class II).*

Impact #	Impact Description	Phase	Impact Classification
CR.2	Grading and excavation associated with the project could result in the disturbance and destruction of unknown subsurface archeological resources.	Construction	Class II

Although no potentially significant archaeological resources were identified within the project area during the cultural resources survey of the project, the study (Arcadis 2013a) could not exclude the possibility that unrecorded buried archaeological material could exist and be encountered during grading, clearing, grubbing, and/or other construction activities. If intact cultural remains are encountered during grading, clearing, grubbing, and/or other construction activities, the potential for destruction of these potential unknown finds would be a potentially significant impact on cultural resources.

Given the extent of disturbance within the project area, archaeological monitoring shall focus on areas of intact native soils, which would be identified in the Archaeological Monitoring Plan prepared for the project. In addition to preparation and implementation of an Archaeological Monitoring Plan, cultural resources shall be included in the environmental training session for all construction staff to reduce the potential destruction of unanticipated resources.

Mitigation Measures

CR-2a Prior to any grading or construction, contractors involved in grading and grubbing activities shall receive training from a County-qualified archeologist. The training shall address the following issues:

a. Review the types of archaeological artifacts that may be uncovered;

b. Provide examples of common archaeological artifacts to examine;

c. Review what makes an archaeological resource significant to archaeologists and local native Americans;

d. Describe procedures for notifying involved or interested parties in case of a new discovery;

e. Describe reporting requirements and responsibilities of construction personnel;

f. Review procedures that shall be used to record, evaluate, and mitigate new discoveries;

g. Describe procedures that would be followed in the case of discovery of disturbed as well as intact human burials and burial-associated artifacts; and

h. Employees completing this training shall be given a special helmet sticker or card to show they have completed the training, where the sticker/card shall be kept with them at all times while at the work site.

CR-2b Prior to issuance of grading and construction permits, the Applicant shall submit an Archaeological Monitoring Plan to the Department of Planning and Building for review and approval. The plan shall include, at minimum:

a. List of personnel involved in the monitoring activities including a Native American monitor;

b. Description of how the monitoring shall occur;

c. Description of monitoring frequency;

d. Description of circumstances that would result in the "work diversion," in the case of discovery, at the project site;

e. Description of procedures for diverting work on the site and notification procedures; and

f. Description of monitoring reporting procedures.

CR-2c A County approved archaeological monitor shall be present during all ground disturbing construction activities within intact native soil (i.e., undisturbed soils) as noted in the approved Archaeological Monitoring Plan.

Residual Impacts

With implementation of the above measure, this impact would be considered *less than significant with mitigation (Class II).*

Impact #	Impact Description	Phase	Impact Classification
CR.3	Unanticipated disturbance to human remains due to construction.	Construction	Class II

According to CEQA, "Archaeological sites known to contain human remains shall be treated in accordance with the provisions of Section (7050.5) Health and Safety Code." The PRC also ensures the protection of human remains (Sections 5097.94, 5097.98, and 5097.99). Section 22.10.040 of San Luis Obispo County's Land Use Ordinance has similar stipulations stating that "(i)n the event archeological resources are found to include human remains, or in any other case when human remains are discovered during construction, the County Coroner shall be notified in addition to the Department so proper disposition may be accomplished." The Coroner will determine the origin of the remains and, if determined to be of Native American origin, notify the Native American Heritage Commission, which will determine and notify a most likely descendant. The most likely descendant shall complete the inspection of the site within 48 hours of notification and may recommend scientific removal and nondestructive analysis of human remains and items associated with Native American burials. If human remains were encountered during grading, the potential for disturbance of these remains would be potentially significant.

Mitigation Measures

CR-3 If human remains are exposed during construction, the Applicant shall notify the County Environmental Coordinator immediately and comply with State Health and Safety Code Section 7050.5, which states that no further disturbance shall occur until the County Coroner has been notified and can make the necessary findings as to origin and disposition of the remains pursuant to Public Resources Code 5097.98.

Construction shall halt in the area of the discovery of human remains, the area shall be protected, and consultation and treatment shall occur as prescribed by law.

Residual Impacts

Implementing mitigation measure CR-3 would reduce the impact of potentially encountering and disturbing human remains during grading and excavation to *less than significant with mitigation* (Class II).

Impact #	Impact Description	Phase	Impact Classification
CR.4	Construction of the Rail Spur Project would result in impacts to historical resources.	Construction	None

The Santa Maria Refinery was established in the mid-1950s and has played an important role in the development of the Santa Maria Valley and the oil and gas industry of California. Due to the potential for the historic-era (i.e., greater than 50 years in age) buildings and facilities to be considered historical resources, Arcadis conducted a cultural resources assessment of the Refinery itself (Arcadis 2013c).

Arcadis indicates that although the refinery has been an important part of the Santa Maria region, the facilities have experienced substantial modification and upgrades "that have altered the qualities of design, setting, materials, workmanship, feeling, and association adversely impacting its historic significance" (Arcadis 2013c:6). As such, the analysis determined the Refinery is not considered a historical resource due to a lack of overall integrity, and therefore, is not eligible for inclusion in the CRHR. Therefore, based on the design and location of the project, and remaining historic integrity of the refinery, no impact to historic resources would occur.

Impact #	Impact Description	Phase	Impact Classification
CR.5	Unanticipated disturbance to paleontological resources.	Construction	Class II

At present, there are no known paleontological resources or unique geologic formations or sites located within the project area. However, it is possible that paleontological resources could be discovered during ground disturbing activities associated with project construction. If unanticipated paleontological resources were disturbed it could potentially be a significant impact.

Mitigation Measures

CR-5 *If any paleontological resources are encountered during ground-disturbing activities, activities in the immediate area of the find shall be halted and the discovery assessed. A qualified paleontologist shall be retained to evaluate the discovery and recommend appropriate treatment options pursuant to guidelines developed by the Society of Vertebrate Paleontology. A paleontological resource impact mitigation program for*

treatment of the resources shall be developed and implemented if paleontological resources are encountered.

Residual Impacts

Implementing mitigation measure CR-4, if needed, would reduce the impact of potentially encountering and disturbing paleontological resources during grading and excavation to *less than significant with mitigation (Class II).*

Impact #	Impact Description	Phase	Impact Classification
CR.6	Train traffic associated with the importation of crude oil to the project site could result in a derailment or a material spill, which could result in the disturbance and destruction of cultural resources along the mainline routes.	Operations	Class I

Cultural resources are known to occur throughout California and undoubtedly in the vicinity of existing rail lines that would be used to transport crude oil to the SMR. In the event of a train derailment or an oil spill, potentially significant adverse impacts to cultural resources could occur, including the destruction or disturbance of archaeological, historic, and paleontological resources as a result of the cleanup and restoration activities.

The probability of a crude oil train release incident is discussed in the Hazardous and Hazardous Materials Section (Section 4.7). This probability represents the probability of a release incident for the length of the rail routes between the SMR, the Roseville or Colton rail yards, and the California border. In order for there to be an impact to cultural resources, the incident would need to occur in the vicinity of these resources. This would lower the probability of an oil train release impacting cultural resources. The Hazardous and Hazardous Materials Section (Section 4.7) discusses the overall probability of a spill along the mainline rail routes to the Roseville or Colton rail yards, and the California border.

Clean up of an oil spill would likely require the use of bulldozers, frontend loaders, and other construction equipment to remove any contaminated soil. Use of this type of construction equipment could impact both known and unknown cultural, historic, and paleontological resources. As the exact location and extent of this type of event cannot be reasonably predicted, a resource-specific analysis was not conducted for the preparation of this section. While a cultural resources inventory of the entire route and all areas subject to potential impacts from a derailment or material spill would assist in the identification of culturally sensitive areas, it would not provide a means to avoid potential adverse impacts.

In the event of a derailment or material spill, however, a qualified cultural resources specialist could develop resource-specific measures for further avoidance, protection, and treatment of cultural resources in the vicinity of the accident. For instance, where feasible, a qualified cultural resources specialist could direct emergency crews, clean up, and remediation efforts to avoid further impacts to known resources and develop treatment plans for future activities that may result in adverse impacts. Total avoidance in the event of a derailment or a spill would not be feasible; therefore, if cultural resources are affected, the impact could be significant.

Mitigation Measures

CR-6 *As part of the Applicant's contract with UPRR, it shall require that a qualified archaeologist, architectural historian, and paleontologist who meet the Secretary of the Interior's Professional Qualification Standards prepare an Emergency Contingency and Treatment Plan for Cultural and Historic Resources along the rail routes in California that could be used to transport crude oil to the SMR. The treatment plan shall include, but not be limited to, the following components:*

a. Protocols for determining the cultural resources regulatory setting of the incident site;

b. Provide various methodologies for identifying cultural resources, as needed, within the incident site (e.g., California Historical Resources Information System records search, agency contact, field survey); and

c. If cultural resources are present, identify measures for their avoidance, protection, and treatment.

The Treatment Plan shall be in place prior to delivery of crude by rail to the Santa Maria Refinery.

Residual Impacts

Implementing mitigation measure CR-6 would potentially reduce potential impacts; however, there is the potential that a derailment or a spill may destroy a significant cultural or historic resource, and remediation actions may not result in the recovery of significant resources. In the event this occurs, the residual effect could be *significant and unavoidable (Class I).*

Federal law may preempt local agency regulation of rail lines; therefore, implementation of appropriate mitigation measures to protect cultural, historic and paleontological resources along the UPRR mainline may not be feasible or enforceable.

4.5.6 Cumulative Analysis

Implementation of the Rail Spur Project could contribute to the cumulative degradation of significant cultural resources in the County and along the proposed rail route. The destruction of cultural resources, which are inherently important to the descendants of native peoples and the heritage of California, can have the potential for significant cumulative impacts. Given the prevalence of cultural resource sites in the immediate vicinity of the project area, and the number of construction activities that involve disturbance of culturally sensitive areas that are not regulated, it is likely that significant pre-historic and historic resources are often not identified and are permanently lost. As such, the cumulative impacts to pre-historic and historic resources from the cumulative projects in the vicinity of the proposed project would likely be significant. For the proposed construction of the project, no impacts to any known CRHR eligible resources would occur, and mitigation measures are in place to reduce potential impacts to unknown buried resources. Therefore, the Rail Spur Project's contribution to the cumulative impact would be less than significant.

There is the potential for cumulative impacts associated with the crude by rail project discussed in Chapter 3. In conducting the cumulative analysis for crude by rail it has been assumed that the cumulative projects listed in Table 3.1 would use the same rail car tank design as the SMR Rail Spur Project, and that the cumulative crude by rail projects, with the exception of the Phillips Rail Spur Project, would transport a Bakken type crude, which is a worst case assumption.[1] It has also been assumed that all of the Rail Spur Project crude oil trains would use routes discussed below.

If all of the crude by rail projects travel via the UPRR Roseville Rail Yard, then up to eight crude oil trains per day could travel on the stretch of track between Sacramento and the California boarder (two for Valero, one for Kinder Morgan, two for Alon, one for Targa, one for Plains All American, and one for the SMR). From Roseville, rail traffic would likely follow two different routes; one following the I-80 corridor to Reno, Nevada, with the other heading north along the I-5 corridor to Oregon. A third route through the Feather River Canyon was not considered for further analysis.

From Sacramento the crude oil trains servicing the Valero Benicia and Kinder Morgan projects could use the same UPRR tracks as the Rail Spur Project from Sacramento to the Bay Area. This portion of track could have up to four crude oil trains per day (two for Valero, one for Kinder Morgan, and one for the SMR).

From Sacramento the crude oil trains servicing the Alon, Targa, and Plains All American projects could use the same tracks as the Rail Spur Project from Sacramento to Stockton a distance of about 46 miles. This portion of track could have up to five crude oil trains per day (two for Alon, one for Targa, one for Plains All American, and one for the SMR).

This level of crude oil train traffic would increase the probability of an oil spill along these mainline routes. Assuming all of the cumulative crude oil trains use the same route from Sacramento to the California border, the cumulative probability of a 100 gallon or greater oil spill would be about once every seven years for the route from the SMR to the Oregon border, and once every six years for the route from the SMR to the Nevada border.

None of the other cumulative crude by rail projects would use the mainline tracks along the southern route thorough the Los Angeles Basin since the crude oil trains going to Bakersfield would use Tehachapi Pass via Barstow and would not travel has far west as Colton. However, up to four unit trains per day could share the route between Nevada and Barstow (two for Alon, one for Plains All American, and one for the SMR). Assuming these cumulative crude oil trains use the same route from Barstow to the California border, the cumulative probability of a 100 gallon or greater oil spill would be about once every 25 years for the southern route from the SMR to the Nevada border.

Cumulative crude oil train traffic along these stretches of mainline track could cause adverse impacts to cultural, historic and paleontological resources if an oil spill were to occur in a

[1] Canadian Crude, as specified in the Project Description, was assumed for the Phillips Rail Spur Project as part of the project and cumulative analysis.

location where these resources were present. Clean up of an oil spill would likely require the use of bulldozers, frontend loaders, and other construction equipment to remove any contaminated soil. Use of this type of construction equipment could impact both known and unknown cultural, historic, and paleontological resources. Therefore, cumulative impacts to cultural, historic and paleontological resources in the unlikely event of an oil spill along these stretches of mainline tracks could be significant and unavoidable depending upon the location of the spill.

4.5.7 Mitigation Monitoring Plan

Mitigation Measure	Plan Requirements and Timing	Compliance Verification		
		Method	Timing	Responsible Party
CR-1a	Prior to issuance of grading and construction permits, the Applicant shall submit plans showing a modified road alignment for the Emergency Vehicle Access (EVA) road to the Department of Planning and Building for review and approval. Grading and construction of the EVA shall avoid all ground disturbing activities within the previously identified boundary of CA-SLO-1190. The plans shall note the boundaries of the site as an Environmentally Sensitive Area (ESA) and shall include a 50-foot buffer around the ESA. No grading, storage of materials or equipment, or use of equipment shall occur within the ESA.	Avoid archaeological site.	Prior to issuance of grading and construction permits.	County Planning and Building
CR-1b	Prior to issuance of grading and construction permits, the Applicant shall submit an Archaeological Monitoring Plan to the Department of Planning and Building for review and approval. The plan shall include, at minimum: a. List of personnel involved in the monitoring activities including a Native American monitor; b. Clear identification of what portions of the project area in relation to CA-SLO-1190 shall be monitored; c. Description of how the monitoring shall occur; d. Description of monitoring frequency; e. Description of resources expected to be encountered; f. Description of circumstances that would result in the "work diversion," in the case of discovery, at the project site; g. Description of procedures for diverting work on the site and notification procedures; and h. Description of monitoring reporting procedures.	Prepare and implement Archaeological Monitoring Plan.	Prior to issuance of grading and construction permits.	County-approved archaeologist, County Planning and Building.
CR-1c	A County approved archaeological monitor shall be present during all ground disturbing construction activities within intact native soil (i.e., undisturbed soils) within 300 feet of the previously identified boundary of CA-SLO-1190, and as noted in the approved Archaeological Monitoring Plan.	Archaeological monitoring	During all ground disturbing activities within 300 feet of sensitive site.	County-approved archaeologist, County Planning and Building.
CR-1d	Upon completion of all monitoring and mitigation activities required by CR-1 through CR-5, and prior to	Submit monitoring	Upon completion	County-approved

Mitigation Measure	Plan Requirements and Timing	Compliance Verification		
		Method	Timing	Responsible Party
	final inspection or occupancy, whichever occurs first, the Applicant shall submit to the Department of Planning and Building a report summarizing all monitoring and mitigation activities and confirming that all recommended mitigation measures have been met.	report.	of monitoring and mitigation.	archaeologist, County Planning and Building.
CR-2a	Prior to any grading or construction, contractors involved in grading and grubbing activities shall receive training from a County-qualified archeologist. The training shall address the following issues: a. Review the types of archaeological artifacts that may be uncovered; b. Provide examples of common archaeological artifacts to examine; c. Review what makes an archaeological resource significant to archaeologists and local native Americans; d. Describe procedures for notifying involved or interested parties in case of a new discovery; e. Describe reporting requirements and responsibilities of construction personnel; f. Review procedures that shall be used to record, evaluate, and mitigate new discoveries; g. Describe procedures that would be followed in the case of discovery of disturbed as well as intact human burials and burial-associated artifacts; and h. Employees completing this training shall be given a special helmet sticker or card to show they have completed the training, where the sticker/card shall be kept with them at all times while at the work site.	Environmental training	Prior to grading and construction.	County-approved archaeologist, County Planning and Building.
CR-2b	Prior to issuance of grading and construction permits, the Applicant shall submit an Archaeological Monitoring Plan to the Department of Planning and Building for review and approval. The plan shall include, at minimum: a. List of personnel involved in the monitoring activities including a Native American monitor; b. Description of how the monitoring shall occur; c. Description of monitoring frequency; d. Description of circumstances that would result in the "work diversion," in the case of discovery, at the project site; e. Description of procedures for diverting work on the site and notification procedures; and f. Description of monitoring reporting procedures.	Prepare and implement Archaeological Monitoring Plan.	Prior to issuance of grading and construction permits.	County-approved archaeologist, County Planning and Building.
CR-2c	A County approved archaeological monitor shall be present during all ground disturbing construction activities within intact native soil (i.e., undisturbed soils) as noted in the approved Archaeological Monitoring Plan.	Archaeological monitoring	During all ground disturbing activities	County-approved archaeologist, County Planning and Building.
CR-3	If human remains are exposed during construction, the Applicant shall notify the County Environmental Coordinator immediately and comply with State Health	Compliance with regulations	Prior to, during, and following	County Coroner, County

Mitigation Measure	Plan Requirements and Timing	Compliance Verification		
		Method	Timing	Responsible Party
	and Safety Code Section 7050.5, which states that no further disturbance shall occur until the County Coroner has been notified and can make the necessary findings as to origin and disposition of the remains pursuant to Public Resources Code 5097.98. Construction shall halt in the area of the discovery of human remains, the area shall be protected, and consultation and treatment shall occur as prescribed by law.	regarding human remains discovery.	construction.	Planning and Building
CR-5	If any paleontological resources are encountered during ground-disturbing activities, activities in the immediate area of the find shall be halted and the discovery assessed. A qualified paleontologist shall be retained to evaluate the discovery and recommend appropriate treatment options pursuant to guidelines developed by the Society of Vertebrate Paleontology. A paleontological resource impact mitigation program for treatment of the resources shall be developed and implemented if paleontological resources are encountered.	Treatment and mitigation upon incidental discovery.	Prior to, during, and following construction.	Applicant, Contractor, County-approved paleontologist (as necessary).
CR-6	As part of the Applicant's contract with UPRR, it shall require that a qualified archaeologist, architectural historian, and paleontologist who meet the Secretary of the Interior's Professional Qualification Standards prepare an Emergency Contingency and Treatment Plan for Cultural and Historic Resources along the rail routes in California that could be used to transport crude oil to the SMR. The treatment plan shall include, but not be limited to, the following components: a. Protocols for determining the cultural resources regulatory setting of the incident site; b. Provide various methodologies for identifying cultural resources, as needed, within the incident site (e.g., California Historical Resources Information System records search, agency contact, field survey); and c. If cultural resources are present, identify measures for their avoidance, protection, and treatment. The Treatment Plan shall be in place prior to delivery of crude by rail to the Santa Maria Refinery.	Develop avoidance, protection, and treatment plan.	Prior to crude delivery to the Santa Maria Refinery	Applicant, County-approved archaeologist and architectural historian

4.5.8 References

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4.6 Geological Resources

This section addresses issues involving geological resources resulting from the proposed Rail Spur Project. The environmental setting provides information on geological resources in the vicinity of the Project Site. The impacts evaluation focuses on the potential effects of the Rail Spur Project and identifies potential mitigation measures for any significant impacts. The section also provides a discussion of cumulative geological resources impacts.

4.6.1 Environmental Setting

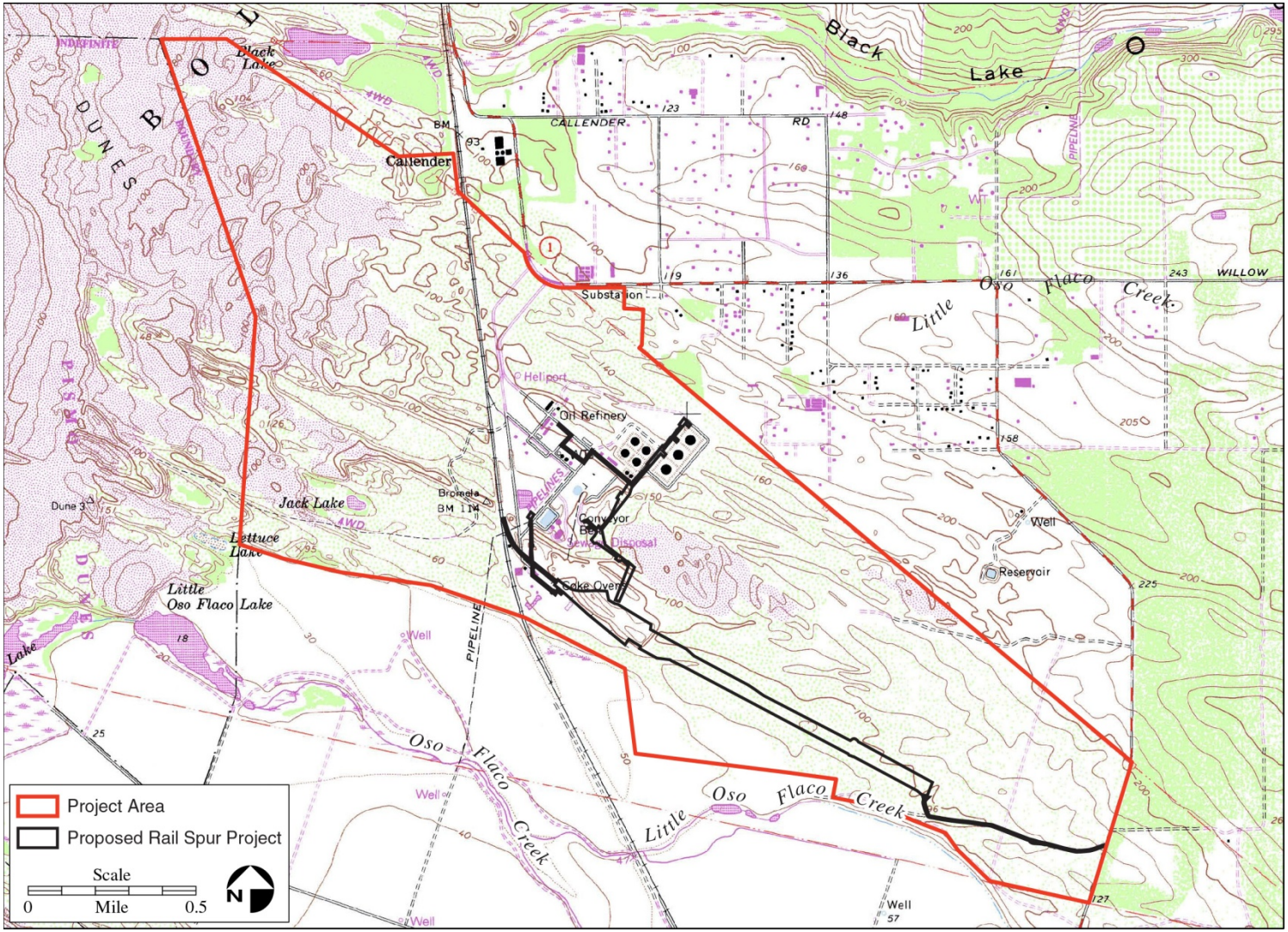
4.6.1.1 Regional Geologic Setting

The Project Site is located in the Santa Maria Valley, at the southwestern edge of the Nipomo Mesa. The Nipomo Mesa and Santa Maria Valley comprise a structural and topographic basin bounded by the Casmalia and Solomon Hills on the south, Pacific Ocean on the west, Edna Hills and Newsom Ridge on the north-northeast, and San Rafael Mountains on the east-southeast. The regional geologic structure surrounding and including the Santa Maria Valley area is extremely complex, as it lies within the structural influence of both the California Coast Ranges and the Transverse Ranges of southern California. The older rocks, which are exposed in the bordering ranges, are concealed at considerable depth beneath Tertiary and Quaternary rocks. The Tertiary rocks form a series of west-trending folds. Of these folds, the northern-most forms the basin beneath the Santa Maria and Sisquoc valleys (Worts 1951).

4.6.1.2 Topography and Stratigraphy

The Project Site is located on undulating dune topography, with elevations ranging from approximately 50 to 180 feet above mean sea level (Figure 4.6-1). The topography of the proposed rail spur portion of the Project Site ranges in elevation from approximately 80 to 110 feet above sea level. Slope gradients are predominantly gentle, with localized steep slopes up to 30 feet high where the topography has been modified by grading. The proposed pipeline route traverses two such steep slopes, with intervening areas of gentle topography. The proposed railcar unloading area consists of a relatively flat graded area used by the existing coke facility. Large stockpiles of coke are present in the eastern portion of the coke facility. The proposed Rail Spur Project roughly trends along a broad east-west trending ridge; however, the topography undulates along the alignment. Two broad, southwest-trending drainages emanate from the south side of the proposed rail spur. Several internally draining basins are also present in the Project Site, along the pipeline route and the rail spur alignment.

Figure 4.6-1 General Topography of Rail Spur Project Area



Underlying sediments, to a depth of approximately 60 feet, are relatively uniform across the Project Site, consisting primarily of poorly-graded dune sands with limited thin interbeds of silt and clay (Figure 4.6-2). The sands are generally loose to medium dense at the surface, becoming denser and slightly coarser grained with depth. These late Quaternary wind-blown deposits are underlain by late Quaternary alluvium, Plio-Pleistocene sediments of the Paso Robles Formation, and/or Pliocene and Miocene age sedimentary rocks (Dames & Moore 1990; Earth Systems Pacific 2008a, 2008b).

4.6.1.3 Seismicity and Faulting

San Luis Obispo County is located in a geologically complex and seismically active region that is subject to earthquakes and potentially strong ground shaking. Earthquakes up to magnitude 4.0 commonly occur throughout the region and available historical and instrumental data indicate at least 10 magnitude 5 to 5.5 earthquakes have occurred in the onshore and offshore areas of the site region since 1902.

In addition to these local earthquakes, the 1927 Lompoc earthquake (M 7.0), located offshore of Point Arguello, and the 1857 Fort Tejon earthquake (M 7.9), located on the San Andreas Fault, generated significant strong ground motion at the site (Dames & Moore 1990). More recently, the 2003 San Simeon earthquake (M 6.6) generated strong ground motion in the project area (USGS 2008).

The California Geological Survey (CGS) classifies faults as either active or potentially active, according to the Alquist-Priolo Special Studies Zone Act of 1972. A fault that has exhibited surface displacement within the Holocene Epoch (the last 11,000 years) is defined as active by the CGS. A fault that has exhibited surface displacement during the Pleistocene Epoch (which began about 1.6 million years ago and ended about 11,000 years ago) is defined as potentially active. Pre-Pleistocene faults are considered inactive. The CGS has established Alquist-Priolo Special Study Zones (AP Zones) around faults identified by the State Geologist as being active. The Alquist-Priolo Special Studies Zone Act limits development along the surface trace of active faults to reduce the potential for structural damage and/or injury due to fault rupture (CDMG 1999 and 1994). The closest AP Zone to the Project Site is the Los Osos Fault Zone, located near the City of San Luis Obispo, approximately 17 miles to the north-northwest (CDMG 1990; CGS 2007).

Major active or potentially active faults in the region include the Hosgri, Orcutt-Casmalia, Wilmar Avenue, and Oceano faults (Figures 4.6-2 and 4.6-3). These faults have the potential to generate the greatest strong ground motion at the site. Other faults in the region, including the Los Osos and Lion's Head faults, could also generate earthquakes that could affect the site (Dames & Moore 1990).

In 2008, the U.S. Geological Survey (USGS) produced updated seismic hazard maps for the conterminous United States, including peak ground accelerations (PGAs) and spectral accelerations for a range of return periods and exceedance probabilities (Peterson et al. 2008). Multiple seismogenic source zones and ground motion prediction equations were used to develop the maps and hazard values.

Figure 4.6-2 Geology of Rail Spur Project Area

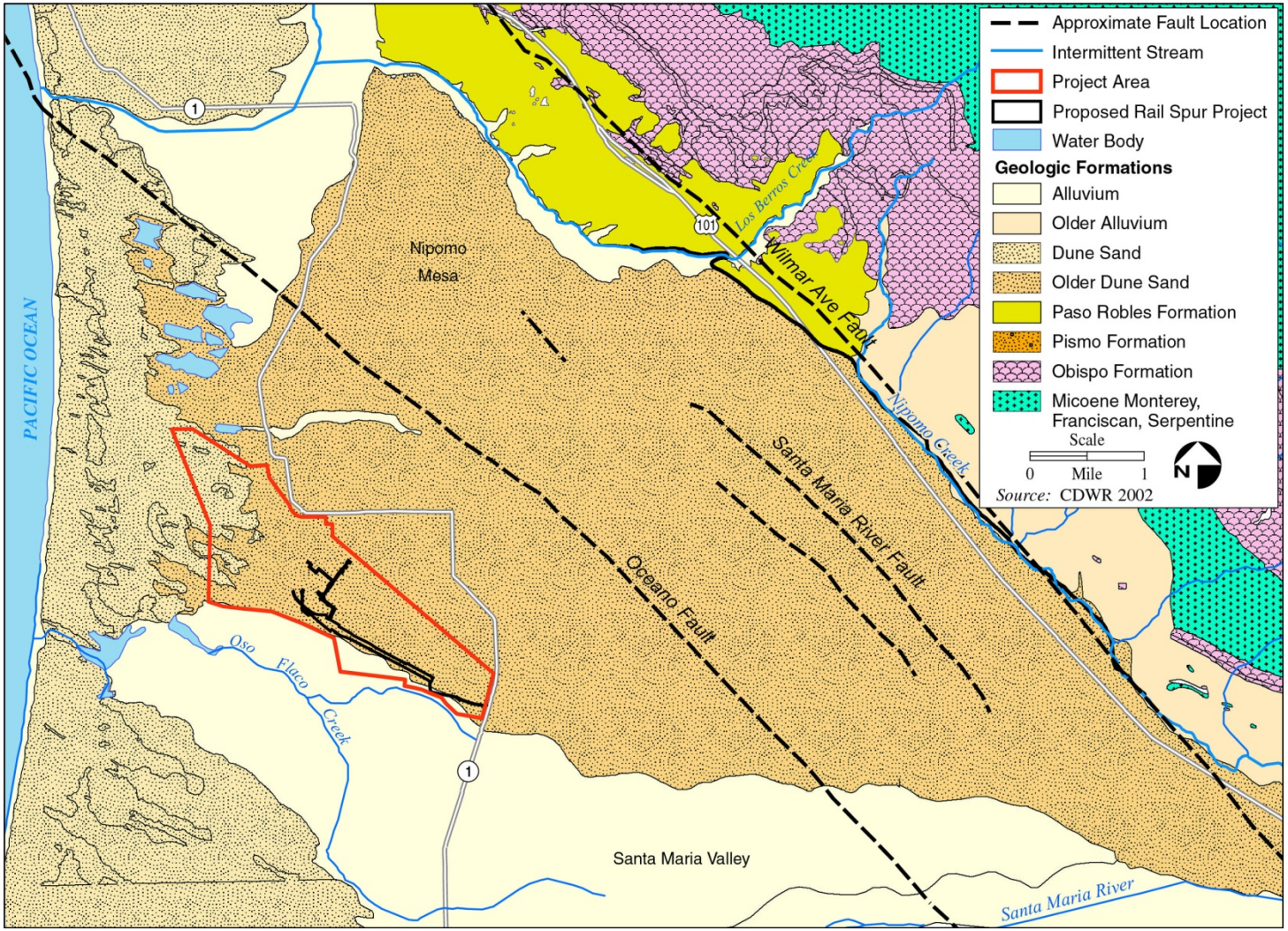
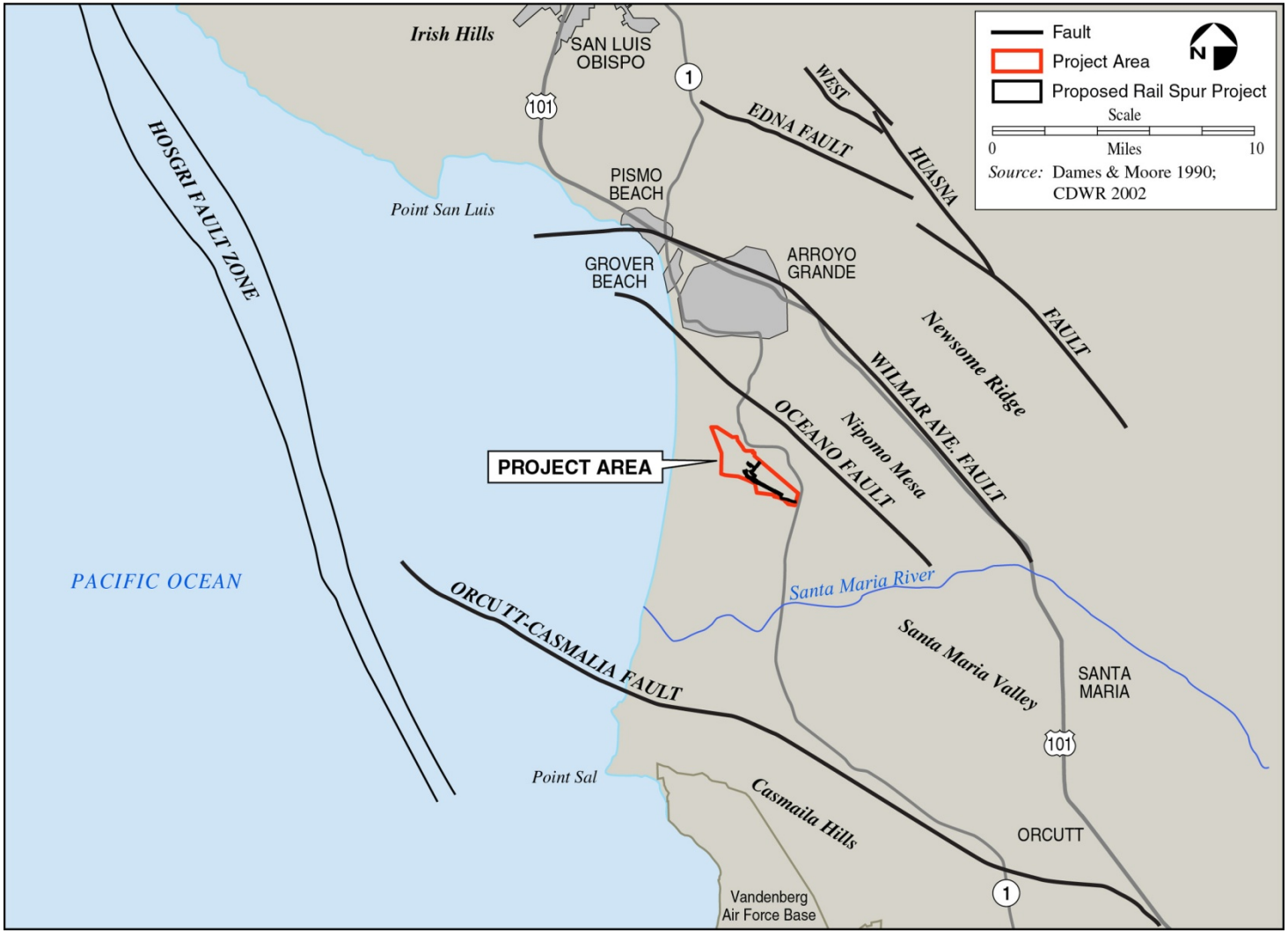


Figure 4.6-3 Generalized Fault Map of Project Area



Predicted PGA values for the site based on USGS data are provided in Table 4-6.1 (USGS 2012; Arcadis 2013). PGA depends largely on the ability of the surficial geologic unit to transmit seismic energy.

These values were calculated using shear wave velocities representative of deep alluvial or eolian deposits observed in the area (CDWR 2002; Arcadis 2013).

Table 4.6.1 Project Peak Ground Acceleration Values

Return Period (Years)	PGA (%g)	Mean Magnitude	Mean Distance (km)
30	10.72	6.52	65.7
72	10.73	6.65	51.4
144	15.22	6.69	41.7
475	26.04	6.67	28.2
1485	40.49	6.62	19.1
2475	48.27	6.61	16.3
4950	59.57	6.60	13.6
9900	71.84	6.59	11.7

Notes:
PGA values calculated for latitude 35.032117°N, longitude 120.584918°W.
Values calculated using USGS 2008 Interactive Deaggregations (Beta) Tool (USGS 2012).
Average shear wave velocity in the upper 30 meters (Vs_{30}) value of 287 meters per second used to calculate PGA values based on Kalkan et al. (2010).

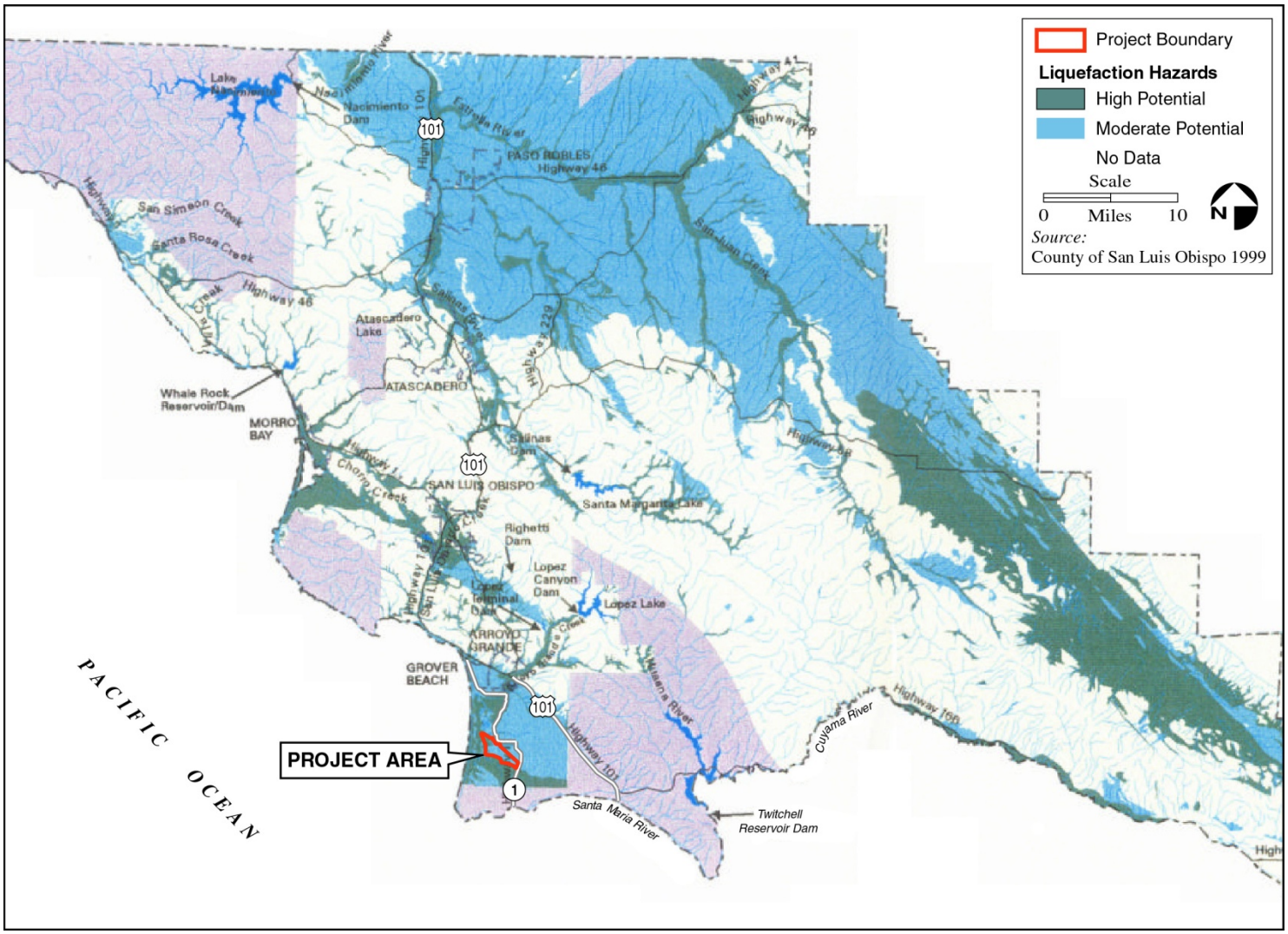
The highest predicted PGA value for a seismic event in the Project area with a return period of 144 years or less would be 0.15g. The predicted PGA would create strong ground shaking corresponding to a Modified Mercalli Intensity of VI, which could potentially cause light infrastructure damage (Wald et al. 1999; Arcadis 2013).

Similarly, a site-specific seismic analysis was completed for previous refinery upgrades (Dames & Moore 1990). Available geologic data suggest that the highest PGAs occurring at the Project Site, in association with a maximum credible earthquake (MCE), would occur on the Orcutt-Casmalia or Hosgri faults, which have an MCE of magnitude 6.9 and 7.2, respectively. The PGAs for the MCE, maximum probable earthquake (MPE), and Upper Level Event (ULE) earthquakes on both these faults would be similar (approximately 0.14g to 0.15g for ULE earthquakes, 0.26g for the MCE, and 0.09g for the MPE) and are probably the most relevant for design considerations at the site. The ULE has a 10 percent probability of occurrence in 50 years, which is equivalent to a recurrence interval of approximately 475 years (Dames & Moore 1990). The Uniform Building Code currently requires that structures be designed to resist a minimum seismic force resulting from ground motion having a 10 percent probability of being exceeded in a 50 year period (County of San Luis Obispo 1999).

4.6.1.4 Liquefaction

State of California Liquefaction Hazard Zones have not been established for San Luis Obispo County; however, the San Luis Obispo County General Plan Safety Element indicates that locally shallow groundwater and sandy soils have created a moderate potential for liquefaction in the Project area (Figure 4.6-4) (County of San Luis Obispo 1999).

Figure 4.6-4 Liquefaction Hazards



Liquefaction is the phenomenon in which loose, saturated, granular soils lose strength due to excess pore water pressure buildup during an earthquake. Liquefaction is usually manifested by the formation of boils and mud-spouts at the ground surface, by seepage of water through ground cracks, or in some cases by the development of quick-sand-like conditions.

Where the latter occurs, structures or equipment may sink substantially into the ground or tilt excessively, light weight structures may float upwards, and foundations may displace vertically or laterally, causing structural failures. The phenomenon of liquefaction generally adds to the damages which would otherwise be caused by strong ground motions alone. Lateral spreading typically occurs in association with liquefaction. Lateral spreading occurs when liquefaction of a subsurface layer causes the mass to flow down slope, moving blocks of ground at the surface.

The proximity of the site to the Oso Flaco Creek floodplain to the south indicates that high groundwater levels may be seasonally high or under other high water table conditions. In 1990, borings drilled at the refinery indicated that shallow groundwater was locally present at an elevation of 56 to 58 feet above mean sea level, corresponding to a depth of approximately 20 to 25 feet, at the lowest topographic areas of the proposed rail spur portion of the Project Site. Borings drilled from higher elevations within the refinery, up to 60 feet higher than portions of the proposed rail spur portion of the Project Site, did not encounter groundwater to a depth of 61 feet (Dames & Moore 1990). Borings subsequently drilled in 2008 at the refinery did not encounter groundwater to a maximum depth of 31 feet, although these borings were also drilled at elevations up to 60 feet higher than the lower portions of the proposed rail spur portion of the Project Site (Earth Systems Pacific 2008a, 2008b).

The Project Site is underlain by relatively uniform sand. However, in general, the sands are sufficiently dense to prevent liquefaction at levels of seismically induced ground motion corresponding to the ULE earthquake (Dames & Moore 1990).

4.6.1.5 Mineral Resources

The California Geological Survey (CGS), previously known as the California Division of Mines and Geology, has classified land in San Luis Obispo County according to the presence or absence of significant Portland cement concrete-grade aggregate deposits. The Project Site is within an area classified as MRZ-3, which contain known or inferred mineral occurrences of undetermined mineral resource significance. Only Portland cement concrete (PCC)-grade criteria were considered in classifying MRZ-3 areas. MRZ-2 areas, which are areas with a high likelihood for the occurrence of significant mineral resources, have been mapped by the CGS in combination with areas having current land uses deemed compatible with potential mining. The closest such area to the Project Site is located approximately 0.6 mile southeast of the Project Site (California Geological Survey 2011).

The County of San Luis Obispo has similarly classified land in the county according to the presence or absence of appreciable mineral resources. The Project Site is not located in an Energy or Extractive Resource Area (EX) or Extractive Resource Area (EX-1). The closest aggregate production areas, which are designated EX-1 areas, are located approximately three

miles southwest and six miles southeast of the Project Site, respectively, along the Santa Maria River (County of San Luis Obispo 2010; California Geological Survey 2012).

4.6.2 Regulatory Setting

4.6.2.1 California Building Code

The California Building Standards Commission provides a minimum standard for building design with the California Building Code, which is based on the International Code Council but has been modified for California conditions. Chapter 23 of the California Building Code contains specific requirements for seismic safety. Chapter 29 of the California Building Code regulates excavation, foundations, and retaining walls. Chapter 33 of the California Building Code contains specific requirements pertaining to site demolition, excavation, and construction to protect people and property from hazards associated with excavation cave-ins and falling debris or construction materials. Chapter 70 of the California Building Code regulates grading activities, including drainage and erosion control. Construction activities are subject to occupational safety standards for excavation, shoring, and trenching, as specified in California Occupational Health and Safety Administration (Title 8 of the California Code of Regulations) and in Section A33 of the California Building Code.

4.6.2.2 The Alquist-Priolo Earthquake Fault Zone Act of 1994

The criteria most commonly used to estimate fault activity in California are described in the Alquist-Priolo Earthquake Fault Zone Act, which addresses only surface fault-rupture hazards. These legislative guidelines determine fault activity status and are based on the age of the youngest geologic unit offset by the fault. As previously discussed, an active fault is described by the California Geological Survey as a fault that has "had surface displacement within Holocene time." A potentially active fault is defined as "any fault that showed evidence of surface displacement during Quaternary time (within the last 1.6 million years)." This legislation prohibits the construction of buildings used for human occupancy on active and potentially active surface faults. However, only those potentially active faults that have a relatively high potential for ground rupture are identified as Alquist-Priolo Earthquake Fault Zones. Therefore, not all active or potentially active faults are zoned under the Alquist-Priolo Earthquake Fault Zone Act, as designated by the State of California.

4.6.2.3 Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act was created to map and address non-surface fault rupture hazards, including liquefaction and earthquake-induced landslides, pursuant to the Seismic Hazards Mapping Act (Public Resources Code, Chapter 7.8, Section 2690 et seq.). The purpose of the Seismic Hazards Mapping Act is to reduce the threat of seismic hazards to public safety and to minimize the loss of life and property, by identifying and mitigating these seismic hazards.

Once Official Seismic Hazard Zones Maps are released, cities and counties affected by the Official Seismic Hazard Zone Maps must require a site-specific geotechnical investigation be conducted within the Zones of Required Investigation, to identify and evaluate seismic hazards and formulate mitigation measures prior to permitting most developments designed for human occupancy.

A copy of each approved geotechnical investigation, including the mitigation measures, is required to be submitted to the California Geological Survey within 30 days of approval of the investigation. Additional guidance regarding the responsibilities of local agencies, guidelines for evaluating and mitigating seismic hazards, as well as the text of the Seismic Hazards Mapping Act, are contained within Special Publication 117A - Guidelines for Evaluating and Mitigating Seismic Hazards in California (California Geological Survey 2008). In addition, local agencies are to incorporate the Seismic Hazard Zone Maps into their Safety Element and the Natural Hazard Disclosure Statement. The Seismic Hazards Mapping Act also requires sellers of real property to disclose to buyers if the property is within a Zone of Required Investigation.

4.6.2.4 California Division of Oil, Gas, and Geothermal Resources

The California Division of Oil, Gas, and Geothermal Resources regulates environmentally sensitive pipelines, which are defined under California Code of Regulations Section 1760 as:

- A pipeline located within 300 feet of any public recreational area, or a building intended for human occupancy, that is not necessary to the operation of the production operation, such as residences, schools, hospitals, and businesses;
- A pipeline located within 200 feet of any officially recognized wildlife preserve or environmentally sensitive habitat that is designated on a United States Geological Survey topographic map, designated waterways, or other surface waters, such as lakes, reservoirs, rivers, canals, creeks, or other water bodies that contain water throughout the year;
- A pipeline located within the coastal zone, as defined in Section 30103(b) of the Public Resources Code; and

Any pipeline for which the Supervisor determines there may be a significant potential threat to life, health, property, or natural resources, in the event of a leak, or that has a history of chronic leaks.

California Code of Regulations, Title 14, Section 1774 requires a pipeline management plan for environmentally sensitive pipelines.

4.6.2.5 Surface Mining and Reclamation Act

The Surface Mining and Reclamation Act of 1975 (SMARA) was enacted to promote conservation of the State's mineral resources and to ensure adequate reclamation of lands once those lands have been mined. Among other provisions, SMARA requires the State Geologist to classify land in California for mineral resource potential. The State Geologist submits the mineral land classification report to the State Mining and Geology Board, which transmits the

information to appropriate local governments that maintain jurisdictional authority in mining, reclamation, and related land use activities.

Local governments are required to incorporate the State Mining and Geology Board report and maps into their general plans and consider the information when making land use decisions. In accordance with the Surface Mining and Reclamation Act of 1975, Section 2762, before permitting a use in an MRZ-3 area that would threaten the potential to extract minerals in that area, the lead agency must first require the significance of the minerals to be evaluated. The lead agency's report must be forwarded to the State Geologist.

4.6.2.6 San Luis Obispo County General Plan

The County's General Plan Safety Element provides measures for evaluation of geologic hazards and geotechnical requirements related to new construction to reduce the potential for loss of life and reduce the amount of property damage. In addition, the County's Conservation and Open Space Element balances protection of mineral and other resources in order to enable exploitation of important mineral resources, while protecting the environment.

4.6.3 Significance Criteria

The California Environmental Quality Act (CEQA) Guidelines indicate that a substantial adverse impact would occur if a project would expose people or structures to major geologic hazards. This recognizes any and all unstable geologic conditions as a result of construction, as well as hazards associated with earthquakes, ground shaking, ground movement, fault rupture, groundwater, and other geologic hazards, features, or events. In terms of construction, significant adverse impacts are determined based on whether construction of the project would generate unstable geologic conditions lasting beyond the short-term construction phase.

In addition, impacts would be considered significant as a result of deterioration of components of facility infrastructure due to corrosion, weathering, fatigue, or erosion that could reduce structural stability.

The following significance criteria for geological resources were derived from the San Luis Obispo County Environmental Checklist which was developed in accordance with Appendix G of the CEQA Guidelines. Impacts of the proposed Project would be considered significant and would require mitigation if the Project:

- Results in exposure to or production of unstable earth conditions, such as landslides, earthquakes, liquefaction, ground failure, land subsidence, or other similar hazards;
- Is located in a California Geological Survey Alquist-Priolo Earthquake Fault Zone, or other known fault zones, per the California Division of Mines and Geology Special Publication 42;
- Results in soil erosion, topographic changes, loss of topsoil, or unstable soil conditions from Project-related improvements, such as vegetation removal, grading, excavation, or fill;
- Includes structures located on expansive soils;

- Is inconsistent with the goals and policies of the County's Safety Element relating to geologic and seismic hazards; or
- Precludes the future extraction of valuable mineral resources.

4.6.4 Project Impacts and Mitigation Measures

This section discussed the impacts and any mitigation measures associated with the Rail Spur Project related to geological resources.

Impact #	Impact Description	Phase	Impact Classification
GR.1	Seismically induced ground shaking could damage proposed structures and infrastructure, potentially resulting in loss of property, risk to human health and safety, and oil spills.	Construction and Operations	Class II

No active or potentially active faults underlie the Project Site. The closest Alquist-Priolo Fault Zone to the Project Site is the Los Osos Fault Zone, located near the City of San Luis Obispo, approximately 17 miles to the north-northwest. Therefore, the potential for surface fault rupture at the Project Site is low. However, San Luis Obispo County is located in a geologically complex and seismically active region that is subject to earthquakes and potentially strong ground shaking. Major active or potentially active faults in the region include the Hosgri, Orcutt-Casmalia, Wilmar Avenue, and Oceano faults (Figures 4.6-2 and 4.6-3). Available geologic data suggest that the highest peak ground accelerations at the Project Site would occur on the Orcutt-Casmalia or Hosgri faults, which have a maximum credible earthquake of magnitude 6.9 and 7.2, respectively. The proposed rail spur, unloading facility, and associated oil pipeline would be susceptible to damage as a result of an earthquake on these regional faults.

Shallow groundwater and sandy soils also create a moderate potential for liquefaction at the Project Site. Water levels measured in borings drilled at the Project Site, in combination with the proximity of the site to the Oso Flaco Creek floodplain to the south, indicates that high groundwater levels may be seasonally high or under other high water table conditions. Lateral spreading and seismically induced settlement typically occur in association with liquefaction. Because of the nature of the industrial activities proposed, the effects of seismically induced ground failure could be severe and include hazardous oil spills, risk of fire, and soil, surface water, and groundwater contamination.

As discovered during the 1971 San Fernando earthquake and the 1994 Northridge earthquake, existing building codes are often inadequate to completely protect engineered structures from hazards associated with large ground accelerations. Therefore, potential seismic impacts and associated damage to structures from a major earthquake on the nearby Orcutt-Casmalia or Hosgri faults, or any other regional fault, would be considered potentially significant.

Mitigation Measures

The following measures would ensure that the Rail Spur Project is consistent with provisions of the California Building Code and goals and policies of the County's Safety Element relating to geologic and seismic hazards:

GR-1a *At the time of application for grading and construction permits, the proposed rail spur, unloading facility, and oil pipeline infrastructure shall be designed and constructed to withstand anticipated horizontal and vertical ground acceleration in the Project area, based on the California Building Code. The calculated design base ground motion for project components shall consider the soil type, potential for liquefaction, and the most current and applicable seismic attenuation methods that are available.*

GR-1b *At the time of application for construction permits, all surface facilities and equipment shall have suitable foundations and anchoring design, surface restraints, and moment-limiting supports to withstand seismically induced groundshaking.*

GR-1c *A Registered Civil Engineer and Certified Engineering Geologist shall complete an updated geotechnical investigation specific to the proposed rail spur and oil pipeline site, as previous on-site geotechnical investigations were completed in other areas of the refinery. All geotechnical recommendations provided in the report shall be followed during grading and construction at the Project Site. The updated geotechnical evaluation shall include, but not be limited to, an estimation of both vertical and horizontal anticipated peak ground accelerations, as well as an updated liquefaction analysis.*

GR-1d *The geotechnical report shall be completed prior to completion of the final Project design and shall be submitted to the County of San Luis Obispo Building Division for review and approval. The Project design must conform to the recommendations within the updated geotechnical evaluation. The geotechnical recommendations would likely include, but not be limited, to the following:*

a. Proposed structures shall be designed and constructed to withstand anticipated horizontal and vertical ground acceleration in the Project area, based on the California Building Code.

b. Proposed structures shall be designed and constructed to withstand the effects of liquefaction, as applicable, based on the California Building Code.

c. The Project Site shall be cleared of unsuitable materials and graded to provide a firm base for compacted fill, as applicable. Ground surfaces to receive compacted fill shall be prepared by removing organics, rubble, debris, existing disturbed fill, artificial fill, unconsolidated materials, and soft or disturbed soils. Removal of unconsolidated materials would likely include several feet of overexcavation.

d. All fill material shall be placed in uniform lifts not exceeding 8 inches in its loose state and compacted to a minimum of 90 percent relative compaction, as determined by the latest ASTM Test Designation D-1557.

e. Due to the low cohesion of the onsite soils (i.e., dune sands), the potential need for mechanical stabilization of fill slopes shall be evaluated and implemented, as applicable, to attain the acceptable factors of safety for stability. Mechanical stabilization may include Mechanically Stabilized Earth (MSE), which includes use of engineered geogrids placed at 2-foot vertical spacing within fill slopes. Cut slopes may similarly require construction of overlying stability fills, using MSE.

f. Surface runoff shall be directed away from slopes and foundations and collected in lined ditches or drainage swales, via non-erodible engineered drainage devices. Fill slopes and stability fills, as applicable, shall be provided with subsurface drainage for stability.

GR-1e At the time of application for grading and construction permits, all proposed slope, building pad, and rail track bed construction shall be properly engineered, with fill placed in accordance with requirements of the current County of San Luis Obispo Building and Construction Ordinance (Title 19 of the San Luis Obispo County Code), and California Building Code.

GR-1f During construction, the proposed aboveground oil pipeline shall be anchored to prevent pipeline movement, as determined by a California Registered Civil Engineer, in accordance with California Building Code, San Luis Obispo County requirements, and the American Public Works Association Greenbook.

GR-1g At the time of application for construction permits, the facilities and equipment, including spill containment vaults and Project-related pipelines, shall be designed for predicted, site-specific seismic loading in accordance with applicable codes, including the California Building Code.

GR-1h The Applicant shall cease rail car unloading and pipeline oil conveyance following any perceptible (i.e., felt by humans) seismic event and inspect all project-related facilities, equipment, and pipelines for damage prior to restarting operations.

GR-1i Consistent with California Building Code Section 3401.2, all project-related facilities, equipment, and pipelines shall be maintained in conformance with the California Building Code edition under which it was installed. Annual inspections shall be completed by a California Registered Civil Engineer to verify that project components have not been damaged or compromised by seismic induced ground shaking, corrosion, soil erosion, soil settlement, or other geologic hazards.

Residual Impacts

Implementing mitigation measures GR-1a through GR-1i would reduce the severity of seismic-related impacts to *less than significant with mitigation (Class II)*.

Impact #	Impact Description	Phase	Impact Classification
GR.2	Project grading would result in changes in topography, potentially unstable slopes, and potential increased erosion.	Construction and Operations	Class II

Slope gradients within the proposed area of ground disturbance are predominantly gentle, with localized steep slopes along the proposed pipeline alignment. The proposed railcar unloading area consists of a relatively flat graded area used by the existing coke facility; however, the proposed rail spur alignment roughly trends along a broad east-west trending ridge with undulating topography. Approximately 135,771 cubic yards of cut and 114,075 cubic yards of fill would be required to establish the proposed rail spur final grade. As a result, the topography would be altered, primarily along the proposed rail spur alignment. Cut and fill slopes along the majority of the rail spur would not exceed 15 feet; however, the eastern end of the spur would include a cut slope up to 25 feet high.

Underlying sediments are relatively uniform across the proposed area of disturbance, consisting primarily of poorly-graded dune sands, which are generally loose to medium dense at the surface. Excavations and oversteepened slopes in such loose sands could result in sloughing and shallow slope failures. However, cut slopes and compacted fill slopes would not exceed 2.5:1 (horizontal to vertical) in gradient, thus minimizing the potential for slope failure. In addition, track construction would include placement of sub-ballast, thus contributing to stabilization of the track bed by reducing erosion and rilling at the top of slope.

If specified by Union Pacific, demolition/removal of approximately 1,300 feet of existing track may occur, resulting in exposure of underlying soils to wind and water erosion. However, this work would occur within the existing track corridor and would not require impacts outside the existing disturbed area. Areas to be graded would initially be cleared of vegetation, thus exposing the sandy soils to increased wind and water erosion during construction. Areas not paved during construction would be susceptible to increased wind and water erosion following construction. However, the last stage of construction would include soil stabilization and vegetation restoration, thus minimizing erosion. In addition, most of the precipitation infiltrates with minimal runoff to cause soil erosion. Although onsite soils have been classified as highly erodible, evidence of erosion, such as rilling or gullying, was not noted during a site reconnaissance of the Project Site, including areas that had been previously disturbed and/or graded. However, Project related erosion would be considered potentially significant.

Mitigation Measures

Implementation of Mitigation Measures GR-1c, GR-1d, and GR-1e would ensure that the Rail Spur Project is consistent with goals and policies of the County's Safety Element relating to geologic hazards. In addition, the following mitigation measures would reduce erosion related impacts.

GR-2 *During construction and operations, the Applicant shall implement a Storm Water Pollution Prevention Plan using Best Management Practices and monitor and maintain stormwater pollution control facilities identified in the Storm Water*

Pollution Prevention Plan, in a manner consistent with the provisions of the Federal Water Pollution Control Act (National Pollutant Discharge Elimination System Program). Stormwater management protection measures and wet weather measures shall be designed by a California registered, Qualified Storm Water Pollution Prevention Plan Developer. In addition, a California registered, Qualified Storm Water Pollution Prevention Plan Practitioner shall oversee and monitor construction and operational Best Management Practices and stormwater management, in accordance with the State General Construction Permit and the Central Coast Regional Water Quality Control Board. Conventional measures typically recommended by the State Water Resource Board and the California Department of Transportation include the following:

a. *Implement permanent erosion and sediment control measures:*

   - *Minimize grading, clearing, and grubbing to preserve existing vegetation;*
   - *Use mulches and hydroseed, free of invasive plants, to protect exposed soils;*
   - *Use geotextiles and mats to stabilize soils;*
   - *Use drainage swales and dissipation devices; and*
   - *Use erosion control measures outlined in the California Stormwater Quality Association Best Management Practice Handbook.*

b. *Implement temporary Best Management Practice mitigation measures:*

   - *Use silt fences, sandbags, and straw wattles;*
   - *Use temporary sediment basins and check dams; and*
   - *Use temporary Best Management Practices outlined in the California Stormwater Quality Association Best Management Practice Handbook.*

c. *Implement tracking control Best Management Practices to reduce tracking sediment offsite.*

   - *Use stabilized construction entrance and exit with steel shakers;*
   - *Use tire wash areas; and*
   - *Use tracking control Best Management Practices outlined in the California Stormwater Quality Association Best Management Practice Handbook.*

Personnel at the site shall be trained in equipment use and containment and cleanup of an oil spill. Dry cleanup methods, such as absorbents, shall be used on paved and impermeable surfaces. Spills in dirt areas shall be immediately contained with an earthen dike and the contaminated soil shall be dug up and discarded in accordance with local and state regulations.

Residual Impacts

Implementing mitigation measures GR-1c, GR-1d, GR-1e, and GR-2 would reduce the severity of slope stability- and erosion-related impacts to *less than significant with mitigation (Class II)*.

Impact #	Impact Description	Phase	Impact Classification
GR.3	Expansive soils, if present, could damage proposed foundations.	Construction	Class II

Soil expansion generally occurs in clay rich soils as a result of wetting of the soil. The soils subsequently contract when dry, resulting in widespread cracking of the soil. This alternating sequence of soil expansion and contraction can result in damage to overlying foundations. However, because the Project Site soils consist of dune sand, the likelihood of expansive soils is low. However, in the absence of site-specific soils testing, impacts are potentially significant.

Mitigation Measures

GR-3 Implement Mitigation Measure GR-1c to confirm the absence of expansive soil.

Residual Impacts

Implementing mitigation measure GR-1c would reduce the severity of potential expansive soil-related impacts to *less than significant with mitigation (Class II)*.

Impact #	Impact Description	Phase	Impact Classification
GR.4	The Project could potentially preclude the future extraction of valuable mineral resources.	Construction and Operations	Class III

The Project Site is within an area classified as MRZ-3 by the California Geological Survey, which contain known or inferred mineral occurrences of undetermined mineral resource significance. Only Portland cement concrete (PCC)-grade criteria were considered in classifying MRZ-3 areas. MRZ-2 areas, which are areas with a high likelihood for the occurrence of significant mineral resources, have been mapped by the California Geological Survey in combination with areas having current land uses deemed compatible with potential mining. The closest such area to the Project Site is located approximately 0.6 mile southeast of the Project Site.

Similarly, the Project Site is not located in an EX or EX-1 area, as designated by the County of San Luis Obispo. The closest aggregate production areas, which are designated EX-1 areas, are located approximately three miles southwest and six miles southeast of the Project Site, respectively, along the Santa Maria River. As a result, the Project would not preclude the future extraction of valuable mineral resources and impacts are considered less than significant.

Mitigation Measures
None required.

Residual Impacts
Residual impacts would be *less than significant (Class III).*

4.6.5 Cumulative Analysis

In general, the impacts due to the Rail Spur Project can be mitigated to less than significant levels.

Cumulative impacts related to seismically-related ground shaking and associated ground failure, as well as slope failures and other impacts, would be similar to what is described for Project-specific impacts. The impacts would be addressed on a project-by-project basis through compliance with existing building codes and any site-specific mitigation measures for individual projects. Remaining impacts associated with the cumulative projects in the vicinity of the project will not have any impacts that result in cumulative impacts, since the impacts are site specific and not significant with mitigation.

Compliance with applicable code requirements and the recommendations of site-specific geotechnical evaluations on a case-by-case basis would reduce cumulative impacts relating to geotechnical hazards to a less than significant level.

All mitigation measures are based on conventional techniques and standards within the industry. All geotechnical hazards can be mitigated to acceptable levels by licensed professionals who will provide guidelines and specifications to mitigate and remediate the specific hazard.

Therefore, cumulative impacts relating to geotechnical hazards would be less than significant.

4.6.6 Mitigation Monitoring Plan

Mitigation Measure	Plan Requirements and Timing	Compliance Verification		
		Method	Timing	Responsible Party
GR-1a	At the time of application for grading and construction permits, the proposed rail spur, unloading facility, and oil pipeline infrastructure shall be designed and constructed to withstand anticipated horizontal and vertical ground acceleration in the Project area, based on the California Building Code. The calculated design base ground motion for project components shall consider the soil type, potential for liquefaction, and the most current and applicable seismic attenuation methods that are available.	Review and approval of design drawings and seismic loading calculations	Approve design drawings and seismic loading calculations prior to issuance of building permits	County Planning and Building
GR-1b	At the time of application for construction permits, all surface facilities and equipment shall have suitable foundations and anchoring design, surface restraints, and moment-limiting supports to withstand seismically induced groundshaking.	Review and approval of design drawings	Approve design drawings prior to issuance of building permits	County Planning and Building
GR-1c	A Registered Civil Engineer and Certified Engineering	Review and	Approve	County

Mitigation Measure	Plan Requirements and Timing	Compliance Verification		
		Method	Timing	Responsible Party
	Geologist shall complete an updated geotechnical investigation specific to the proposed rail spur and oil pipeline site, as previous on-site geotechnical investigations were completed in other areas of the refinery. All geotechnical recommendations provided in the report shall be followed during grading and construction at the Project Site. The updated geotechnical evaluation shall include, but not be limited to, an estimation of both vertical and horizontal anticipated peak ground accelerations, as well as an updated liquefaction analysis.	approval of geotechnical report.	geotechnical report prior to issuance of grading permit.	Planning and Building
GR-1d	The geotechnical report shall be completed prior to completion of the final Project design and shall be submitted to the County of San Luis Obispo Building Division for review and approval. The Project design must conform to the recommendations within the updated geotechnical evaluation. The geotechnical recommendations would likely include, but not be limited, to the following: a. Proposed structures shall be designed and constructed to withstand anticipated horizontal and vertical ground acceleration in the Project area, based on the California Building Code. b. Proposed structures shall be designed and constructed to withstand the effects of liquefaction, as applicable, based on the California Building Code. c. The Project Site shall be cleared of unsuitable materials and graded to provide a firm base for compacted fill, as applicable. Ground surfaces to receive compacted fill shall be prepared by removing organics, rubble, debris, existing disturbed fill, artificial fill, unconsolidated materials, and soft or disturbed soils. Removal of unconsolidated materials would likely include several feet of overexcavation. d. All fill material shall be placed in uniform lifts not exceeding 8 inches in its loose state and compacted to a minimum of 90 percent relative compaction, as determined by the latest ASTM Test Designation D-1557. e. Due to the low cohesion of the onsite soils (i.e., dune sands), the potential need for mechanical stabilization of fill slopes shall be evaluated and implemented, as applicable, to attain the acceptable factors of safety for stability. Mechanical stabilization may include Mechanically Stabilized Earth (MSE), which includes use of engineered geogrids placed at 2-foot vertical spacing within fill slopes. Cut slopes may similarly require construction of overlying stability fills, using MSE. f. Surface runoff shall be directed away from slopes and foundations and collected in lined ditches or drainage	Review and approval of geotechnical report.	Approve geotechnical report prior to issuance of grading permit.	County Planning and Building

Mitigation Measure	Plan Requirements and Timing	Compliance Verification		
		Method	Timing	Responsible Party
	swales, via non-erodible engineered drainage devices. Fill slopes and stability fills, as applicable, shall be provided with subsurface drainage for stability.			
GR-1e	At the time of application for grading and construction permits, all proposed slope, building pad, and rail track bed construction shall be properly engineered, with fill placed in accordance with requirements of the current County of San Luis Obispo Building and Construction Ordinance (Title 19 of the San Luis Obispo County Code), and California Building Code.	Review and approval of grading plans	Approve grading plans prior to issuance of building permits	County Planning and Building
GR-1f	During construction, the proposed aboveground oil pipeline shall be anchored to prevent pipeline movement, as determined by a California Registered Civil Engineer, in accordance with California Building Code, San Luis Obispo County requirements, and the American Public Works Association Greenbook.	Review and approval of design drawings	Approve design drawings prior to issuance of building permits	County Planning and Building
GR-1g	At the time of application for construction permits, the facilities and equipment, including spill containment vaults and Project-related pipelines, shall be designed for predicted, site-specific seismic loading in accordance with applicable codes, including the California Building Code.	Review and approval of design drawings	Approve design drawings prior to issuance of building permits	County Planning and Building
GR-1h	The Applicant shall cease rail car unloading and pipeline oil conveyance following any perceptible (i.e., felt by humans) seismic event and inspect all project-related facilities, equipment, and pipelines for damage prior to restarting operations.	Cease any rail car unloading and pipeline oil conveyance and inspect all project-related facilities, equipment and pipelines following any perceptible seismic event.	Inspection for earthquake damage of unloading and oil conveyance infrastructure immediately following seismic events.	County Planning and Building
GR-1i	Consistent with California Building Code Section 3401.2, all project-related facilities, equipment, and pipelines shall be maintained in conformance with the California Building Code edition under which it was installed. Annual inspections shall be completed by a California Registered Civil Engineer to verify that project components have not been damaged or compromised by seismic induced ground shaking, corrosion, soil erosion, soil settlement, or other geologic hazards.	Inspection of project-related facilities, equipment, and pipelines	Annually	County Planning and Building
GR-2	During construction and operations, the Applicant shall implement a Storm Water Pollution Prevention Plan using Best Management Practices and monitor and maintain stormwater pollution control facilities identified in the	Review and approval of SWPPP.	Approve SWPPP prior to issuance of grading permit.	County of San Luis Obispo

Mitigation Measure	Plan Requirements and Timing	Compliance Verification		
		Method	Timing	Responsible Party
	Storm Water Pollution Prevention Plan, in a manner consistent with the provisions of the Federal Water Pollution Control Act (National Pollutant Discharge Elimination System Program). Stormwater management protection measures and wet weather measures shall be designed by a California registered, Qualified Storm Water Pollution Prevention Plan Developer. In addition, a California registered, Qualified Storm Water Pollution Prevention Plan Practitioner shall oversee and monitor construction and operational Best Management Practices and stormwater management, in accordance with the State General Construction Permit and the Central Coast Regional Water Quality Control Board. Conventional measures typically recommended by the State Water Resource Board and the California Department of Transportation include the following: a. Implement permanent erosion and sediment control measures: – Minimize grading, clearing, and grubbing to preserve existing vegetation; – Use mulches and hydroseed, free of invasive plants, to protect exposed soils; – Use geotextiles and mats to stabilize soils; – Use drainage swales and dissipation devices; and – Use erosion control measures outlined in the California Stormwater Quality Association Best Management Practice Handbook. b. Implement temporary Best Management Practice mitigation measures: – Use silt fences, sandbags, and straw wattles; – Use temporary sediment basins and check dams; and – Use temporary Best Management Practices outlined in the California Stormwater Quality Association Best Management Practice Handbook. c. Implement tracking control Best Management Practices to reduce tracking sediment offsite. – Use stabilized construction entrance and exit with steel shakers; – Use tire wash areas; and – Use tracking control Best Management Practices outlined in the California Stormwater Quality Association Best Management Practice Handbook. Personnel at the site shall be trained in equipment use and containment and cleanup of an oil spill. Dry cleanup methods, such as absorbents, shall be used on paved and impermeable surfaces. Spills in dirt areas shall be immediately contained with an earthen dike and the contaminated soil shall be dug up and discarded in			

Mitigation Measure	Plan Requirements and Timing	Compliance Verification		
		Method	Timing	Responsible Party
	accordance with local and state regulations.			

4.6.7 References

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4.7 Hazards and Hazardous Materials

This section discusses potential public safety and hazardous materials impacts associated with the Rail Spur Project. Potential impacts include train derailments and unloading accidents that could lead to fires and explosions. The information in this section outlines the environmental setting, regulatory setting, significance criteria, potential risk scenarios and their significance, and the levels of risk to the public associated with these scenarios.

In addition, this section presents an analysis of the estimated frequency and volume of oil spills for the Rail Spur Project. For a discussion of air toxic health risk impacts, please see Section 4.3, Air Quality.

Trains could enter California at least five different locations (one at the north end of the state from Oregon, two at the northeast from Nevada, one at the southeast from Nevada, and one at the south from Arizona). Depending upon the route taken by the train they could arrive at the SMR from the north or the south. It is unknown what route UPRR would use to deliver the trains to the SMR. Coming from the north the routes merge at the UPRR Roseville Rail Yard. From the south the routes merge at the Colton Rail Yard. Given that the route the trains would travel to get to these two UPRR yards is speculative, the EIR has evaluated in more detail the impacts of trains traveling from these two UPRR yards to the SMR.

Beyond the two UPRR Yards, trains could travel any number of routes (refer to Figure 2-8). Also, crude oil delivered to California by UPRR would generally pass through either of these two rail yards in route to the SMR. Depending upon the source of the crude oil, crude oil trains could use any portion of the UPRR network between Roseville/Colton and the source location for the crude oil. The exact route that would be taken would depend upon a number of factors, that could include the source of the crude oil, weather conditions, train traffic conditions, etc. Since the routes past Roseville and Colton are somewhat speculative, the EIR has discussed in a more qualitative nature the potential public safety impacts of train traffic beyond these two rail yards.

4.7.1 Environmental Setting

For the Rail Spur Project, environmental setting or baseline conditions reflect the baseline risks of upset associated with the existing refinery and rail operations. For the public safety analysis, the study area includes the mainline rail corridors, the rail spur at the SMR, and the rail unloading facilities and associated pipelines.

An upset condition at the listed facilities or along transportation routes could have an adverse impact to the public and environmental resources in the study area. Impacts to air, water, cultural, agricultural, and biological resources are discussed in the appropriate sections of this Environmental Impact Report. The study area that would be affected in terms of public safety by an upset condition includes any population located in the vicinity of the SMR and along the mainline rail routes. This would include residences, businesses, educational institutions, etc.

4.7.1.1 Mainline Rail

This section discusses the existing rail operations along the mainline route that could be used by crude oil trains servicing the SMR.

Existing Rail Traffic
The UPRR mainline routes that could be used to move crude oil to the SMR are currently used for both freight and passenger trains. The level of traffic on these mainlines varies by location. In the Bay Area and Los Angeles there are higher levels of train traffic then along the Coast Line. In these two metropolitan areas trains volumes (freight and passenger trains) varies between 10 and 75 trains per day depending upon location and track (Caltrans 2013). Freight trains carry a variety of freight, including crude oil, automobiles, lumber, hazardous materials, etc.

Rail traffic on the UPRR Coast Line through San Luis Obispo County is relatively light. Currently, there are no more than 6 freight trains per day (Caltrans 2013) and six passenger trains daily. The average number of freight trains running the length of the Coastal Route is about two per day. Local freight trains operate along various sections of the Coast Line, primarily from Salinas north and Oxnard south. Freight trains travelling through San Luis Obispo County carry a variety of freight, including crude oil, automobiles, lumber, and hazardous materials. One crude oil unit train currently traverses San Luis Obispo County traveling from San Ardo to Los Angeles, which occurs two to three times per week. This crude oil train has been in operation for about 20 years.

Rail Track Type
Rail track is classified into six categories with Class 6 having the most stringent track tolerances and maintenance schedules. With the advent of higher speed trains additional classifications have been defined for Classes 7 and 8. Mainline tracks are generally Class 4 or 5 and typically have lower accident rates per million miles. Class 6 track is used for high speed trains up to 110 mph, and is found in the Northeast Corridor between Washington D.C. and New York. Class 4 track is the dominant class for mainline track used in passenger and long-haul freight service. The Class of a track determines the maximum speed that freight and passenger trains can travel. Higher class tracks have higher allowable speeds.

The Federal Railroad Administration (FRA) establishes minimum design standards for each of the various track classes. Each railroad establishes their own design standards for their tracks that meet or exceed the FRA standards. The FRA standards cover the track roadbed, track geometry, track structure (ballast, cross-ties, joints, switches, etc.). These minimum track safety standards are specified in 49 CFR 213.

For the route from Roseville to the SMR via Oakland 94.9% of the tack is Class 4 and 5. For the route from Roseville to the SMR via Altamont Pass 95.2% of the track is Class 4 and 5. For the route from Colton to the SMR 96.7% of the track is Class 4 and 5. Appendix H.1 provides more information on the track class for each of the possible mainline rail routes to the SMR. The mainline track along the three routes has an allowable gross weight rating of 315,000 lbs per car, with the exception of the track from Niles Junction to near Stockton (Altamont Pass), which has an allowable gross weight rating of 286,000 lbs per car (UPRR 2013). The weight of the Rail Spur Project cars would be limited to a maximum of 286,000 lbs.

Rail Accident Rates

Train accidents are required to be reported to the Federal Railroad Administration (FRA) and typically identify the causes and contributing factors as shown in Table 4.7.1.

The transportation of hazardous substances poses a potential for fires, explosions, and hazardous materials releases. In general, the greater the miles traveled the greater the potential for an accident. Statistical accident frequency varies. 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 4.7.1 Rail Incidents - Initiating and Contributing Causes

Human Errors	Equipment Failures	System or Procedural Failures	External Events
Humping	Non-dedicated car	Routing	Vandalism/sabotage
Switching	Crossing guard failure	Control	At-grade crossing
Coupling	Overpressure	-yards	Flood/washout
Transloading	Leaking valve	-mainline	Earthquake
lnerting	Roller bearing failure	-in-plant	Rockslide/landslide
Contamination	Coupling failure	Interim storage at holding track	Avalanche
Heating and cooling	Broken rail		Fire on rail siding
Overfilling	Brake failure	Car tracking	Fog/blizzard
Speeding	Roadbed failure	Container specification	Bridge failure
Ignoring closed	Protective coating/ insulation/thermal protection failure	Emergency response training	
Block signals	Relief device failure	Maintenance	
Driver impairment	Track sensor failure	Inspection	
	Switchgear failure	Circuitous routing	
	Signal failure		
	Communications system failure		
	Broken wheel		
	Suspension failure		
	Fitting defect		
	Corrosion		
	Material defect		
	Bad weld		

Source: 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 FRA with accurate information concerning the hazards and risks 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, in California, and accidents reported by UPRR between 2003 and 2012 are summarized in Table 4.7.2. Based on the train accident data for the United States, the train accident rate varied from 2.3 accidents per million miles traveled to 4.4 accidents per million miles traveled over the 10-year period from January 2003 to December 2012. The train accident rate for 2012 was 2.3 train accidents per million miles traveled.

Table 4.7.2 Summary of National and California Train Accident Data

Category	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Train Accident Data for United States										
Total Accidents/ Incidents[1]	14,371	14,523	14,311	13,803	13,936	12,958	11,263	11,628	11,434	10,747
Accident Rate[2]	19.3	18.9	18.1	17.0	17.6	16.7	16.9	16.5	15.9	14.5
Train Accidents	3,019	3,385	3,266	2,998	2,693	2,482	1,911	1,902	2,019	1,712
Train Accident Rate[2]	4.1	4.4	4.1	3.7	3.4	3.2	2.9	2.7	2.8	2.3
Train Accidents on Main Line	976	1,033	1,021	981	854	767	619	616	619	489
Accident Rate on Main Line	1.5	1.5	1.5	1.4	1.2	1.1	1.1	1.0	1.0	0.7
Hazmat Releases[3]	30	31	39	30	46	22	22	21	21	25
Cars Carrying Hazmat[4]	7,790	8,185	8,034	9,000	8,562	8,451	6,440	7,509	7,582	6,680
Hazmat Cars Damaged/Derailed	1,072	998	915	1,047	1,056	751	749	719	666	661
Cars Releasing	41	49	52	71	76	38	44	40	66	45
Total Train Miles[5]	743.3	770.2	789.0	813.6	793.6	774.1	668.0	704.8	717.6	740.4
Train Accident Data for UPRR										
Total Accidents/ Incidents[1]	2,562	2,708	2,747	2,749	2,597	2,287	1,696	1,708	1,738	1,718
Train Accidents	801	960	955	891	723	637	444	447	547	501
Hazmat Releases	8	7	12	5	6	5	3	4	4	6
Train Accident Data for California										
Total Accidents/ Incidents[1]	1,002	865	965	944	950	843	727	720	704	807
Train Accidents	175	185	199	191	155	120	101	87	88	83
Hazmat Releases	1	3	2	3	4	1	1	1	0	0
Train Accident Data for San Luis Obispo County										
Total Accidents/ Incidents	9	10	3	7	15	7	9	8	7	6
---Total fatalities	2	.	2	1	1	.	1	3	.	2
---Total nonfatal	6	10	1	6	12	6	8	6	7	5
EOD deaths	.	.	.	.	.	.	.	.	.	.
EOD injuries	3	3	.	2	2	3	.	1	.	.
EOD illnesses	.	.	.	.	1	.	.	.	.	.
Total EOD cases	3	3	.	2	3	3	.	1	.	.
Cases with days absent from work	3	3	.	2	1	2	.	1	.	.
Trespasser deaths, not at Rail Crossing	2	.	2	1	1	.	.	3	.	.

Table 4.7.2 Summary of National and California Train Accident Data

Category	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Trespasser injuries, not at Rail Crossing	.	.	.	3	3	1	1	4	.	1
Train Accidents	.	.	.	.	.	.	.	.	.	.
--- deaths	.	.	.	.	.	.	.	.	.	.
--- injuries	.	.	.	.	.	.	.	.	.	.
HAZMAT Releases	.	.	.	.	.	.	.	.	.	.
--- Hazmat cars	.	.	.	.	.	.	.	.	.	.
--- Cars damaged	.	.	.	.	.	.	.	.	.	.
--- Cars releasing	.	.	.	.	.	.	.	.	.	.
Highway Rail Incidents	1	2	.	.	2	2	1	.	.	1
--- deaths	.	.	.	.	.	.	1	.	.	2
--- injuries	.	2	.	.	.	1	.	.	.	.
--- at public crossing	.	.	.	.	1	.	1	.	.	.
Other Accidents/ Incidents[1]	8	8	3	7	13	5	8	8	7	5
--- deaths	2	.	2	1	1	.	.	3	.	.
--- injuries	6	8	1	6	12	5	8	6	7	5
Train Accident Data for Monterey										
Total Accidents/ Incidents	3	4	4	10	3	.	1	1	3	.
---Total fatalities	.	.	1	2	.	.	.	1	.	.
---Total nonfatal	.	2	1	1	2	.	.	.	1	.
EOD deaths	.	.	.	1	.	.	.	.	.	.
EOD injuries	.	1	1	1	1	.	.	.	.	.
EOD illnesses	.	.	.	.	.	.	.	.	.	.
Total EOD cases	.	1	1	2	1	.	.	.	.	.
Cases with days absent from work	.	1	1	1	1	.	.	.	.	.
Trespasser deaths, not at Rail Crossing	.	.	1	.	.	.	.	1	.	.
Trespasser injuries, not at Rail Crossing	.	.	.	.	1	.	.	.	.	.
Train Accidents	1	.	.	4	1	.	.	.	1	.
--- deaths	.	.	.	.	.	.	.	.	.	.
--- injuries	.	.	.	.	.	.	.	.	.	.
HAZMAT Releases	.	.	.	1	1	.	.	.	1	.
--- Hazmat cars	.	.	.	2	.	.	.	.	.	.
--- Cars damaged	.	.	.	1	.	.	.	.	.	.
--- Cars releasing	.	.	.	.	.	.	.	.	.	.
Highway Rail Incidents	.	.	.	.	.	.	.	.	.	.
--- deaths	1	.	.	.	.	.	.	.	.	.
--- injuries	.	.	.	.	.	.	.	.	.	.
--- at public crossing	.	.	.	.	.	.	.	.	.	.
Other Accidents/	1	.	.	4	.	.	.	.	1	.

Table 4.7.2 Summary of National and California Train Accident Data

Category	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Incidents[1]										
--- deaths	.	.	.	.	1	.	.	.	.	.
--- injuries	1	.	.	2	.	.	.	.	.	.
Train Accident Data for Santa Clara County										
Total Accidents/ Incidents	5	3	9	6	7	3	4	2	1	.
---Total fatalities	.	.	2	3	1	.	.	.	.	.
---Total nonfatal	2	.	6	1	2	3	3	.	1	.
EOD deaths	.	.	.	.	.	.	.	.	.	.
EOD injuries	1	.	3	1	1	.	1	.	.	.
EOD illnesses	.	.	.	.	.	.	.	.	.	.
Total EOD cases	1	.	3	1	1	.	1	.	.	.
Cases with days absent from work	1	.	1	.	.	.	1	.	.	.
Trespasser deaths, not at Rail Crossing	.	.	2	3	1	.	.	.	.	.
Trespasser injuries, not at Rail Crossing	.	.	2	.	.	2	1	.	.	.
Train Accidents	3	2	1	2	3	.	1	.	.	.
--- deaths	.	.	.	.	.	.	.	.	.	.
--- injuries	.	.	.	.	.	.	.	.	.	.
HAZMAT Releases	2	1	.	.	1	.	1	.	.	.
--- Hazmat cars	1	1	1	1	2	.	.	.	.	.
--- Cars damaged	.	.	.	.	.	.	.	.	.	.
--- Cars releasing	.	.	.	.	.	.	.	.	.	.
Highway Rail Incidents	.	.	.	.	.	.	.	.	.	.
--- deaths	.	.	.	1	.	.	.	.	.	.
--- injuries	.	1	.	.	.	.	.	.	.	.
--- at public crossing	.	.	.	.	.	.	.	.	.	.
Other Accidents/ Incidents[1]	3	1	1	2	3	.	1	.	.	.
--- deaths	.	.	.	.	.	.	.	.	.	.
--- injuries	.	1	.	.	1	.	.	.	.	.
Train Accident Data for Alameda County										
Total Accidents/ Incidents	12	13	22	14	16	16	10	12	13	8
---Total fatalities	.	.	2	.	.	2	3	.	1	1
---Total nonfatal	8	9	11	5	10	7	8	7	9	4
EOD deaths	.	.	.	.	.	.	.	.	.	.
EOD injuries	7	6	6	3	7	4	2	1	5	1
EOD illnesses	.	.	.	1	.	.	.	.	.	.
Total EOD cases	7	6	6	4	7	4	2	1	5	1
Cases with days absent from work	5	5	3	3	1	1	.	1	3	.
Trespasser deaths,	.	.	1	.	.	2	3	.	1	1

Table 4.7.2 Summary of National and California Train Accident Data

Category	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
not at Rail Crossing										
Trespasser injuries, not at Rail Crossing	.	1	3	1	1	.	1	.	.	1
Train Accidents	4	5	9	6	3	5	1	5	3	3
--- deaths	.	.	.	.	.	.	.	.	.	.
--- injuries	.	.	.	.	.	.	.	.	.	.
HAZMAT Releases	1	3	2	4	1	.	.	3	2	2
--- Hazmat cars	3	1	4	2	2	4	1	1	.	.
--- Cars damaged	.	.	.	.	.	.	.	1	.	.
--- Cars releasing	.	.	1	.	.	1	.	.	.	.
Highway Rail Incidents	.	.	.	.	.	.	.	.	.	.
--- deaths	.	1	2	.	.	.	.	.	1	1
--- injuries	.	.	.	.	.	.	.	.	1	.
--- at public crossing	.	.	.	.	.	.	.	.	.	.
Other Accidents/ Incidents[1]	3	5	8	6	3	5	1	5	1	1
--- deaths	1	.	1	.	.	.	.	.	1	2
--- injuries	.	.	1	.	.	.	.	.	1	.
Train Accident Data for Contra Costa County										
Total Accidents/ Incidents	9	5	1	11	9	4	5	5	1	2
---Total fatalities	.	1	1	1	2	1	.	.	.	.
---Total nonfatal	5	2	.	3	1	2	2	5	1	2
EOD deaths	.	.	.	.	1	.	.	.	.	.
EOD injuries	2	1	.	2	1	2	2	1	.	2
EOD illnesses	.	.	.	.	.	.	.	.	.	.
Total EOD cases	2	1	.	2	2	2	2	1	.	2
Cases with days absent from work	2	.	.	2	1	2	1	1	.	2
Trespasser deaths, not at Rail Crossing	.	1	1	1	1	1	.	.	.	.
Trespasser injuries, not at Rail Crossing	1	1	.	1	.	.	.	2	.	.
Train Accidents	4	2	.	7	5	1	3	.	.	.
--- deaths	.	.	.	.	.	.	.	.	.	.
--- injuries	.	.	.	.	.	.	.	.	.	.
HAZMAT Releases	1	.	.	3	4	.	1	.	.	.
--- Hazmat cars	2	.	.	3	.	.	.	.	.	.
--- Cars damaged	.	.	.	.	.	.	.	.	.	.
--- Cars releasing	.	.	.	.	.	.	.	.	.	.
Highway Rail Incidents	.	.	.	.	.	.	.	.	.	.
--- deaths	1	2	.	1	1	1	2	.	.	.
--- injuries	.	.	.	.	.	.	.	.	.	.
--- at public crossing	.	.	.	.	.	.	.	.	.	.

Table 4.7.2 Summary of National and California Train Accident Data

Category	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Other Accidents/ Incidents[1]	3	.	.	7	4	1	2	.	.	.
--- deaths	1	2	.	.	1	.	1	.	.	.
--- injuries	1	.	.	.	2	1	1	.	.	.
Train Accident Data for Solano County										
Total Accidents/ Incidents	2	2	3	3	4	2	4	2	1	.
---Total fatalities	.	.	.	1	2	.	1	.	.	.
---Total nonfatal	2	.	2	1	1	2	4	2	1	.
EOD deaths	.	.	.	.	.	.	.	.	.	.
EOD injuries	1	.	2	1	1	1	3	1	.	.
EOD illnesses	.	.	.	.	.	.	.	.	.	.
Total EOD cases	1	.	2	1	1	1	3	1	.	.
Cases with days absent from work	1	.	.	1	.	.	2	1	.	.
Trespasser deaths, not at Rail Crossing	.	.	.	1	2	.	.	.	.	.
Trespasser injuries, not at Rail Crossing	1	.	.	.	.	.	.	.	.	.
Train Accidents	.	1	.	.	1	1	.	.	.	.
--- deaths	.	.	.	.	.	.	.	.	.	.
--- injuries	.	.	.	.	.	1	.	.	.	.
HAZMAT Releases	.	.	.	.	.	.	.	.	.	.
--- Hazmat cars	.	.	.	.	.	.	.	.	.	.
--- Cars damaged	.	.	.	.	.	1	.	.	.	.
--- Cars releasing	.	.	.	.	.	.	.	.	.	.
Highway Rail Incidents	.	.	.	.	.	.	.	.	.	.
--- deaths	.	1	.	.	1	.	.	.	.	.
--- injuries	.	.	.	.	.	.	.	.	.	.
--- at public crossing	.	.	.	.	.	.	.	.	.	.
Other Accidents/ Incidents[1]	.	.	.	.	.	.	.	.	.	.
--- deaths	.	1	.	.	1	1	.	.	.	.
--- injuries	.	.	.	.	.	.	.	.	.	.
Train Accident Data for Yolo County										
Total Accidents/ Incidents	4	2	.	2	5	2	1	1	2	.
---Total fatalities	2	.	.	.	1	.	.	.	.	.
---Total nonfatal	.	1	.	.	1	1	2	1	1	.
EOD deaths	.	.	.	.	.	.	.	.	.	.
EOD injuries	.	1	.	.	1	1	.	1	.	.
EOD illnesses	.	.	.	.	.	.	.	.	.	.
Total EOD cases	.	1	.	.	1	1	.	1	.	.
Cases with days absent from work	.	1	.	.	.	1	.	1	.	.

Table 4.7.2 Summary of National and California Train Accident Data

Category	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Trespasser deaths, not at Rail Crossing	2	.	.	.	.	.	.	.	.	.
Trespasser injuries, not at Rail Crossing	.	.	.	.	.	.	2	.	1	.
Train Accidents	1	1	.	2	3	1	.	1	1	.
--- deaths	.	.	.	.	.	.	.	.	.	.
--- injuries	.	.	.	.	.	.	.	1	.	.
HAZMAT Releases	1	.	.	.	1	1	.	1	.	.
--- Hazmat cars	.	.	.	2	2	.	.	.	.	.
--- Cars damaged	.	.	.	.	.	.	.	.	.	.
--- Cars releasing	.	.	.	.	.	.	.	.	.	.
Highway Rail Incidents	.	.	.	.	.	.	.	.	.	.
--- deaths	.	1	.	.	.	.	.	.	1	.
--- injuries	.	.	.	.	.	.	.	.	.	.
--- at public crossing	.	.	.	.	.	.	.	.	.	.
Other Accidents/ Incidents[1]	1	1	.	2	2	1	.	.	.	.
--- deaths	.	.	.	.	1	.	.	1	1	.
--- injuries	.	.	.	.	.	.	.	.	1	.
Train Accident Data for Sacramento County										
Total Accidents/ Incidents	12	11	9	10	15	12	4	7	8	5
---Total fatalities	4	1	2	.	2	6	.	2	2	4
---Total nonfatal	2	6	4	9	11	8	2	3	6	1
EOD deaths	.	.	.	.	.	.	.	.	.	.
EOD injuries	1	3	1	5	1	2	1	.	1	.
EOD illnesses	.	.	.	.	.	.	.	.	.	.
Total EOD cases	1	3	1	5	1	2	1	.	1	.
Cases with days absent from work	1	2	1	3	.	1	1	.	1	.
Trespasser deaths, not at Rail Crossing	4	1	2	.	2	5	.	1	2	4
Trespasser injuries, not at Rail Crossing	1	1	3	4	3	5	.	3	1	.
Train Accidents	6	3	3	1	3	1	1	1	.	.
--- deaths	.	.	.	.	.	.	.	.	.	.
--- injuries	.	.	.	.	.	.	.	.	.	.
HAZMAT Releases	1	1	1	.	2	.	.	1	.	.
--- Hazmat cars	4	1	2	1	1	.	1	.	.	.
--- Cars damaged	.	1	.	.	.	.	.	.	.	.
--- Cars releasing	.	.	.	.	.	.	.	.	.	.
Highway Rail Incidents	.	.	.	.	.	.	.	.	.	.
--- deaths	1	.	.	.	.	1	.	.	.	.
--- injuries	1	1	.	.	.	.	.	.	.	.

Table 4.7.2 Summary of National and California Train Accident Data

Category	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
--- at public crossing	1	1	.	.	.	.	.	.	.	.
Other Accidents/ Incidents[1]	4	2	3	1	3	1	1	.	.	.
--- deaths	1	.	.	.	.	.	.	1	.	.
--- injuries	1	.	.	.	.	.	.	.	.	.
Train Accident Data for San Joaquin County										
Total Accidents/ Incidents	12	18	33	23	21	23	12	13	16	19
---Total fatalities	.	2	1	2	3	2	2	1	1	4
---Total nonfatal	7	5	13	7	8	12	5	8	11	7
EOD deaths	.	.	.	.	.	.	.	.	.	.
EOD injuries	2	3	12	4	6	5	1	2	3	5
EOD illnesses	.	.	.	.	.	.	.	.	.	.
Total EOD cases	2	3	12	4	6	5	1	2	3	5
Cases with days absent from work	2	2	8	1	5	2	.	2	1	4
Trespasser deaths, not at Rail Crossing	.	1	1	2	2	1	2	1	1	2
Trespasser injuries, not at Rail Crossing	3	1	1	1	1	.	3	1	3	.
Train Accidents	5	8	19	14	8	4	4	2	4	3
--- deaths	.	.	.	1	.	.	.	.	.	.
--- injuries	.	.	.	.	.	.	.	.	.	.
HAZMAT Releases	3	4	7	2	2	1	1	1	1	2
--- Hazmat cars	2	1	11	6	3	3	1	.	3	.
--- Cars damaged	.	.	.	1	3	.	1	.	.	.
--- Cars releasing	.	.	.	.	.	.	.	.	.	.
Highway Rail Incidents	.	.	.	.	.	.	.	.	.	.
--- deaths	.	3	1	5	.	.	1	1	.	1
--- injuries	2	.	.	.	.	.	1	.	.	.
--- at public crossing	.	.	.	.	.	.	1	.	.	.
Other Accidents/ Incidents[1]	3	5	18	11	7	3	3	2	4	2
--- deaths	.	3	1	3	1	1	.	.	.	1
--- injuries	.	1	2	1	1	.	1	.	1	1
Train Accident Data for Santa Barbara County										
Total Accidents/ Incidents	5	.	1	5	5	4	2	2	2	.
---Total fatalities	3	.	.	3	1	2	1	.	.	.
---Total nonfatal	2	.	.	2	1	2	1	2	1	.
EOD deaths	.	.	.	.	.	.	.	.	.	.
EOD injuries	.	.	.	1	1	2	.	2	.	.
EOD illnesses	.	.	.	.	.	.	.	.	.	.
Total EOD cases	.	.	.	1	1	2	.	2	.	.
Cases with days	.	.	.	.	1	1	.	1	.	.

Table 4.7.2 Summary of National and California Train Accident Data

Category	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
absent from work										
Trespasser deaths, not at Rail Crossing	2	.	.	3	1	2	1	.	.	.
Trespasser injuries, not at Rail Crossing	2	.	.	.	.	.	1	.	1	.
Train Accidents	1	.	.	.	2	.	.	.	1	.
--- deaths	.	.	.	.	.	.	.	.	.	.
--- injuries	.	.	.	.	.	.	.	.	.	.
HAZMAT Releases	.	.	.	.	2	.	.	.	.	.
--- Hazmat cars	.	.	.	.	.	.	.	.	.	.
--- Cars damaged	.	.	.	.	.	.	.	.	.	.
--- Cars releasing	.	.	.	.	.	.	.	.	.	.
Highway Rail Incidents	.	.	.	.	.	.	.	.	.	.
--- deaths	1	.	.	.	.	.	.	.	1	.
--- injuries	.	.	.	.	.	.	.	.	.	.
--- at public crossing	.	.	.	.	.	.	.	.	.	.
Other Accidents/ Incidents[1]	.	.	.	.	2	.	.	.	.	.
--- deaths	1	.	.	.	.	.	.	.	1	.
--- injuries	.	.	.	.	1	.	.	.	.	.
Train Accident Data for Ventura County										
Total Accidents/ Incidents	2	4	.	4	2	4	2	2	.	.
---Total fatalities	1	1	.	2	1	2	.	.	.	.
---Total nonfatal	.	2	.	1	.	2	1	.	.	.
EOD deaths	.	.	.	.	.	.	.	.	.	.
EOD injuries	.	1	.	1	.	2	.	.	.	.
EOD illnesses	.	.	.	.	.	.	.	.	.	.
Total EOD cases	.	1	.	1	.	2	.	.	.	.
Cases with days absent from work	.	.	.	.	.	1	.	.	.	.
Trespasser deaths, not at Rail Crossing	1	1	.	1	1	2	.	.	.	.
Trespasser injuries, not at Rail Crossing	.	1	.	.	.	.	1	.	.	.
Train Accidents	.	.	.	.	1	.	1	1	.	.
--- deaths	.	.	.	.	.	.	.	.	.	.
--- injuries	.	.	.	.	.	.	.	.	.	.
HAZMAT Releases	.	.	.	.	.	.	.	.	.	.
--- Hazmat cars	.	.	.	.	.	.	.	.	.	.
--- Cars damaged	.	.	.	.	.	.	.	.	.	.
--- Cars releasing	.	.	.	.	.	.	.	.	.	.
Highway Rail Incidents	.	.	.	.	.	.	.	.	.	.
--- deaths	.	.	.	.	1	.	1	1	.	.

Table 4.7.2 Summary of National and California Train Accident Data

Category	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
--- injuries	.	.	.	.	.	.	.	.	.	.
--- at public crossing	.	.	.	.	.	.	.	.	.	.
Other Accidents/ Incidents[1]	.	.	.	.	.	.	.	.	.	.
--- deaths	.	.	.	.	1	.	1	1	.	.
--- injuries	.	.	.	.	.	.	.	.	.	.
Train Accident Data for Los Angeles County										
Total Accidents/ Incidents	76	72	82	75	92	76	66	47	48	51
---Total fatalities	3	6	6	5	4	2	4	6	3	6
---Total nonfatal	60	42	63	50	71	54	45	31	34	30
EOD deaths	.	.	.	1	.	.	.	1	.	.
EOD injuries	52	28	45	35	55	35	28	14	17	13
EOD illnesses	1	.	2	.	6	2	.	.	.	.
Total EOD cases	53	28	47	36	61	37	28	15	17	13
Cases with days absent from work	41	16	33	26	37	17	21	7	11	10
Trespasser deaths, not at Rail Crossing	3	3	4	1	1	1	3	3	.	6
Trespasser injuries, not at Rail Crossing	2	5	8	4	3	4	2	5	3	1
Train Accidents	6	15	13	13	14	17	11	9	9	11
--- deaths	.	.	.	.	.	.	.	.	.	.
--- injuries	3	.	1	.	1	3	.	.	.	.
HAZMAT Releases	6	6	5	4	7	12	3	4	5	2
--- Hazmat cars	.	5	4	5	4	5	6	4	2	6
--- Cars damaged	.	.	.	1	1	.	1	.	.	1
--- Cars releasing	.	.	.	.	.	.	.	.	.	.
Highway Rail Incidents	.	.	.	.	.	.	.	.	.	.
--- deaths	.	4	4	3	2	.	1	1	2	2
--- injuries	2	.	1	.	.	1	.	.	.	1
--- at public crossing	.	.	.	.	.	1	.	.	.	.
Other Accidents/ Incidents[1]	4	13	9	11	9	12	10	8	7	10
--- deaths	.	2	3	2	5	4	1	1	2	.
--- injuries	1	2	3	2	.	4	.	2	2	3
Train Accident Data for San Bernardino County										
Total Accidents/ Incidents	57	42	51	52	45	49	29	35	32	36
---Total fatalities	2	1	1	2	1	3	2	1	3	1
---Total nonfatal	40	25	27	30	27	28	15	25	15	20
EOD deaths	.	.	.	.	.	.	.	.	.	.
EOD injuries	36	23	20	20	25	26	12	21	10	14
EOD illnesses	.	.	1	3	1	.	.	.	.	.
Total EOD cases	36	23	21	23	26	26	12	21	10	14

Table 4.7.2 Summary of National and California Train Accident Data

Category	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cases with days absent from work	27	18	11	13	17	16	7	17	5	12
Trespasser deaths, not at Rail Crossing	2	1	1	2	1	3	2	.	3	1
Trespasser injuries, not at Rail Crossing	3	1	2	1	.	.	.	1	2	2
Train Accidents	16	17	21	21	15	14	12	11	11	15
--- deaths	.	.	.	.	.	.	.	.	.	.
--- injuries	2	.	.	2	.	.	.	3	.	.
HAZMAT Releases	3	5	3	4	5	1	2	3	5	4
--- Hazmat cars	6	4	10	10	7	7	1	4	4	5
--- Cars damaged	2	2	1	1	1	1	3	1	.	1
--- Cars releasing	.	.	2	1	.	2	2	.	.	2
Highway Rail Incidents	.	.	.	.	.	.	.	.	.	.
--- deaths	5	6	5	5	2	3	4	3	2	3
--- injuries	.	1	1	.	.	.	.	2	.	1
--- at public crossing	.	1	.	.	.	.	.	1	.	.
Other Accidents/ Incidents[1]	16	14	18	15	14	12	8	8	9	14
--- deaths	.	2	2	6	1	2	4	1	2	.
--- injuries	5	4	5	5	6	3	4	4	2	2

Source: Federal Railroad Administration, Office of Safety Analysis data reports.
http://safetydata.fra.dot.gov/officeofsafety/publicsite/query/tenyr1a.aspx

(1) Total accident/incidents include train accidents, highway-rail accidents, and other incidents.
(2) Events per million train miles.
(3) Number of accidents involving a hazmat release.
(4) Number of rail cars that released hazardous materials.
(5) Number in million train miles.

Of the train accidents reported during the 10-year period (a total of 128,974), less than one percent of the train accidents resulted in a release of hazardous materials (287/128,974 = 0.0022 or 0.22%).

Train accident data reported for each of the Counties along the mainline routes that could be used by the Rail Spur Project crude oil trains are also presented in Table 4.7.2.

Local Safety Hazard Sites in California

The CPUC has identified a number of local safety hazard sites (LSHS) within California along the mainline rail routes and adopted rules governing operations at some of these sites. Table 4.7.3 provides a list of these LSHS. These sites consist of steep grades and tight curves, and also have historically high frequencies of derailments. As described in California Public Utilities Code § 7711, factors that the CPUC considers in determining a LSHS includes at a minimum the following:

1. The severity of grade and curve of track.
2. The value of special skills of train operators in negotiating the particular segment of railroad line.
3. The value of special railroad equipment in negotiating the particular segment of railroad line.
4. The types of commodities transported on or near the particular segment of railroad line.
5. The hazard posed by the release of the commodity into the environment.
6. The value of special railroad equipment in the process of safely loading, transporting, storing, or unloading potentially hazardous commodities.
7. The proximity of railroad activity to human activity or sensitive environmental areas.

Table 4.7.3 List of Local Safety Hazard Sites in California

Generic Name	County	Track Length (miles)	Number of Derailments 2009-13
UPRR Yuma Line	San Bernardino/Riverside	56.4	32
UPRR Bakersfield Line	Kern	24.9	10
UPRR Shasta Line	Siskiyou	26.9	4
UPRR Bakersfield Line	San Bernardino	23.0	4
UPRR Roseville District	Placer	10.0	3
UPRR Feather River Division	Butte and Plumas	93.1	2
UPRR Yuma Line	Riverside	6.0	1
BSNF Gateway	Plumas	10.0	1
BNSF San Diego	San Diego	4.0	1
UPRR Coast Line (Cuesta Grade)	San Luis Obispo	14.0	0
Central Oregon and Pacific Railroad	Siskiyou	9.7	0
UPRR Feather River Division	Plumas	29.0	0
UPRR Cima Grade	San Bernardino	18.1	0
BNSF Cajon	San Bernardino	15.0	0
BNSF Cajon	San Bernardino	0.5	0
BNSF Cajon	San Bernardino	25.6	0

Source: Adapted from CPUC Annual Railroad Local Safety Hazard Site Report 2014.

Depending upon the route that is taken to get from the California border to the SMR, the crude oil train would have to traverse a number of LSHS. LSHS account for a disproportionate share of derailments occurring in California. Within the previous five calendar years, California has experienced 342 derailments. Of that amount, 58 derailments, or 17 percent, have occurred at or near local safety hazard sites (includes the LSHS track plus the distance of track one mile on each side of the local safety hazard site (CPUC 2014).

A train traveling from the north from Roseville would have to use the track along Cuesta Grade in San Luis Obispo County. Over the past five years (2009-2013) no derailments occurred on Cuesta Grade. From Colton to the SMR no LSHS would be used. Between Roseville or Colton and the California Border the train would have to traverse a number of other LSHS depending upon the route taken.

4.7.1.2 Existing Refinery Operations

The SMR processes crude oil and produced gas, both of which could present risks to the public. Crude oil is processed and then stored in tanks that could spill and ignite, creating thermal radiation impacts. Thermal radiation impacts from crude oil tank fires could cause injury 220 feet away. The closest population to the crude oil tanks at the Refinery is industrial area 425 feet northeast of the crude oil storage facilities. The closest residence to the crude oil tanks, which is located within the industrial area, is 1,200 feet northeast of the tank storage area. The gas processing equipment and piping are within the Refinery, at least 1,700 feet from the Refinery fence line and the closest receptor on industrial property. Given the limited population and significant distance between these receptors and the Refinery, there would not be a significant risk level. A search of historical release data for the Refinery through the Federal Emergency Response Notification System indicates that in the last 28 years a total of 16 reportable releases occurred (from 1982 through 2010). Fifteen of these releases were associated with releases of excess gases to the emergency-only flare stack due to several equipment failures, including boiler and compressor failures. In 2004, a leaking crude oil pipeline caused a release. Additional information on the existing hazards at the SMR can be found in the Throughput Increase EIR (SLOC 2012).

Currently, the rail operations associated with the Phillips 66 Refinery consist of the export of petroleum coke from the SMR for commercial use throughout the U.S. and abroad. A train typically arrives every Wednesday and drops off 18 to 20 empty cars. After delivering the empty cars, the engine picks up any full cars and leaves the SMR (the engine operates for approximately a half hour on site). Each full car hauls approximately 100 tons. The delivered empty cars are filled with coke during the following week and moved around on site by the 'shuttlewagon.' The shuttlewagon, also referred to as a 'switching locomotive' is a small unit compared to an actual train locomotive. The shuttlewagon operates less than two hours per week. Fuel consumption is typically less than five gallons of diesel per week.

4.7.1.3 Population Density

Figures 4.7-1 and 4.7-2 show the population densities along the mainline rail routes that could be used by the Rail Spur Project crude oil trains between the SMR and the Roseville and Colton rail yard . Each of the rail routes were divided into numerous segments based on population density using the categories listed in Table 4.7.4.

Table 4.7.4 Representative Default Population Densities

Designation	Density	Description
Remote	20 people/sq mile	Non-metropolitan area with scattered housing; farms
Rural	100 people/sq mile	Small village or town; recreation areas
Suburban	1,000 people/sq mile	Typical suburbs; mixed use areas
Urban	3,000 people/sq mile	Small city; densely populated suburbs; congested commercial areas
High	10,000+ people/sq mile	Very dense city area

Source: CCPS, 1995.

Figure 4.7-1 UPRR Route and Population Densities (Roseville to SMR Routes)

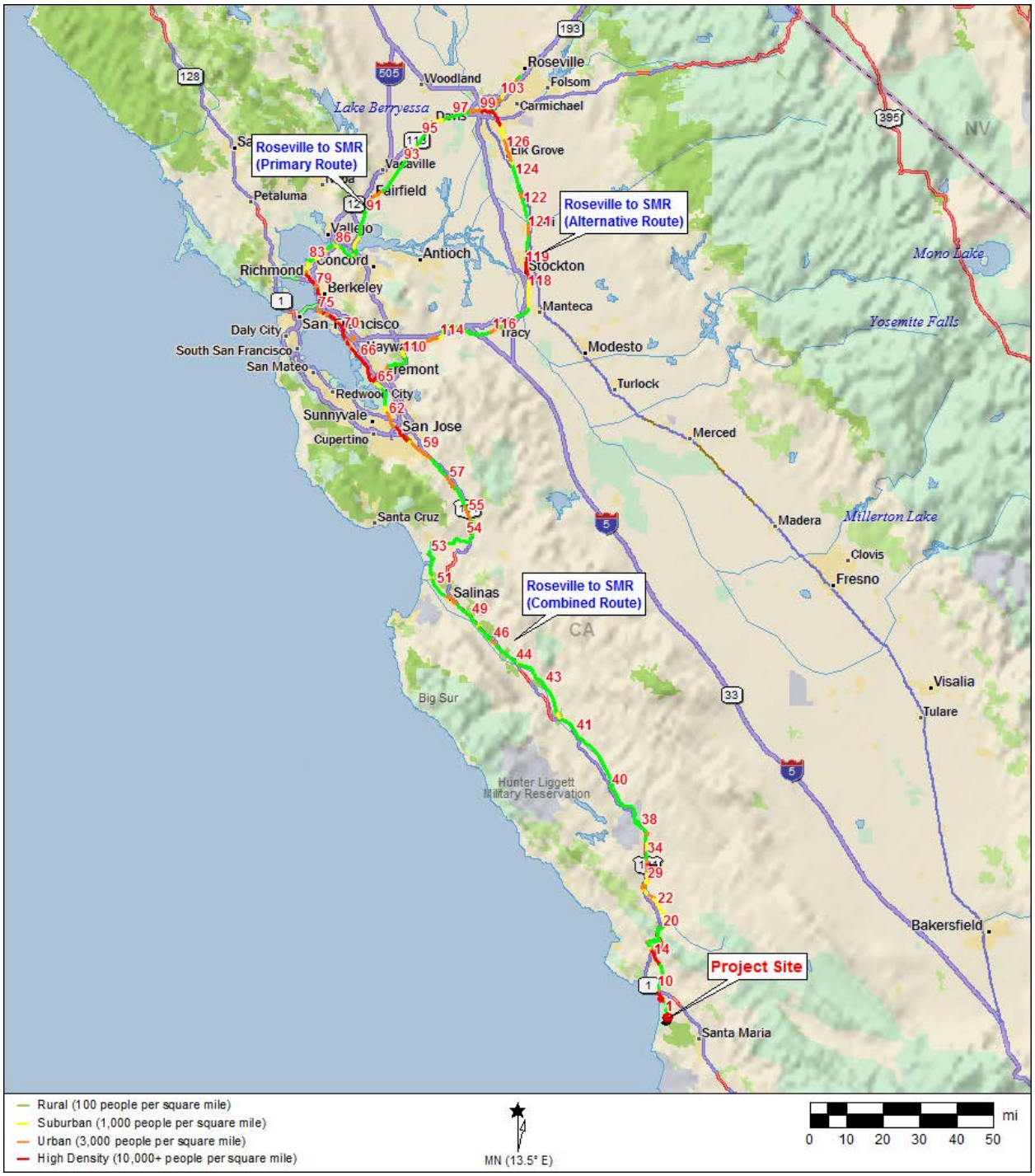
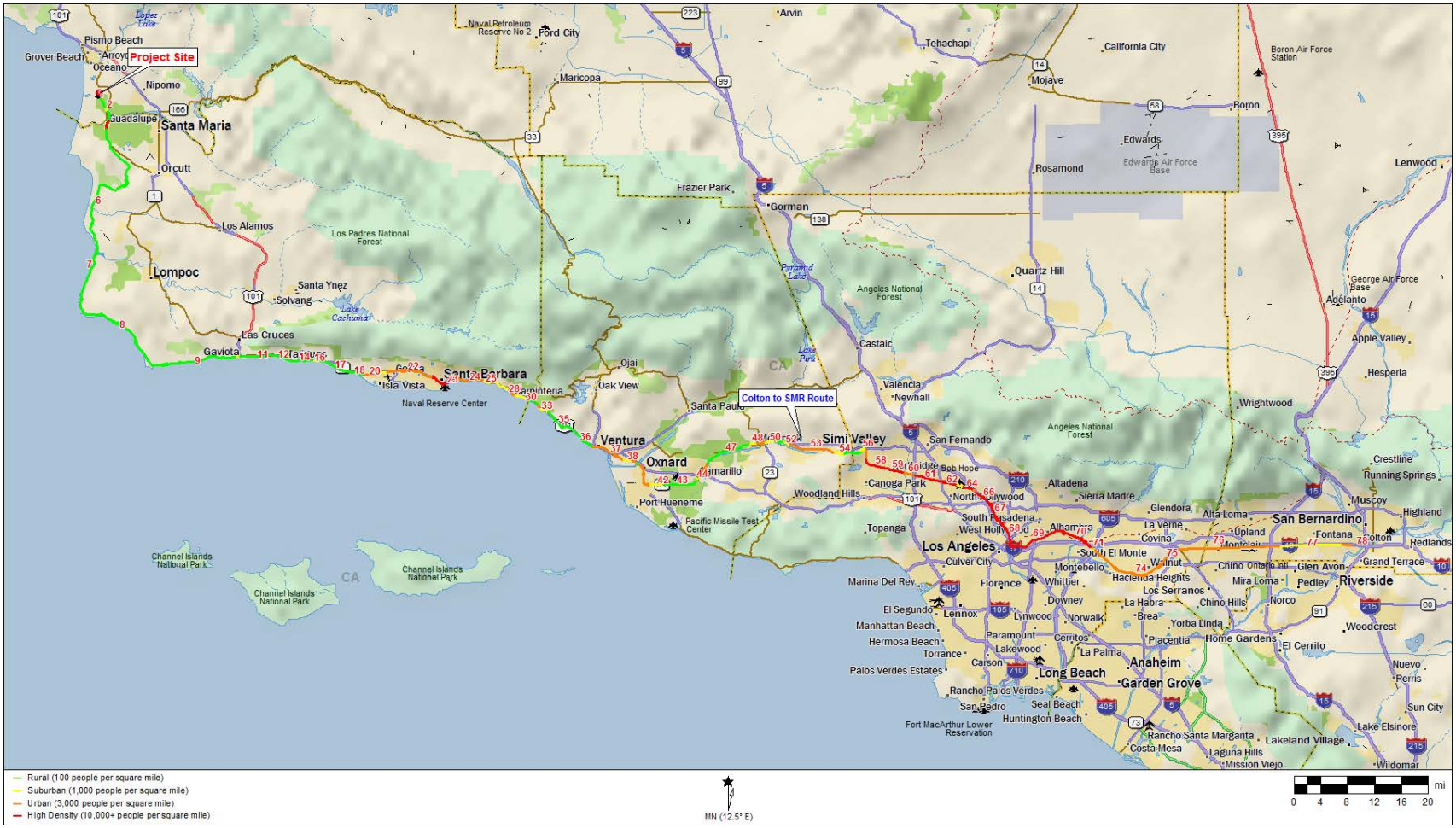


Figure 4.7-2 UPRR Route and Population Densities (Colton to SMR Route)



4.7.2 Regulatory Setting

Many regulations and standards exist to ensure the safe operation of oil facilities, pipelines, rail transportation, and hazardous materials. This section provides an overview of the federal, state, and local regulations.

4.7.2.1 Federal Laws and Regulations

Federal Regulation of Oil Transportation by Rail

The Federal Railroad Administration (FRA), which is part of the US Department of Transportation (USDOT), is responsible for regulating the safety of the nation's railroad system. FRA promulgates railroad safety regulations (49 CFR subtitle B, chapter II (parts 200-299)) and orders, enforces those regulations and orders as well as the Hazardous Materials Regulations at 49 CFR Parts 171-180, and the Federal railroad safety laws, and conducts a comprehensive railroad safety program.

FRA's regulations promulgated for the safety of railroad operations involving the movement of freight address: (1) railroad track; (2) signal and train control systems; (3) operating practices; (4) railroad communications; (5) rolling stock; (6) rear-end marking devices; (7) safety glazing; (8) railroad accident/incident reporting; (9) locational requirements for the dispatch of U.S. rail operations; (10) safety integration plans governing railroad consolidations, mergers, and acquisitions of control; (11) alcohol and drug testing; (12) locomotive engineer and conductor certification; (13) workplace safety; (14) highway-rail grade crossing safety; and other subjects. The FRA inspects rail facilities throughout the country in order to ensure compliance with its own regulations, and those adopted by the Pipeline and Hazardous Materials Safety Administration (PHMSA).

The FRA is also responsible for conducting inspections of rail lines and bridges throughout the United States. However, they have a limited number of inspectors. In July 2010, new federal rules on railroad bridge safety standards were issued (49 CFR Parts 213 and 237). The bridge safety standards final rule requires the railroad companies that own the bridges to:

- Implement bridge management programs that include at minimum annual inspections of railroad bridges,
- Conduct special inspections if the weather or other conditions warrant such inspections,
- Maintain an inventory of all railroad bridges and know their safe load capacities,
- Maintain design documents and to document all repairs, modifications, and inspections of each bridge,
- Ensure bridge engineers, inspectors and supervisors must meet minimum qualifications,
- Make sure bridge inspections are conducted under the direct supervision of a designated railroad bridge inspector, and
- Conduct internal audits of bridge management programs and inspections.

PHMSA is another department within the USDOT. Pursuant to the Hazardous Materials Transportation Act, PHMSA adopts regulations governing the transport of hazardous materials by rail, highway, air, and water. The PHMSA regulations are set forth in Chapter I of Subtitle B of Title 49 of the Code of Federal Regulations (CFR). The FRA enforces the requirements set forth in PHMSA regulations.

The National Transportation Safety Board (NTSB) is an independent federal agency. The NTSB reviews transportation accidents, including rail accidents, and makes recommendations to FRA and PHMSA for regulatory changes.

The American Association of Railroads (AAR) is an industry trade association that represents railroads, including the major freight railroads in the United States, Canada, and Mexico. AAR adopts standards for the design and construction of tank cars used by its members. In some cases, these standards are more stringent than the requirements set forth in FRA or PHMSA regulations.

The PHMSA regulations classify hazardous materials based on each material's hazardous characteristics. Crude oil is assigned to hazard Class 3, based on specified characteristics of flammability and combustibility (49 CFR 173.120). The key PHMSA regulations governing rail transport are summarized below:

- 49 CFR 172, *Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, Training Requirements, and Security Plans,* addresses numerous aspects of safe rail transport, including requirements pertaining to the hazardous materials classification of crude oil.

- 49 CFR 173, *General Requirements for Shipments and Packages*, specifies requirements for bulk packaging including the type of tank car a hazardous material must be transported in based on its assigned Packing Group.

- 49 CFR 174, *Carriage by Rail*, specifies handling, loading, and unloading requirements for the safe transport and shipping of hazardous materials, which must be performed by qualified personnel. This part also addresses correct placarding of rail cars to indicate the hazard classifications of the materials, and segregation of incompatible materials.

- 49 CFR 176, *Carriage by Vessel*, provides further details on vessel carriage requirements for different classes of hazardous materials.

- 49 CFR 179, *Specifications for Tank Cars*, provides design standards and construction requirements for rail tank cars including tank wall thickness, tank mounting, welding certification, pressure relief devices, protection of fittings, loading/unloading valve requirements, coupler vertical restraints systems, tank-head puncture-resistance systems, and thermal protection systems.

Under PMHSA regulations, all crude oil must be shipped in a tank car built to the "DOT-111" specification. DOT-111 tank cars are non pressure tank cars. The cars have a minimum shell thickness of 7/16 inch and a design pressure of up to 500 pounds per square inch gage (psig).

DOT-111 tank cars are used to transport a variety of hazardous materials, including crude oil and ethanol. The DOT-111 design has been in use since the 1960's. Different "packaging" requirements apply to different crude oils transported by rail. PHMSA regulations assign hazardous materials to "Packing Groups" based on the risks posed by the transport of each hazardous material. Packing Group I indicates great danger; Packing Group II indicates medium danger; and Packing Group III indicates minor danger (49 CFR 171.8).

Materials assigned to Packing Group I are subject to the most stringent packaging requirements, while crude oils assigned to Packing Group III are subject to the least stringent requirements. Individual crude oils can be classified as Packing Group I, II, or III materials depending on their boiling points and flash points. Any crude oil with a boiling point below 95° Fahrenheit is assigned to Packing Group I. Packing Group II includes any crude oil with a boiling point above 95° and a flash point below 73° Fahrenheit. Packing Group II crude oils are less volatile than Packing Group I, although more volatile than Packing Group III crude oils. Packing Group III includes any crude oil with a boiling point above 95° and a flash point between 73° and 140° Fahrenheit.

Recent and Ongoing Development in the Regulation of Crude Transportation by Rail

As a result of recent train accidents involving the derailment of crude oil trains a number of recent regulatory actions by the Federal government and voluntary actions by the railroads have taken place.

A summary of some of the recent crude oil rail accidents are listed below.

- On March 27, 2013, a train derailed in Parkers Prairies Minnesota. Fourteen cars on a Canadian Pacific Railway train caring Canadian crude derailed, and one car was heavily damaged, An estimated 30,000 gallons of crude spilled, but the was no fire or explosion.
- May 21, 2013, a train derailed near Jansen Saskatchewan Canada. A Canadian Pacific Railway mixed freight train jumped the tracks and five cars derailed, with one leaking its content. An estimated 24,000 gallons spilled, but there was no fire or explosion.
- On July 6, 2013, a train carrying Bakken crude oil in 72 DOT-111 Legacy Tank Cars derailed in the downtown area of Lac-Mégantic, Canada. The waybills described the Bakken crude oil as a Class 3 hazardous material, assigned to Packing Group III. The engineer stopped the train at a designated crew change point, left the lead locomotive engine idling, and departed the area leaving the train unattended on the mainline track. A fire was later reported on one of the train's unattended locomotive engines and local emergency personnel responded. An employee of the rail line also arrived on scene. After the responders departed, the unattended train began to move and gather speed, travelling uncontrolled for 7.4 miles down a descending 1.2% grade into the town of Lac-Mégantic. The train reached a top speed of 60-70 miles per hour. Sixty-three of the tank cars derailed and, of these, at least 60 released a total of 1.6 million gallons of crude oil. The spilled oil ignited immediately, and the resulting fire engulfed the tank cars and the surrounding area. A total of 47 people died in the accident. Thirty buildings were destroyed and 2,000 people were evacuated. Approximately 26,000 gallons of crude oil was discharged into the Chaudière River.

- On November 8, 2013, a train derailed in Aliceville, Alabama. The train was carrying 90 DOT-111 Legacy Tank Cars with Bakken crude oil from North Dakota to a refinery in the Gulf Coast. Approximately 12 of the tank cars released crude oil and caught fire. There were no reported injuries.
- On December 30, 2013, a train carrying 106 DOT-111 Legacy Tank Cars with Bakken crude oil collided with a grain train in Casselton, North Dakota. A total of 34 cars from both trains derailed, including 20 that were carrying Bakken crude oil. These cars released their contents, exploded and burned for over 24 hours. There were no reported injuries. Over 1,400 residents were evacuated from the scene.
- On April 30, 2014 in Lynchburg, Virginia, a train carrying crude oil tank cars derailed. Some of the cars that derailed were Legacy DOT-111 Tank Cars, while some were 1232 Tank Cars. One of the 1232 Tank Cars ruptured and released crude oil that ignited. In addition, over 33,000 gallons of Bakken crude oil was released into the James River. There were no reported injuries.
- February 16, 2015, a CSX train carrying Bakken crude derailed in the Mount Carbon area of Fayette County West Virginia. Twenty-six cars of a 109- car train derailed, and 19 of the cars were involved in the fire and explosion. Some of the spilled oil entered the Kanawha River. There were no reported injuries.
- March 5, 2015, a BNSF train carrying Bakken crude derailed near the town of Galena Illinois. Eight of the 105-car train derailed. Two of the cars were involved in a fire and explosion. There were no reported injuries.
- March 7, 2015, and Canadian National Railway train charring Alberta crude derailed in Northern Ontario. The train had about 94 cars and approximately 30 of them derailed. Some of the cars caught fire and oil entered the Mattagami River System. There were no reported injuries.

As a result of accidents a number of actions have been taken by the Federal government and the railroads to address the safety issues associated with moving crude oil by rail. These actions include the following:

- On August 2, 2013, FRA issued Emergency Order No. 28 establishing additional requirements for unattended trains. The requirements are designed to ensure that unattended trains, locomotives, and tenders on the mainline track or siding are properly secured against unintended movement. The Order was prompted by the Lac-Mégantic accident, which involved an unattended train.
- Also on August 2, 2013, PHMSA and FRA issued joint Safety Advisory 2013-06. The advisory recommended eight specific actions that railroads and shippers should take relating to unattended trains, procedures for securing trains, safety and security plans, and proper classification of hazardous materials for shipment.
- On September 6, 2013 PHMSA published an Advanced Notice of Proposed Rulemaking. This rulemaking will address, among other topics, the need to enhance the standards for

DOT-111 tank cars used to transport Packing Group I and II hazardous materials, including crude oil.

- On November 20, 2013, PHMSA and FRA issued joint Safety Advisory 2013-07 relating to the proper classification of crude oil for purposes of the packing group requirements. The Advisory expressed the concern that, based on its low flash point, the Bakken crude involved in the Lac-Mégantic incident should not have been classified as a Packing Group III material. The Advisory stressed the importance of proper classification based on flash point and other hazardous characteristics. The Advisory also announced a joint FRA/PHMSA compliance initiative called "Operation Classification." The initiative involves unannounced inspections at oil producing sites to ensure that crude oil has been properly tested and classified before it is loaded onto a tank car. The initiative has informally been referred to as the "Bakken Blitz."

- On January 2, 2014, PHMSA issued a Safety Alert reinforcing the need to properly characterize crude oil offered for shipment. The Alert specifically noted that, because of its low flash point and/or low boiling point, light sweet crude such as Bakken should typically be assigned to Packing Group I or II.

- On January 21, 2014, NTSB issued Safety Recommendations R-14-4, 14-5, and 14-6 to PHMSA relating to the Lac-Mégantic incident. NTSB reported its finding that, based on its flash point, the Bakken crude oil released in the Lac-Mégantic incident was improperly characterized as a Packing Group III material, and should have been assigned to Packing Group II. NTSB recommended, among other things, that PHMSA and FRA work together to require shippers to accurately characterize hazardous materials offered for shipment to ensure that they are assigned to the correct packing group.

- On January 23, 2014, NTSB issued Safety Recommendations R-14-1, 14-2, and 14-3 to FRA relating to the Lac-Mégantic incident. NTSB repeated its findings relating to mischaracterization of Bakken crude oil and recommended that FRA, among other things, audit shippers and railroads to ensure that they are using the correct shipping classifications.

- On February 21, 2014, DOT and AAR announced an agreement relating to the transport of crude oil by rail. AAR and its individual members (including Union Pacific Railroad) agreed to take the following eight specific actions designed to reduce the risk of transporting crude by rail:

    - **Increased Track Inspections** – Effective March 25, 2014, railroads will perform at least one additional internal-rail inspection each year above those required by new FRA regulations on main line routes over which trains moving 20 or more carloads of crude oil travel. Railroads will also conduct at least two high-tech track geometry inspections each year on main line routes over which trains with 20 or more loaded cars of crude oil are moving. Current federal regulations do not require comprehensive track geometry inspections.
    - **Braking Systems** – No later than April 1, 2014, railroads will equip all trains with 20 or more carloads of crude oil with either distributed power or two-way telemetry end-of-

train devices. These technologies allow train crews to apply emergency brakes from both ends of the train in order to stop the train faster.

- **Use of Rail Traffic Routing Technology** – No later than July 1, 2014 railroads will begin using the Rail Corridor Risk Management System (RCRMS) to aid in the determination of the safest and most secure rail routes for trains with 20 or more cars of crude oil. RCRMS is a sophisticated analytical tool, developed in coordination with the federal government, including the U.S. Department of Homeland Security (DHS), PHMSA and FRA. Railroads currently use RCRMS in the routing of security sensitive materials, but it currently does not apply to trains carrying crude oil. This tool takes into account 27 risk factors – including volume of commodity, trip length, population density along the route, local emergency response capability, track quality and signal systems – to assess the safety and security of rail routes.
- **Lower Speeds** – No later than July 1, 2014 railroads will operate trains with 20 or more tank cars carrying crude oil that include at least one older DOT-111 car no faster than 40 miles-per-hour in the federally designated high-threat-urban areas[1] (HTUA) as established by Federal regulations. In the meantime, railroads will continue to operate trains with 20 or more carloads of hazardous materials, including crude oil, at the industry self-imposed speed limit of 50 miles per hour.
- **Community Relations** – Railroads will continue to work with communities through which crude oil trains move to address location-specific concerns that communities may have.
- **Increased Trackside Safety Technology** – No later than July 1, 2014 railroads will begin installing additional wayside wheel bearing detectors[2] if they are not already in place every 40 miles along tracks with trains carrying 20 or more crude oil cars, as other safety factors allow.
- **Increased Emergency Response Training and Tuition Assistance** – Railroads have committed by July 1, 2014 to provide $5 million to develop specialized crude by rail training and tuition assistance program for local first responders. One part of the curriculum will be designed to be provided to local emergency responders in the field, as well as comprehensive training that will be designed to be conducted at the Transportation Technology Center, Inc. (TTCI) facility in Pueblo, Colo. The funding will provide program development as well as tuition assistance for an estimated 1,500 first responders in 2014.
- **Emergency Response Capability Planning** – Railroads will by July 1, 2014 develop an inventory of emergency response resources for responding to the release of large amounts of crude oil along routes over which trains with 20 or more cars of crude oil operate.

[1] High-Threat-Urban Areas are defined by the Federal Government as an area comprising one or more cities and surrounding areas including a 10-mile buffer zone. A list of the HTUA, as determined by the Federal Government, is provided in Appendix H.6.

[2] Wayside wheel bearing detectors are devices that are placed along railroad tracks that detect heat or acoustic signatures, which would indicate that a bearing may fail in the near future. This allows railroad operators to detect defects before they damage track or cause accidents.

This inventory will include locations for the staging of emergency response equipment and, where appropriate, contacts for the notification of communities. When the inventory is completed, railroads will provide DOT with information on the deployment of the resources and make the information available upon request to appropriate emergency responders.

- On March 6, 2014, USDOT issued Emergency Order DOT-OST-2014-0025. Among other things, the Order requires shippers to assign crude oil to Packing Groups I or II, thereby assuring that Bakken and other highly volatile crude oils cannot be mischaracterized and assigned to Packing Group III.

- On May 7, 2014, USDOT issued Emergency Order DOT-OST-2014-0067. The Order requires railroads to notify the State Emergency Response Commission for each state in which the railroad transports Bakken crude oil. The notice must contain certain prescribed information, including the number of trains, the train routes, and the characteristics of the crude oil. Absent the required notice, railroads are prohibited from transporting Bakken crude oil. The Order allows states to effectively plan emergency response procedures for an accident involving Bakken crude oil.

- On May 7, 2014, FRA and PHMSA issued a joint Safety Advisory relating to the transport of Bakken crude by rail. The Advisory recommended that shippers and railroads use the rail tank car designs with the "highest level of integrity reasonably available within their fleet" for the shipment of Bakken crude oil. The Advisory also specifically advised shippers and railroads to avoid the use of DOT-111 Legacy Tank Cars for shipping Bakken crude oil, to the extent reasonably practicable.

- On July 23, 2014 USDOT issued a Notice of Proposed Rulemaking (NPRM) covering enhanced tank car standards and operations controls for high-hazard flammable trains. PHMSA in coordination with the FRA, are proposing: (1) new operational requirements for certain trains transporting a large volume of Class 3 flammable liquids; (2) improvements in tank car standards; and (3) revision of the general requirements to ensure proper classification and characterization of mined gases and liquids. These proposed requirements are designed to lessen the frequency and consequences of train accidents/incidents involving certain trains transporting a large volume of flammable liquids, including trains carrying crude oil. This proposed rule is discussed further in the section below.

USDOT Proposed Rulemaking for High-Hazard Flammable Trains (HHFT)

USDOT regulates the design standards for rail cars. The rail car type for crude oil are DOT-111 non-pressurized tank cars (DOT 111A60W1). DOT-111 tank cars for crude oil service have a maximum capacity of 30,000 gallons. Following an accident in Illinois in 2009, the NTSB made a number of safety recommendations to both the American Association of Railroads (AAR) and the DOT Pipeline and Hazardous Materials Safety Administration (PHMSA) regarding DOT-111 tank cars. The NTSB recommended to PHMSA that it require modifications be made on all existing and new DOT-111s. PHMSA did not mandate a fleet retrofit, nor has it published new standard designs for crude and ethanol tank cars. The AAR-North American Tank Car Committee, independent of a federal mandate, implemented nearly all of the recommendations made to PHMSA in its design standards for new crude oil and ethanol tank cars ordered after

October 2011. Specifically, all new DOT-111 tank cars for ethanol and crude oil service beginning October 1, 2011 are required to have:

- Increased head and shell thickness;
- Normalized steel;
- ½-inch thick ½-height head shields; and
- Top fitting protection.

The NTSB also recommended the AAR review the design requirements for attaching center sills or draft sills for all tank cars. The AAR-North American Tank Car Committee has studied the stub sill issue and will revise those standards as recommended. Nearly 25 percent of the DOT-111 fleet carrying crude today meets the higher design standards, as outlined above.

On July 23, 2014 the DOT issued a notice of proposed rulemaking covering enhanced tank car standards and operational controls for high-hazard flammable trains, which include crude oil trains. As part of the proposed DOT rulemaking, the PHMSA, in coordination with the Federal Railroad Administration (FRA), is proposing: (1) new operational requirements for certain trains transporting a large volume of Class 3 flammable liquids[3]; (2) improvements in tank car standards; and (3) revision of the general requirements for offerors to ensure proper classification and characterization of mined gases and liquids. These proposed requirements are designed to lessen the frequency and consequences of train accidents/incidents (train accidents) involving certain trains transporting a large volume of flammable liquids. Table 4.7.5 provides a summary of the elements of the proposed rule.

Table 4.7.6 further summarizes the three options that DOT is considering for use with HHFT. As noted in Table 4.7.5, PHMSA proposes to require one of these options for new tank cars constructed after October 1, 2015, if those tank cars are used as part of HHFT.

In addition, for all three Options, PHMSA proposes the following timelines for tank cars used as part of HHFT: (1) for Packing Group I, DOT Specification 111 tank cars (pre and post October 2011 designs) are not authorized after October 1, 2017; (2) for Packing Group II, DOT Specification 111 tank cars are not authorized after October 1, 2018; and (3) for Packing Group III, DOT Specification 111 tank cars are not authorized after October 1, 2020. The crude transported to the SMR could be in Packing Group I.

On May 1, 2015 PHMSA issued the final rules for High-Hazard Flammable Trains (HHFT). The final rule is discussed below in Section 4.7.5.

Liquid Pipelines and Oil Facilities

Hazardous liquid pipelines are under the jurisdiction of the DOT and must follow the regulations in 49 CFR Part 195, Transportation of Hazardous Liquids by Pipeline, as authorized by the Hazardous Liquid Pipeline Safety Act of 1979 (49 USC 2004).

[3] A flammable liquid having a flash point of not more than 141°F, or any material in a liquid phase with a flash point at or above 100°F, and would include crude oil.

Table 4.7.5 Proposed Regulatory Requirements for HHFT (USDOT July 23, 2014)

Proposed Requirement	Effected Entity
Better classification and characterization of mined gases and liquids. • Written sampling and testing program for all mined gases and liquids, such as crude oil, to address: (1) frequency of sampling and testing; (2) sampling at various points along the supply chain; (3) sampling methods that ensure a representative sample of the entire mixture; (4) testing methods to enable complete analysis, classification, and characterization of material; (5) statistical justification for sample frequencies; and, (6) duplicate samples for quality assurance. • Require offerer to certify that program is in place, document the testing and sampling program, and make program information available to DOT personnel, upon request.	Offerors / Shippers of all mined gases and liquids
Rail routing risk assessment. • Requires carriers to perform a routing analysis that considers 27 safety and security factors. The carrier must select a route based on findings of the route analysis. These planning requirements are prescribed in 49 CFR 172.820 and would be expanded to apply to HHFTs. Notification to SERCs. • Require trains containing one million gallons of Bakken crude oil to notify State Emergency Response Commissions (SERCs) or other appropriate state delegated entity about the operation of these trains through their States. Reduced operating speeds. • Restrict all HHFTs to 50-mph in all areas • PHMSA is requesting comment on three speed restriction options for HHFTs that contain any tank cars not meeting the enhanced tank car standards proposed by this rule: (1) a 40-mph maximum speed restriction in all areas (2) a 40-mph speed restriction in high threat urban areas; and, (3) a 40-mph speed restriction in areas with a 100K+ population. • PHMSA is also requesting comment on a 30-mph speed restriction for HHFTs that do not comply with enhanced braking requirements. Enhanced braking. • Require all HHFTs be equipped with alternative brake signal propagation systems. Depending on the outcome of the tank car standard proposal and implementation timing, all HHFTs would be operated with either electronic controlled pneumatic brakes (ECP), a two-way end of train device (EOT), or distributed power (DP).	Rail Carriers, Emergency Responders
Enhanced standards for both new and existing tank cars. • Require new tank cars constructed after October 1, 2015 (that are used to transport flammable liquids as part of a HHFT) to meet criteria for a selected option, including specific design requirements or performance criteria (e.g., thermal, top fittings, and bottom outlet protection; tank head and shell puncture resistance). PHMSA is requesting comment on the following three options for the DOT Specification 117: 1. FRA and PHMSA Designed Car, or equivalent 2. AAR 2014 Tank Car, or equivalent 3. Jacketed CPC-1232, or equivalent • Require existing tank cars that are used to transport flammable liquids as part of a HHFT, to be retrofitted to meet the selected option for performance requirements, except for top fittings protection. Those not retrofitted would be retired, repurposed, or operated under speed restrictions for up to five years, based on packing group assignment of the lading.	Tank Car Manufacturers, Tank Car Owners, Shippers and Rail Carriers

HHFT-High-Hazard Flammable Trains
Source: USDOT, 2014.

Table 4.7.6 Proposed Safety Features by Tank Car Option (USDOT July 23, 2014)

Tank Car	Bottom Outlet Handle	GRL (lbs)	Head Shield Type	Pressure Relief Valve	Shell Thickness	Jacket	Tank Material	Top Fittings Protection	Thermal Protection System	Braking
Option 1: PHMSA and FRA Designed Tank Car	Bottom outlet handle removed or designed to prevent unintended actuation during a train accident	286k	Full- height, 1/2 inch thick Head shield	Reclosing pressure relief device	9/16 inch Minimum	Minimum 11-gauge jacket constructed from A1011 steel or equivalent. The jacket must be weather-tight	TC-128 Grade B, normalized steel	TIH Top fittings protection system and nozzle capable of sustaining, without failure, a rollover accident at a speed of 9 mph	Thermal protection system in accordance with §179.18	ECP brakes
Option 2: AAR 2014 Tank Car	Bottom outlet handle removed or designed to prevent unintended actuation during a train accident	286k	Full- height, 1/2 inch thick head shield	Reclosing pressure relief device	9/16 inch Minimum	Minimum 11-gauge jacket constructed from A1011 steel or equivalent. The jacket must be weather-tight	TC-128 Grade B, normalized steel	Equipped per AAR Specifications Tank Cars, appendix E paragraph 10.2.1	Thermal protection system in accordance with §179.18	In trains with DP or EOT devices
Option 3: Enhanced CPC 1232 Tank Car	Bottom outlet handle removed or designed to prevent unintended actuation during a train accident	286k	Full Height 1/2 inch thick head shield	Reclosing pressure relief device	7/16 inch-Minimum	Minimum 11-gauge jacket constructed from A1011 steel or equivalent. The jacket must be weather-tight	TC-128 Grade B, normalized steel	Equipped per AAR Specifications Tank Cars, appendix E paragraph 10.2.1	Thermal protection system in accordance with §179.18	In trains with DP or EOT devices
DOT 111A100 W1 Specification (Currently Authorized)[1]	Bottom Outlets are Optional	263K	Optional; Bare Tanks half height; Jacket Tanks full height	Reclosing pressure relief valve	7/16 inch-Minimum	Jackets are optional	TC-128 Grade B, normalized steel	Not required, but when Equipped per AAR Specifications Tank Cars, appendix E paragraph 10.2.1	Optional	Not required

1. A CPC-1232 tank car is with all of the options included in the design. This is referred to as a post October 1, 2011 tank car and is the tank car design proposed for use by the Applicant.

ECP-Electronically controlled pneumatic; DP-Distributed power; EOT-End of Train

Source: USDOT 2014.

Other applicable Federal requirements are contained in 40 CFR Parts 109, 110, 112, 113, and 114, pertaining to the need for Oil Spill Prevention Control & Countermeasures Plans; 40 CFR Parts 109–114 promulgated in response to the Oil Pollution Act of 1990.

Overview of the 49 CFR 195 Requirements.
Part 195.30 incorporates many of the applicable national safety standards of the:

- American Petroleum Institute (API);
- American Society of Mechanical Engineers (ASME);
- American National Standards Institute (ANSI); and
- American Society for Testing and Materials (ASTM).

Part 195.50 requires reporting of accidents by telephone and in writing for:

- Explosion or fire not intentionally set by the operator;
- Spills of 5 gallons or more or 5 barrels if confined to company property and cleaned up promptly;
- Daily loss of 5 barrels a day to the atmosphere;
- Death or injury necessitating hospitalization; or
- Estimated property damage, including cleanup costs, greater than $50,000.

The Part 195.100 series includes design requirements for the temperature environment, variations in pressure, internal design pressure for pipe specifications, external pressure and external loads, new and used pipe, valves, fittings, and flanges.

The Part 195.200 series provides construction requirements for standards such as compliance, inspections, welding, siting and routing, bending, welding and welders, inspection and nondestructive testing of welds, external corrosion and cathodic protection, installing in-ditch and covering, clearances and crossings, valves, pumping, breakout tanks, and construction records.

The Part 195.300 series prescribes minimum requirements for hydrostatic testing, compliance dates, test pressures and duration, test medium, and records.

The Part 195.400 series specifies minimum requirements for operating and maintaining steel pipeline systems, including:

- Correction of unsafe conditions within a reasonable time;
- Procedural manual for operations, maintenance, and emergencies;
- Training;
- Maps;
- Maximum operating pressure;
- Communication system;
- Cathodic protection system;
- External and internal corrosion control;
- Valve maintenance;

- Pipeline repairs;
- Overpressure safety devices;
- Firefighting equipment; and
- Public education program for hazardous liquid pipeline emergencies and reporting.

Overview of 40 CFR Parts 109, 110, 112, 113, and 114
The Spill Prevention, Control and Countermeasure Plans (SPCCs) covered in these regulatory programs apply to oil storage and transportation facilities and terminals, tank farms, bulk plants, oil refineries, and production facilities, as well as bulk oil consumers, such as apartment houses, office buildings, schools, hospitals, farms, and state and federal facilities as follows:

- Part 109 establishes the minimum criteria for developing oil-removal contingency plans for certain inland navigable waters by state, local, and regional agencies in consultation with the regulated community (i.e., oil facilities).
- Part 110 prohibits discharge of oil such that applicable water quality standards would be violated, or that would cause a film or sheen upon or in the water. These regulations were updated in 1987 to adequately reflect the intent of Congress in Section 311(b) (3) and (4) of the Clean Water Act, specifically incorporating the provision "in such quantities as may be harmful."
- Part 112 deals with oil spill prevention and preparation of Spill Prevention Control and Countermeasure Plans. These regulations establish procedures, methods, and equipment requirements to prevent the discharge of oil from onshore and offshore facilities into or upon the navigable waters of the United States. These regulations apply only to non-transportation-related facilities.
- Part 113 establishes financial liability limits; however, these limits were preempted by the Oil Pollution Act of 1990.
- Part 114 provides civil penalties for violations of the oil spill regulations.

Overview of 6 CFR Part 27
Chemical Facility Anti-Terrorism Standards, 6 CFR 27. The Federal Department of Homeland Security established the chemical facility anti-terrorism standards of 2007. This 2007 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, which include measures that satisfy the identified risk-based performance standards.

Emergency Planning and Community Right-to-Know Act
Under the Emergency Planning and Community Right-to-Know Act, or Title III of the Superfund Amendments and Reauthorization Act of 1986, the EPA requires local agencies to regulate the storage and handling of hazardous materials and requires development of a plan to mitigate the release of hazardous materials. Businesses that handle any of the specified hazardous materials must submit to government agencies (i.e., fire departments or Public Health Departments), an inventory of the hazardous materials, an emergency response plan, and an employee training program. The business plans must provide a description of the types of hazardous materials/waste onsite and the location of these materials. The information in the

business plan can then be used in the event of an emergency to determine the appropriate response action, the need for public notification, and the need for evacuation.

In 1990, Congress passed the Pollution Prevention Act which requires facilities to report additional data on waste management and source reduction activities to EPA under Toxics Release Inventory Program. The goal of the Toxics Release Inventory is to provide communities with information about toxic chemical releases and waste management activities and to support informed decision making at all levels by industry, government, non-governmental organizations, and the public.

Hazardous Materials Management Planning

Section 112(r) of the Clean Air Act Amendments of 1990, 40 CFR 68

The EPA requires facilities that handle listed regulated substances to develop Risk Management Programs (RMP) to prevent accidental releases of these substances. RMP materials are submitted to both local agencies (generally the fire department) and the Federal EPA. Stationary sources with more than a threshold quantity of a regulated substance shall be evaluated to determine the potential for, and impacts of, accidental releases of that substance. Under certain conditions, the owner or operator of a stationary source may be required to develop and submit a Risk Management Program. Risk Management Programs consist of three main elements: a hazard assessment that includes off site consequences analyses and a five-year accident history; a prevention program; and an emergency response program.

National Contingency Plan Requirements

Spill Prevention Control and Countermeasures Plans, 40 CFR 112.3 and 112.7

Facilities that store large volumes of hazardous materials are required to have a Spill Prevention Control and Countermeasures Plans (SPCCP) per the requirements of 40 CFR 112 submitted to the EPA. The SPCCP is designed to prevent spills from onsite facilities and includes requirements for secondary containment, provides emergency response procedures, and establishes training requirements.

Worker Health and Safety

Occupational Safety and Health Act, 29 CFR et seq.

Under the authority of the Occupational Safety and Health Act of 1970, the federal OSHA has adopted numerous regulations pertaining to worker safety (29 CFR) and provides oversight and enforcement (along with CalOSHA in California). These regulations set standards for safe workplaces and work practices, including the reporting of accidents and occupational injuries. Some OSHA regulations contain standards relating to hazardous materials handling, including workplace conditions, employee protection requirements, first aid, and fire protection, as well as material handling and storage.

Hazard Communication, 29 CFR 1910.1200

The purpose of the OSHA Hazard Communication law is to ensure that the hazards of all chemicals produced or imported are evaluated, and that information concerning any potential hazards is transmitted to employers and employees. This transmittal of information is to be accomplished by means of comprehensive hazard communication programs, which are to include container labeling and other forms of warning, material safety data sheets, and employee training.

Process Safety Management, 29 CFR 1910.119
Under this section, facilities that use, store, manufacture, handle, process, or move hazardous materials are required to:

- Conduct employee safety training;
- Have an inventory of safety equipment relevant to potential hazards;
- Have knowledge on use of the safety equipment;
- Prepare an illness prevention program;
- Provide hazardous substance exposure warnings;
- Prepare an emergency response plan; and
- Prepare a fire prevention plan.

In addition, 29 CFR 1910.119, Process Safety Management of Highly Hazardous Chemicals, OSHA specifically requires prevention program elements to protect workers at facilities that have toxic, flammable, reactive or explosive materials. Prevention program elements are aimed at preventing or minimizing the consequences of catastrophic releases of chemicals and include process hazard analyses, formal training programs for employees and contractors, investigation of equipment mechanical integrity, and an emergency response plan.

4.7.2.2 California Laws and Regulations

State laws address gas and liquid pipelines, oil and gas facilities and hazardous materials and waste. The following sections discuss each of these.

California Public Utilities Commission (CPUC)
CPUC is the State agency charged with ensuring the safety of freight railroads, inter-city and commuter railroads, and highway-railroad crossings in the State of California. CPUC performs these railroad safety responsibilities through the Railroad Operations and Safety Branch (ROSB) of the Safety & Enforcement Division.

ROSB's mission is to ensure that California communities and railroad employees are protected from unsafe practices on freight and passenger railroads by enforcing rail safety rules, regulations, and inspection efforts; and by carrying out proactive assessments of potential risks before they create dangerous conditions. ROSB personnel investigate rail accidents and safety related complaints, and recommend safety improvements to the Commission, railroads, and the federal government as appropriate. A more detailed listing of the CPUC regulations for railroad is provided in Appendix H.5.

The CPUC is responsible for enforcing federal and state railroad safety requirements, including those governing railroad tracks, facilities, bridges, rail crossings, motive power and equipment, operating practices, and hazardous material shipping requirements. The Rail Spur Project would require review and approval by the CPUC as it relates to the new track and operations that would occur at the SMR.

ROSB currently has 38 certified rail inspectors and has funding to hire seven more. Inspections are divided into five railroad disciplines:

1. Operating Practices – oversight of main, branch and yard train operations, including hours of service, carrier operating rules, employee qualification guidelines, and carrier training and testing programs to determine compliance with railroad occupational safety and health standards, accident and personal injury reporting requirements, and other requirements.
2. Track – oversight of track construction, maintenance and inspection activities.
3. Signal & Train Control – oversight of signal system construction, maintenance and inspection activities.
4. Motive Power & Equipment – oversight of locomotives, freight and passenger rail cars, air brakes, and other safety appliances maintenance and inspection activities.
5. Hazardous Materials – oversight of the rail movements of hazardous materials, such as petroleum and chemical products; and inspection of hazardous materials shippers.

At a minimum mainline track within California is inspected by ROSB inspectors on an annual basis. Any identified track deficiencies are reported to the FRA and the track operator, and repairs are required to be made. (Roger Clugston, CPUC ROSB Manager 2014).

Gas and Liquid Pipelines and Oil Facilities

Overview of California Pipeline Safety Regulations
State of California regulations Part 51010 through 51018 of the Government Code provide specific safety requirements that are more stringent than the Federal rules. These include:

- Periodic hydrostatic testing of pipelines, with specific accuracy requirements on leak rate determination;
- Hydrostatic testing by state-certified independent pipeline testing firms;
- Pipeline leak detection; and
- Reporting of all leaks required.

Recent amendments require pipelines to include means of leak prevention and cathodic protection, with acceptability to be determined by the California State Fire Marshall (CSFM). All new pipelines must also be designed to accommodate passage of instrumented inspection devices (smart pigs) through the pipeline.

California Pipeline Safety Act of 1981
The California Pipeline Safety Act gives regulatory jurisdiction for the safety of all intrastate hazardous liquid pipelines and all interstate pipelines used for the transportation of hazardous or highly volatile liquid substances to the CSFM. The law establishes the governing rules for interstate pipelines to be the Federal Hazardous Liquid Pipeline Safety Act and Federal pipeline safety regulations.

Oil Pipeline Environmental Responsibility Act (Assembly Bill 1868)
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 ..." The law applies only to public utility pipelines for which construction

would be completed after January 1, 1996, or that part of an existing utility pipeline that is being relocated after the above date and is more than three miles in length. The major features signed into law in October 1995 include:

- Each pipeline corporation that qualifies as a public utility that transports any crude oil in a public utility oil pipeline system shall be absolutely liable, without regard to fault, for any damages incurred by any injured party that arise out of, or are caused by, the discharge or leaking of crude oil.
- Damages for which a pipeline corporation is liable under this law are: all costs of response, containment, cleanup, removal, and treatment, including monitoring and administration cost; injury or economic losses resulting from destruction of, or injury to, real or personal property; injury to, destruction of, or loss of natural resources, including but not limited to, the reasonable cost of rehabilitating wildlife habitat, and other resources and the reasonable cost of assessing that injury, destruction, or loss, in any action brought by the State, County, city, or district; loss of taxes, royalties, rents, use, or profit shares caused by the injury, destruction, loss, or impairment of use of real property, personal property, or natural resources; and loss of use and enjoyment of natural resources and other public resources or facilities in any action brought by the State, County, city, or district;
- A pipeline corporation shall immediately clean up all crude oil that leaks or is discharged from a pipeline.
- No pipeline system subject to this law shall be permitted to operate unless the State Fire Marshal certifies that the pipeline corporation demonstrates sufficient financial responsibility to respond to the liability imposed by this section. The minimum financial responsibility required by the State Fire Marshal shall be seven hundred fifty dollars ($750) times the maximum capacity of the pipeline in the number of barrels per day up to a maximum of one hundred million dollars ($100,000,000) per pipeline system, or a maximum of two hundred million dollars ($200,000,000) per multiple pipeline system. For the Pacific Pipeline, the Bill specifically requires $100,000,000 for the financial responsibility (Section l.h.(l)).
- Financial responsibility shall be demonstrated by evidence that is substantially equivalent to that required by regulations issued under Section 8670.37.54 of the Government Code, including insurance, surety bond, letter of credit, guaranty, qualification as a self-insurer, or combination thereof or any other evidence of financial responsibility. The State Fire Marshal shall require that the documentation evidencing financial responsibility be placed on file with that office.
- The State Fire Marshal shall require evidence of financial responsibility to fund post-closure cleanup spots. The evidence of financial responsibility shall be 15 percent of the amount of financial responsibility stated above.

California Accident Release Prevention

The California Accident Release Prevention program mirrors the Federal Risk Management program, except that it adds external events and seismic analysis to the requirements and includes facilities with lower inventories of materials. A California Accident Release Prevention or Risk Management Plan, as administered by the Fire Departments and the EPA, if applicable,

is a document prepared by the owner or operator of a stationary source containing detailed information including:

- Regulated substances held onsite at the stationary source;
- Offsite consequences of an accidental release of a regulated substance;
- The accident history at the stationary source;
- The emergency response program for the stationary source;
- Coordination with local emergency responders;
- Hazard review or process hazard analysis;
- Operating procedures at the stationary source;
- Training of the stationary source's personnel;
- Maintenance and mechanical integrity of the stationary source's physical plant; and
- Incident investigation.

Hazardous Materials and Hazardous Waste

Hazardous Waste Control Law

The Hazardous Waste Control Law is administered by the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC). DTSC has adopted extensive regulations governing the generation, transportation, and disposal of hazardous wastes. These regulations impose cradle-to-grave requirements for handling hazardous wastes in a manner that protects human health and the environment. The Hazardous Waste Control Law regulations establish requirements for identifying, packaging, and labeling hazardous wastes. They prescribe management practices for hazardous wastes; establish permit requirements for hazardous waste treatment, storage, disposal, and transportation; and identify hazardous wastes that cannot be disposed of in landfills. Hazardous waste is tracked from the point of generation to the point of disposal or treatment using hazardous waste manifests. The manifests list a description of the waste, its intended destination, and regulatory information about the waste.

Hazardous Materials Management Planning

The Office of Emergency Services, in support of local government, coordinates overall state agency response to major disasters. The office is responsible for assuring the State's readiness to respond to and recover from natural, manmade, and war-caused emergencies, and for assisting local governments in their emergency preparedness, response, and recovery efforts. During major emergencies, Office of Emergency Services may call upon all State agencies to help provide support. Due to their expertise, the California National Guard, California Highway Patrol (CHP), Department of Forestry and Fire Protection, Conservation Corps, Department of Social Services, and Caltrans are the agencies most often asked to respond and assist in emergency response activities.

In January 2014, the Governor's Office convened a Rail Safety Working Group to examine safety concerns and recommend actions the State of California and others should take in response to the emerging risk posed by increased shipments of crude oil by rail into California.

The Working Group includes representatives from the California Public Utilities Commission, California Office of Emergency Services, California Environmental Protection Agency, Department of Toxic Substances Control, California Energy Commission, California Natural

Resources Agency, California Office of the State Fire Marshal, Department of Oil, Gas and Geothermal Resources, and Office of Spill Prevention and Response.

The Working Group published their report on June 10, 2014. The report provides preliminary findings and recommendations to improve emergency response for crude oil trains in California. Some of the key recommendations in the report covered increasing the number of CPUC rail inspectors, improve emergency preparedness and response programs at both the state and local level, require railroad to provide better information to emergency responders and affected communities about crude by rail shipments and accident/incident data.

Some of these recommendations were addressed with the passage of SB 861. More of the requirements of SB 861 can be found in the Biological Resources regulatory setting section (Section 4.2.2.2). Also, the most recent California budget allotted funds for additional CPUC rail inspectors, and the CPUC is currently in the process of hiring two railroad bridge inspectors.

Hazardous Materials Transportation in California
California regulates the transportation of hazardous waste originating or passing through the State in Title 13 of the California Code of Regulations. 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. The CHP conducts regular inspections of licensed transporters to ensure regulatory compliance. Caltrans has emergency chemical spill identification teams at locations throughout the State.

Hazardous waste must be regularly removed from generating sites by licensed hazardous waste transporters. Transported materials must be accompanied by hazardous waste manifests.

Hazardous Material Worker Safety, California Occupational Safety and Health Act
The California Occupational Safety and Health Administration (Cal/OSHA) is responsible for assuring worker safety in the handling and use of chemicals in the workplace. Cal/OSHA assumes primary responsibility for developing and enforcing workplace safety regulations in Title 8 CCR. Cal/OSHA hazardous materials regulations include requirements for safety training, availability of safety equipment, hazardous substance exposure warnings, and emergency action and fire prevention plan preparation.

Cal/OSHA also enforces hazard communication program regulations, which contain training and information requirements, including procedures for identifying and labeling hazardous substances. The hazard communication program also requires that Material Safety Data Sheets be available to employees and that employee information and training programs be documented.

County of San Luis Obispo Regulations
Energy Element and Conservation and Open Space Element
In 1995, the County of San Luis Obispo adopted the Energy Element as part of the County's General Plan, subsequently merged with the Conservation and Open Space Element. The

Conservation and Open Space Element contains a goal of protecting public health, safety, and environment and several policies that promote the stated goal. The applicable policies include:

- Policy 56. Encourage existing and proposed facilities to focus on measures and procedures that prevent oil, gas, and other toxic releases into the environment. This policy is to ensure that facilities: (1) take measures to prevent releases and spills; (2) prepare for responding to a spill or release; and (3) provide for the protection of sensitive resources. A review of a facilities spill response plan, or reports from other agencies, should be completed to monitor compliance.
- Policy 64. Guideline 64.1. To reduce the possibility of injury to the public, facility employees, or the environment, the applicant shall submit an emergency response plan which details response procedures for incidents that may affect human health and safety or the environment. The plan shall be based on the results of the comprehensive risk analysis. In the case of a facility modification, the existing response plan shall be evaluated by the safety review committee and revisions made as recommended.
- Flammable and Combustible Liquid Storage. County Coastal Zone Land Use Ordinance Section 23.06.126 includes requirements for flammable and combustible liquid storage relating to: applicability, permit requirements, limitation on use, limitation on quantity, setbacks, and including California Department of Forestry and Fire Prevention (CAL FIRE) recommendations, as applicable. Without approval through a Development Plan, aboveground storage limits of combustible liquid is 20,000 gallons and 2,000 gallons for flammable liquids.

4.7.2.3 Other Applicable Guidelines, National Codes, and Standards

Safety and Corrosion Prevention Requirements — American Society of Mechanical Engineers, National Association of Corrosion Engineers, American National Standards Institute, API

The following design requirements are generally enforced by local building departments, fire departments and public health departments during plan review and permit issuance. The code requirements address a range of issues that would reduce impacts, including equipment design, material selection, and use of safety valves.

- ASME & ANSI B16.1 Cast Iron Pipe Flanges and Flanged Fittings;
- ASME & ANSI B16.9, Factory-Made Wrought Steel Butt Welding Fittings;
- ASME & ANSI B31.1a, Power Piping;
- ASME & ANSI B31.4a, addenda to ASME B31.4a, Liquid Transportation Systems for Hydrocarbons, Liquid Petroleum Gas, Anhydrous Ammonia, and Alcohols;
- NACE Standard RP0190, Item No. 53071. Standard Recommended Practice External Protective Coatings for Joints, Fittings, and Valves on Metallic Underground or Submerged Pipelines and Piping Systems;
- NACE Standard RP0169, Item No. 53002. Standard Recommended Practice Control of External Corrosion on Underground or Submerged Metallic Piping Systems;

- API 510 Pressure Vessel inspection Code;
- API 570 Piping Inspection Code, applies to in-service metallic piping systems used for the transport of petroleum products;
- API 572 Inspection of Pressure Vessels;
- API 574 Inspection Practices for Pipe System Components;
- API 575 API Guidelines and Methods for Inspection of Existing Atmospheric and Low-pressure Storage Tanks;
- API 576 Inspection of Pressure Relieving Devices;
- API 650 Welded Steel Tanks for Oil Storage;
- API 651 Cathodic Protection of Aboveground Storage Tanks;
- API 653 Tank Inspection, Repair, Alteration, and Reconstruction;
- API 2610, Design, Construction, Operation, Maintenance, and Inspection of Terminal & Tank Facilities; and
- API Spec 12B - Bolted Tanks for Storage of Production Liquids.

API 653, atmospheric tank inspection and repair, is particularly applicable to the Rail Spur Project and addresses the following issues:

- Tank suitability for service;
- Brittle fracture considerations;
- Inspections;
- Materials;
- Design considerations;
- Tank repair and alteration;
- Dismantling and reconstruction;
- Welding;
- Examination and testing;
- Marking and recordkeeping;
- Pertinent issues related to tank inspections in API 653;
- External inspections by an authorized inspector every 5 years;
- Ultrasonic inspections of shell thickness every 5 years (when corrosion rate not known); and
- Internal bottom inspection every 10 years, if corrosion rates not known.

Fire and Explosion Prevention and Control, National Fire Protection Agency
The following design requirements are generally enforced by fire departments during plan review and permit issuance. The code requirements address a range of issues that would reduce impacts, including fire fighting system design, and water supply requirements.

- NFPA 30 Flammable and Combustible Liquids Code and Handbook;
- NFPA 11 Foam Extinguishing Systems;
- NFPA 12 A&B Halogenated Extinguishing Agent Systems;

- NFPA 15 Water Spray Fixed Systems;
- NFPA 20 Centrifugal Fire Pumps; and
- NFPA 70 National Electrical Code.

4.7.3 Significance Criteria

As defined in Appendix G (the Environmental Checklist Form) of the California Environmental Quality Act (CEQA), a significant safety effect is one in which the Proposed Project "create[s] a potential health hazard or involve[s] the use, production or disposal of materials which pose a hazard to people, animal or plant populations in the area affected." The San Luis Obispo County Initial Study Checklist defines significant risk if the project will "result in a risk of explosion or release of hazardous substances (e.g. oil, pesticides, chemicals, radiation) or exposure of people to hazardous substances," or "create any other health hazard or potential hazard."

San Luis Obispo County does not have a process to address risk of upset and CEQA thresholds. Therefore, the Santa Barbara County thresholds have been applied. Santa Barbara County established quantitative risk-based criteria that have been utilized by various state agencies, including the California Coastal Commission and the California State Lands Commission. Santa Barbara County adopted Public Safety Thresholds in August 1999. The thresholds provide specific zones (i.e., green, amber, and red) on a risk profile curve to guide the determination of significance or insignificance based on the estimated probability and consequence of an accident. In general, risk levels in the green area would be less than significant and therefore acceptable, while risk levels in the amber and red zones would be significant. Risk profiles plot the frequency of an event against the consequence in terms of fatalities or injuries; frequent events with high consequence have the highest risk level.

The criteria used in this section are based on the potential risk associated with the facilities. Therefore, an impact would be considered significant if any of the following were to occur:

- Be within the amber or red regions of the Santa Barbara County Safety Criteria; or
- Non-compliance with any applicable design code, regulation, NFPA standard, or generally acceptable industry practice.

Issues related to fire protection and emergency response are discussed in Section 4.11, Public Services.

The foregoing thresholds do not address risk of environmental damage. The threshold applied for risk of significant environmental impact due to accidental spills is as follows: an impact of spills would be potentially significant if operations would increase the probability or volume of oil spills into an environment that contained sensitive resources. The environmental impacts of a potential oil spill are discussed in other issue areas such as Biological Resources, Cultural Resources, Water Resources, and Agricultural Resources.

In addition, the thresholds do not apply to occupational safety. Occupational risk, which is governed by state and federal OSHAs is considered to be more voluntary and is generally judged according to more lenient standards of significance than those used for involuntary exposure.

A significant impact associated with existing site contamination and hazardous waste would be determined if the project would:

- Result in mobilization of contaminants currently existing in the soil and groundwater, creating potential pathways of exposure to humans or other sensitive receptors that would result in exposure to contaminant levels that would be expected to be harmful; or
- Result in the presence of contaminated soils or groundwater within the project area, and as a result, expose workers and/or the public to contaminated or hazardous materials during construction activities at levels in excess of those permitted by California Occupational Safety and Health Administration (Cal/OSHA) in CCR Title B and the Federal Occupational Safety and Health Administration (OSHA) in Title 29 CFR Part 1910.

4.7.4 Project Impacts and Mitigation Measures

The Rail Spur Project would result in the construction of new facilities that could lead to increased fire and explosion hazards at the refinery and along the railroad routes to the SMR. In assessing the level of public risk associated with these hazards a quantitative risk assessment (QRA) was conducted for both the facilities at the SMR as well as for the various mainline rail routes to the SMR.

A QRA involves evaluating risks presented to the public by a facility or transportation operation in the form of hazardous materials releases resulting in explosions, flammable vapors, or toxic material impacts. A QRA was used to evaluate the risks associated with the transport of crude by rail along the main rail lines between the SMR and Roseville and Colton, and for the rail operations that would occur at the SMR.

The QRA analyzes the risks of immediate human safety impacts presented by these operations on nearby populations. The assessment follows commonly accepted industry standards including the recommendations of the Center for Chemical Process Safety (CCPS), and the Health and Safety Executive of the United Kingdom.

The main objective of the QRA is to assess the risk of generating serious injuries or fatalities to members of the public, to assess the risks of spill events, and to develop mitigation measures that could reduce these risks. The development of the serious injury and fatality aspects of the QRA involves five major tasks:

- Identifying release scenarios;
- Developing frequencies of occurrence for each release scenario;
- Determining consequences of each release scenario;
- Developing estimates of risk, including risk profiles;
- Compare the risk level to the significance criteria; and
- Developing risk-reducing mitigation measures.

Figure 4.7-3 shows the steps in developing a QRA. A QRA computer model, developed by Marine Research Specialists, is used to calculate the risk profiles[4] and, in conjunction with Geographic Information System software, to manage the data in accordance with CCPS guidelines for hazard assessments (CCPS 1989). A detailed description of the QRA methodology is provided in Appendix H.1. This appendix describes each of the steps used in the QRA as well as the various consequence models and impact thresholds that were used in the QRA.

The spill modeling was done using a multi-component crude with the properties provided below in Table 4.7.7.

Table 4.7.7 Properties of Crude Oil Used for Consequence Modeling

Gravity (API)	25
Flash Point (F)	50
Vapor Pressure (psi)	11
Light Ends (C3-C10; Vol %)	24
Burn Rate (meters/second)	0.00025
Flame Temperature (K)	1,000
Flame Emissive Power (kw/m^2)	56.7

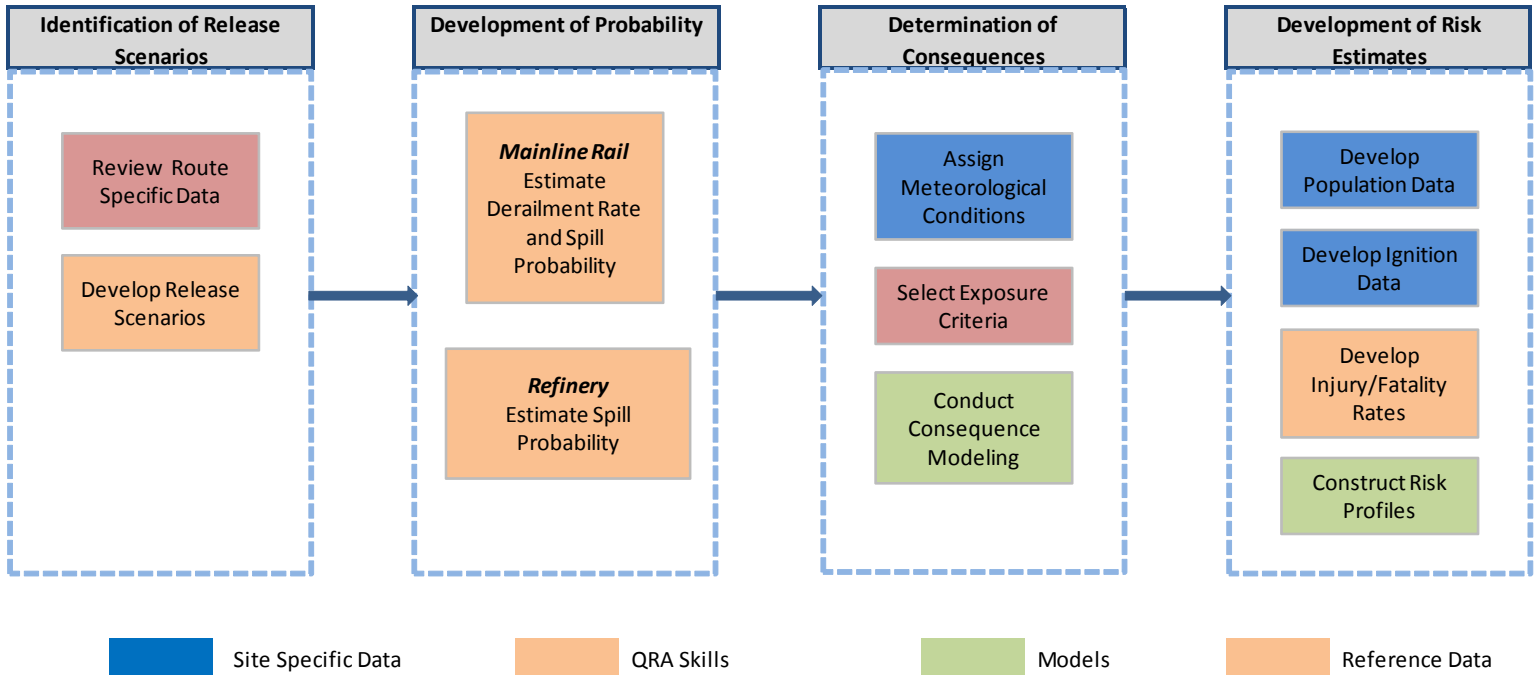
Combined, these values are extremely conservative, and represent a crude that is lighter than the crudes identified in Section 2.6 of the Project Description. Ultimately, the modeling is sensitive to the initial percent of light ends, flame temperature, and emissive power values, which for the modeling are very conservative for crude oil, regardless of type, and probably are more representative of very light synbit.

Impact #	Impact Description	Phase	Impact Classification
HM.1	The proposed rail spur unloading facility would increase the risk of an oil spill, fires and explosions at the refinery and on the project site that could impact the public.	Operation	Class III

The new unloading facility would include an access platform and a system of pumps and meters, suction lines from the railcars, carbon beds for vapor treatment, and a common pipeline leading to the refinery's existing tank farm. The unloading facility would be equipped with two 10-car unloading systems. This would allow 20 rail cars to be unloaded at one time.

[4] A risk profile is a plot of the frequency (i.e., probability) of various levels of fatalities or injuries that could result from a set of hazardous events.

Figure 4.7-3 Steps Involved in Developing a Quantitative Risk Assessment



The unloading rack would be configured to unload two 10-car strings simultaneously (one 10-car string on Track 1 and one 10-car string on Track 2). The system used to unload each car would consist of an adapter unit to connect the rail car to couplings, hoses, valves and piping connecting to a 400 gallon-per-minute (gpm) positive displacement pump. The system may employ unloading hoses for the connection to the rail cars. Each of the two unloading systems (one for Track 1 and one for Track 2) would be equipped with an air eliminator, flow meters, and carbon beds. Upon exiting the flow meters the crude oil from the two unloading systems would be comingled and transported via a new pipeline to the existing refinery crude oil storage tanks.

All of the rail track extensions built as part of the Rail Spur Project would have to comply with the applicable California Public Utilities Commission (CPUC) general orders including:

- GO 26-D: Clearances on railroads and street railroads as to side and overhead structures, parallel tracks and crossings,
- GO 72-B: Construction & Maintenance - Standard types of pavement construction at railroad grade crossings,
- GO 75-D: Warning Devices for at-grade railroad crossings, and
- GO 118: Construction, reconstruction and maintenance of walkways and control, of vegetation adjacent to railroad tracks.

Implementation of the project could result in spills at the Project Site due to mechanical failure, structural failure, corrosion, or human error during pipeline use and oil transportation to and from the Rail Spur. Given the low speed the trains would be moving at the site (3 mph) it is unlikely that a tank car could be impacted enough to result in a spill. The estimated shell and head puncture velocity of the tank car design proposed for use by the Applicant are 8.3 and 10.3 miles per hour respectively (USDOT 2014).

The most likely spill related event would be a release during the unloading process due to a loading line failure. The unloading racks are equipped with oil spill drain boxes which would feed below-grade 16-inch-diameter drain lines routed to three parallel 20,000 gallon rectangular storage tanks located in a vault for containment. The total capacity of the containment system would be about 273,000 gallons (this includes the drain boxes, curbed area, pipelines and storage tanks). The containment system has been designed to move any spilled oil away from the rail cars and into the 60,000 gallon storage tanks. The loss of a loading hose could result in a maximum spill of about 27,300 gallons of crude oil (the capacity of one rail car). This system would effectively control spills that would from the loading operations.

The loading area would also be equipped with a fire protection system that would consist of fire detection equipment hydrants, controls and piping. The unloading rack would be equipped with a foam sprinkler deluge system and firewater monitors with foam generators at the unloading rack periphery. In the event of a spill that led to a fire, the sprinkler deluge system would activate and douse the area with foam. Any spilled oil would be directed away from the unloading area to the spill containment tanks, which would serve to keep any fire away from the rail cars.

Downstream of the two unloading facility meter assemblies, a new 24-inch above ground pipeline would be routed along an existing internal dirt road on the Phillips 66 property between

the unloading facility and the refinery. This pipeline would connect with the existing refinery crude oil storage tanks. The route for this pipeline is shown in Project Description Figure 2-3. This dirt road accommodates periodic on-site traffic only associated with refinery personnel traveling at low-speeds.

The pipeline would be approximately 3,525 feet in length. The unloaded crude oil would be stored in the existing refinery storage tanks. Therefore, crude oil storage would not result in any increase in fire and explosion risk at the refinery.

The proposed unloading facility would have a maximum crude oil pumping rate of 8,000 gpm. The unloading facility and 24-inch pipeline would be monitored using multiple Programmable Logic Controllers (PLCs) and controlled using the existing refinery Supervisory Control and Data Acquisition (SCADA) system. The SCADA would detect a catastrophic failure of the 24-inch pipeline within one minute, thus limiting pumping losses. However, the drainage of the pipeline would occur, and potentially result in a worst-case spill of about 90,800 gallons of crude oil. This worst case spill would occur where the pipeline connects with unloading pumps since this is the lowest elevation of the pipeline. As one moves up the pipeline toward the storage tanks, the maximum spill volumes decrease, with the smallest spill volumes being near the storage tanks. In the event of a release from the pipeline the oil would drain into the area around the pipeline and unloading racks, which could result in a pool fire (see grading plans in Appendix A).

Several crude oil spill scenarios were modeled to evaluate worst-case thermal radiation hazards associated with a large crude oil fire. Modeled scenarios ranged from small releases from a tank car, full release of rail car contents, and full release of the pipeline volume. (see Appendix H.3 for consequence modeling input data and results). The worst-case thermal radiation hazard distance are provided in Table 4.7.8

Table 4.7.8 Worst Case Onsite Thermal Radiation Hazard Zones

Wind Speed (meters/second)	Distance in feet to	
	5 kw/m^2	10 kw/m^2
1	561	305
3	627	351
5	659	374
7	679	387
10	699	407
15	1,001	535
20	1,099	761

See Appendix H.3 for the detailed consequence modeling results.
See Appendix H.1 for a description of on the consequences associated with these hazards.

As shown in Figure 4.7-4, none of these flammable hazard zones have the potential for offsite impacts associated with the worst-case unloading facility crude oil spill and fire. The worst case spill occurs just north of the unloading facility where nearly the entire pipeline would drain onto the ground due to the slope of the area between the unloading facility and refinery storage tanks. Spills closer to the refinery storage tanks would be smaller, thus resulting in smaller hazard zones. Since the worst case hazard zones are within the SMR boundaries, no QRA was needed for the onsite impacts since no sensitive receptors would be impacted. Therefore, potential hazards associated with the unloading facility are considered less than significant since the worst case hazard zones do not extend outside of the boundaries of the SMR.

Mitigation Measures

No mitigation measures are required since the impacts are less than significant. However, implementation of mitigation measures PS-3a through PS-3i for fire protection and emergency response would serve to further reduce the onsite hazards associated with the Rail Spur Project.

Residual Impacts

Hazards associated with the onsite portion of the Rail Spur Project would be *less than significant (Class III).*

Impact #	Impact Description	Phase	Impact Classification
HM.2	The potential for a crude oil unit train derailment would increase the risk to the public in the vicinity of the UPRR right-of-way.	Operations	Class I

It is unknown what route UPRR would use to deliver the trains to the SMR. Coming from the north the routes merge at the UPRR Roseville Rail Yard. From the south the routes merge at the Colton Rail Yard. Given that the route the trains would travel to get to these two UPRR yards is speculative, the EIR has evaluated in more detail the impacts of trains traveling from these two UPRR yards to the SMR.

Beyond the two UPRR Yards, trains could travel any number of routes (refer to Figure 2-8). Depending upon the source of the crude oil, crude oil trains could use any portion of the UPRR network between Roseville/Colton and the source location for the crude oil. The exact route that would be taken would depend upon a number of factors, that could include the source of the crude oil, weather conditions, train traffic conditions, etc. Since the routes past Roseville and Colton are somewhat speculative, a more qualitative assessment of public safety impacts associated with rail accidents beyond these two rail yards is provide at the end of this impact discussion.

The route distances were developed using a graphical information systems (GIS). The GIS estimated the route from Roseville via Oakland at 367.3 miles, which is almost identical to the 367.9 miles provide by UPPR for the length of this route. The other route distances were also close to the values provided by UPRR.

Figure 4.7-4 Worst Case Rail Unloading Facility Flammable Hazard Zones at the SMR

UPRR would be responsible for transporting the crude oil to the SMR if the project were approved. Federal law requires common carriers like UPRR, to transport hazardous materials, such as crude oil, ammonia, chlorine, for its customers. If a customer delivers the hazardous material in conformity with applicable DOT requirements, UPRR must transport the material. UPRR is required to transport all commodities in accordance with applicable federal laws.

To maximize safety and security when moving crude oil, UPRR has implemented additional measures that include:

- Using the Rail Corridor Risk Management System (RCRMS) routing protocol for trains carrying 20 or more crude oil cars to determine the safest and most secure routes. The RCRMS is an analytical tool developed in conjunction with the Department of Homeland Security (DHS) and the FRA. This tool takes into account 27 risk factors to assess rail route safety and security.
- Requiring trains carrying 20 or more crude oil cars that include at least one older DOT-111 tank car not to exceed 40 miles per hour in the 46[5] designated high-threat-urban areas (HTUA) established by Federal regulations. This reduces by 10 miles per hour Union Pacific's current self-imposed speed limit. This reduced train speed reduces the kinetic energy that contributes to tank car breeches in accident.
- Evaluating where the railroad may need to install additional advanced track-side detectors.
- Increased emergency response training and tuition assistance to include a specialized crude by rail curriculum at the industry's Transportation Technology Center, Inc. (TTCI) facility in Pueblo, Colorado.
- Creating a comprehensive emergency response resources inventory.
- Use of distributed power or two-way telemetry end-of-train devices for enhanced braking on trains that carry 20 or more carloads of crude oil (UPRR 2014a).

In addition, UPRR has a track inspection program for their rail lines in California that exceed the current Federal requirements. The UPRR inspection program includes the following:

- Tracks in California are visually inspected twice a week with "hi-rail pickup trucks to identify any broken rails or issues with track surface condition.
- Special inspections are performed during and after storm events and earthquakes.
- UPRR conducted track geometry tests of their mainline tracks at least twice per year. These tests provide information on the condition of the track, track alignment, curve wear, clearance in tunnels and bridges, track profile, etc. These inspections also include collecting video of the track, which can be used to further assess track conditions.

[5] A list of the HTUA is provided in Appendix H.6. Within California the crude oil trains could pass through three HTUA (the Bay Area, the Los Angeles Area, and Sacramento) depending upon the route taken to get to the SMR. Outside of California, a crude oil train could pass through a number of HTUA depending upon the route taken to get to California (i.e., Las Vegas, Denver, Seattle, etc.)

- UPRR also tests their main line rails in California every three to six months using a rail detector system, which uses ultrasonic sound waves to search the tracks for any internal issues. This is a key technology that helps to prevent broken rail derailments.

UPRR also has a capital track maintenance project in California that covers the replacement and upgrading of track. In the last five years UPRR has replaced over two million railroad ties and 452 miles of rail line in California (UPRR, 2014b).

UPRR also has a bridge inspection program that complies with 49 CFR Part 237-Bridge Safety Standards. This program is used to ensure the structural integrity of bridges, culverts, and tunnels. All bridges are inspected between one and three times per year. In the last five years, UPRR has upgraded 70 bridges in California (UPRR, 2014b).

As required by Federal law, UPRR has been installing Positive Train Control (PTC) on their main rail lines in California. The main line routes between Roseville/Colton and the SMR that would be used for the proposed project have been upgraded to include PTC. PTC is used to prevent train to train collisions, over-speed derailments, switch misalignment, and unauthorized entry into work zones (UPRR, 2014b).

The tracks along the mainline routes are also inspected by the FRA and CPUC rail inspectors. In discussions with the CPUC staff it was noted that the Coastal Line has very few deficiencies associated with the CPUC rail inspections (Roger Clugston CPUC ROSB Manager, 2014).

A QRA was prepared following the guidelines of the American Institute of Chemical Engineers, Center for Chemical Process Safety (CCPS, 1995). Appendix H.1 provides a detailed description of the QRA methodology and the parameters that were used for various QRA inputs. The three rail routes evaluated are shown in Figures 4.7-1 and 4.7-2. The QRA was used to determine the significance of an accident associated with crude oil transportation along each of the routes, assuming that all of the annual trains servicing the SMR used that specific route. Each of the major inputs to the QRA is discussed below.

Probability (e.g. Frequency) of a Derailment and Associated Crude Oil Spill

In order to identify the probability of an accident (i.e., accident rate or derailment rate) and oil spill (i.e., spill rate) from a crude oil train on each of the possible routes, Dr. Christopher Barkan was retained to conduct a quantitative assessment. Dr. Barkan is Professor and Executive Director of the Rail Transportation and Engineering Center at the Department of Civil and Environmental Engineering at the University of Illinois at Urbana- Champaign. He and his colleagues prepared a report (see Appendix H.2) that looked at route specific accident rates and spill rates based upon the tank car design proposed by the Applicant. The analysis took into account major risk factors, including route specific FRA track class, method of operation, tank car safety design, and the proposed volume of crude oil trains over the route.

In conducting the QRA the routes were divided into distinct segments based on rail characteristics and population density along the railroad. Segments are shown based on the population density adjacent to the railroad. Crude oil spill probabilities for each of routes and segments are shown in Tables 4.7.9 through 4.7.11.

Table 4.7.9 Summary of Unit Train Accident and Spill Rates by Segment for the Colton to SMR Route

Segment	*Segment Description*	*Length (miles)*	*Accident Probability (per mile)*	*Population Density (per sq.mi.)*	*# of Trains (per year)*	*Project Oil Spill with Ignition*			*Project Oil Spill with no Ignition*		
						All Spill Probability (per year)	*Small Spill Probability (per year)*	*Large Spill Probability (per year)*	*All Spill Probability (per year)*	*Small Spill Probability (per year)*	*Large Spill Probability (per year)*
1	Oso Flaco	2.8	4.30E-07	100	250	1.43E-06	8.42E-07	5.85E-07	1.43E-04	8.42E-05	5.85E-05
2	Nipomo	0.6	4.30E-07	1,000	250	3.28E-07	1.93E-07	1.34E-07	3.28E-05	1.93E-05	1.34E-05
3	Nipomo	1.5	4.30E-07	100	250	7.57E-07	4.47E-07	3.11E-07	7.57E-05	4.47E-05	3.11E-05
4	Guadalupe	1.3	4.30E-07	10,000	250	6.90E-07	4.07E-07	2.83E-07	6.90E-05	4.07E-05	2.83E-05
5	SMV	0.3	4.30E-07	100	250	1.57E-07	9.27E-08	6.44E-08	1.57E-05	9.27E-06	6.44E-06
6	Point Sal	13.8	4.30E-07	100	250	7.10E-06	4.19E-06	2.91E-06	7.10E-04	4.19E-04	2.91E-04
7	VAFB	13.5	4.30E-07	100	250	6.96E-06	4.11E-06	2.85E-06	6.96E-04	4.11E-04	2.85E-04
8	Rocky Point	14.7	4.30E-07	100	250	7.55E-06	4.45E-06	3.09E-06	7.55E-04	4.45E-04	3.09E-04
9	Hollister Ranch	13.0	4.30E-07	100	250	6.72E-06	3.96E-06	2.75E-06	6.72E-04	3.96E-04	2.75E-04
10	Gaviota Beach	0.5	4.30E-07	1,000	250	2.39E-07	1.41E-07	9.81E-08	2.39E-05	1.41E-05	9.81E-06
11	Gaviota	5.9	4.30E-07	100	250	3.01E-06	1.78E-06	1.24E-06	3.01E-04	1.78E-04	1.24E-04
12	Arroyo Quemado	0.3	4.30E-07	1,000	250	1.41E-07	8.33E-08	5.79E-08	1.41E-05	8.33E-06	5.79E-06
13	Tajiquas	2.9	4.30E-07	100	250	1.51E-06	8.93E-07	6.21E-07	1.51E-04	8.93E-05	6.21E-05
14	Refugio	0.2	4.30E-07	1,000	250	9.49E-08	5.60E-08	3.89E-08	9.49E-06	5.60E-06	3.89E-06
15	Canada del Corral	2.0	4.30E-07	100	250	1.02E-06	6.02E-07	4.18E-07	1.02E-04	6.02E-05	4.18E-05
16	El Capitan	0.8	4.30E-07	1,000	250	4.10E-07	2.42E-07	1.68E-07	4.10E-05	2.42E-05	1.68E-05
17	Naples	5.7	4.30E-07	100	250	2.92E-06	1.72E-06	1.20E-06	2.92E-04	1.72E-04	1.20E-04
18	Bacara	0.8	4.30E-07	1,000	250	3.88E-07	2.29E-07	1.59E-07	3.88E-05	2.29E-05	1.59E-05
19	Sandpiper	0.6	4.30E-07	100	250	2.98E-07	1.76E-07	1.22E-07	2.98E-05	1.76E-05	1.22E-05
20	Goleta	2.1	4.30E-07	3,000	250	1.08E-06	6.38E-07	4.43E-07	1.08E-04	6.38E-05	4.43E-05
21	Goleta	1.6	4.30E-07	1,000	250	8.40E-07	4.95E-07	3.44E-07	8.40E-05	4.95E-05	3.44E-05
22	Santa Barbara	9.5	4.30E-07	3,000	250	4.88E-06	2.88E-06	2.00E-06	4.88E-04	2.88E-04	2.00E-04
23	Santa Barbara	3.8	4.30E-07	10,000	250	1.96E-06	1.16E-06	8.05E-07	1.96E-04	1.16E-04	8.05E-05
24	Montecito	4.3	4.30E-07	3,000	250	2.19E-06	1.29E-06	9.00E-07	2.19E-04	1.29E-04	9.00E-05
25	Polo Grounds	0.9	4.30E-07	1,000	250	4.88E-07	2.88E-07	2.00E-07	4.88E-05	2.88E-05	2.00E-05
26	Padero Lane	0.5	4.30E-07	3,000	250	2.64E-07	1.56E-07	1.08E-07	2.64E-05	1.56E-05	1.08E-05
27	Carpinteria	2.8	4.30E-07	1,000	250	1.43E-06	8.45E-07	5.87E-07	1.43E-04	8.45E-05	5.87E-05
28	Carpinteria	1.3	4.30E-07	3,000	250	6.64E-07	3.92E-07	2.72E-07	6.64E-05	3.92E-05	2.72E-05
29	Carpinteria Bluffs	1.9	4.30E-07	1,000	250	9.58E-07	5.65E-07	3.93E-07	9.58E-05	5.65E-05	3.93E-05

Table 4.7.9 Summary of Unit Train Accident and Spill Rates by Segment for the Colton to SMR Route

Segment	Segment Description	Length (miles)	Accident Probability (per mile)	Population Density (per sq.mi.)	# of Trains (per year)	Project Oil Spill with Ignition			Project Oil Spill with no Ignition		
						All Spill Probability (per year)	Small Spill Probability (per year)	Large Spill Probability (per year)	All Spill Probability (per year)	Small Spill Probability (per year)	Large Spill Probability (per year)
30	Rincon	0.2	4.30E-07	3,000	250	1.21E-07	7.16E-08	4.98E-08	1.21E-05	7.16E-06	4.98E-06
31	La Concita Oil	1.7	4.30E-07	100	250	8.91E-07	5.26E-07	3.65E-07	8.91E-05	5.26E-05	3.65E-05
32	La Conchita	0.4	4.30E-07	3,000	250	2.13E-07	1.26E-07	8.75E-08	2.13E-05	1.26E-05	8.75E-06
33	Mussle Shoals	1.6	4.30E-07	1,000	250	8.19E-07	4.83E-07	3.36E-07	8.19E-05	4.83E-05	3.36E-05
34	Seacliff	0.9	4.30E-07	100	250	4.44E-07	2.62E-07	1.82E-07	4.44E-05	2.62E-05	1.82E-05
35	Faria/Solimar	4.5	4.30E-07	100	250	2.30E-06	1.36E-06	9.42E-07	2.30E-04	1.36E-04	9.42E-05
36	State Beaches	3.6	4.30E-07	100	250	1.86E-06	1.10E-06	7.62E-07	1.86E-04	1.10E-04	7.62E-05
37	Ventura	5.1	4.30E-07	3,000	250	2.62E-06	1.54E-06	1.07E-06	2.62E-04	1.54E-04	1.07E-04
38	Ventura Greenbelt	1.2	4.30E-07	1,000	250	5.92E-07	3.49E-07	2.43E-07	5.92E-05	3.49E-05	2.43E-05
39	Montalvo	1.0	4.30E-07	3,000	250	5.12E-07	3.02E-07	2.10E-07	5.12E-05	3.02E-05	2.10E-05
40	Santa Clara River	0.4	4.30E-07	100	250	2.02E-07	1.19E-07	8.27E-08	2.02E-05	1.19E-05	8.27E-06
41	Oxnard	4.1	4.30E-07	3,000	250	2.11E-06	1.24E-06	8.64E-07	2.11E-04	1.24E-04	8.64E-05
42	Oxnard Industrial	3.0	4.30E-07	1,000	250	1.55E-06	9.12E-07	6.33E-07	1.55E-04	9.12E-05	6.33E-05
43	Oxnard Ag	5.2	4.30E-07	100	250	2.66E-06	1.57E-06	1.09E-06	2.66E-04	1.57E-04	1.09E-04
44	Camarillo Comm	0.5	4.30E-07	1,000	250	2.79E-07	1.65E-07	1.14E-07	2.79E-05	1.65E-05	1.14E-05
45	Camarillo Ag	0.1	4.30E-07	100	250	4.28E-08	2.53E-08	1.76E-08	4.28E-06	2.53E-06	1.76E-06
46	Camarillo	2.5	4.30E-07	3,000	250	1.29E-06	7.63E-07	5.30E-07	1.29E-04	7.63E-05	5.30E-05
47	Somis	7.6	4.30E-07	100	250	3.89E-06	2.29E-06	1.59E-06	3.89E-04	2.29E-04	1.59E-04
48	Moorpark	1.1	4.30E-07	1,000	250	5.67E-07	3.34E-07	2.32E-07	5.67E-05	3.34E-05	2.32E-05
49	Moorpark	1.2	4.30E-07	3,000	250	5.92E-07	3.49E-07	2.43E-07	5.92E-05	3.49E-05	2.43E-05
50	Moorpark	2.1	4.30E-07	1,000	250	1.09E-06	6.44E-07	4.48E-07	1.09E-04	6.44E-05	4.48E-05
51	Los Alamos Cyn	0.8	4.30E-07	100	250	4.27E-07	2.52E-07	1.75E-07	4.27E-05	2.52E-05	1.75E-05
52	Simi Valley	1.1	4.30E-07	1,000	250	5.67E-07	3.34E-07	2.32E-07	5.67E-05	3.34E-05	2.32E-05
53	Simi Valley	6.8	4.30E-07	3,000	250	3.52E-06	2.08E-06	1.44E-06	3.52E-04	2.08E-04	1.44E-04
54	Santa Susana	1.6	4.30E-07	1,000	250	8.09E-07	4.77E-07	3.32E-07	8.09E-05	4.77E-05	3.32E-05
55	Santa Susana Pass	2.7	4.30E-07	100	250	1.38E-06	8.14E-07	5.66E-07	1.38E-04	8.14E-05	5.66E-05
56	Stoney Point	1.0	4.30E-07	1,000	250	4.99E-07	2.94E-07	2.05E-07	4.99E-05	2.94E-05	2.05E-05
57	Chatsworth	1.4	4.30E-07	3,000	250	7.16E-07	4.22E-07	2.94E-07	7.16E-05	4.22E-05	2.94E-05
58	Chatsworth	3.6	4.30E-07	10,000	250	1.84E-06	1.08E-06	7.54E-07	1.84E-04	1.08E-04	7.54E-05

Table 4.7.9 Summary of Unit Train Accident and Spill Rates by Segment for the Colton to SMR Route

Segment	*Segment Description*	*Length (miles)*	*Accident Probability (per mile)*	*Population Density (per sq.mi.)*	*# of Trains (per year)*	*Project Oil Spill with Ignition*			*Project Oil Spill with no Ignition*		
						All Spill Probability (per year)	*Small Spill Probability (per year)*	*Large Spill Probability (per year)*	*All Spill Probability (per year)*	*Small Spill Probability (per year)*	*Large Spill Probability (per year)*
59	Northridge	2.5	4.30E-07	10,000	250	1.31E-06	7.72E-07	5.36E-07	1.31E-04	7.72E-05	5.36E-05
60	Van Nyus AP	1.7	4.30E-07	3,000	250	8.91E-07	5.26E-07	3.65E-07	8.91E-05	5.26E-05	3.65E-05
61	North Hollywood	4.0	4.30E-07	10,000	250	2.08E-06	1.23E-06	8.53E-07	2.08E-04	1.23E-04	8.53E-05
62	Burbank	2.5	4.30E-07	10,000	250	1.31E-06	7.72E-07	5.36E-07	1.31E-04	7.72E-05	5.36E-05
63	Valhalla	0.7	4.30E-07	1,000	250	3.66E-07	2.16E-07	1.50E-07	3.66E-05	2.16E-05	1.50E-05
64	Burbank	1.8	4.30E-07	10,000	250	9.06E-07	5.35E-07	3.72E-07	9.06E-05	5.35E-05	3.72E-05
65	Burbank	0.4	4.30E-07	3,000	250	2.24E-07	1.32E-07	9.18E-08	2.24E-05	1.32E-05	9.18E-06
66	Glendale	2.9	4.30E-07	10,000	250	1.50E-06	8.87E-07	6.17E-07	1.50E-04	8.87E-05	6.17E-05
67	Atwater	3.3	4.30E-07	10,000	250	1.72E-06	1.01E-06	7.05E-07	1.72E-04	1.01E-04	7.05E-05
68	Elysian Park	5.8	4.30E-07	10,000	250	2.99E-06	1.77E-06	1.23E-06	2.99E-04	1.77E-04	1.23E-04
69	East Los Angeles	7.5	4.30E-07	10,000	250	3.87E-06	2.29E-06	1.59E-06	3.87E-04	2.29E-04	1.59E-04
70	San Gabriel Vly	6.0	4.30E-07	10,000	250	3.10E-06	1.83E-06	1.27E-06	3.10E-04	1.83E-04	1.27E-04
71	El Monte	0.4	4.30E-07	3,000	250	2.11E-07	1.24E-07	8.63E-08	2.11E-05	1.24E-05	8.63E-06
72	San Gabriel River	0.2	4.30E-07	1,000	250	1.21E-07	7.13E-08	4.96E-08	1.21E-05	7.13E-06	4.96E-06
73	La Puente	4.5	4.30E-07	3,000	250	2.32E-06	1.37E-06	9.50E-07	2.32E-04	1.37E-04	9.50E-05
74	La Puente-Walnut	7.9	4.30E-07	3,000	250	4.08E-06	2.41E-06	1.67E-06	4.08E-04	2.41E-04	1.67E-04
75	Walnut-Pomona	3.1	4.30E-07	3,000	250	1.62E-06	9.54E-07	6.63E-07	1.62E-04	9.54E-05	6.63E-05
76	Pomona	16.0	4.30E-07	3,000	250	8.23E-06	4.86E-06	3.37E-06	8.23E-04	4.86E-04	3.37E-04
77	Ontario	9.3	4.30E-07	3,000	250	4.81E-06	2.84E-06	1.97E-06	4.81E-04	2.84E-04	1.97E-04
78	Fontana	1.5	4.30E-07	1,000	250	7.83E-07	4.62E-07	3.21E-07	7.83E-05	4.62E-05	3.21E-05

Table 4.7.10 Summary of Unit Train Accident and Spill Rates by Segment for the Roseville to SMR via Oakland

Segment	*Segment Description*	*Length (miles)*	*Accident Probability (per mile)*	*Population Density (per sq.mi.)*	*# of Trains (per year)*	*Project Oil Spill with Ignition*			*Project Oil Spill with no Ignition*		
						All Spill Probability (per year)	*Small Spill Probability (per year)*	*Large Spill Probability (per year)*	*All Spill Probability (per year)*	*Small Spill Probability (per year)*	*Large Spill Probability (per year)*
1	Arroyo Grande	1.6	3.90E-07	1,000	250	7.24E-07	4.27E-07	2.97E-07	2.97E-08	7.24E-05	4.27E-05
2	Arroyo Grande	0.8	3.90E-07	100	250	3.73E-07	2.20E-07	1.53E-07	1.53E-08	3.73E-05	2.20E-05
3	Arroyo Grande	0.9	3.90E-07	1,000	250	4.39E-07	2.59E-07	1.80E-07	1.80E-08	4.39E-05	2.59E-05
4	Arroyo Grande	1.4	3.90E-07	100	250	6.45E-07	3.81E-07	2.65E-07	2.65E-08	6.45E-05	3.81E-05
5	Oceano	0.4	3.90E-07	3,000	250	1.88E-07	1.11E-07	7.71E-08	7.71E-09	1.88E-05	1.11E-05
6	Oceano	0.6	3.90E-07	10,000	250	2.92E-07	1.72E-07	1.20E-07	1.20E-08	2.92E-05	1.72E-05
7	Oceano	0.2	3.90E-07	3,000	250	1.12E-07	6.59E-08	4.58E-08	4.58E-09	1.12E-05	6.59E-06
8	Pismo/Grover	2.1	3.90E-07	10,000	250	9.80E-07	5.78E-07	4.02E-07	4.02E-08	9.80E-05	5.78E-05
9	Pismo	0.3	3.90E-07	3,000	250	1.35E-07	7.96E-08	5.53E-08	5.53E-09	1.35E-05	7.96E-06
10	Pismo	0.4	3.90E-07	1,000	250	1.72E-07	1.02E-07	7.06E-08	7.06E-09	1.72E-05	1.02E-05
11	Price Canyon	5.2	3.90E-07	100	250	2.42E-06	1.43E-06	9.93E-07	9.93E-08	2.42E-04	1.43E-04
12	Edna	0.6	3.90E-07	1,000	250	2.81E-07	1.66E-07	1.15E-07	1.15E-08	2.81E-05	1.66E-05
13	Edna	1.6	3.90E-07	100	250	7.56E-07	4.46E-07	3.10E-07	3.10E-08	7.56E-05	4.46E-05
14	San Luis Obispo	4.7	3.90E-07	10,000	250	2.18E-06	1.29E-06	8.94E-07	8.94E-08	2.18E-04	1.29E-04
15	San Luis Obispo	0.6	3.90E-07	3,000	250	2.64E-07	1.56E-07	1.08E-07	1.08E-08	2.64E-05	1.56E-05
16	Chorro	0.4	3.90E-07	1,000	250	1.99E-07	1.17E-07	8.16E-08	8.16E-09	1.99E-05	1.17E-05
17	Chorro	1.6	3.90E-07	100	250	7.31E-07	4.31E-07	3.00E-07	3.00E-08	7.31E-05	4.31E-05
18	CMC	0.8	3.90E-07	3,000	250	3.56E-07	2.10E-07	1.46E-07	1.46E-08	3.56E-05	2.10E-05
19	Santa Lucia	11.2	3.90E-07	100	250	5.22E-06	3.08E-06	2.14E-06	2.14E-07	5.22E-04	3.08E-04
20	Santa Margarita	0.9	3.90E-07	3,000	250	4.12E-07	2.43E-07	1.69E-07	1.69E-08	4.12E-05	2.43E-05
21	Phillips PS	0.9	3.90E-07	100	250	3.97E-07	2.34E-07	1.63E-07	1.63E-08	3.97E-05	2.34E-05
22	Atascadero	7.4	3.90E-07	1,000	250	3.46E-06	2.04E-06	1.42E-06	1.42E-07	3.46E-04	2.04E-04
23	Atascadero	1.6	3.90E-07	3,000	250	7.47E-07	4.41E-07	3.06E-07	3.06E-08	7.47E-05	4.41E-05
24	Atascadero	1.3	3.90E-07	1,000	250	5.95E-07	3.51E-07	2.44E-07	2.44E-08	5.95E-05	3.51E-05
25	Atascadero	0.4	3.90E-07	3,000	250	2.01E-07	1.19E-07	8.24E-08	8.24E-09	2.01E-05	1.19E-05
26	101	0.4	3.90E-07	1,000	250	1.71E-07	1.01E-07	7.00E-08	7.00E-09	1.71E-05	1.01E-05
27	Templeton	2.1	3.90E-07	3,000	250	9.99E-07	5.90E-07	4.10E-07	4.10E-08	9.99E-05	5.90E-05
28	Paso Robles	0.5	3.90E-07	1,000	250	2.40E-07	1.41E-07	9.83E-08	9.83E-09	2.40E-05	1.41E-05
29	Paso Robles	0.8	3.90E-07	3,000	250	3.93E-07	2.32E-07	1.61E-07	1.61E-08	3.93E-05	2.32E-05

Table 4.7.10 Summary of Unit Train Accident and Spill Rates by Segment for the Roseville to SMR via Oakland

Segment	Segment Description	Length (miles)	Accident Probability (per mile)	Population Density (per sq.mi.)	# of Trains (per year)	Project Oil Spill with Ignition			Project Oil Spill with no Ignition		
						All Spill Probability (per year)	Small Spill Probability (per year)	Large Spill Probability (per year)	All Spill Probability (per year)	Small Spill Probability (per year)	Large Spill Probability (per year)
30	Paso Robles	2.7	3.90E-07	1,000	250	1.28E-06	7.57E-07	5.26E-07	5.26E-08	1.28E-04	7.57E-05
31	Paso Robles	2.1	3.90E-07	3,000	250	9.99E-07	5.89E-07	4.10E-07	4.10E-08	9.99E-05	5.89E-05
32	Paso Robles	0.4	3.90E-07	10,000	250	2.03E-07	1.20E-07	8.32E-08	8.32E-09	2.03E-05	1.20E-05
33	Paso Robles	1.2	3.90E-07	3,000	250	5.43E-07	3.20E-07	2.23E-07	2.23E-08	5.43E-05	3.20E-05
34	101	2.1	3.90E-07	100	250	9.91E-07	5.84E-07	4.06E-07	4.06E-08	9.91E-05	5.84E-05
35	Wellsona	2.4	3.90E-07	1,000	250	1.14E-06	6.73E-07	4.68E-07	4.68E-08	1.14E-04	6.73E-05
36	101	1.9	3.90E-07	100	250	8.71E-07	5.14E-07	3.57E-07	3.57E-08	8.71E-05	5.14E-05
37	San Miguel	1.5	3.90E-07	3,000	250	6.86E-07	4.05E-07	2.81E-07	2.81E-08	6.86E-05	4.05E-05
38	101	2.7	3.90E-07	100	250	1.24E-06	7.31E-07	5.08E-07	5.08E-08	1.24E-04	7.31E-05
39	Camp Roberts	5.7	3.90E-07	100	250	2.67E-06	1.57E-06	1.09E-06	1.09E-07	2.67E-04	1.57E-04
40	Bradley	15.3	3.90E-07	100	250	7.15E-06	4.22E-06	2.93E-06	2.93E-07	7.15E-04	4.22E-04
41	San Lucas	18.5	3.90E-07	100	250	8.65E-06	5.10E-06	3.55E-06	3.55E-07	8.65E-04	5.10E-04
42	King City	1.5	3.90E-07	1,000	250	6.82E-07	4.02E-07	2.80E-07	2.80E-08	6.82E-05	4.02E-05
43	Clark Ranch	18.1	3.90E-07	100	250	8.45E-06	4.99E-06	3.46E-06	3.46E-07	8.45E-04	4.99E-04
44	Soledad	1.4	3.90E-07	1,000	250	6.63E-07	3.91E-07	2.72E-07	2.72E-08	6.63E-05	3.91E-05
45	Salinas Valley Ag	7.3	3.90E-07	100	250	3.43E-06	2.02E-06	1.41E-06	1.41E-07	3.43E-04	2.02E-04
46	Gonzales	1.2	3.90E-07	3,000	250	5.42E-07	3.20E-07	2.22E-07	2.22E-08	5.42E-05	3.20E-05
47	Salinas Valley Ag	5.0	3.90E-07	100	250	2.35E-06	1.39E-06	9.63E-07	9.63E-08	2.35E-04	1.39E-04
48	Chular	0.6	3.90E-07	1,000	250	2.98E-07	1.76E-07	1.22E-07	1.22E-08	2.98E-05	1.76E-05
49	Sprekles	7.8	3.90E-07	100	250	3.63E-06	2.14E-06	1.49E-06	1.49E-07	3.63E-04	2.14E-04
50	Salinas	3.9	3.90E-07	6,500	250	1.84E-06	1.08E-06	7.53E-07	7.53E-08	1.84E-04	1.08E-04
51	Salinas Valley Ag	6.2	3.90E-07	100	250	2.89E-06	1.70E-06	1.18E-06	1.18E-07	2.89E-04	1.70E-04
52	Castroville	1.1	3.90E-07	1,000	250	5.28E-07	3.11E-07	2.16E-07	2.16E-08	5.28E-05	3.11E-05
53	Las Lomas	15.4	3.90E-07	100	250	7.21E-06	4.26E-06	2.96E-06	2.96E-07	7.21E-04	4.26E-04
54	Aromas	12.1	3.90E-07	100	250	5.63E-06	3.32E-06	2.31E-06	2.31E-07	5.63E-04	3.32E-04
55	Gilroy	4.2	3.90E-07	3,000	250	1.95E-06	1.15E-06	8.01E-07	8.01E-08	1.95E-04	1.15E-04
56	San Martin	6.1	3.90E-07	100	250	2.83E-06	1.67E-06	1.16E-06	1.16E-07	2.83E-04	1.67E-04
57	Morgan Hill	3.8	3.90E-07	3,000	250	1.79E-06	1.06E-06	7.34E-07	7.34E-08	1.79E-04	1.06E-04
58	Coyote Valley	6.7	3.90E-07	100	250	3.12E-06	1.84E-06	1.28E-06	1.28E-07	3.12E-04	1.84E-04

Table 4.7.10 Summary of Unit Train Accident and Spill Rates by Segment for the Roseville to SMR via Oakland

Segment	Segment Description	Length (miles)	Accident Probability (per mile)	Population Density (per sq.mi.)	# of Trains (per year)	Project Oil Spill with Ignition			Project Oil Spill with no Ignition		
						All Spill Probability (per year)	Small Spill Probability (per year)	Large Spill Probability (per year)	All Spill Probability (per year)	Small Spill Probability (per year)	Large Spill Probability (per year)
59	San Jose	6.3	3.90E-07	5,000	250	2.96E-06	1.75E-06	1.21E-06	1.21E-07	2.96E-04	1.75E-04
60	Seven Trees	1.9	3.90E-07	1,000	250	8.69E-07	5.13E-07	3.56E-07	3.56E-08	8.69E-05	5.13E-05
61	San Jose	5.0	3.90E-07	10,000	250	2.32E-06	1.37E-06	9.50E-07	9.50E-08	2.32E-04	1.37E-04
62	Santa Clara	5.1	3.90E-07	6,500	250	2.39E-06	1.41E-06	9.79E-07	9.79E-08	2.39E-04	1.41E-04
63	Alviso	1.7	3.90E-07	1,000	250	8.03E-07	4.74E-07	3.29E-07	3.29E-08	8.03E-05	4.74E-05
64	Drawbridge	5.7	3.90E-07	100	250	2.66E-06	1.57E-06	1.09E-06	1.09E-07	2.66E-04	1.57E-04
65	Newark	2.3	3.90E-07	1,000	250	1.05E-06	6.20E-07	4.31E-07	4.31E-08	1.05E-04	6.20E-05
66	Newark to Russell	11.3	3.90E-07	10,000	250	5.30E-06	3.13E-06	2.17E-06	2.17E-07	5.30E-04	3.13E-04
67	San Lorenzo	0.8	3.90E-07	3,000	250	3.73E-07	2.20E-07	1.53E-07	1.53E-08	3.73E-05	2.20E-05
68	San Leandro	1.3	3.90E-07	10,000	250	5.98E-07	3.53E-07	2.45E-07	2.45E-08	5.98E-05	3.53E-05
69	San Leandro	0.7	3.90E-07	3,000	250	3.37E-07	1.99E-07	1.38E-07	1.38E-08	3.37E-05	1.99E-05
70	Oakland	5.3	3.90E-07	10,000	250	2.46E-06	1.45E-06	1.01E-06	1.01E-07	2.46E-04	1.45E-04
71	Oakland	1.4	3.90E-07	3,000	250	6.40E-07	3.78E-07	2.62E-07	2.62E-08	6.40E-05	3.78E-05
72	Oakland	1.6	3.90E-07	10,000	250	7.57E-07	4.46E-07	3.10E-07	3.10E-08	7.57E-05	4.46E-05
73	Oakland	1.4	3.90E-07	3,000	250	6.31E-07	3.72E-07	2.59E-07	2.59E-08	6.31E-05	3.72E-05
74	Oakland	1.5	3.90E-07	10,000	250	7.19E-07	4.24E-07	2.95E-07	2.95E-08	7.19E-05	4.24E-05
75	Oakland	2.7	3.90E-07	3,000	250	1.25E-06	7.36E-07	5.11E-07	5.11E-08	1.25E-04	7.36E-05
76	Emeryville	1.5	3.90E-07	10,000	250	6.77E-07	4.00E-07	2.78E-07	2.78E-08	6.77E-05	4.00E-05
77	Berkeley	1.0	3.90E-07	3,000	250	4.72E-07	2.78E-07	1.93E-07	1.93E-08	4.72E-05	2.78E-05
78	Berkeley	1.8	3.90E-07	10,000	250	8.17E-07	4.82E-07	3.35E-07	3.35E-08	8.17E-05	4.82E-05
79	Richmond	1.5	3.90E-07	3,000	250	7.01E-07	4.13E-07	2.87E-07	2.87E-08	7.01E-05	4.13E-05
80	Richmond	3.8	3.90E-07	10,000	250	1.76E-06	1.04E-06	7.20E-07	7.20E-08	1.76E-04	1.04E-04
81	North Richmond	1.1	3.90E-07	3,000	250	4.90E-07	2.89E-07	2.01E-07	2.01E-08	4.90E-05	2.89E-05
82	San Pablo	2.5	3.90E-07	1,000	250	1.16E-06	6.86E-07	4.77E-07	4.77E-08	1.16E-04	6.86E-05
83	Sobranto	1.8	3.90E-07	100	250	8.17E-07	4.82E-07	3.35E-07	3.35E-08	8.17E-05	4.82E-05
84	Hercules	5.6	3.90E-07	1,000	250	2.62E-06	1.55E-06	1.07E-06	1.07E-07	2.62E-04	1.55E-04
85	Selby	1.7	3.90E-07	100	250	7.89E-07	4.66E-07	3.24E-07	3.24E-08	7.89E-05	4.66E-05
86	Crockett	1.6	3.90E-07	1,000	250	7.29E-07	4.30E-07	2.99E-07	2.99E-08	7.29E-05	4.30E-05
87	Port Costa	4.3	3.90E-07	100	250	2.01E-06	1.19E-06	8.25E-07	8.25E-08	2.01E-04	1.19E-04

Table 4.7.10 Summary of Unit Train Accident and Spill Rates by Segment for the Roseville to SMR via Oakland

Segment	Segment Description	Length (miles)	Accident Probability (per mile)	Population Density (per sq.mi.)	# of Trains (per year)	Project Oil Spill with Ignition			Project Oil Spill with no Ignition		
						All Spill Probability (per year)	Small Spill Probability (per year)	Large Spill Probability (per year)	All Spill Probability (per year)	Small Spill Probability (per year)	Large Spill Probability (per year)
88	Martinez	0.5	3.90E-07	1,000	250	2.26E-07	1.34E-07	9.28E-08	9.28E-09	2.26E-05	1.34E-05
89	Suisun Pt Channel	2.6	3.90E-07	100	250	1.20E-06	7.08E-07	4.92E-07	4.92E-08	1.20E-04	7.08E-05
90	Benicia	3.5	3.90E-07	1,000	250	1.63E-06	9.65E-07	6.70E-07	6.70E-08	1.63E-04	9.65E-05
91	Grizzly Bay	10.6	3.90E-07	100	250	4.94E-06	2.92E-06	2.03E-06	2.03E-07	4.94E-04	2.92E-04
92	Fairfield	3.8	3.90E-07	3,000	250	1.78E-06	1.05E-06	7.32E-07	7.32E-08	1.78E-04	1.05E-04
93	Elmira	13.7	3.90E-07	100	250	6.40E-06	3.78E-06	2.62E-06	2.62E-07	6.40E-04	3.78E-04
94	Dixon	2.1	3.90E-07	1,000	250	1.00E-06	5.90E-07	4.10E-07	4.10E-08	1.00E-04	5.90E-05
95	Solano Co Ag	6.6	3.90E-07	100	250	3.09E-06	1.82E-06	1.27E-06	1.27E-07	3.09E-04	1.82E-04
96	Davis	3.5	3.90E-07	1,000	250	1.65E-06	9.73E-07	6.76E-07	6.76E-08	1.65E-04	9.73E-05
97	Yolo Co Ag	7.0	3.90E-07	100	250	3.27E-06	1.93E-06	1.34E-06	1.34E-07	3.27E-04	1.93E-04
98	Sacramento	3.3	3.90E-07	3,000	250	1.52E-06	8.96E-07	6.22E-07	6.22E-08	1.52E-04	8.96E-05
99	Sacramento River	0.4	3.90E-07	100	250	1.96E-07	1.16E-07	8.05E-08	8.05E-09	1.96E-05	1.16E-05
100	Sacramento	2.5	3.90E-07	10,000	250	1.15E-06	6.78E-07	4.71E-07	4.71E-08	1.15E-04	6.78E-05
101	Parkland	1.6	3.90E-07	100	250	7.57E-07	4.46E-07	3.10E-07	3.10E-08	7.57E-05	4.46E-05
102	Sacramento	3.1	3.90E-07	3,000	250	1.45E-06	8.54E-07	5.94E-07	5.94E-08	1.45E-04	8.54E-05
103	North Highlands	2.6	3.90E-07	1,000	250	1.21E-06	7.11E-07	4.94E-07	4.94E-08	1.21E-04	7.11E-05
104	North Highlands	4.4	3.90E-07	3,000	250	2.04E-06	1.20E-06	8.37E-07	8.37E-08	2.04E-04	1.20E-04
105	Roseville Yard	1.3	3.90E-07	100	250	5.89E-07	3.47E-07	2.41E-07	2.41E-08	5.89E-05	3.47E-05

Table 4.7.11 Summary of Unit Train Accident and Spill Rates by Segment for the Roseville to SMR via Altamont Pass

Segment	Segment Description	Length (miles)	Accident Probability (per mile)	Population Density (per sq.mi.)	# of Trains (per year)	Project Oil Spill with Ignition			Project Oil Spill with no Ignition		
						All Spill Probability (per year)	Small Spill Probability (per year)	Large Spill Probability (per year)	All Spill Probability (per year)	Small Spill Probability (per year)	Large Spill Probability (per year)
1	Arroyo Grande	1.6	5.10E-07	1,000	250	9.47E-07	5.59E-07	3.88E-07	3.88E-08	9.47E-05	5.59E-05
2	Arroyo Grande	0.8	5.10E-07	100	250	4.88E-07	2.88E-07	2.00E-07	2.00E-08	4.88E-05	2.88E-05
3	Arroyo Grande	0.9	5.10E-07	1,000	250	5.74E-07	3.39E-07	2.35E-07	2.35E-08	5.74E-05	3.39E-05
4	Arroyo Grande	1.4	5.10E-07	100	250	8.44E-07	4.98E-07	3.46E-07	3.46E-08	8.44E-05	4.98E-05
5	Oceano	0.4	5.10E-07	3,000	250	2.46E-07	1.45E-07	1.01E-07	1.01E-08	2.46E-05	1.45E-05
6	Oceano	0.6	5.10E-07	10,000	250	3.81E-07	2.25E-07	1.56E-07	1.56E-08	3.81E-05	2.25E-05
7	Oceano	0.2	5.10E-07	3,000	250	1.46E-07	8.61E-08	5.99E-08	5.99E-09	1.46E-05	8.61E-06
8	Pismo/Grover	2.1	5.10E-07	10,000	250	1.28E-06	7.56E-07	5.25E-07	5.25E-08	1.28E-04	7.56E-05
9	Pismo	0.3	5.10E-07	3,000	250	1.76E-07	1.04E-07	7.23E-08	7.23E-09	1.76E-05	1.04E-05
10	Pismo	0.4	5.10E-07	1,000	250	2.25E-07	1.33E-07	9.23E-08	9.23E-09	2.25E-05	1.33E-05
11	Price Canyon	5.2	5.10E-07	100	250	3.17E-06	1.87E-06	1.30E-06	1.30E-07	3.17E-04	1.87E-04
12	Edna	0.6	5.10E-07	1,000	250	3.67E-07	2.17E-07	1.51E-07	1.51E-08	3.67E-05	2.17E-05
13	Edna	1.6	5.10E-07	100	250	9.89E-07	5.83E-07	4.05E-07	4.05E-08	9.89E-05	5.83E-05
14	San Luis Obispo	4.7	5.10E-07	10,000	250	2.85E-06	1.68E-06	1.17E-06	1.17E-07	2.85E-04	1.68E-04
15	San Luis Obispo	0.6	5.10E-07	3,000	250	3.45E-07	2.04E-07	1.42E-07	1.42E-08	3.45E-05	2.04E-05
16	Chorro	0.4	5.10E-07	1,000	250	2.60E-07	1.54E-07	1.07E-07	1.07E-08	2.60E-05	1.54E-05
17	Chorro	1.6	5.10E-07	100	250	9.56E-07	5.64E-07	3.92E-07	3.92E-08	9.56E-05	5.64E-05
18	CMC	0.8	5.10E-07	3,000	250	4.66E-07	2.75E-07	1.91E-07	1.91E-08	4.66E-05	2.75E-05
19	Santa Lucia	11.2	5.10E-07	100	250	6.83E-06	4.03E-06	2.80E-06	2.80E-07	6.83E-04	4.03E-04
20	Santa Margarita	0.9	5.10E-07	3,000	250	5.39E-07	3.18E-07	2.21E-07	2.21E-08	5.39E-05	3.18E-05
21	Phillips PS	0.9	5.10E-07	100	250	5.19E-07	3.06E-07	2.13E-07	2.13E-08	5.19E-05	3.06E-05
22	Atascadero	7.4	5.10E-07	1,000	250	4.52E-06	2.67E-06	1.85E-06	1.85E-07	4.52E-04	2.67E-04
23	Atascadero	1.6	5.10E-07	3,000	250	9.77E-07	5.77E-07	4.01E-07	4.01E-08	9.77E-05	5.77E-05
24	Atascadero	1.3	5.10E-07	1,000	250	7.77E-07	4.59E-07	3.19E-07	3.19E-08	7.77E-05	4.59E-05
25	Atascadero	0.4	5.10E-07	3,000	250	2.63E-07	1.55E-07	1.08E-07	1.08E-08	2.63E-05	1.55E-05
26	101	0.4	5.10E-07	1,000	250	2.23E-07	1.32E-07	9.16E-08	9.16E-09	2.23E-05	1.32E-05
27	Templeton	2.1	5.10E-07	3,000	250	1.31E-06	7.71E-07	5.36E-07	5.36E-08	1.31E-04	7.71E-05
28	Paso Robles	0.5	5.10E-07	1,000	250	3.14E-07	1.85E-07	1.29E-07	1.29E-08	3.14E-05	1.85E-05
29	Paso Robles	0.8	5.10E-07	3,000	250	5.14E-07	3.03E-07	2.11E-07	2.11E-08	5.14E-05	3.03E-05

Table 4.7.11 Summary of Unit Train Accident and Spill Rates by Segment for the Roseville to SMR via Altamont Pass

Segment	Segment Description	Length (miles)	Accident Probability (per mile)	Population Density (per sq.mi.)	# of Trains (per year)	Project Oil Spill with Ignition			Project Oil Spill with no Ignition		
						All Spill Probability (per year)	Small Spill Probability (per year)	Large Spill Probability (per year)	All Spill Probability (per year)	Small Spill Probability (per year)	Large Spill Probability (per year)
30	Paso Robles	2.7	5.10E-07	1,000	250	1.68E-06	9.90E-07	6.88E-07	6.88E-08	1.68E-04	9.90E-05
31	Paso Robles	2.1	5.10E-07	3,000	250	1.31E-06	7.71E-07	5.36E-07	5.36E-08	1.31E-04	7.71E-05
32	Paso Robles	0.4	5.10E-07	10,000	250	2.65E-07	1.57E-07	1.09E-07	1.09E-08	2.65E-05	1.57E-05
33	Paso Robles	1.2	5.10E-07	3,000	250	7.10E-07	4.19E-07	2.91E-07	2.91E-08	7.10E-05	4.19E-05
34	101	2.1	5.10E-07	100	250	1.30E-06	7.64E-07	5.31E-07	5.31E-08	1.30E-04	7.64E-05
35	Wellsona	2.4	5.10E-07	1,000	250	1.49E-06	8.81E-07	6.12E-07	6.12E-08	1.49E-04	8.81E-05
36	101	1.9	5.10E-07	100	250	1.14E-06	6.72E-07	4.67E-07	4.67E-08	1.14E-04	6.72E-05
37	San Miguel	1.5	5.10E-07	3,000	250	8.97E-07	5.29E-07	3.68E-07	3.68E-08	8.97E-05	5.29E-05
38	101	2.7	5.10E-07	100	250	1.62E-06	9.55E-07	6.64E-07	6.64E-08	1.62E-04	9.55E-05
39	Camp Roberts	5.7	5.10E-07	100	250	3.49E-06	2.06E-06	1.43E-06	1.43E-07	3.49E-04	2.06E-04
40	Bradley	15.3	5.10E-07	100	250	9.35E-06	5.51E-06	3.83E-06	3.83E-07	9.35E-04	5.51E-04
41	San Lucas	18.5	5.10E-07	100	250	1.13E-05	6.67E-06	4.64E-06	4.64E-07	1.13E-03	6.67E-04
42	King City	1.5	5.10E-07	1,000	250	8.92E-07	5.26E-07	3.66E-07	3.66E-08	8.92E-05	5.26E-05
43	Clark Ranch	18.1	5.10E-07	100	250	1.11E-05	6.52E-06	4.53E-06	4.53E-07	1.11E-03	6.52E-04
44	Soledad	1.4	5.10E-07	1,000	250	8.67E-07	5.12E-07	3.56E-07	3.56E-08	8.67E-05	5.12E-05
45	Salinas Valley Ag	7.3	5.10E-07	100	250	4.48E-06	2.65E-06	1.84E-06	1.84E-07	4.48E-04	2.65E-04
46	Gonzales	1.2	5.10E-07	3,000	250	7.09E-07	4.18E-07	2.91E-07	2.91E-08	7.09E-05	4.18E-05
47	Salinas Valley Ag	5.0	5.10E-07	100	250	3.07E-06	1.81E-06	1.26E-06	1.26E-07	3.07E-04	1.81E-04
48	Chular	0.6	5.10E-07	1,000	250	3.89E-07	2.30E-07	1.60E-07	1.60E-08	3.89E-05	2.30E-05
49	Sprekles	7.8	5.10E-07	100	250	4.75E-06	2.80E-06	1.95E-06	1.95E-07	4.75E-04	2.80E-04
50	Salinas	3.9	5.10E-07	6,500	250	2.40E-06	1.42E-06	9.84E-07	9.84E-08	2.40E-04	1.42E-04
51	Salinas Valley Ag	6.2	5.10E-07	100	250	3.78E-06	2.23E-06	1.55E-06	1.55E-07	3.78E-04	2.23E-04
52	Castroville	1.1	5.10E-07	1,000	250	6.90E-07	4.07E-07	2.83E-07	2.83E-08	6.90E-05	4.07E-05
53	Las Lomas	15.4	5.10E-07	100	250	9.43E-06	5.56E-06	3.87E-06	3.87E-07	9.43E-04	5.56E-04
54	Aromas	12.1	5.10E-07	100	250	7.36E-06	4.34E-06	3.02E-06	3.02E-07	7.36E-04	4.34E-04
55	Gilroy	4.2	5.10E-07	3,000	250	2.55E-06	1.51E-06	1.05E-06	1.05E-07	2.55E-04	1.51E-04
56	San Martin	6.1	5.10E-07	100	250	3.70E-06	2.18E-06	1.52E-06	1.52E-07	3.70E-04	2.18E-04
57	Morgan Hill	3.8	5.10E-07	3,000	250	2.34E-06	1.38E-06	9.59E-07	9.59E-08	2.34E-04	1.38E-04
58	Coyote Valley	6.7	5.10E-07	100	250	4.07E-06	2.40E-06	1.67E-06	1.67E-07	4.07E-04	2.40E-04

Table 4.7.11 Summary of Unit Train Accident and Spill Rates by Segment for the Roseville to SMR via Altamont Pass

Segment	Segment Description	Length (miles)	Accident Probability (per mile)	Population Density (per sq.mi.)	# of Trains (per year)	Project Oil Spill with Ignition			Project Oil Spill with no Ignition		
						All Spill Probability (per year)	Small Spill Probability (per year)	Large Spill Probability (per year)	All Spill Probability (per year)	Small Spill Probability (per year)	Large Spill Probability (per year)
59	San Jose	6.3	5.10E-07	5,000	250	3.87E-06	2.28E-06	1.59E-06	1.59E-07	3.87E-04	2.28E-04
60	Seven Trees	1.9	5.10E-07	1,000	250	1.14E-06	6.70E-07	4.66E-07	4.66E-08	1.14E-04	6.70E-05
61	San Jose	5.0	5.10E-07	10,000	250	3.03E-06	1.79E-06	1.24E-06	1.24E-07	3.03E-04	1.79E-04
62	Santa Clara	5.1	5.10E-07	6,500	250	3.12E-06	1.84E-06	1.28E-06	1.28E-07	3.12E-04	1.84E-04
63	Alviso	1.7	5.10E-07	1,000	250	1.05E-06	6.20E-07	4.31E-07	4.31E-08	1.05E-04	6.20E-05
64	Drawbridge	5.7	5.10E-07	100	250	3.48E-06	2.05E-06	1.43E-06	1.43E-07	3.48E-04	2.05E-04
65	Newark	2.3	5.10E-07	1,000	250	1.37E-06	8.11E-07	5.64E-07	5.64E-08	1.37E-04	8.11E-05
107	Newark	3.1	5.10E-07	10,000	250	1.90E-06	1.12E-06	7.79E-07	7.79E-08	1.90E-04	1.12E-04
108	Fremont	3.2	5.10E-07	10,000	250	1.97E-06	1.16E-06	8.06E-07	8.06E-08	1.97E-04	1.16E-04
109	Sunol	6.8	5.10E-07	100	250	4.17E-06	2.46E-06	1.71E-06	1.71E-07	4.17E-04	2.46E-04
110	Pleasanton	1.8	5.10E-07	1,000	250	1.09E-06	6.42E-07	4.46E-07	4.46E-08	1.09E-04	6.42E-05
111	Pleasanton	2.5	5.10E-07	3,000	250	1.52E-06	8.97E-07	6.24E-07	6.24E-08	1.52E-04	8.97E-05
112	Pleasanton	3.0	5.10E-07	100	250	1.81E-06	1.07E-06	7.44E-07	7.44E-08	1.81E-04	1.07E-04
113	Livermore	5.0	5.10E-07	5,000	250	3.08E-06	1.82E-06	1.26E-06	1.26E-07	3.08E-04	1.82E-04
114	Livermore	2.5	5.10E-07	1,000	250	1.51E-06	8.90E-07	6.19E-07	6.19E-08	1.51E-04	8.90E-05
115	Altamont	14.2	5.10E-07	100	250	8.67E-06	5.12E-06	3.56E-06	3.56E-07	8.67E-04	5.12E-04
116	Tracy	3.9	5.10E-07	3,000	250	2.36E-06	1.39E-06	9.67E-07	9.67E-08	2.36E-04	1.39E-04
117	Lathrop	8.2	5.10E-07	100	250	5.01E-06	2.96E-06	2.05E-06	2.05E-07	5.01E-04	2.96E-04
118	French Camp	8.0	5.10E-07	1,000	250	4.89E-06	2.88E-06	2.00E-06	2.00E-07	4.89E-04	2.88E-04
119	Stockton	7.9	5.10E-07	10,000	250	4.83E-06	2.85E-06	1.98E-06	1.98E-07	4.83E-04	2.85E-04
120	Lodi	4.1	5.10E-07	100	250	2.47E-06	1.46E-06	1.01E-06	1.01E-07	2.47E-04	1.46E-04
121	Lodi	3.4	5.10E-07	5,000	250	2.07E-06	1.22E-06	8.49E-07	8.49E-08	2.07E-04	1.22E-04
122	Acampo	5.5	5.10E-07	100	250	3.36E-06	1.98E-06	1.38E-06	1.38E-07	3.36E-04	1.98E-04
123	Galt	1.6	5.10E-07	4,000	250	9.53E-07	5.62E-07	3.91E-07	3.91E-08	9.53E-05	5.62E-05
124	Hicksville	8.6	5.10E-07	100	250	5.24E-06	3.09E-06	2.15E-06	2.15E-07	5.24E-04	3.09E-04
125	Elk Grove	1.0	5.10E-07	100	250	5.83E-07	3.44E-07	2.39E-07	2.39E-08	5.83E-05	3.44E-05
126	Elk Grove	5.8	5.10E-07	5,000	250	3.52E-06	2.08E-06	1.44E-06	1.44E-07	3.52E-04	2.08E-04
127	Sacramento	4.2	5.10E-07	1,000	250	2.57E-06	1.51E-06	1.05E-06	1.05E-07	2.57E-04	1.51E-04
128	Sacramento	4.6	5.10E-07	10,000	250	2.78E-06	1.64E-06	1.14E-06	1.14E-07	2.78E-04	1.64E-04

Table 4.7.11 Summary of Unit Train Accident and Spill Rates by Segment for the Roseville to SMR via Altamont Pass

Segment	*Segment Description*	*Length (miles)*	*Accident Probability (per mile)*	*Population Density (per sq.mi.)*	*# of Trains (per year)*	*Project Oil Spill with Ignition*			*Project Oil Spill with no Ignition*		
						All Spill Probability (per year)	*Small Spill Probability (per year)*	*Large Spill Probability (per year)*	*All Spill Probability (per year)*	*Small Spill Probability (per year)*	*Large Spill Probability (per year)*
101	Parkland	0.8	5.10E-07	100	250	4.94E-07	2.91E-07	2.02E-07	2.02E-08	4.94E-05	2.91E-05
102	Sacramento	3.1	5.10E-07	3,000	250	1.89E-06	1.11E-06	7.74E-07	7.74E-08	1.89E-04	1.11E-04
103	North Highlands	2.6	5.10E-07	1,000	250	1.56E-06	9.23E-07	6.41E-07	6.41E-08	1.56E-04	9.23E-05
104	North Highlands	4.4	5.10E-07	3,000	250	2.67E-06	1.57E-06	1.09E-06	1.09E-07	2.67E-04	1.57E-04
105	Roseville Yard	1.3	5.10E-07	100	250	7.70E-07	4.54E-07	3.16E-07	3.16E-08	7.70E-05	4.54E-05

The results of this analysis showed that the probability of a crude oil release incident exceeding 100 gallons or more would range between one every 46 years to once every 76 years depending upon the rail route used to get to the SMR. These probabilities of a release are only for the portion of the routes between Roseville/Colton and the SMR. As discussed below, the probability of a release of crude oil would be greater for the entire route in California and for the full length of the train route (crude source location to SMR).

Consequence Modeling Results

As with the refinery spill analysis, several crude oil spill scenarios were modeled to evaluate worst-case thermal radiation hazards associated with a large crude oil fire. Modeled scenarios ranged from small releases from a tank car, to the complete loss of multiple tank cars. The worst case spill was assumed to be 180,000 gallons (about six tanker cars). An explosion of tank cars, simulated as a Boiling Liquid Expanding Vapor Explosion (BLEVE), was also evaluated. The worst-case thermal radiation and explosion hazard distance are provided in Table 4.7.12. The modeling input data and results for these hazards are provided in Appendix H.3. A 100-gallon spill was used as the cut off from the hazards analysis since below that level the hazard zones would likely be contained to the railroad right-of-way, and explosions would be unlikely since 100-gallon spill fire would not generate enough thermal radiation for a long enough period of time to produce a BLEVE.

Table 4.7.12 Worst Case Mainline Rail Hazard Zones

Thermal Radiation Hazard Zones (feet)		
Wind Speed (meters/second)	**5 kw/m^2**	**10 kw/m^2**
1	745	407
3	856	436
5	938	495
7	1,063	495
10	1,204	541
15	1,335	728
20	1,404	958
BLEVE Hazard Zones (feet)		
40 kj/m^2	1,690	
150 kj/m^2	860	
196 kj/m^2	643	

See Appendix H.3 for the detailed consequence modeling results.
See Appendix H.1 for a description of on the consequences associated with these hazards.

These modeling results, known as consequence modeling, were then used along with the spill probability and population densities to estimate the overall risk of injury and fatality for each of the routes. These hazard zones would be the same for the entire rail route within California and all the way back to the source of the crude oil.

Quantitative Risk Assessment Results

The results of the QRA are presented in Figure 4.7-5 as risk profiles. The risk profiles for each route assume that all 250 trains per year use route. The level of risk for the Rail Spur Project along the three potential mainline rail routes is represented by the solid green, red and blue lines in Figure 4.7-5. The graph on the left shows the risk for potential injuries, while the graph on the right shows the risk for potential fatalities. Because maximum risks from proposed transport of crude oil are above the significant risk threshold (dashed green line), impacts would be considered potentially significant. These risk profiles represent the cumulative risk along the entire route. The risk within any individual City or County would be considerably less. The risk is primarily driven by the HTUA (Los Angeles Area, Bay Area, and Sacramento) since these are the locations where fairly long stretches of track are in close proximity to heavily populated areas.

The diagonal dashed green and red lines in Figure 4.7-5 represent the significant risk threshold for insignificant (green) and significant and unavoidable (red) risk. If the risk falls between the dashed green and red lines, the impact remains significant, but risk may be viewed as acceptable if all feasible mitigation has been identified and implemented.

Public Safety Impacts beyond Roseville and Colton Yards

Beyond the two UPRR Yards, trains could travel any number of routes (refer to Figure 2-8). Also, crude oil delivered to California by UPRR would generally pass through either of these two rail yards in route to the SMR.

Depending upon the source of the crude oil, crude oil trains could use any portion of the UPRR network between Roseville/Colton and the source location for the crude oil. The exact route that would be taken would depend upon a number of factors, that could include the source of the crude oil, weather conditions, train traffic conditions, etc.

While the exact route the trains would take to get to these two rail yards is somewhat speculative, all of the routes within and outside of California would traverse populated areas that could be impacted in the event of a release that resulted in a fire or explosion. Train accident rates are typically determined based upon “accidents per million miles traveled”. As the miles a train travels increase the probability of an accident increases. Therefore, when the miles traveled beyond Roseville or Colton is included the overall probability of an accident would increase.

This EIR has evaluated several routes between the Colton or Roseville rail yards to the state line to determine the route specific accident rates for areas beyond Roseville and Colton. For the routes past these two rail yards the train would have to use track that the CPUC has determined are LSHS. From Roseville, rail traffic would likely follow two different routes; one following the UPRR following the I-80 corridor to Reno, Nevada, with the other heading north along the I-5 corridor to Oregon. A third route through the Feather River Canyon was not considered for further analysis. From Colton, the rail route would traverse north and east through the Cajon Pass, Barstow, the Mojave Desert, and enter Nevada southwest of Las Vegas. In conducting the QRA the routes were divided into distinct segments based on rail characteristics and population density along the railroad. Segments are shown based on the population density adjacent to the railroad. Crude oil spill probabilities for each of routes and segments are shown in Figure 4.7-6 and Tables 4.7.13 through 4.7.17.

Figure 4.7-5 Risk Associated with Mainline Rail Crude Oil Unit Train Transportation

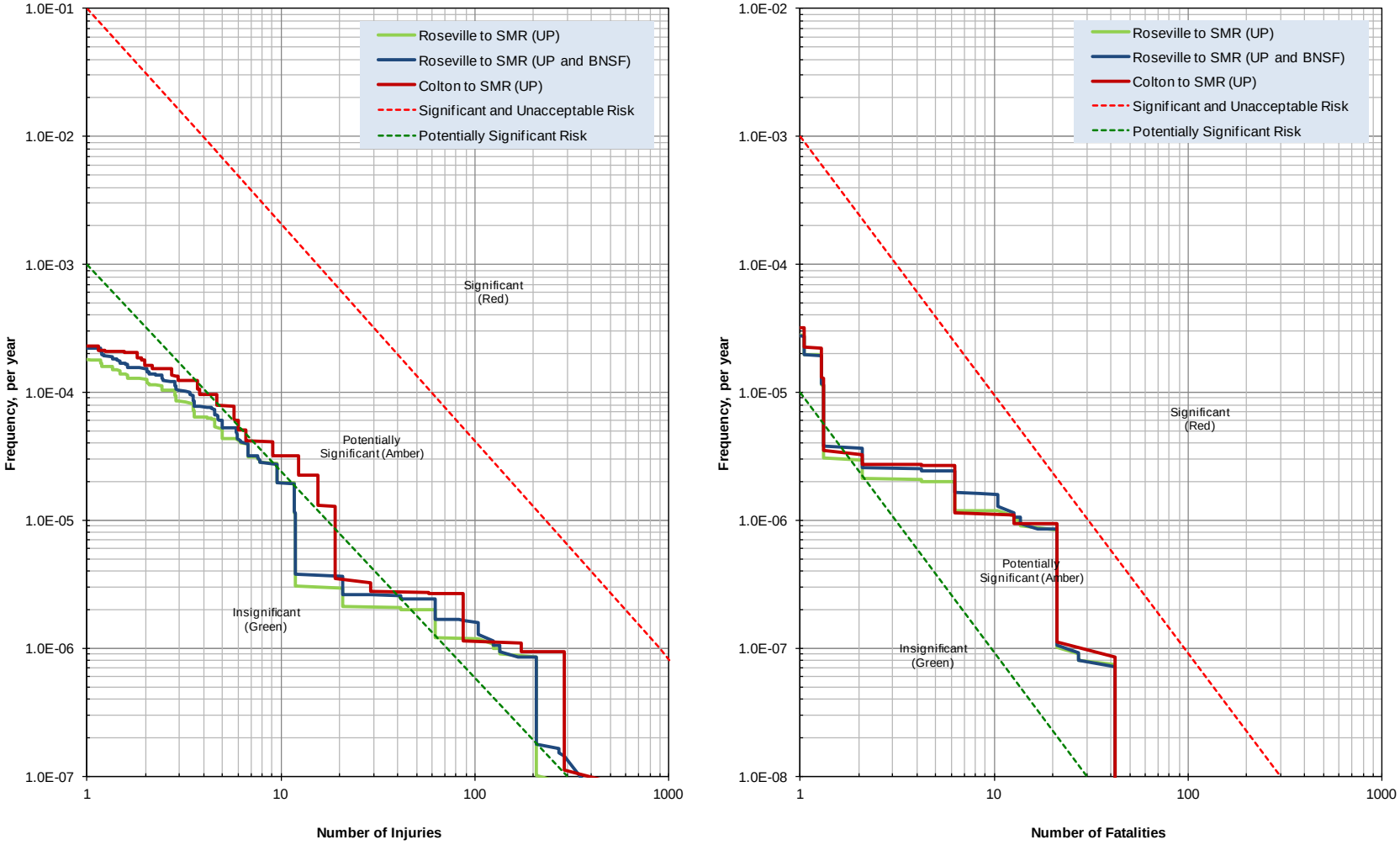


Figure 4.7-6 UPRR Route and Population Densities (SMR Nevada and Oregon Routes)

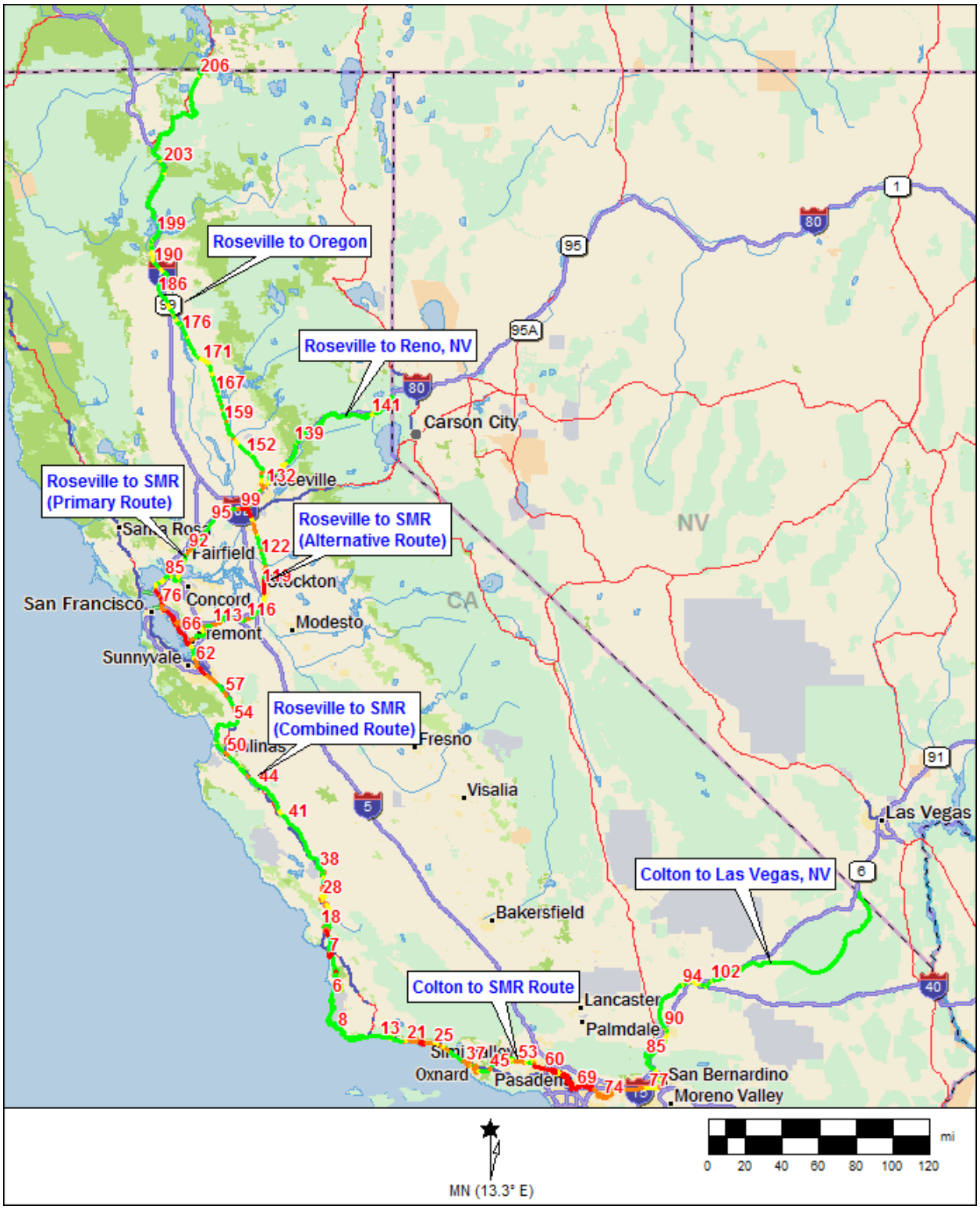


Table 4.7.13 Summary of Unit Train Accident and Spill Rates by Segment for the Nevada to Colton to SMR Route

Segment	Segment Description	Length (miles)	Accident Probability (per mile)	Population Density (per sq.mi.)	# of Trains (per year)	Project Oil Spill with Ignition			Project Oil Spill with no Ignition		
						All Spill Probability (per year)	Small Spill Probability (per year)	Large Spill Probability (per year)	All Spill Probability (per year)	Small Spill Probability (per year)	Large Spill Probability (per year)
1	Oso Flaco	2.8	4.30E-07	100	250	1.43E-06	8.42E-07	5.85E-07	5.26E-08	1.43E-04	8.42E-05
2	Nipomo	0.6	4.30E-07	1,000	250	3.28E-07	1.93E-07	1.34E-07	1.21E-08	3.28E-05	1.93E-05
3	Nipomo	1.5	4.30E-07	100	250	7.57E-07	4.47E-07	3.11E-07	2.79E-08	7.57E-05	4.47E-05
4	Guadalupe	1.3	4.30E-07	10,000	250	6.90E-07	4.07E-07	2.83E-07	2.55E-08	6.90E-05	4.07E-05
5	SMV	0.3	4.30E-07	100	250	1.57E-07	9.27E-08	6.44E-08	5.79E-09	1.57E-05	9.27E-06
6	Point Sal	13.8	4.30E-07	100	250	7.10E-06	4.19E-06	2.91E-06	2.62E-07	7.10E-04	4.19E-04
7	VAFB	13.5	4.30E-07	100	250	6.96E-06	4.11E-06	2.85E-06	2.57E-07	6.96E-04	4.11E-04
8	Rocky Point	14.7	4.30E-07	100	250	7.55E-06	4.45E-06	3.09E-06	2.78E-07	7.55E-04	4.45E-04
9	Bixby/Hollister	13.0	4.30E-07	100	250	6.72E-06	3.96E-06	2.75E-06	2.48E-07	6.72E-04	3.96E-04
10	Gaviota Beach	0.5	4.30E-07	1,000	250	2.39E-07	1.41E-07	9.81E-08	8.83E-09	2.39E-05	1.41E-05
11	Gaviota	5.9	4.30E-07	100	250	3.01E-06	1.78E-06	1.24E-06	1.11E-07	3.01E-04	1.78E-04
12	Arroyo Quemado	0.3	4.30E-07	1,000	250	1.41E-07	8.33E-08	5.79E-08	5.21E-09	1.41E-05	8.33E-06
13	Tajiquas	2.9	4.30E-07	100	250	1.51E-06	8.93E-07	6.21E-07	5.59E-08	1.51E-04	8.93E-05
14	Refugio	0.2	4.30E-07	1,000	250	9.49E-08	5.60E-08	3.89E-08	3.50E-09	9.49E-06	5.60E-06
15	Canada del Corral	2.0	4.30E-07	100	250	1.02E-06	6.02E-07	4.18E-07	3.76E-08	1.02E-04	6.02E-05
16	El Capitan	0.8	4.30E-07	1,000	250	4.10E-07	2.42E-07	1.68E-07	1.51E-08	4.10E-05	2.42E-05
17	Naples	5.7	4.30E-07	100	250	2.92E-06	1.72E-06	1.20E-06	1.08E-07	2.92E-04	1.72E-04
18	Bacara	0.8	4.30E-07	1,000	250	3.88E-07	2.29E-07	1.59E-07	1.43E-08	3.88E-05	2.29E-05
19	Sandpiper	0.6	4.30E-07	100	250	2.98E-07	1.76E-07	1.22E-07	1.10E-08	2.98E-05	1.76E-05
20	Goleta	2.1	4.30E-07	3,000	250	1.08E-06	6.38E-07	4.43E-07	3.99E-08	1.08E-04	6.38E-05
21	Goleta	1.6	4.30E-07	1,000	250	8.40E-07	4.95E-07	3.44E-07	3.10E-08	8.40E-05	4.95E-05
22	Santa Barbara	9.5	4.30E-07	3,000	250	4.88E-06	2.88E-06	2.00E-06	1.80E-07	4.88E-04	2.88E-04
23	Santa Barbara	3.8	4.30E-07	10,000	250	1.96E-06	1.16E-06	8.05E-07	7.24E-08	1.96E-04	1.16E-04
24	Montecito	4.3	4.30E-07	3,000	250	2.19E-06	1.29E-06	9.00E-07	8.10E-08	2.19E-04	1.29E-04
25	Polo Grounds	0.9	4.30E-07	1,000	250	4.88E-07	2.88E-07	2.00E-07	1.80E-08	4.88E-05	2.88E-05
26	Padero Lane	0.5	4.30E-07	3,000	250	2.64E-07	1.56E-07	1.08E-07	9.75E-09	2.64E-05	1.56E-05
27	Carpinteria	2.8	4.30E-07	1,000	250	1.43E-06	8.45E-07	5.87E-07	5.28E-08	1.43E-04	8.45E-05
28	Carpinteria	1.3	4.30E-07	3,000	250	6.64E-07	3.92E-07	2.72E-07	2.45E-08	6.64E-05	3.92E-05
29	Carpinteria Bluffs	1.9	4.30E-07	1,000	250	9.58E-07	5.65E-07	3.93E-07	3.53E-08	9.58E-05	5.65E-05

Table 4.7.13 Summary of Unit Train Accident and Spill Rates by Segment for the Nevada to Colton to SMR Route

Segment	Segment Description	Length (miles)	Accident Probability (per mile)	Population Density (per sq.mi.)	# of Trains (per year)	Project Oil Spill with Ignition			Project Oil Spill with no Ignition		
						All Spill Probability (per year)	Small Spill Probability (per year)	Large Spill Probability (per year)	All Spill Probability (per year)	Small Spill Probability (per year)	Large Spill Probability (per year)
30	Rincon	0.2	4.30E-07	3,000	250	1.21E-07	7.16E-08	4.98E-08	4.48E-09	1.21E-05	7.16E-06
31	La Concita Oil	1.7	4.30E-07	100	250	8.91E-07	5.26E-07	3.65E-07	3.29E-08	8.91E-05	5.26E-05
32	La Conchita	0.4	4.30E-07	3,000	250	2.13E-07	1.26E-07	8.75E-08	7.88E-09	2.13E-05	1.26E-05
33	Mussle Shoals	1.6	4.30E-07	1,000	250	8.19E-07	4.83E-07	3.36E-07	3.02E-08	8.19E-05	4.83E-05
34	Seacliff	0.9	4.30E-07	100	250	4.44E-07	2.62E-07	1.82E-07	1.64E-08	4.44E-05	2.62E-05
35	Faria/Solimar	4.5	4.30E-07	100	250	2.30E-06	1.36E-06	9.42E-07	8.48E-08	2.30E-04	1.36E-04
36	State Beaches	3.6	4.30E-07	100	250	1.86E-06	1.10E-06	7.62E-07	6.86E-08	1.86E-04	1.10E-04
37	Ventura	5.1	4.30E-07	3,000	250	2.62E-06	1.54E-06	1.07E-06	9.65E-08	2.62E-04	1.54E-04
38	Ventura Greenbelt	1.2	4.30E-07	1,000	250	5.92E-07	3.49E-07	2.43E-07	2.19E-08	5.92E-05	3.49E-05
39	Montalvo	1.0	4.30E-07	3,000	250	5.12E-07	3.02E-07	2.10E-07	1.89E-08	5.12E-05	3.02E-05
40	Santa Clara River	0.4	4.30E-07	100	250	2.02E-07	1.19E-07	8.27E-08	7.45E-09	2.02E-05	1.19E-05
41	Oxnard	4.1	4.30E-07	3,000	250	2.11E-06	1.24E-06	8.64E-07	7.77E-08	2.11E-04	1.24E-04
42	Oxnard Indust/Ag	3.0	4.30E-07	1,000	250	1.55E-06	9.12E-07	6.33E-07	5.70E-08	1.55E-04	9.12E-05
43	Oxnard Ag	5.2	4.30E-07	100	250	2.66E-06	1.57E-06	1.09E-06	9.81E-08	2.66E-04	1.57E-04
44	Camarillo Comm	0.5	4.30E-07	1,000	250	2.79E-07	1.65E-07	1.14E-07	1.03E-08	2.79E-05	1.65E-05
45	Camarillo Ag	0.1	4.30E-07	100	250	4.28E-08	2.53E-08	1.76E-08	1.58E-09	4.28E-06	2.53E-06
46	Camarillo	2.5	4.30E-07	3,000	250	1.29E-06	7.63E-07	5.30E-07	4.77E-08	1.29E-04	7.63E-05
47	Somis	7.6	4.30E-07	100	250	3.89E-06	2.29E-06	1.59E-06	1.43E-07	3.89E-04	2.29E-04
48	Moorpark	1.1	4.30E-07	1,000	250	5.67E-07	3.34E-07	2.32E-07	2.09E-08	5.67E-05	3.34E-05
49	Moorpark	1.2	4.30E-07	3,000	250	5.92E-07	3.49E-07	2.43E-07	2.19E-08	5.92E-05	3.49E-05
50	Moorpark	2.1	4.30E-07	1,000	250	1.09E-06	6.44E-07	4.48E-07	4.03E-08	1.09E-04	6.44E-05
51	Los Alamos Cyn	0.8	4.30E-07	100	250	4.27E-07	2.52E-07	1.75E-07	1.58E-08	4.27E-05	2.52E-05
52	Simi Valley	1.1	4.30E-07	1,000	250	5.67E-07	3.34E-07	2.32E-07	2.09E-08	5.67E-05	3.34E-05
53	Simi Valley	6.8	4.30E-07	3,000	250	3.52E-06	2.08E-06	1.44E-06	1.30E-07	3.52E-04	2.08E-04
54	Santa Susana Knl	1.6	4.30E-07	1,000	250	8.09E-07	4.77E-07	3.32E-07	2.98E-08	8.09E-05	4.77E-05
55	Santa Susana Pass	2.7	4.30E-07	100	250	1.38E-06	8.14E-07	5.66E-07	5.09E-08	1.38E-04	8.14E-05
56	Stoney Point	1.0	4.30E-07	1,000	250	4.99E-07	2.94E-07	2.05E-07	1.84E-08	4.99E-05	2.94E-05
57	Chatsworth	1.4	4.30E-07	3,000	250	7.16E-07	4.22E-07	2.94E-07	2.64E-08	7.16E-05	4.22E-05
58	Chatsworth	3.6	4.30E-07	10,000	250	1.84E-06	1.08E-06	7.54E-07	6.78E-08	1.84E-04	1.08E-04

Table 4.7.13 Summary of Unit Train Accident and Spill Rates by Segment for the Nevada to Colton to SMR Route

Segment	Segment Description	Length (miles)	Accident Probability (per mile)	Population Density (per sq.mi.)	# of Trains (per year)	Project Oil Spill with Ignition			Project Oil Spill with no Ignition		
						All Spill Probability (per year)	Small Spill Probability (per year)	Large Spill Probability (per year)	All Spill Probability (per year)	Small Spill Probability (per year)	Large Spill Probability (per year)
59	Northridge	2.5	4.30E-07	10,000	250	1.31E-06	7.72E-07	5.36E-07	4.83E-08	1.31E-04	7.72E-05
60	Van Nyus AP	1.7	4.30E-07	3,000	250	8.91E-07	5.26E-07	3.65E-07	3.29E-08	8.91E-05	5.26E-05
61	North Hollywood	4.0	4.30E-07	10,000	250	2.08E-06	1.23E-06	8.53E-07	7.68E-08	2.08E-04	1.23E-04
62	Burbank	2.5	4.30E-07	10,000	250	1.31E-06	7.72E-07	5.36E-07	4.83E-08	1.31E-04	7.72E-05
63	Valhalla	0.7	4.30E-07	1,000	250	3.66E-07	2.16E-07	1.50E-07	1.35E-08	3.66E-05	2.16E-05
64	Burbank	1.8	4.30E-07	10,000	250	9.06E-07	5.35E-07	3.72E-07	3.34E-08	9.06E-05	5.35E-05
65	Burbank	0.4	4.30E-07	3,000	250	2.24E-07	1.32E-07	9.18E-08	8.26E-09	2.24E-05	1.32E-05
66	Glendale	2.9	4.30E-07	10,000	250	1.50E-06	8.87E-07	6.17E-07	5.55E-08	1.50E-04	8.87E-05
67	Atwater	3.3	4.30E-07	10,000	250	1.72E-06	1.01E-06	7.05E-07	6.35E-08	1.72E-04	1.01E-04
68	Elysian Park	5.8	4.30E-07	10,000	250	2.99E-06	1.77E-06	1.23E-06	1.10E-07	2.99E-04	1.77E-04
69	East Los Angeles	7.5	4.30E-07	10,000	250	3.87E-06	2.29E-06	1.59E-06	1.43E-07	3.87E-04	2.29E-04
70	San Gabriel Val	6.0	4.30E-07	10,000	250	3.10E-06	1.83E-06	1.27E-06	1.14E-07	3.10E-04	1.83E-04
71	El monte	0.4	4.30E-07	3,000	250	2.11E-07	1.24E-07	8.63E-08	7.77E-09	2.11E-05	1.24E-05
72	San Gabriel River	0.2	4.30E-07	1,000	250	1.21E-07	7.13E-08	4.96E-08	4.46E-09	1.21E-05	7.13E-06
73	La Puente	4.5	4.30E-07	3,000	250	2.32E-06	1.37E-06	9.50E-07	8.55E-08	2.32E-04	1.37E-04
74	La Puente-Walnut	7.9	4.30E-07	3,000	250	4.08E-06	2.41E-06	1.67E-06	1.51E-07	4.08E-04	2.41E-04
75	Walnut-Pomona	3.1	4.30E-07	3,000	250	1.62E-06	9.54E-07	6.63E-07	5.97E-08	1.62E-04	9.54E-05
76	Pomona	16.0	4.30E-07	3,000	250	8.23E-06	4.86E-06	3.37E-06	3.04E-07	8.23E-04	4.86E-04
77	Ontario	9.3	4.30E-07	3,000	250	4.81E-06	2.84E-06	1.97E-06	1.77E-07	4.81E-04	2.84E-04
78	Fontana	1.2	4.30E-07	1,000	250	6.27E-07	3.70E-07	2.57E-07	2.31E-08	6.27E-05	3.70E-05
79	Colton	2.1	2.60E-07	3,000	250	6.39E-07	3.77E-07	2.62E-07	2.36E-08	6.39E-05	3.77E-05
80	Rialto	1.9	2.60E-07	1,000	250	5.79E-07	3.41E-07	2.37E-07	2.13E-08	5.79E-05	3.41E-05
81	Rialto	1.1	2.60E-07	100	250	3.44E-07	2.03E-07	1.41E-07	1.27E-08	3.44E-05	2.03E-05
82	San Bernardino	1.9	2.60E-07	1,000	250	5.86E-07	3.46E-07	2.40E-07	2.16E-08	5.86E-05	3.46E-05
83	S. Bernardino Co	3.2	2.60E-07	100	250	1.01E-06	5.96E-07	4.14E-07	3.73E-08	1.01E-04	5.96E-05
84	Devore	1.6	2.60E-07	1,000	250	5.09E-07	3.00E-07	2.09E-07	1.88E-08	5.09E-05	3.00E-05
85	Cajon Pass	19.5	2.60E-07	100	250	6.08E-06	3.58E-06	2.49E-06	2.24E-07	6.08E-04	3.58E-04
86	Hesperia	4.5	2.60E-07	1,000	250	1.41E-06	8.32E-07	5.78E-07	5.21E-08	1.41E-04	8.32E-05
87	Hesperia	1.0	2.60E-07	100	250	3.23E-07	1.91E-07	1.32E-07	1.19E-08	3.23E-05	1.91E-05

Table 4.7.13 Summary of Unit Train Accident and Spill Rates by Segment for the Nevada to Colton to SMR Route

Segment	Segment Description	Length (miles)	Accident Probability (per mile)	Population Density (per sq.mi.)	# of Trains (per year)	Project Oil Spill with Ignition			Project Oil Spill with no Ignition		
						All Spill Probability (per year)	Small Spill Probability (per year)	Large Spill Probability (per year)	All Spill Probability (per year)	Small Spill Probability (per year)	Large Spill Probability (per year)
88	Victorville	4.3	2.60E-07	1,000	250	1.35E-06	7.97E-07	5.54E-07	4.98E-08	1.35E-04	7.97E-05
89	Victorville	2.1	2.60E-07	100	250	6.40E-07	3.78E-07	2.63E-07	2.36E-08	6.40E-05	3.78E-05
90	Victorville	0.7	2.60E-07	1,000	250	2.30E-07	1.36E-07	9.44E-08	8.50E-09	2.30E-05	1.36E-05
91	Victorville	4.5	2.60E-07	100	250	1.39E-06	8.19E-07	5.69E-07	5.12E-08	1.39E-04	8.19E-05
92	Oro Grande	0.5	2.60E-07	1,000	250	1.60E-07	9.46E-08	6.57E-08	5.91E-09	1.60E-05	9.46E-06
93	Helendale	25.4	2.60E-07	100	250	7.90E-06	4.66E-06	3.24E-06	2.91E-07	7.90E-04	4.66E-04
94	Lenwood	1.1	2.60E-07	1,000	250	3.48E-07	2.05E-07	1.43E-07	1.29E-08	3.48E-05	2.05E-05
95	Barstow	1.8	2.60E-07	100	250	5.65E-07	3.33E-07	2.32E-07	2.08E-08	5.65E-05	3.33E-05
96	Barstow	1.7	2.60E-07	1,000	250	5.34E-07	3.15E-07	2.19E-07	1.97E-08	5.34E-05	3.15E-05
97	Barstow	0.7	2.60E-07	100	250	2.28E-07	1.35E-07	9.36E-08	8.43E-09	2.28E-05	1.35E-05
98	Barstow	6.2	2.60E-07	1,000	250	1.93E-06	1.14E-06	7.89E-07	7.10E-08	1.93E-04	1.14E-04
99	Daggett	2.4	2.60E-07	100	250	7.57E-07	4.46E-07	3.10E-07	2.79E-08	7.57E-05	4.46E-05
100	Daggett	0.8	2.60E-07	1,000	250	2.36E-07	1.39E-07	9.68E-08	8.71E-09	2.36E-05	1.39E-05
101	MCSC	4.3	2.60E-07	100	250	1.35E-06	7.98E-07	5.55E-07	4.99E-08	1.35E-04	7.98E-05
102	Yermo	1.3	2.60E-07	1,000	250	3.97E-07	2.34E-07	1.63E-07	1.46E-08	3.97E-05	2.34E-05
103	Mojave Desert	123.5	2.60E-07	100	250	3.85E-05	2.27E-05	1.58E-05	1.42E-06	3.85E-03	2.27E-03

Table 4.7.14 Summary of Unit Train Accident and Spill Rates by Segment for the Oregon Roseville to SMR via Oakland

Segment	Segment Description	Length (miles)	Accident Probability (per mile)	Population Density (per sq.mi.)	# of Trains (per year)	Project Oil Spill with Ignition			Project Oil Spill with no Ignition		
						All Spill Probability (per year)	Small Spill Probability (per year)	Large Spill Probability (per year)	All Spill Probability (per year)	Small Spill Probability (per year)	Large Spill Probability (per year)
1	Arroyo Grande	1.6	3.90E-07	1,000	250	7.24E-07	4.27E-07	2.97E-07	2.67E-08	7.24E-05	4.27E-05
2	Arroyo Grande	0.8	3.90E-07	100	250	3.73E-07	2.20E-07	1.53E-07	1.38E-08	3.73E-05	2.20E-05
3	Arroyo Grande	0.9	3.90E-07	1,000	250	4.39E-07	2.59E-07	1.80E-07	1.62E-08	4.39E-05	2.59E-05
4	Arroyo Grande	1.4	3.90E-07	100	250	6.45E-07	3.81E-07	2.65E-07	2.38E-08	6.45E-05	3.81E-05
5	Oceano	0.4	3.90E-07	3,000	250	1.88E-07	1.11E-07	7.71E-08	6.94E-09	1.88E-05	1.11E-05
6	Oceano	0.6	3.90E-07	10,000	250	2.92E-07	1.72E-07	1.20E-07	1.08E-08	2.92E-05	1.72E-05
7	Oceano	0.2	3.90E-07	3,000	250	1.12E-07	6.59E-08	4.58E-08	4.12E-09	1.12E-05	6.59E-06
8	Pismo/Grover	2.1	3.90E-07	10,000	250	9.80E-07	5.78E-07	4.02E-07	3.62E-08	9.80E-05	5.78E-05
9	Pismo	0.3	3.90E-07	3,000	250	1.35E-07	7.96E-08	5.53E-08	4.98E-09	1.35E-05	7.96E-06
10	Pismo	0.4	3.90E-07	1,000	250	1.72E-07	1.02E-07	7.06E-08	6.35E-09	1.72E-05	1.02E-05
11	Price Canyon	5.2	3.90E-07	100	250	2.42E-06	1.43E-06	9.93E-07	8.94E-08	2.42E-04	1.43E-04
12	Edna	0.6	3.90E-07	1,000	250	2.81E-07	1.66E-07	1.15E-07	1.04E-08	2.81E-05	1.66E-05
13	Edna	1.6	3.90E-07	100	250	7.56E-07	4.46E-07	3.10E-07	2.79E-08	7.56E-05	4.46E-05
14	San Luis Obispo	4.7	3.90E-07	10,000	250	2.18E-06	1.29E-06	8.94E-07	8.05E-08	2.18E-04	1.29E-04
15	San Luis Obispo	0.6	3.90E-07	3,000	250	2.64E-07	1.56E-07	1.08E-07	9.74E-09	2.64E-05	1.56E-05
16	Chorro	0.4	3.90E-07	1,000	250	1.99E-07	1.17E-07	8.16E-08	7.35E-09	1.99E-05	1.17E-05
17	Chorro	1.6	3.90E-07	100	250	7.31E-07	4.31E-07	3.00E-07	2.70E-08	7.31E-05	4.31E-05
18	CMC	0.8	3.90E-07	3,000	250	3.56E-07	2.10E-07	1.46E-07	1.31E-08	3.56E-05	2.10E-05
19	Santa Lucia	11.2	3.90E-07	100	250	5.22E-06	3.08E-06	2.14E-06	1.93E-07	5.22E-04	3.08E-04
20	Santa Margarita	0.9	3.90E-07	3,000	250	4.12E-07	2.43E-07	1.69E-07	1.52E-08	4.12E-05	2.43E-05
21	Phillips PS	0.9	3.90E-07	100	250	3.97E-07	2.34E-07	1.63E-07	1.47E-08	3.97E-05	2.34E-05
22	Atascadero	7.4	3.90E-07	1,000	250	3.46E-06	2.04E-06	1.42E-06	1.28E-07	3.46E-04	2.04E-04
23	Atascadero	1.6	3.90E-07	3,000	250	7.47E-07	4.41E-07	3.06E-07	2.76E-08	7.47E-05	4.41E-05
24	Atascadero	1.3	3.90E-07	1,000	250	5.95E-07	3.51E-07	2.44E-07	2.19E-08	5.95E-05	3.51E-05
25	Atascadero	0.4	3.90E-07	3,000	250	2.01E-07	1.19E-07	8.24E-08	7.42E-09	2.01E-05	1.19E-05
26	101	0.4	3.90E-07	1,000	250	1.71E-07	1.01E-07	7.00E-08	6.30E-09	1.71E-05	1.01E-05
27	Templeton	2.1	3.90E-07	3,000	250	9.99E-07	5.90E-07	4.10E-07	3.69E-08	9.99E-05	5.90E-05
28	Paso Robles	0.5	3.90E-07	1,000	250	2.40E-07	1.41E-07	9.83E-08	8.85E-09	2.40E-05	1.41E-05
29	Paso Robles	0.8	3.90E-07	3,000	250	3.93E-07	2.32E-07	1.61E-07	1.45E-08	3.93E-05	2.32E-05

Table 4.7.14 Summary of Unit Train Accident and Spill Rates by Segment for the Oregon Roseville to SMR via Oakland

Segment	Segment Description	Length (miles)	Accident Probability (per mile)	Population Density (per sq.mi.)	# of Trains (per year)	Project Oil Spill with Ignition			Project Oil Spill with no Ignition		
						All Spill Probability (per year)	Small Spill Probability (per year)	Large Spill Probability (per year)	All Spill Probability (per year)	Small Spill Probability (per year)	Large Spill Probability (per year)
30	Paso Robles	2.7	3.90E-07	1,000	250	1.28E-06	7.57E-07	5.26E-07	4.74E-08	1.28E-04	7.57E-05
31	Paso Robles	2.1	3.90E-07	3,000	250	9.99E-07	5.89E-07	4.10E-07	3.69E-08	9.99E-05	5.89E-05
32	Paso Robles	0.4	3.90E-07	10,000	250	2.03E-07	1.20E-07	8.32E-08	7.49E-09	2.03E-05	1.20E-05
33	Paso Robles	1.2	3.90E-07	3,000	250	5.43E-07	3.20E-07	2.23E-07	2.00E-08	5.43E-05	3.20E-05
34	101	2.1	3.90E-07	100	250	9.91E-07	5.84E-07	4.06E-07	3.66E-08	9.91E-05	5.84E-05
35	Wellsona	2.4	3.90E-07	1,000	250	1.14E-06	6.73E-07	4.68E-07	4.21E-08	1.14E-04	6.73E-05
36	101	1.9	3.90E-07	100	250	8.71E-07	5.14E-07	3.57E-07	3.22E-08	8.71E-05	5.14E-05
37	San Miguel	1.5	3.90E-07	3,000	250	6.86E-07	4.05E-07	2.81E-07	2.53E-08	6.86E-05	4.05E-05
38	101	2.7	3.90E-07	100	250	1.24E-06	7.31E-07	5.08E-07	4.57E-08	1.24E-04	7.31E-05
39	Camp Roberts	5.7	3.90E-07	100	250	2.67E-06	1.57E-06	1.09E-06	9.84E-08	2.67E-04	1.57E-04
40	Bradley	15.3	3.90E-07	100	250	7.15E-06	4.22E-06	2.93E-06	2.64E-07	7.15E-04	4.22E-04
41	San Lucas	18.5	3.90E-07	100	250	8.65E-06	5.10E-06	3.55E-06	3.19E-07	8.65E-04	5.10E-04
42	King City	1.5	3.90E-07	1,000	250	6.82E-07	4.02E-07	2.80E-07	2.52E-08	6.82E-05	4.02E-05
43	Clark Ranch	18.1	3.90E-07	100	250	8.45E-06	4.99E-06	3.46E-06	3.12E-07	8.45E-04	4.99E-04
44	Soledad	1.4	3.90E-07	1,000	250	6.63E-07	3.91E-07	2.72E-07	2.45E-08	6.63E-05	3.91E-05
45	Salinas Vly Ag	7.3	3.90E-07	100	250	3.43E-06	2.02E-06	1.41E-06	1.27E-07	3.43E-04	2.02E-04
46	Gonzales	1.2	3.90E-07	3,000	250	5.42E-07	3.20E-07	2.22E-07	2.00E-08	5.42E-05	3.20E-05
47	Salinas Vly Ag	5.0	3.90E-07	100	250	2.35E-06	1.39E-06	9.63E-07	8.67E-08	2.35E-04	1.39E-04
48	Chular	0.6	3.90E-07	1,000	250	2.98E-07	1.76E-07	1.22E-07	1.10E-08	2.98E-05	1.76E-05
49	Sprekles	7.8	3.90E-07	100	250	3.63E-06	2.14E-06	1.49E-06	1.34E-07	3.63E-04	2.14E-04
50	Salinas	3.9	3.90E-07	6,500	250	1.84E-06	1.08E-06	7.53E-07	6.77E-08	1.84E-04	1.08E-04
51	Salinas Vly Ag	6.2	3.90E-07	100	250	2.89E-06	1.70E-06	1.18E-06	1.07E-07	2.89E-04	1.70E-04
52	Castroville	1.1	3.90E-07	1,000	250	5.28E-07	3.11E-07	2.16E-07	1.95E-08	5.28E-05	3.11E-05
53	Las Lomas	15.4	3.90E-07	100	250	7.21E-06	4.26E-06	2.96E-06	2.66E-07	7.21E-04	4.26E-04
54	Aromas	12.1	3.90E-07	100	250	5.63E-06	3.32E-06	2.31E-06	2.08E-07	5.63E-04	3.32E-04
55	Gilroy	4.2	3.90E-07	3,000	250	1.95E-06	1.15E-06	8.01E-07	7.20E-08	1.95E-04	1.15E-04
56	San Martin	6.1	3.90E-07	100	250	2.83E-06	1.67E-06	1.16E-06	1.04E-07	2.83E-04	1.67E-04
57	Morgan Hill	3.8	3.90E-07	3,000	250	1.79E-06	1.06E-06	7.34E-07	6.60E-08	1.79E-04	1.06E-04
58	Coyote Valley	6.7	3.90E-07	100	250	3.12E-06	1.84E-06	1.28E-06	1.15E-07	3.12E-04	1.84E-04

Table 4.7.14 Summary of Unit Train Accident and Spill Rates by Segment for the Oregon Roseville to SMR via Oakland

Segment	Segment Description	Length (miles)	Accident Probability (per mile)	Population Density (per sq.mi.)	# of Trains (per year)	Project Oil Spill with Ignition			Project Oil Spill with no Ignition		
						All Spill Probability (per year)	Small Spill Probability (per year)	Large Spill Probability (per year)	All Spill Probability (per year)	Small Spill Probability (per year)	Large Spill Probability (per year)
59	San Jose	6.3	3.90E-07	5,000	250	2.96E-06	1.75E-06	1.21E-06	1.09E-07	2.96E-04	1.75E-04
60	Seven Trees	1.9	3.90E-07	1,000	250	8.69E-07	5.13E-07	3.56E-07	3.21E-08	8.69E-05	5.13E-05
61	San Jose	5.0	3.90E-07	10,000	250	2.32E-06	1.37E-06	9.50E-07	8.55E-08	2.32E-04	1.37E-04
62	Santa Clara	5.1	3.90E-07	6,500	250	2.39E-06	1.41E-06	9.79E-07	8.81E-08	2.39E-04	1.41E-04
63	Alviso	1.7	3.90E-07	1,000	250	8.03E-07	4.74E-07	3.29E-07	2.96E-08	8.03E-05	4.74E-05
64	Drawbridge	5.7	3.90E-07	100	250	2.66E-06	1.57E-06	1.09E-06	9.82E-08	2.66E-04	1.57E-04
65	Newark	2.3	3.90E-07	1,000	250	1.05E-06	6.20E-07	4.31E-07	3.88E-08	1.05E-04	6.20E-05
66	Newark/Russell	11.3	3.90E-07	10,000	250	5.30E-06	3.13E-06	2.17E-06	1.95E-07	5.30E-04	3.13E-04
67	San Lorenzo	0.8	3.90E-07	3,000	250	3.73E-07	2.20E-07	1.53E-07	1.38E-08	3.73E-05	2.20E-05
68	San Leandro	1.3	3.90E-07	10,000	250	5.98E-07	3.53E-07	2.45E-07	2.21E-08	5.98E-05	3.53E-05
69	San Leandro	0.7	3.90E-07	3,000	250	3.37E-07	1.99E-07	1.38E-07	1.24E-08	3.37E-05	1.99E-05
70	Oakland	5.3	3.90E-07	10,000	250	2.46E-06	1.45E-06	1.01E-06	9.07E-08	2.46E-04	1.45E-04
71	Oakland	1.4	3.90E-07	3,000	250	6.40E-07	3.78E-07	2.62E-07	2.36E-08	6.40E-05	3.78E-05
72	Oakland	1.6	3.90E-07	10,000	250	7.57E-07	4.46E-07	3.10E-07	2.79E-08	7.57E-05	4.46E-05
73	Oakland	1.4	3.90E-07	3,000	250	6.31E-07	3.72E-07	2.59E-07	2.33E-08	6.31E-05	3.72E-05
74	Oakland	1.5	3.90E-07	10,000	250	7.19E-07	4.24E-07	2.95E-07	2.65E-08	7.19E-05	4.24E-05
75	Oakland	2.7	3.90E-07	3,000	250	1.25E-06	7.36E-07	5.11E-07	4.60E-08	1.25E-04	7.36E-05
76	Emeryville	1.5	3.90E-07	10,000	250	6.77E-07	4.00E-07	2.78E-07	2.50E-08	6.77E-05	4.00E-05
77	Berkeley	1.0	3.90E-07	3,000	250	4.72E-07	2.78E-07	1.93E-07	1.74E-08	4.72E-05	2.78E-05
78	Berkeley	1.8	3.90E-07	10,000	250	8.17E-07	4.82E-07	3.35E-07	3.02E-08	8.17E-05	4.82E-05
79	Richmond	1.5	3.90E-07	3,000	250	7.01E-07	4.13E-07	2.87E-07	2.59E-08	7.01E-05	4.13E-05
80	Richmond	3.8	3.90E-07	10,000	250	1.76E-06	1.04E-06	7.20E-07	6.48E-08	1.76E-04	1.04E-04
81	North Richmond	1.1	3.90E-07	3,000	250	4.90E-07	2.89E-07	2.01E-07	1.81E-08	4.90E-05	2.89E-05
82	San Pablo	2.5	3.90E-07	1,000	250	1.16E-06	6.86E-07	4.77E-07	4.29E-08	1.16E-04	6.86E-05
83	Sobranto	1.8	3.90E-07	100	250	8.17E-07	4.82E-07	3.35E-07	3.02E-08	8.17E-05	4.82E-05
84	Hercules	5.6	3.90E-07	1,000	250	2.62E-06	1.55E-06	1.07E-06	9.67E-08	2.62E-04	1.55E-04
85	Selby	1.7	3.90E-07	100	250	7.89E-07	4.66E-07	3.24E-07	2.91E-08	7.89E-05	4.66E-05
86	Crockett	1.6	3.90E-07	1,000	250	7.29E-07	4.30E-07	2.99E-07	2.69E-08	7.29E-05	4.30E-05
87	Port Costa	4.3	3.90E-07	100	250	2.01E-06	1.19E-06	8.25E-07	7.43E-08	2.01E-04	1.19E-04

Table 4.7.14 Summary of Unit Train Accident and Spill Rates by Segment for the Oregon Roseville to SMR via Oakland

Segment	Segment Description	Length (miles)	Accident Probability (per mile)	Population Density (per sq.mi.)	# of Trains (per year)	Project Oil Spill with Ignition			Project Oil Spill with no Ignition		
						All Spill Probability (per year)	Small Spill Probability (per year)	Large Spill Probability (per year)	All Spill Probability (per year)	Small Spill Probability (per year)	Large Spill Probability (per year)
88	Martinez	0.5	3.90E-07	1,000	250	2.26E-07	1.34E-07	9.28E-08	8.35E-09	2.26E-05	1.34E-05
89	Suisun Pt Chnl	2.6	3.90E-07	100	250	1.20E-06	7.08E-07	4.92E-07	4.43E-08	1.20E-04	7.08E-05
90	Benicia	3.5	3.90E-07	1,000	250	1.63E-06	9.65E-07	6.70E-07	6.03E-08	1.63E-04	9.65E-05
91	Grizzly Bay	10.6	3.90E-07	100	250	4.94E-06	2.92E-06	2.03E-06	1.82E-07	4.94E-04	2.92E-04
92	Fairfield	3.8	3.90E-07	3,000	250	1.78E-06	1.05E-06	7.32E-07	6.58E-08	1.78E-04	1.05E-04
93	Elmira	13.7	3.90E-07	100	250	6.40E-06	3.78E-06	2.62E-06	2.36E-07	6.40E-04	3.78E-04
94	Dixon	2.1	3.90E-07	1,000	250	1.00E-06	5.90E-07	4.10E-07	3.69E-08	1.00E-04	5.90E-05
95	Solano Co Ag	6.6	3.90E-07	100	250	3.09E-06	1.82E-06	1.27E-06	1.14E-07	3.09E-04	1.82E-04
96	Davis	3.5	3.90E-07	1,000	250	1.65E-06	9.73E-07	6.76E-07	6.08E-08	1.65E-04	9.73E-05
97	Yolo Co Ag	7.0	3.90E-07	100	250	3.27E-06	1.93E-06	1.34E-06	1.20E-07	3.27E-04	1.93E-04
98	Sacramento	3.3	3.90E-07	3,000	250	1.52E-06	8.96E-07	6.22E-07	5.60E-08	1.52E-04	8.96E-05
99	Sacramento Rvr	0.4	3.90E-07	100	250	1.96E-07	1.16E-07	8.05E-08	7.24E-09	1.96E-05	1.16E-05
100	Sacramento	2.5	3.90E-07	10,000	250	1.15E-06	6.78E-07	4.71E-07	4.24E-08	1.15E-04	6.78E-05
101	Parkland	1.6	3.90E-07	100	250	7.57E-07	4.46E-07	3.10E-07	2.79E-08	7.57E-05	4.46E-05
102	Sacramento	3.1	3.90E-07	3,000	250	1.45E-06	8.54E-07	5.94E-07	5.34E-08	1.45E-04	8.54E-05
103	North Highlands	2.6	3.90E-07	1,000	250	1.21E-06	7.11E-07	4.94E-07	4.45E-08	1.21E-04	7.11E-05
104	North Highlands	4.4	3.90E-07	3,000	250	2.04E-06	1.20E-06	8.37E-07	7.53E-08	2.04E-04	1.20E-04
105	Roseville Yard	1.3	3.90E-07	100	250	5.89E-07	3.47E-07	2.41E-07	2.17E-08	5.89E-05	3.47E-05
145	Roseville	2.3	2.70E-07	3,000	250	7.37E-07	4.35E-07	3.02E-07	2.72E-08	7.37E-05	4.35E-05
146	Roseville	1.3	2.70E-07	1,000	250	4.13E-07	2.43E-07	1.69E-07	1.52E-08	4.13E-05	2.43E-05
147	Roseville	0.1	2.70E-07	100	250	4.79E-08	2.83E-08	1.96E-08	1.77E-09	4.79E-06	2.83E-06
148	Placer Co	2.9	2.70E-07	1,000	250	9.45E-07	5.58E-07	3.88E-07	3.49E-08	9.45E-05	5.58E-05
149	Lincoln	1.2	2.70E-07	100	250	3.86E-07	2.28E-07	1.58E-07	1.42E-08	3.86E-05	2.28E-05
150	Lincoln	2.9	2.70E-07	3,000	250	9.27E-07	5.47E-07	3.80E-07	3.42E-08	9.27E-05	5.47E-05
151	Sheridan	10.7	2.70E-07	100	250	3.45E-06	2.03E-06	1.41E-06	1.27E-07	3.45E-04	2.03E-04
152	Wheatland	0.9	2.70E-07	1,000	250	3.01E-07	1.78E-07	1.23E-07	1.11E-08	3.01E-05	1.78E-05
153	Yuba County	9.2	2.70E-07	100	250	2.99E-06	1.76E-06	1.22E-06	1.10E-07	2.99E-04	1.76E-04
154	Olivehurst	4.3	2.70E-07	1,000	250	1.38E-06	8.13E-07	5.65E-07	5.08E-08	1.38E-04	8.13E-05
155	Marysville	1.3	2.70E-07	3,000	250	4.29E-07	2.53E-07	1.76E-07	1.58E-08	4.29E-05	2.53E-05

Table 4.7.14 Summary of Unit Train Accident and Spill Rates by Segment for the Oregon Roseville to SMR via Oakland

Segment	Segment Description	Length (miles)	Accident Probability (per mile)	Population Density (per sq.mi.)	# of Trains (per year)	Project Oil Spill with Ignition			Project Oil Spill with no Ignition		
						All Spill Probability (per year)	Small Spill Probability (per year)	Large Spill Probability (per year)	All Spill Probability (per year)	Small Spill Probability (per year)	Large Spill Probability (per year)
156	Marysville	2.3	2.70E-07	100	250	7.51E-07	4.43E-07	3.08E-07	2.77E-08	7.51E-05	4.43E-05
157	Live Oak	0.3	2.70E-07	1,000	250	1.06E-07	6.27E-08	4.36E-08	3.92E-09	1.06E-05	6.27E-06
158	Live Oak	6.4	2.70E-07	100	250	2.08E-06	1.23E-06	8.51E-07	7.66E-08	2.08E-04	1.23E-04
159	Live Oak	0.4	2.70E-07	1,000	250	1.18E-07	6.99E-08	4.86E-08	4.37E-09	1.18E-05	6.99E-06
160	Live Oak	1.0	2.70E-07	3,000	250	3.28E-07	1.93E-07	1.34E-07	1.21E-08	3.28E-05	1.93E-05
161	Butte Co	5.2	2.70E-07	100	250	1.69E-06	9.97E-07	6.93E-07	6.23E-08	1.69E-04	9.97E-05
162	Gridley	0.5	2.70E-07	1,000	250	1.47E-07	8.68E-08	6.03E-08	5.43E-09	1.47E-05	8.68E-06
163	Gridley	0.8	2.70E-07	3,000	250	2.68E-07	1.58E-07	1.10E-07	9.89E-09	2.68E-05	1.58E-05
164	Gridley	2.5	2.70E-07	100	250	8.11E-07	4.79E-07	3.33E-07	2.99E-08	8.11E-05	4.79E-05
165	Biggs	0.6	2.70E-07	3,000	250	1.85E-07	1.09E-07	7.59E-08	6.83E-09	1.85E-05	1.09E-05
166	Butte Co	5.1	2.70E-07	100	250	1.66E-06	9.79E-07	6.80E-07	6.12E-08	1.66E-04	9.79E-05
167	Richvale	0.8	2.70E-07	1,000	250	2.70E-07	1.59E-07	1.11E-07	9.97E-09	2.70E-05	1.59E-05
168	Nelson	9.3	2.70E-07	100	250	3.00E-06	1.77E-06	1.23E-06	1.11E-07	3.00E-04	1.77E-04
169	Durham	2.4	2.70E-07	1,000	250	7.88E-07	4.65E-07	3.23E-07	2.91E-08	7.88E-05	4.65E-05
170	Chico	4.3	2.70E-07	100	250	1.40E-06	8.25E-07	5.73E-07	5.16E-08	1.40E-04	8.25E-05
171	Chico	4.5	2.70E-07	1,000	250	1.46E-06	8.61E-07	5.98E-07	5.39E-08	1.46E-04	8.61E-05
172	Chico	2.8	2.70E-07	100	250	9.06E-07	5.35E-07	3.71E-07	3.34E-08	9.06E-05	5.35E-05
173	Nord	0.6	2.70E-07	1,000	250	1.89E-07	1.11E-07	7.73E-08	6.96E-09	1.89E-05	1.11E-05
174	Butte Co	11.3	2.70E-07	100	250	3.67E-06	2.16E-06	1.50E-06	1.35E-07	3.67E-04	2.16E-04
175	Vina	0.4	2.70E-07	1,000	250	1.44E-07	8.51E-08	5.91E-08	5.32E-09	1.44E-05	8.51E-06
176	Copeland	6.3	2.70E-07	100	250	2.04E-06	1.20E-06	8.37E-07	7.53E-08	2.04E-04	1.20E-04
177	Los Molinos	0.5	2.70E-07	1,000	250	1.68E-07	9.91E-08	6.89E-08	6.20E-09	1.68E-05	9.91E-06
178	Los Molinos	1.0	2.70E-07	100	250	3.21E-07	1.89E-07	1.32E-07	1.19E-08	3.21E-05	1.89E-05
179	Tehema	0.3	2.70E-07	1,000	250	1.08E-07	6.34E-08	4.41E-08	3.97E-09	1.08E-05	6.34E-06
180	Tehema	2.2	2.70E-07	100	250	7.23E-07	4.27E-07	2.97E-07	2.67E-08	7.23E-05	4.27E-05
181	Gerber	2.3	2.70E-07	1,000	250	7.49E-07	4.42E-07	3.07E-07	2.76E-08	7.49E-05	4.42E-05
182	Tehema Co	1.8	2.70E-07	100	250	5.78E-07	3.41E-07	2.37E-07	2.13E-08	5.78E-05	3.41E-05
183	Red Bluff	0.8	2.70E-07	1,000	250	2.49E-07	1.47E-07	1.02E-07	9.21E-09	2.49E-05	1.47E-05
184	Red Bluff	4.6	2.70E-07	100	250	1.50E-06	8.83E-07	6.14E-07	5.52E-08	1.50E-04	8.83E-05

Table 4.7.14 Summary of Unit Train Accident and Spill Rates by Segment for the Oregon Roseville to SMR via Oakland

Segment	Segment Description	Length (miles)	Accident Probability (per mile)	Population Density (per sq.mi.)	# of Trains (per year)	Project Oil Spill with Ignition			Project Oil Spill with no Ignition		
						All Spill Probability (per year)	Small Spill Probability (per year)	Large Spill Probability (per year)	All Spill Probability (per year)	Small Spill Probability (per year)	Large Spill Probability (per year)
185	Red Bluff	3.3	2.70E-07	1,000	250	1.06E-06	6.26E-07	4.35E-07	3.92E-08	1.06E-04	6.26E-05
186	Tehema Co	15.3	2.70E-07	100	250	4.94E-06	2.92E-06	2.03E-06	1.82E-07	4.94E-04	2.92E-04
187	Cottonwood	0.6	2.70E-07	1,000	250	1.97E-07	1.16E-07	8.08E-08	7.27E-09	1.97E-05	1.16E-05
188	Anderson	5.4	2.70E-07	100	250	1.73E-06	1.02E-06	7.10E-07	6.39E-08	1.73E-04	1.02E-04
189	Anderson	3.5	2.70E-07	1,000	250	1.15E-06	6.77E-07	4.70E-07	4.23E-08	1.15E-04	6.77E-05
190	Anderson	4.1	2.70E-07	100	250	1.32E-06	7.79E-07	5.42E-07	4.87E-08	1.32E-04	7.79E-05
191	Redding	6.0	2.70E-07	1,000	250	1.95E-06	1.15E-06	8.01E-07	7.21E-08	1.95E-04	1.15E-04
192	Redding	0.8	2.70E-07	1,000	250	2.46E-07	1.45E-07	1.01E-07	9.09E-09	2.46E-05	1.45E-05
193	Redding	1.1	2.70E-07	100	250	3.65E-07	2.16E-07	1.50E-07	1.35E-08	3.65E-05	2.16E-05
194	Redding	0.4	2.70E-07	1,000	250	1.26E-07	7.45E-08	5.18E-08	4.66E-09	1.26E-05	7.45E-06
195	Redding	2.6	2.70E-07	100	250	8.35E-07	4.92E-07	3.42E-07	3.08E-08	8.35E-05	4.92E-05
196	Shasta Co	0.5	2.70E-07	1,000	250	1.69E-07	9.98E-08	6.93E-08	6.24E-09	1.69E-05	9.98E-06
197	Shasta Lake	1.7	2.70E-07	100	250	5.34E-07	3.15E-07	2.19E-07	1.97E-08	5.34E-05	3.15E-05
198	Shasta Lake	0.8	2.70E-07	1,000	250	2.43E-07	1.43E-07	9.96E-08	8.96E-09	2.43E-05	1.43E-05
199	Shasta Co	16.4	2.70E-07	100	250	5.32E-06	3.14E-06	2.18E-06	1.96E-07	5.32E-04	3.14E-04
200	Lakeshore	0.6	2.70E-07	1,000	250	1.96E-07	1.16E-07	8.05E-08	7.24E-09	1.96E-05	1.16E-05
201	Shasta Co	30.4	2.70E-07	100	250	9.82E-06	5.79E-06	4.03E-06	3.62E-07	9.82E-04	5.79E-04
202	Dunsmuir	1.3	2.70E-07	1,000	250	4.21E-07	2.49E-07	1.73E-07	1.56E-08	4.21E-05	2.49E-05
203	Siskiyou Co	12.8	2.70E-07	100	250	4.13E-06	2.44E-06	1.69E-06	1.52E-07	4.13E-04	2.44E-04
204	Mount Shasta	1.1	2.70E-07	1,000	250	3.66E-07	2.16E-07	1.50E-07	1.35E-08	3.66E-05	2.16E-05
205	Siskiyou Co	69.5	2.70E-07	100	250	2.25E-05	1.33E-05	9.21E-06	8.29E-07	2.25E-03	1.33E-03
206	Dorris	0.9	2.70E-07	100	250	2.85E-07	1.68E-07	1.17E-07	1.05E-08	2.85E-05	1.68E-05
207	Siskiyou Co	3.4	2.70E-07	1,000	250	1.10E-06	6.51E-07	4.52E-07	4.07E-08	1.10E-04	6.51E-05

Table 4.7.15 Summary of Unit Train Accident and Spill Rates by Segment for the Nevada to Roseville to SMR via Oakland

Segment	Segment Description	Length (miles)	Accident Probability (per mile)	Population Density (per sq.mi.)	# of Trains (per year)	Project Oil Spill with Ignition			Project Oil Spill with no Ignition		
						All Spill Probability (per year)	Small Spill Probability (per year)	Large Spill Probability (per year)	All Spill Probability (per year)	Small Spill Probability (per year)	Large Spill Probability (per year)
1	Arroyo Grande	1.6	3.90E-07	1,000	250	7.24E-07	4.27E-07	2.97E-07	2.67E-08	7.24E-05	4.27E-05
2	Arroyo Grande	0.8	3.90E-07	100	250	3.73E-07	2.20E-07	1.53E-07	1.38E-08	3.73E-05	2.20E-05
3	Arroyo Grande	0.9	3.90E-07	1,000	250	4.39E-07	2.59E-07	1.80E-07	1.62E-08	4.39E-05	2.59E-05
4	Arroyo Grande	1.4	3.90E-07	100	250	6.45E-07	3.81E-07	2.65E-07	2.38E-08	6.45E-05	3.81E-05
5	Oceano	0.4	3.90E-07	3,000	250	1.88E-07	1.11E-07	7.71E-08	6.94E-09	1.88E-05	1.11E-05
6	Oceano	0.6	3.90E-07	10,000	250	2.92E-07	1.72E-07	1.20E-07	1.08E-08	2.92E-05	1.72E-05
7	Oceano	0.2	3.90E-07	3,000	250	1.12E-07	6.59E-08	4.58E-08	4.12E-09	1.12E-05	6.59E-06
8	Pismo/Grover	2.1	3.90E-07	10,000	250	9.80E-07	5.78E-07	4.02E-07	3.62E-08	9.80E-05	5.78E-05
9	Pismo	0.3	3.90E-07	3,000	250	1.35E-07	7.96E-08	5.53E-08	4.98E-09	1.35E-05	7.96E-06
10	Pismo	0.4	3.90E-07	1,000	250	1.72E-07	1.02E-07	7.06E-08	6.35E-09	1.72E-05	1.02E-05
11	Price Canyon	5.2	3.90E-07	100	250	2.42E-06	1.43E-06	9.93E-07	8.94E-08	2.42E-04	1.43E-04
12	Edna	0.6	3.90E-07	1,000	250	2.81E-07	1.66E-07	1.15E-07	1.04E-08	2.81E-05	1.66E-05
13	Edna	1.6	3.90E-07	100	250	7.56E-07	4.46E-07	3.10E-07	2.79E-08	7.56E-05	4.46E-05
14	San Luis Obispo	4.7	3.90E-07	10,000	250	2.18E-06	1.29E-06	8.94E-07	8.05E-08	2.18E-04	1.29E-04
15	San Luis Obispo	0.6	3.90E-07	3,000	250	2.64E-07	1.56E-07	1.08E-07	9.74E-09	2.64E-05	1.56E-05
16	Chorro	0.4	3.90E-07	1,000	250	1.99E-07	1.17E-07	8.16E-08	7.35E-09	1.99E-05	1.17E-05
17	Chorro	1.6	3.90E-07	100	250	7.31E-07	4.31E-07	3.00E-07	2.70E-08	7.31E-05	4.31E-05
18	CMC	0.8	3.90E-07	3,000	250	3.56E-07	2.10E-07	1.46E-07	1.31E-08	3.56E-05	2.10E-05
19	Santa Lucia	11.2	3.90E-07	100	250	5.22E-06	3.08E-06	2.14E-06	1.93E-07	5.22E-04	3.08E-04
20	Santa Margarita	0.9	3.90E-07	3,000	250	4.12E-07	2.43E-07	1.69E-07	1.52E-08	4.12E-05	2.43E-05
21	Phillips PS	0.9	3.90E-07	100	250	3.97E-07	2.34E-07	1.63E-07	1.47E-08	3.97E-05	2.34E-05
22	Atascadero	7.4	3.90E-07	1,000	250	3.46E-06	2.04E-06	1.42E-06	1.28E-07	3.46E-04	2.04E-04
23	Atascadero	1.6	3.90E-07	3,000	250	7.47E-07	4.41E-07	3.06E-07	2.76E-08	7.47E-05	4.41E-05
24	Atascadero	1.3	3.90E-07	1,000	250	5.95E-07	3.51E-07	2.44E-07	2.19E-08	5.95E-05	3.51E-05
25	Atascadero	0.4	3.90E-07	3,000	250	2.01E-07	1.19E-07	8.24E-08	7.42E-09	2.01E-05	1.19E-05
26	101	0.4	3.90E-07	1,000	250	1.71E-07	1.01E-07	7.00E-08	6.30E-09	1.71E-05	1.01E-05
27	Templeton	2.1	3.90E-07	3,000	250	9.99E-07	5.90E-07	4.10E-07	3.69E-08	9.99E-05	5.90E-05
28	Paso Robles	0.5	3.90E-07	1,000	250	2.40E-07	1.41E-07	9.83E-08	8.85E-09	2.40E-05	1.41E-05
29	Paso Robles	0.8	3.90E-07	3,000	250	3.93E-07	2.32E-07	1.61E-07	1.45E-08	3.93E-05	2.32E-05

Table 4.7.15 Summary of Unit Train Accident and Spill Rates by Segment for the Nevada to Roseville to SMR via Oakland

Segment	Segment Description	Length (miles)	Accident Probability (per mile)	Population Density (per sq.mi.)	# of Trains (per year)	Project Oil Spill with Ignition			Project Oil Spill with no Ignition		
						All Spill Probability (per year)	Small Spill Probability (per year)	Large Spill Probability (per year)	All Spill Probability (per year)	Small Spill Probability (per year)	Large Spill Probability (per year)
30	Paso Robles	2.7	3.90E-07	1,000	250	1.28E-06	7.57E-07	5.26E-07	4.74E-08	1.28E-04	7.57E-05
31	Paso Robles	2.1	3.90E-07	3,000	250	9.99E-07	5.89E-07	4.10E-07	3.69E-08	9.99E-05	5.89E-05
32	Paso Robles	0.4	3.90E-07	10,000	250	2.03E-07	1.20E-07	8.32E-08	7.49E-09	2.03E-05	1.20E-05
33	Paso Robles	1.2	3.90E-07	3,000	250	5.43E-07	3.20E-07	2.23E-07	2.00E-08	5.43E-05	3.20E-05
34	101	2.1	3.90E-07	100	250	9.91E-07	5.84E-07	4.06E-07	3.66E-08	9.91E-05	5.84E-05
35	Wellsona	2.4	3.90E-07	1,000	250	1.14E-06	6.73E-07	4.68E-07	4.21E-08	1.14E-04	6.73E-05
36	101	1.9	3.90E-07	100	250	8.71E-07	5.14E-07	3.57E-07	3.22E-08	8.71E-05	5.14E-05
37	San Miguel	1.5	3.90E-07	3,000	250	6.86E-07	4.05E-07	2.81E-07	2.53E-08	6.86E-05	4.05E-05
38	101	2.7	3.90E-07	100	250	1.24E-06	7.31E-07	5.08E-07	4.57E-08	1.24E-04	7.31E-05
39	Camp Roberts	5.7	3.90E-07	100	250	2.67E-06	1.57E-06	1.09E-06	9.84E-08	2.67E-04	1.57E-04
40	Bradley	15.3	3.90E-07	100	250	7.15E-06	4.22E-06	2.93E-06	2.64E-07	7.15E-04	4.22E-04
41	San Lucas	18.5	3.90E-07	100	250	8.65E-06	5.10E-06	3.55E-06	3.19E-07	8.65E-04	5.10E-04
42	King City	1.5	3.90E-07	1,000	250	6.82E-07	4.02E-07	2.80E-07	2.52E-08	6.82E-05	4.02E-05
43	Clark Ranch	18.1	3.90E-07	100	250	8.45E-06	4.99E-06	3.46E-06	3.12E-07	8.45E-04	4.99E-04
44	Soledad	1.4	3.90E-07	1,000	250	6.63E-07	3.91E-07	2.72E-07	2.45E-08	6.63E-05	3.91E-05
45	Salinas Valley Ag	7.3	3.90E-07	100	250	3.43E-06	2.02E-06	1.41E-06	1.27E-07	3.43E-04	2.02E-04
46	Gonzales	1.2	3.90E-07	3,000	250	5.42E-07	3.20E-07	2.22E-07	2.00E-08	5.42E-05	3.20E-05
47	Salinas Valley Ag	5.0	3.90E-07	100	250	2.35E-06	1.39E-06	9.63E-07	8.67E-08	2.35E-04	1.39E-04
48	Chular	0.6	3.90E-07	1,000	250	2.98E-07	1.76E-07	1.22E-07	1.10E-08	2.98E-05	1.76E-05
49	Sprekles	7.8	3.90E-07	100	250	3.63E-06	2.14E-06	1.49E-06	1.34E-07	3.63E-04	2.14E-04
50	Salinas	3.9	3.90E-07	6,500	250	1.84E-06	1.08E-06	7.53E-07	6.77E-08	1.84E-04	1.08E-04
51	Salinas Valley Ag	6.2	3.90E-07	100	250	2.89E-06	1.70E-06	1.18E-06	1.07E-07	2.89E-04	1.70E-04
52	Castroville	1.1	3.90E-07	1,000	250	5.28E-07	3.11E-07	2.16E-07	1.95E-08	5.28E-05	3.11E-05
53	Las Lomas	15.4	3.90E-07	100	250	7.21E-06	4.26E-06	2.96E-06	2.66E-07	7.21E-04	4.26E-04
54	Aromas	12.1	3.90E-07	100	250	5.63E-06	3.32E-06	2.31E-06	2.08E-07	5.63E-04	3.32E-04
55	Gilroy	4.2	3.90E-07	3,000	250	1.95E-06	1.15E-06	8.01E-07	7.20E-08	1.95E-04	1.15E-04
56	San Martin	6.1	3.90E-07	100	250	2.83E-06	1.67E-06	1.16E-06	1.04E-07	2.83E-04	1.67E-04
57	Morgan Hill	3.8	3.90E-07	3,000	250	1.79E-06	1.06E-06	7.34E-07	6.60E-08	1.79E-04	1.06E-04
58	Coyote Valley	6.7	3.90E-07	100	250	3.12E-06	1.84E-06	1.28E-06	1.15E-07	3.12E-04	1.84E-04

Table 4.7.15 Summary of Unit Train Accident and Spill Rates by Segment for the Nevada to Roseville to SMR via Oakland

Segment	Segment Description	Length (miles)	Accident Probability (per mile)	Population Density (per sq.mi.)	# of Trains (per year)	Project Oil Spill with Ignition			Project Oil Spill with no Ignition		
						All Spill Probability (per year)	Small Spill Probability (per year)	Large Spill Probability (per year)	All Spill Probability (per year)	Small Spill Probability (per year)	Large Spill Probability (per year)
59	San Jose	6.3	3.90E-07	5,000	250	2.96E-06	1.75E-06	1.21E-06	1.09E-07	2.96E-04	1.75E-04
60	Seven Trees	1.9	3.90E-07	1,000	250	8.69E-07	5.13E-07	3.56E-07	3.21E-08	8.69E-05	5.13E-05
61	San Jose	5.0	3.90E-07	10,000	250	2.32E-06	1.37E-06	9.50E-07	8.55E-08	2.32E-04	1.37E-04
62	Santa Clara	5.1	3.90E-07	6,500	250	2.39E-06	1.41E-06	9.79E-07	8.81E-08	2.39E-04	1.41E-04
63	Alviso	1.7	3.90E-07	1,000	250	8.03E-07	4.74E-07	3.29E-07	2.96E-08	8.03E-05	4.74E-05
64	Drawbridge	5.7	3.90E-07	100	250	2.66E-06	1.57E-06	1.09E-06	9.82E-08	2.66E-04	1.57E-04
65	Newark	2.3	3.90E-07	1,000	250	1.05E-06	6.20E-07	4.31E-07	3.88E-08	1.05E-04	6.20E-05
66	Newark to Russell	11.3	3.90E-07	10,000	250	5.30E-06	3.13E-06	2.17E-06	1.95E-07	5.30E-04	3.13E-04
67	San Lorenzo	0.8	3.90E-07	3,000	250	3.73E-07	2.20E-07	1.53E-07	1.38E-08	3.73E-05	2.20E-05
68	San Leandro	1.3	3.90E-07	10,000	250	5.98E-07	3.53E-07	2.45E-07	2.21E-08	5.98E-05	3.53E-05
69	San Leandro	0.7	3.90E-07	3,000	250	3.37E-07	1.99E-07	1.38E-07	1.24E-08	3.37E-05	1.99E-05
70	Oakland	5.3	3.90E-07	10,000	250	2.46E-06	1.45E-06	1.01E-06	9.07E-08	2.46E-04	1.45E-04
71	Oakland	1.4	3.90E-07	3,000	250	6.40E-07	3.78E-07	2.62E-07	2.36E-08	6.40E-05	3.78E-05
72	Oakland	1.6	3.90E-07	10,000	250	7.57E-07	4.46E-07	3.10E-07	2.79E-08	7.57E-05	4.46E-05
73	Oakland	1.4	3.90E-07	3,000	250	6.31E-07	3.72E-07	2.59E-07	2.33E-08	6.31E-05	3.72E-05
74	Oakland	1.5	3.90E-07	10,000	250	7.19E-07	4.24E-07	2.95E-07	2.65E-08	7.19E-05	4.24E-05
75	Oakland	2.7	3.90E-07	3,000	250	1.25E-06	7.36E-07	5.11E-07	4.60E-08	1.25E-04	7.36E-05
76	Emeryville	1.5	3.90E-07	10,000	250	6.77E-07	4.00E-07	2.78E-07	2.50E-08	6.77E-05	4.00E-05
77	Berkeley	1.0	3.90E-07	3,000	250	4.72E-07	2.78E-07	1.93E-07	1.74E-08	4.72E-05	2.78E-05
78	Berkeley	1.8	3.90E-07	10,000	250	8.17E-07	4.82E-07	3.35E-07	3.02E-08	8.17E-05	4.82E-05
79	Richmond	1.5	3.90E-07	3,000	250	7.01E-07	4.13E-07	2.87E-07	2.59E-08	7.01E-05	4.13E-05
80	Richmond	3.8	3.90E-07	10,000	250	1.76E-06	1.04E-06	7.20E-07	6.48E-08	1.76E-04	1.04E-04
81	North Richmond	1.1	3.90E-07	3,000	250	4.90E-07	2.89E-07	2.01E-07	1.81E-08	4.90E-05	2.89E-05
82	San Pablo	2.5	3.90E-07	1,000	250	1.16E-06	6.86E-07	4.77E-07	4.29E-08	1.16E-04	6.86E-05
83	Sobranto	1.8	3.90E-07	100	250	8.17E-07	4.82E-07	3.35E-07	3.02E-08	8.17E-05	4.82E-05
84	Hercules	5.6	3.90E-07	1,000	250	2.62E-06	1.55E-06	1.07E-06	9.67E-08	2.62E-04	1.55E-04
85	Selby	1.7	3.90E-07	100	250	7.89E-07	4.66E-07	3.24E-07	2.91E-08	7.89E-05	4.66E-05
86	Crockett	1.6	3.90E-07	1,000	250	7.29E-07	4.30E-07	2.99E-07	2.69E-08	7.29E-05	4.30E-05
87	Port Costa	4.3	3.90E-07	100	250	2.01E-06	1.19E-06	8.25E-07	7.43E-08	2.01E-04	1.19E-04

Table 4.7.15 Summary of Unit Train Accident and Spill Rates by Segment for the Nevada to Roseville to SMR via Oakland

Segment	Segment Description	Length (miles)	Accident Probability (per mile)	Population Density (per sq.mi.)	# of Trains (per year)	Project Oil Spill with Ignition			Project Oil Spill with no Ignition		
						All Spill Probability (per year)	Small Spill Probability (per year)	Large Spill Probability (per year)	All Spill Probability (per year)	Small Spill Probability (per year)	Large Spill Probability (per year)
88	Martinez	0.5	3.90E-07	1,000	250	2.26E-07	1.34E-07	9.28E-08	8.35E-09	2.26E-05	1.34E-05
89	Suisun Pt Channel	2.6	3.90E-07	100	250	1.20E-06	7.08E-07	4.92E-07	4.43E-08	1.20E-04	7.08E-05
90	Benicia	3.5	3.90E-07	1,000	250	1.63E-06	9.65E-07	6.70E-07	6.03E-08	1.63E-04	9.65E-05
91	Grizzly Bay	10.6	3.90E-07	100	250	4.94E-06	2.92E-06	2.03E-06	1.82E-07	4.94E-04	2.92E-04
92	Fairfield	3.8	3.90E-07	3,000	250	1.78E-06	1.05E-06	7.32E-07	6.58E-08	1.78E-04	1.05E-04
93	Elmira	13.7	3.90E-07	100	250	6.40E-06	3.78E-06	2.62E-06	2.36E-07	6.40E-04	3.78E-04
94	Dixon	2.1	3.90E-07	1,000	250	1.00E-06	5.90E-07	4.10E-07	3.69E-08	1.00E-04	5.90E-05
95	Solano Co Ag	6.6	3.90E-07	100	250	3.09E-06	1.82E-06	1.27E-06	1.14E-07	3.09E-04	1.82E-04
96	Davis	3.5	3.90E-07	1,000	250	1.65E-06	9.73E-07	6.76E-07	6.08E-08	1.65E-04	9.73E-05
97	Yolo Co Ag	7.0	3.90E-07	100	250	3.27E-06	1.93E-06	1.34E-06	1.20E-07	3.27E-04	1.93E-04
98	Sacramento	3.3	3.90E-07	3,000	250	1.52E-06	8.96E-07	6.22E-07	5.60E-08	1.52E-04	8.96E-05
99	Sacramento River	0.4	3.90E-07	100	250	1.96E-07	1.16E-07	8.05E-08	7.24E-09	1.96E-05	1.16E-05
100	Sacramento	2.5	3.90E-07	10,000	250	1.15E-06	6.78E-07	4.71E-07	4.24E-08	1.15E-04	6.78E-05
101	Parkland	1.6	3.90E-07	100	250	7.57E-07	4.46E-07	3.10E-07	2.79E-08	7.57E-05	4.46E-05
102	Sacramento	3.1	3.90E-07	3,000	250	1.45E-06	8.54E-07	5.94E-07	5.34E-08	1.45E-04	8.54E-05
103	North Highlands	2.6	3.90E-07	1,000	250	1.21E-06	7.11E-07	4.94E-07	4.45E-08	1.21E-04	7.11E-05
104	North Highlands	4.4	3.90E-07	3,000	250	2.04E-06	1.20E-06	8.37E-07	7.53E-08	2.04E-04	1.20E-04
105	Roseville Yard	1.3	3.90E-07	100	250	5.89E-07	3.47E-07	2.41E-07	2.17E-08	5.89E-05	3.47E-05
129	Roseville	1.4	8.20E-07	3,000	250	1.38E-06	8.16E-07	5.67E-07	5.10E-08	1.38E-04	8.16E-05
130	Roseville	1.1	8.20E-07	3,000	250	1.08E-06	6.37E-07	4.43E-07	3.98E-08	1.08E-04	6.37E-05
131	Roseville	2.1	8.20E-07	1,000	250	2.08E-06	1.23E-06	8.52E-07	7.66E-08	2.08E-04	1.23E-04
132	Roseville	0.5	8.20E-07	3,000	250	4.44E-07	2.62E-07	1.82E-07	1.64E-08	4.44E-05	2.62E-05
133	Rocklin	2.5	8.20E-07	1,000	250	2.47E-06	1.46E-06	1.01E-06	9.11E-08	2.47E-04	1.46E-04
134	Placer Co	8.0	8.20E-07	100	250	7.83E-06	4.62E-06	3.21E-06	2.89E-07	7.83E-04	4.62E-04
135	Newcastle	0.5	8.20E-07	1,000	250	4.43E-07	2.61E-07	1.82E-07	1.63E-08	4.43E-05	2.61E-05
136	Placer Co	2.5	8.20E-07	100	250	2.46E-06	1.45E-06	1.01E-06	9.08E-08	2.46E-04	1.45E-04
137	Auburn	5.3	8.20E-07	1,000	250	5.24E-06	3.09E-06	2.15E-06	1.93E-07	5.24E-04	3.09E-04
138	Placer Co	13.6	8.20E-07	100	250	1.34E-05	7.88E-06	5.47E-06	4.93E-07	1.34E-03	7.88E-04
139	Colfax	0.7	8.20E-07	1,000	250	6.62E-07	3.91E-07	2.71E-07	2.44E-08	6.62E-05	3.91E-05

Table 4.7.15 Summary of Unit Train Accident and Spill Rates by Segment for the Nevada to Roseville to SMR via Oakland

Segment	*Segment Description*	*Length (miles)*	*Accident Probability (per mile)*	*Population Density (per sq.mi.)*	*# of Trains (per year)*	*Project Oil Spill with Ignition*			*Project Oil Spill with no Ignition*		
						All Spill Probability (per year)	*Small Spill Probability (per year)*	*Large Spill Probability (per year)*	*All Spill Probability (per year)*	*Small Spill Probability (per year)*	*Large Spill Probability (per year)*
140	Placer Co	61.6	8.20E-07	100	250	6.05E-05	3.57E-05	2.48E-05	2.23E-06	6.05E-03	3.57E-03
141	Truckee	2.1	8.20E-07	1,000	250	2.08E-06	1.23E-06	8.54E-07	7.69E-08	2.08E-04	1.23E-04
142	Nevada Co	13.9	8.20E-07	100	250	1.36E-05	8.04E-06	5.59E-06	5.03E-07	1.36E-03	8.04E-04
143	Floriston	0.2	8.20E-07	1,000	250	2.27E-07	1.34E-07	9.32E-08	8.39E-09	2.27E-05	1.34E-05
144	Sierra Co	5.8	8.20E-07	100	250	5.69E-06	3.36E-06	2.33E-06	2.10E-07	5.69E-04	3.36E-04

Table 4.7.16 Summary of Unit Train Accident and Spill Rates by Segment for the Oregon to Roseville to SMR via Altamont Pass

Segment	Segment Description	Length (miles)	Accident Probability (per mile)	Population Density (per sq.mi.)	# of Trains (per year)	Project Oil Spill with Ignition			Project Oil Spill with no Ignition		
						All Spill Probability (per year)	Small Spill Probability (per year)	Large Spill Probability (per year)	All Spill Probability (per year)	Small Spill Probability (per year)	Large Spill Probability (per year)
1	Arroyo Grande	1.6	5.10E-07	1,000	250	9.47E-07	5.59E-07	3.88E-07	3.49E-08	9.47E-05	5.59E-05
2	Arroyo Grande	0.8	5.10E-07	100	250	4.88E-07	2.88E-07	2.00E-07	1.80E-08	4.88E-05	2.88E-05
3	Arroyo Grande	0.9	5.10E-07	1,000	250	5.74E-07	3.39E-07	2.35E-07	2.12E-08	5.74E-05	3.39E-05
4	Arroyo Grande	1.4	5.10E-07	100	250	8.44E-07	4.98E-07	3.46E-07	3.11E-08	8.44E-05	4.98E-05
5	Oceano	0.4	5.10E-07	3,000	250	2.46E-07	1.45E-07	1.01E-07	9.07E-09	2.46E-05	1.45E-05
6	Oceano	0.6	5.10E-07	10,000	250	3.81E-07	2.25E-07	1.56E-07	1.41E-08	3.81E-05	2.25E-05
7	Oceano	0.2	5.10E-07	3,000	250	1.46E-07	8.61E-08	5.99E-08	5.39E-09	1.46E-05	8.61E-06
8	Pismo/Grover	2.1	5.10E-07	10,000	250	1.28E-06	7.56E-07	5.25E-07	4.73E-08	1.28E-04	7.56E-05
9	Pismo	0.3	5.10E-07	3,000	250	1.76E-07	1.04E-07	7.23E-08	6.51E-09	1.76E-05	1.04E-05
10	Pismo	0.4	5.10E-07	1,000	250	2.25E-07	1.33E-07	9.23E-08	8.31E-09	2.25E-05	1.33E-05
11	Price Canyon	5.2	5.10E-07	100	250	3.17E-06	1.87E-06	1.30E-06	1.17E-07	3.17E-04	1.87E-04
12	Edna	0.6	5.10E-07	1,000	250	3.67E-07	2.17E-07	1.51E-07	1.35E-08	3.67E-05	2.17E-05
13	Edna	1.6	5.10E-07	100	250	9.89E-07	5.83E-07	4.05E-07	3.65E-08	9.89E-05	5.83E-05
14	San Luis Obispo	4.7	5.10E-07	10,000	250	2.85E-06	1.68E-06	1.17E-06	1.05E-07	2.85E-04	1.68E-04
15	San Luis Obispo	0.6	5.10E-07	3,000	250	3.45E-07	2.04E-07	1.42E-07	1.27E-08	3.45E-05	2.04E-05
16	Chorro	0.4	5.10E-07	1,000	250	2.60E-07	1.54E-07	1.07E-07	9.61E-09	2.60E-05	1.54E-05
17	Chorro	1.6	5.10E-07	100	250	9.56E-07	5.64E-07	3.92E-07	3.53E-08	9.56E-05	5.64E-05
18	CMC	0.8	5.10E-07	3,000	250	4.66E-07	2.75E-07	1.91E-07	1.72E-08	4.66E-05	2.75E-05
19	Santa Lucia	11.2	5.10E-07	100	250	6.83E-06	4.03E-06	2.80E-06	2.52E-07	6.83E-04	4.03E-04
20	Santa Margarita	0.9	5.10E-07	3,000	250	5.39E-07	3.18E-07	2.21E-07	1.99E-08	5.39E-05	3.18E-05
21	Phillips PS	0.9	5.10E-07	100	250	5.19E-07	3.06E-07	2.13E-07	1.92E-08	5.19E-05	3.06E-05
22	Atascadero	7.4	5.10E-07	1,000	250	4.52E-06	2.67E-06	1.85E-06	1.67E-07	4.52E-04	2.67E-04
23	Atascadero	1.6	5.10E-07	3,000	250	9.77E-07	5.77E-07	4.01E-07	3.61E-08	9.77E-05	5.77E-05
24	Atascadero	1.3	5.10E-07	1,000	250	7.77E-07	4.59E-07	3.19E-07	2.87E-08	7.77E-05	4.59E-05
25	Atascadero	0.4	5.10E-07	3,000	250	2.63E-07	1.55E-07	1.08E-07	9.70E-09	2.63E-05	1.55E-05
26	101	0.4	5.10E-07	1,000	250	2.23E-07	1.32E-07	9.16E-08	8.24E-09	2.23E-05	1.32E-05
27	Templeton	2.1	5.10E-07	3,000	250	1.31E-06	7.71E-07	5.36E-07	4.82E-08	1.31E-04	7.71E-05
28	Paso Robles	0.5	5.10E-07	1,000	250	3.14E-07	1.85E-07	1.29E-07	1.16E-08	3.14E-05	1.85E-05
29	Paso Robles	0.8	5.10E-07	3,000	250	5.14E-07	3.03E-07	2.11E-07	1.90E-08	5.14E-05	3.03E-05

Table 4.7.16 Summary of Unit Train Accident and Spill Rates by Segment for the Oregon to Roseville to SMR via Altamont Pass

Segment	*Segment Description*	*Length (miles)*	*Accident Probability (per mile)*	*Population Density (per sq.mi.)*	*# of Trains (per year)*	*Project Oil Spill with Ignition*			*Project Oil Spill with no Ignition*		
						All Spill Probability (per year)	*Small Spill Probability (per year)*	*Large Spill Probability (per year)*	*All Spill Probability (per year)*	*Small Spill Probability (per year)*	*Large Spill Probability (per year)*
30	Paso Robles	2.7	5.10E-07	1,000	250	1.68E-06	9.90E-07	6.88E-07	6.19E-08	1.68E-04	9.90E-05
31	Paso Robles	2.1	5.10E-07	3,000	250	1.31E-06	7.71E-07	5.36E-07	4.82E-08	1.31E-04	7.71E-05
32	Paso Robles	0.4	5.10E-07	10,000	250	2.65E-07	1.57E-07	1.09E-07	9.79E-09	2.65E-05	1.57E-05
33	Paso Robles	1.2	5.10E-07	3,000	250	7.10E-07	4.19E-07	2.91E-07	2.62E-08	7.10E-05	4.19E-05
34	101	2.1	5.10E-07	100	250	1.30E-06	7.64E-07	5.31E-07	4.78E-08	1.30E-04	7.64E-05
35	Wellsona	2.4	5.10E-07	1,000	250	1.49E-06	8.81E-07	6.12E-07	5.51E-08	1.49E-04	8.81E-05
36	101	1.9	5.10E-07	100	250	1.14E-06	6.72E-07	4.67E-07	4.20E-08	1.14E-04	6.72E-05
37	San Miguel	1.5	5.10E-07	3,000	250	8.97E-07	5.29E-07	3.68E-07	3.31E-08	8.97E-05	5.29E-05
38	101	2.7	5.10E-07	100	250	1.62E-06	9.55E-07	6.64E-07	5.97E-08	1.62E-04	9.55E-05
39	Camp Roberts	5.7	5.10E-07	100	250	3.49E-06	2.06E-06	1.43E-06	1.29E-07	3.49E-04	2.06E-04
40	Bradley	15.3	5.10E-07	100	250	9.35E-06	5.51E-06	3.83E-06	3.45E-07	9.35E-04	5.51E-04
41	San Lucas	18.5	5.10E-07	100	250	1.13E-05	6.67E-06	4.64E-06	4.17E-07	1.13E-03	6.67E-04
42	King City	1.5	5.10E-07	1,000	250	8.92E-07	5.26E-07	3.66E-07	3.29E-08	8.92E-05	5.26E-05
43	Clark Ranch	18.1	5.10E-07	100	250	1.11E-05	6.52E-06	4.53E-06	4.08E-07	1.11E-03	6.52E-04
44	Soledad	1.4	5.10E-07	1,000	250	8.67E-07	5.12E-07	3.56E-07	3.20E-08	8.67E-05	5.12E-05
45	Salinas Valley Ag	7.3	5.10E-07	100	250	4.48E-06	2.65E-06	1.84E-06	1.65E-07	4.48E-04	2.65E-04
46	Gonzales	1.2	5.10E-07	3,000	250	7.09E-07	4.18E-07	2.91E-07	2.61E-08	7.09E-05	4.18E-05
47	Salinas Valley Ag	5.0	5.10E-07	100	250	3.07E-06	1.81E-06	1.26E-06	1.13E-07	3.07E-04	1.81E-04
48	Chular	0.6	5.10E-07	1,000	250	3.89E-07	2.30E-07	1.60E-07	1.44E-08	3.89E-05	2.30E-05
49	Sprekles	7.8	5.10E-07	100	250	4.75E-06	2.80E-06	1.95E-06	1.75E-07	4.75E-04	2.80E-04
50	Salinas	3.9	5.10E-07	6,500	250	2.40E-06	1.42E-06	9.84E-07	8.86E-08	2.40E-04	1.42E-04
51	Salinas Valley Ag	6.2	5.10E-07	100	250	3.78E-06	2.23E-06	1.55E-06	1.39E-07	3.78E-04	2.23E-04
52	Castroville	1.1	5.10E-07	1,000	250	6.90E-07	4.07E-07	2.83E-07	2.55E-08	6.90E-05	4.07E-05
53	Las Lomas	15.4	5.10E-07	100	250	9.43E-06	5.56E-06	3.87E-06	3.48E-07	9.43E-04	5.56E-04
54	Aromas	12.1	5.10E-07	100	250	7.36E-06	4.34E-06	3.02E-06	2.72E-07	7.36E-04	4.34E-04
55	Gilroy	4.2	5.10E-07	3,000	250	2.55E-06	1.51E-06	1.05E-06	9.42E-08	2.55E-04	1.51E-04
56	San Martin	6.1	5.10E-07	100	250	3.70E-06	2.18E-06	1.52E-06	1.36E-07	3.70E-04	2.18E-04
57	Morgan Hill	3.8	5.10E-07	3,000	250	2.34E-06	1.38E-06	9.59E-07	8.63E-08	2.34E-04	1.38E-04
58	Coyote Valley	6.7	5.10E-07	100	250	4.07E-06	2.40E-06	1.67E-06	1.50E-07	4.07E-04	2.40E-04

Table 4.7.16 Summary of Unit Train Accident and Spill Rates by Segment for the Oregon to Roseville to SMR via Altamont Pass

Segment	Segment Description	Length (miles)	Accident Probability (per mile)	Population Density (per sq.mi.)	# of Trains (per year)	Project Oil Spill with Ignition			Project Oil Spill with no Ignition		
						All Spill Probability (per year)	Small Spill Probability (per year)	Large Spill Probability (per year)	All Spill Probability (per year)	Small Spill Probability (per year)	Large Spill Probability (per year)
59	San Jose	6.3	5.10E-07	5,000	250	3.87E-06	2.28E-06	1.59E-06	1.43E-07	3.87E-04	2.28E-04
60	Seven Trees	1.9	5.10E-07	1,000	250	1.14E-06	6.70E-07	4.66E-07	4.19E-08	1.14E-04	6.70E-05
61	San Jose	5.0	5.10E-07	10,000	250	3.03E-06	1.79E-06	1.24E-06	1.12E-07	3.03E-04	1.79E-04
62	Santa Clara	5.1	5.10E-07	6,500	250	3.12E-06	1.84E-06	1.28E-06	1.15E-07	3.12E-04	1.84E-04
63	Alviso	1.7	5.10E-07	1,000	250	1.05E-06	6.20E-07	4.31E-07	3.88E-08	1.05E-04	6.20E-05
64	Drawbridge	5.7	5.10E-07	100	250	3.48E-06	2.05E-06	1.43E-06	1.28E-07	3.48E-04	2.05E-04
65	Newark	2.3	5.10E-07	1,000	250	1.37E-06	8.11E-07	5.64E-07	5.07E-08	1.37E-04	8.11E-05
107	Newark	3.1	5.10E-07	10,000	250	1.90E-06	1.12E-06	7.79E-07	7.01E-08	1.90E-04	1.12E-04
108	Fremont	3.2	5.10E-07	10,000	250	1.97E-06	1.16E-06	8.06E-07	7.26E-08	1.97E-04	1.16E-04
109	Sunol	6.8	5.10E-07	100	250	4.17E-06	2.46E-06	1.71E-06	1.54E-07	4.17E-04	2.46E-04
110	Pleasanton	1.8	5.10E-07	1,000	250	1.09E-06	6.42E-07	4.46E-07	4.01E-08	1.09E-04	6.42E-05
111	Pleasanton	2.5	5.10E-07	3,000	250	1.52E-06	8.97E-07	6.24E-07	5.61E-08	1.52E-04	8.97E-05
112	Pleasanton	3.0	5.10E-07	100	250	1.81E-06	1.07E-06	7.44E-07	6.69E-08	1.81E-04	1.07E-04
113	Livermore	5.0	5.10E-07	5,000	250	3.08E-06	1.82E-06	1.26E-06	1.14E-07	3.08E-04	1.82E-04
114	Livermore	2.5	5.10E-07	1,000	250	1.51E-06	8.90E-07	6.19E-07	5.57E-08	1.51E-04	8.90E-05
115	Altamont	14.2	5.10E-07	100	250	8.67E-06	5.12E-06	3.56E-06	3.20E-07	8.67E-04	5.12E-04
116	Tracy	3.9	5.10E-07	3,000	250	2.36E-06	1.39E-06	9.67E-07	8.70E-08	2.36E-04	1.39E-04
117	Lathrop	8.2	5.10E-07	100	250	5.01E-06	2.96E-06	2.05E-06	1.85E-07	5.01E-04	2.96E-04
118	French Camp	8.0	5.10E-07	1,000	250	4.89E-06	2.88E-06	2.00E-06	1.80E-07	4.89E-04	2.88E-04
119	Stockton	7.9	5.10E-07	10,000	250	4.83E-06	2.85E-06	1.98E-06	1.78E-07	4.83E-04	2.85E-04
120	Lodi	4.1	5.10E-07	100	250	2.47E-06	1.46E-06	1.01E-06	9.13E-08	2.47E-04	1.46E-04
121	Lodi	3.4	5.10E-07	5,000	250	2.07E-06	1.22E-06	8.49E-07	7.64E-08	2.07E-04	1.22E-04
122	Acampo	5.5	5.10E-07	100	250	3.36E-06	1.98E-06	1.38E-06	1.24E-07	3.36E-04	1.98E-04
123	Galt	1.6	5.10E-07	4,000	250	9.53E-07	5.62E-07	3.91E-07	3.52E-08	9.53E-05	5.62E-05
124	Hicksville	8.6	5.10E-07	100	250	5.24E-06	3.09E-06	2.15E-06	1.93E-07	5.24E-04	3.09E-04
125	Elk Grove	1.0	5.10E-07	100	250	5.83E-07	3.44E-07	2.39E-07	2.15E-08	5.83E-05	3.44E-05
126	Elk Grove	5.8	5.10E-07	5,000	250	3.52E-06	2.08E-06	1.44E-06	1.30E-07	3.52E-04	2.08E-04
127	Sacramento	4.2	5.10E-07	1,000	250	2.57E-06	1.51E-06	1.05E-06	9.47E-08	2.57E-04	1.51E-04
128	Sacramento	4.6	5.10E-07	10,000	250	2.78E-06	1.64E-06	1.14E-06	1.03E-07	2.78E-04	1.64E-04

Table 4.7.16 Summary of Unit Train Accident and Spill Rates by Segment for the Oregon to Roseville to SMR via Altamont Pass

Segment	Segment Description	Length (miles)	Accident Probability (per mile)	Population Density (per sq.mi.)	# of Trains (per year)	Project Oil Spill with Ignition			Project Oil Spill with no Ignition		
						All Spill Probability (per year)	Small Spill Probability (per year)	Large Spill Probability (per year)	All Spill Probability (per year)	Small Spill Probability (per year)	Large Spill Probability (per year)
101	Parkland	0.8	5.10E-07	100	250	4.94E-07	2.91E-07	2.02E-07	1.82E-08	4.94E-05	2.91E-05
102	Sacramento	3.1	5.10E-07	3,000	250	1.89E-06	1.11E-06	7.74E-07	6.97E-08	1.89E-04	1.11E-04
103	North Highlands	2.6	5.10E-07	1,000	250	1.56E-06	9.23E-07	6.41E-07	5.77E-08	1.56E-04	9.23E-05
104	North Highlands	4.4	5.10E-07	3,000	250	2.67E-06	1.57E-06	1.09E-06	9.85E-08	2.67E-04	1.57E-04
105	Roseville Yard	1.3	5.10E-07	100	250	7.70E-07	4.54E-07	3.16E-07	2.84E-08	7.70E-05	4.54E-05
145	Roseville	2.3	2.70E-07	3,000	250	7.37E-07	4.35E-07	3.02E-07	2.72E-08	7.37E-05	4.35E-05
146	Roseville	1.3	2.70E-07	1,000	250	4.13E-07	2.43E-07	1.69E-07	1.52E-08	4.13E-05	2.43E-05
147	Roseville	0.1	2.70E-07	100	250	4.79E-08	2.83E-08	1.96E-08	1.77E-09	4.79E-06	2.83E-06
148	Placer Co	2.9	2.70E-07	1,000	250	9.45E-07	5.58E-07	3.88E-07	3.49E-08	9.45E-05	5.58E-05
149	Lincoln	1.2	2.70E-07	100	250	3.86E-07	2.28E-07	1.58E-07	1.42E-08	3.86E-05	2.28E-05
150	Lincoln	2.9	2.70E-07	3,000	250	9.27E-07	5.47E-07	3.80E-07	3.42E-08	9.27E-05	5.47E-05
151	Sheridan	10.7	2.70E-07	100	250	3.45E-06	2.03E-06	1.41E-06	1.27E-07	3.45E-04	2.03E-04
152	Wheatland	0.9	2.70E-07	1,000	250	3.01E-07	1.78E-07	1.23E-07	1.11E-08	3.01E-05	1.78E-05
153	Yuba County	9.2	2.70E-07	100	250	2.99E-06	1.76E-06	1.22E-06	1.10E-07	2.99E-04	1.76E-04
154	Olivehurst	4.3	2.70E-07	1,000	250	1.38E-06	8.13E-07	5.65E-07	5.08E-08	1.38E-04	8.13E-05
155	Marysville	1.3	2.70E-07	3,000	250	4.29E-07	2.53E-07	1.76E-07	1.58E-08	4.29E-05	2.53E-05
156	Marysville	2.3	2.70E-07	100	250	7.51E-07	4.43E-07	3.08E-07	2.77E-08	7.51E-05	4.43E-05
157	Live Oak	0.3	2.70E-07	1,000	250	1.06E-07	6.27E-08	4.36E-08	3.92E-09	1.06E-05	6.27E-06
158	Live Oak	6.4	2.70E-07	100	250	2.08E-06	1.23E-06	8.51E-07	7.66E-08	2.08E-04	1.23E-04
159	Live Oak	0.4	2.70E-07	1,000	250	1.18E-07	6.99E-08	4.86E-08	4.37E-09	1.18E-05	6.99E-06
160	Live Oak	1.0	2.70E-07	3,000	250	3.28E-07	1.93E-07	1.34E-07	1.21E-08	3.28E-05	1.93E-05
161	Butte Co	5.2	2.70E-07	100	250	1.69E-06	9.97E-07	6.93E-07	6.23E-08	1.69E-04	9.97E-05
162	Gridley	0.5	2.70E-07	1,000	250	1.47E-07	8.68E-08	6.03E-08	5.43E-09	1.47E-05	8.68E-06
163	Gridley	0.8	2.70E-07	3,000	250	2.68E-07	1.58E-07	1.10E-07	9.89E-09	2.68E-05	1.58E-05
164	Gridley	2.5	2.70E-07	100	250	8.11E-07	4.79E-07	3.33E-07	2.99E-08	8.11E-05	4.79E-05
165	Biggs	0.6	2.70E-07	3,000	250	1.85E-07	1.09E-07	7.59E-08	6.83E-09	1.85E-05	1.09E-05
166	Butte Co	5.1	2.70E-07	100	250	1.66E-06	9.79E-07	6.80E-07	6.12E-08	1.66E-04	9.79E-05
167	Richvale	0.8	2.70E-07	1,000	250	2.70E-07	1.59E-07	1.11E-07	9.97E-09	2.70E-05	1.59E-05
168	Nelson	9.3	2.70E-07	100	250	3.00E-06	1.77E-06	1.23E-06	1.11E-07	3.00E-04	1.77E-04

Table 4.7.16 Summary of Unit Train Accident and Spill Rates by Segment for the Oregon to Roseville to SMR via Altamont Pass

Segment	Segment Description	Length (miles)	Accident Probability (per mile)	Population Density (per sq.mi.)	# of Trains (per year)	Project Oil Spill with Ignition			Project Oil Spill with no Ignition		
						All Spill Probability (per year)	Small Spill Probability (per year)	Large Spill Probability (per year)	All Spill Probability (per year)	Small Spill Probability (per year)	Large Spill Probability (per year)
169	Durham	2.4	2.70E-07	1,000	250	7.88E-07	4.65E-07	3.23E-07	2.91E-08	7.88E-05	4.65E-05
170	Chico	4.3	2.70E-07	100	250	1.40E-06	8.25E-07	5.73E-07	5.16E-08	1.40E-04	8.25E-05
171	Chico	4.5	2.70E-07	1,000	250	1.46E-06	8.61E-07	5.98E-07	5.39E-08	1.46E-04	8.61E-05
172	Chico	2.8	2.70E-07	100	250	9.06E-07	5.35E-07	3.71E-07	3.34E-08	9.06E-05	5.35E-05
173	Nord	0.6	2.70E-07	1,000	250	1.89E-07	1.11E-07	7.73E-08	6.96E-09	1.89E-05	1.11E-05
174	Butte Co	11.3	2.70E-07	100	250	3.67E-06	2.16E-06	1.50E-06	1.35E-07	3.67E-04	2.16E-04
175	Vina	0.4	2.70E-07	1,000	250	1.44E-07	8.51E-08	5.91E-08	5.32E-09	1.44E-05	8.51E-06
176	Copeland	6.3	2.70E-07	100	250	2.04E-06	1.20E-06	8.37E-07	7.53E-08	2.04E-04	1.20E-04
177	Los Molinos	0.5	2.70E-07	1,000	250	1.68E-07	9.91E-08	6.89E-08	6.20E-09	1.68E-05	9.91E-06
178	Los Molinos	1.0	2.70E-07	100	250	3.21E-07	1.89E-07	1.32E-07	1.19E-08	3.21E-05	1.89E-05
179	Tehema	0.3	2.70E-07	1,000	250	1.08E-07	6.34E-08	4.41E-08	3.97E-09	1.08E-05	6.34E-06
180	Tehema	2.2	2.70E-07	100	250	7.23E-07	4.27E-07	2.97E-07	2.67E-08	7.23E-05	4.27E-05
181	Gerber	2.3	2.70E-07	1,000	250	7.49E-07	4.42E-07	3.07E-07	2.76E-08	7.49E-05	4.42E-05
182	Tehema Co	1.8	2.70E-07	100	250	5.78E-07	3.41E-07	2.37E-07	2.13E-08	5.78E-05	3.41E-05
183	Red Bluff	0.8	2.70E-07	1,000	250	2.49E-07	1.47E-07	1.02E-07	9.21E-09	2.49E-05	1.47E-05
184	Red Bluff	4.6	2.70E-07	100	250	1.50E-06	8.83E-07	6.14E-07	5.52E-08	1.50E-04	8.83E-05
185	Red Bluff	3.3	2.70E-07	1,000	250	1.06E-06	6.26E-07	4.35E-07	3.92E-08	1.06E-04	6.26E-05
186	Tehema Co	15.3	2.70E-07	100	250	4.94E-06	2.92E-06	2.03E-06	1.82E-07	4.94E-04	2.92E-04
187	Cottonwood	0.6	2.70E-07	1,000	250	1.97E-07	1.16E-07	8.08E-08	7.27E-09	1.97E-05	1.16E-05
188	Anderson	5.4	2.70E-07	100	250	1.73E-06	1.02E-06	7.10E-07	6.39E-08	1.73E-04	1.02E-04
189	Anderson	3.5	2.70E-07	1,000	250	1.15E-06	6.77E-07	4.70E-07	4.23E-08	1.15E-04	6.77E-05
190	Anderson	4.1	2.70E-07	100	250	1.32E-06	7.79E-07	5.42E-07	4.87E-08	1.32E-04	7.79E-05
191	Redding	6.0	2.70E-07	1,000	250	1.95E-06	1.15E-06	8.01E-07	7.21E-08	1.95E-04	1.15E-04
192	Redding	0.8	2.70E-07	1,000	250	2.46E-07	1.45E-07	1.01E-07	9.09E-09	2.46E-05	1.45E-05
193	Redding	1.1	2.70E-07	100	250	3.65E-07	2.16E-07	1.50E-07	1.35E-08	3.65E-05	2.16E-05
194	Redding	0.4	2.70E-07	1,000	250	1.26E-07	7.45E-08	5.18E-08	4.66E-09	1.26E-05	7.45E-06
195	Redding	2.6	2.70E-07	100	250	8.35E-07	4.92E-07	3.42E-07	3.08E-08	8.35E-05	4.92E-05
196	Shasta Co	0.5	2.70E-07	1,000	250	1.69E-07	9.98E-08	6.93E-08	6.24E-09	1.69E-05	9.98E-06
197	Shasta Lake	1.7	2.70E-07	100	250	5.34E-07	3.15E-07	2.19E-07	1.97E-08	5.34E-05	3.15E-05

Table 4.7.16 Summary of Unit Train Accident and Spill Rates by Segment for the Oregon to Roseville to SMR via Altamont Pass

Segment	*Segment Description*	*Length (miles)*	*Accident Probability (per mile)*	*Population Density (per sq.mi.)*	*# of Trains (per year)*	*Project Oil Spill with Ignition*			*Project Oil Spill with no Ignition*		
						All Spill Probability (per year)	*Small Spill Probability (per year)*	*Large Spill Probability (per year)*	*All Spill Probability (per year)*	*Small Spill Probability (per year)*	*Large Spill Probability (per year)*
198	Shasta Lake	0.8	2.70E-07	1,000	250	2.43E-07	1.43E-07	9.96E-08	8.96E-09	2.43E-05	1.43E-05
199	Shasta Co	16.4	2.70E-07	100	250	5.32E-06	3.14E-06	2.18E-06	1.96E-07	5.32E-04	3.14E-04
200	Lakeshore	0.6	2.70E-07	1,000	250	1.96E-07	1.16E-07	8.05E-08	7.24E-09	1.96E-05	1.16E-05
201	Shasta Co	30.4	2.70E-07	100	250	9.82E-06	5.79E-06	4.03E-06	3.62E-07	9.82E-04	5.79E-04
202	Dunsmuir	1.3	2.70E-07	1,000	250	4.21E-07	2.49E-07	1.73E-07	1.56E-08	4.21E-05	2.49E-05
203	Siskiyou Co	12.8	2.70E-07	100	250	4.13E-06	2.44E-06	1.69E-06	1.52E-07	4.13E-04	2.44E-04
204	Mount Shasta	1.1	2.70E-07	1,000	250	3.66E-07	2.16E-07	1.50E-07	1.35E-08	3.66E-05	2.16E-05
205	Siskiyou Co	69.5	2.70E-07	100	250	2.25E-05	1.33E-05	9.21E-06	8.29E-07	2.25E-03	1.33E-03
206	Dorris	0.9	2.70E-07	100	250	2.85E-07	1.68E-07	1.17E-07	1.05E-08	2.85E-05	1.68E-05
207	Siskiyou Co	3.4	2.70E-07	1,000	250	1.10E-06	6.51E-07	4.52E-07	4.07E-08	1.10E-04	6.51E-05

Table 4.7.17 Summary of Unit Train Accident and Spill Rates by Segment for the Nevada to Roseville to SMR via Altamont Pass

Segment	Segment Description	Length (miles)	Accident Probability (per mile)	Population Density (per sq.mi.)	# of Trains (per year)	Project Oil Spill with Ignition			Project Oil Spill with no Ignition		
						All Spill Probability (per year)	Small Spill Probability (per year)	Large Spill Probability (per year)	All Spill Probability (per year)	Small Spill Probability (per year)	Large Spill Probability (per year)
1	Arroyo Grande	1.6	5.10E-07	1,000	250	9.47E-07	5.59E-07	3.88E-07	3.49E-08	9.47E-05	5.59E-05
2	Arroyo Grande	0.8	5.10E-07	100	250	4.88E-07	2.88E-07	2.00E-07	1.80E-08	4.88E-05	2.88E-05
3	Arroyo Grande	0.9	5.10E-07	1,000	250	5.74E-07	3.39E-07	2.35E-07	2.12E-08	5.74E-05	3.39E-05
4	Arroyo Grande	1.4	5.10E-07	100	250	8.44E-07	4.98E-07	3.46E-07	3.11E-08	8.44E-05	4.98E-05
5	Oceano	0.4	5.10E-07	3,000	250	2.46E-07	1.45E-07	1.01E-07	9.07E-09	2.46E-05	1.45E-05
6	Oceano	0.6	5.10E-07	10,000	250	3.81E-07	2.25E-07	1.56E-07	1.41E-08	3.81E-05	2.25E-05
7	Oceano	0.2	5.10E-07	3,000	250	1.46E-07	8.61E-08	5.99E-08	5.39E-09	1.46E-05	8.61E-06
8	Pismo/Grover	2.1	5.10E-07	10,000	250	1.28E-06	7.56E-07	5.25E-07	4.73E-08	1.28E-04	7.56E-05
9	Pismo	0.3	5.10E-07	3,000	250	1.76E-07	1.04E-07	7.23E-08	6.51E-09	1.76E-05	1.04E-05
10	Pismo	0.4	5.10E-07	1,000	250	2.25E-07	1.33E-07	9.23E-08	8.31E-09	2.25E-05	1.33E-05
11	Price Canyon	5.2	5.10E-07	100	250	3.17E-06	1.87E-06	1.30E-06	1.17E-07	3.17E-04	1.87E-04
12	Edna	0.6	5.10E-07	1,000	250	3.67E-07	2.17E-07	1.51E-07	1.35E-08	3.67E-05	2.17E-05
13	Edna	1.6	5.10E-07	100	250	9.89E-07	5.83E-07	4.05E-07	3.65E-08	9.89E-05	5.83E-05
14	San Luis Obispo	4.7	5.10E-07	10,000	250	2.85E-06	1.68E-06	1.17E-06	1.05E-07	2.85E-04	1.68E-04
15	San Luis Obispo	0.6	5.10E-07	3,000	250	3.45E-07	2.04E-07	1.42E-07	1.27E-08	3.45E-05	2.04E-05
16	Chorro	0.4	5.10E-07	1,000	250	2.60E-07	1.54E-07	1.07E-07	9.61E-09	2.60E-05	1.54E-05
17	Chorro	1.6	5.10E-07	100	250	9.56E-07	5.64E-07	3.92E-07	3.53E-08	9.56E-05	5.64E-05
18	CMC	0.8	5.10E-07	3,000	250	4.66E-07	2.75E-07	1.91E-07	1.72E-08	4.66E-05	2.75E-05
19	Santa Lucia	11.2	5.10E-07	100	250	6.83E-06	4.03E-06	2.80E-06	2.52E-07	6.83E-04	4.03E-04
20	Santa Margarita	0.9	5.10E-07	3,000	250	5.39E-07	3.18E-07	2.21E-07	1.99E-08	5.39E-05	3.18E-05
21	Phillips PS	0.9	5.10E-07	100	250	5.19E-07	3.06E-07	2.13E-07	1.92E-08	5.19E-05	3.06E-05
22	Atascadero	7.4	5.10E-07	1,000	250	4.52E-06	2.67E-06	1.85E-06	1.67E-07	4.52E-04	2.67E-04
23	Atascadero	1.6	5.10E-07	3,000	250	9.77E-07	5.77E-07	4.01E-07	3.61E-08	9.77E-05	5.77E-05
24	Atascadero	1.3	5.10E-07	1,000	250	7.77E-07	4.59E-07	3.19E-07	2.87E-08	7.77E-05	4.59E-05
25	Atascadero	0.4	5.10E-07	3,000	250	2.63E-07	1.55E-07	1.08E-07	9.70E-09	2.63E-05	1.55E-05
26	101	0.4	5.10E-07	1,000	250	2.23E-07	1.32E-07	9.16E-08	8.24E-09	2.23E-05	1.32E-05
27	Templeton	2.1	5.10E-07	3,000	250	1.31E-06	7.71E-07	5.36E-07	4.82E-08	1.31E-04	7.71E-05
28	Paso Robles	0.5	5.10E-07	1,000	250	3.14E-07	1.85E-07	1.29E-07	1.16E-08	3.14E-05	1.85E-05
29	Paso Robles	0.8	5.10E-07	3,000	250	5.14E-07	3.03E-07	2.11E-07	1.90E-08	5.14E-05	3.03E-05

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Segment	Segment Description	Length (miles)	Accident Probability (per mile)	Population Density (per sq.mi.)	# of Trains (per year)	Project Oil Spill with Ignition			Project Oil Spill with no Ignition		
						All Spill Probability (per year)	Small Spill Probability (per year)	Large Spill Probability (per year)	All Spill Probability (per year)	Small Spill Probability (per year)	Large Spill Probability (per year)
30	Paso Robles	2.7	5.10E-07	1,000	250	1.68E-06	9.90E-07	6.88E-07	6.19E-08	1.68E-04	9.90E-05
31	Paso Robles	2.1	5.10E-07	3,000	250	1.31E-06	7.71E-07	5.36E-07	4.82E-08	1.31E-04	7.71E-05
32	Paso Robles	0.4	5.10E-07	10,000	250	2.65E-07	1.57E-07	1.09E-07	9.79E-09	2.65E-05	1.57E-05
33	Paso Robles	1.2	5.10E-07	3,000	250	7.10E-07	4.19E-07	2.91E-07	2.62E-08	7.10E-05	4.19E-05
34	101	2.1	5.10E-07	100	250	1.30E-06	7.64E-07	5.31E-07	4.78E-08	1.30E-04	7.64E-05
35	Wellsona	2.4	5.10E-07	1,000	250	1.49E-06	8.81E-07	6.12E-07	5.51E-08	1.49E-04	8.81E-05
36	101	1.9	5.10E-07	100	250	1.14E-06	6.72E-07	4.67E-07	4.20E-08	1.14E-04	6.72E-05
37	San Miguel	1.5	5.10E-07	3,000	250	8.97E-07	5.29E-07	3.68E-07	3.31E-08	8.97E-05	5.29E-05
38	101	2.7	5.10E-07	100	250	1.62E-06	9.55E-07	6.64E-07	5.97E-08	1.62E-04	9.55E-05
39	Camp Roberts	5.7	5.10E-07	100	250	3.49E-06	2.06E-06	1.43E-06	1.29E-07	3.49E-04	2.06E-04
40	Bradley	15.3	5.10E-07	100	250	9.35E-06	5.51E-06	3.83E-06	3.45E-07	9.35E-04	5.51E-04
41	San Lucas	18.5	5.10E-07	100	250	1.13E-05	6.67E-06	4.64E-06	4.17E-07	1.13E-03	6.67E-04
42	King City	1.5	5.10E-07	1,000	250	8.92E-07	5.26E-07	3.66E-07	3.29E-08	8.92E-05	5.26E-05
43	Clark Ranch	18.1	5.10E-07	100	250	1.11E-05	6.52E-06	4.53E-06	4.08E-07	1.11E-03	6.52E-04
44	Soledad	1.4	5.10E-07	1,000	250	8.67E-07	5.12E-07	3.56E-07	3.20E-08	8.67E-05	5.12E-05
45	Salinas Valley Ag	7.3	5.10E-07	100	250	4.48E-06	2.65E-06	1.84E-06	1.65E-07	4.48E-04	2.65E-04
46	Gonzales	1.2	5.10E-07	3,000	250	7.09E-07	4.18E-07	2.91E-07	2.61E-08	7.09E-05	4.18E-05
47	Salinas Valley Ag	5.0	5.10E-07	100	250	3.07E-06	1.81E-06	1.26E-06	1.13E-07	3.07E-04	1.81E-04
48	Chular	0.6	5.10E-07	1,000	250	3.89E-07	2.30E-07	1.60E-07	1.44E-08	3.89E-05	2.30E-05
49	Sprekles	7.8	5.10E-07	100	250	4.75E-06	2.80E-06	1.95E-06	1.75E-07	4.75E-04	2.80E-04
50	Salinas	3.9	5.10E-07	6,500	250	2.40E-06	1.42E-06	9.84E-07	8.86E-08	2.40E-04	1.42E-04
51	Salinas Valley Ag	6.2	5.10E-07	100	250	3.78E-06	2.23E-06	1.55E-06	1.39E-07	3.78E-04	2.23E-04
52	Castroville	1.1	5.10E-07	1,000	250	6.90E-07	4.07E-07	2.83E-07	2.55E-08	6.90E-05	4.07E-05
53	Las Lomas	15.4	5.10E-07	100	250	9.43E-06	5.56E-06	3.87E-06	3.48E-07	9.43E-04	5.56E-04
54	Aromas	12.1	5.10E-07	100	250	7.36E-06	4.34E-06	3.02E-06	2.72E-07	7.36E-04	4.34E-04
55	Gilroy	4.2	5.10E-07	3,000	250	2.55E-06	1.51E-06	1.05E-06	9.42E-08	2.55E-04	1.51E-04
56	San Martin	6.1	5.10E-07	100	250	3.70E-06	2.18E-06	1.52E-06	1.36E-07	3.70E-04	2.18E-04
57	Morgan Hill	3.8	5.10E-07	3,000	250	2.34E-06	1.38E-06	9.59E-07	8.63E-08	2.34E-04	1.38E-04
58	Coyote Valley	6.7	5.10E-07	100	250	4.07E-06	2.40E-06	1.67E-06	1.50E-07	4.07E-04	2.40E-04

Table 4.7.17 Summary of Unit Train Accident and Spill Rates by Segment for the Nevada to Roseville to SMR via Altamont Pass

Segment	*Segment Description*	*Length (miles)*	*Accident Probability (per mile)*	*Population Density (per sq.mi.)*	*# of Trains (per year)*	*Project Oil Spill with Ignition*			*Project Oil Spill with no Ignition*		
						All Spill Probability (per year)	*Small Spill Probability (per year)*	*Large Spill Probability (per year)*	*All Spill Probability (per year)*	*Small Spill Probability (per year)*	*Large Spill Probability (per year)*
59	San Jose	6.3	5.10E-07	5,000	250	3.87E-06	2.28E-06	1.59E-06	1.43E-07	3.87E-04	2.28E-04
60	Seven Trees	1.9	5.10E-07	1,000	250	1.14E-06	6.70E-07	4.66E-07	4.19E-08	1.14E-04	6.70E-05
61	San Jose	5.0	5.10E-07	10,000	250	3.03E-06	1.79E-06	1.24E-06	1.12E-07	3.03E-04	1.79E-04
62	Santa Clara	5.1	5.10E-07	6,500	250	3.12E-06	1.84E-06	1.28E-06	1.15E-07	3.12E-04	1.84E-04
63	Alviso	1.7	5.10E-07	1,000	250	1.05E-06	6.20E-07	4.31E-07	3.88E-08	1.05E-04	6.20E-05
64	Drawbridge	5.7	5.10E-07	100	250	3.48E-06	2.05E-06	1.43E-06	1.28E-07	3.48E-04	2.05E-04
65	Newark	2.3	5.10E-07	1,000	250	1.37E-06	8.11E-07	5.64E-07	5.07E-08	1.37E-04	8.11E-05
107	Newark	3.1	5.10E-07	10,000	250	1.90E-06	1.12E-06	7.79E-07	7.01E-08	1.90E-04	1.12E-04
108	Fremont	3.2	5.10E-07	10,000	250	1.97E-06	1.16E-06	8.06E-07	7.26E-08	1.97E-04	1.16E-04
109	Sunol	6.8	5.10E-07	100	250	4.17E-06	2.46E-06	1.71E-06	1.54E-07	4.17E-04	2.46E-04
110	Pleasanton	1.8	5.10E-07	1,000	250	1.09E-06	6.42E-07	4.46E-07	4.01E-08	1.09E-04	6.42E-05
111	Pleasanton	2.5	5.10E-07	3,000	250	1.52E-06	8.97E-07	6.24E-07	5.61E-08	1.52E-04	8.97E-05
112	Pleasanton	3.0	5.10E-07	100	250	1.81E-06	1.07E-06	7.44E-07	6.69E-08	1.81E-04	1.07E-04
113	Livermore	5.0	5.10E-07	5,000	250	3.08E-06	1.82E-06	1.26E-06	1.14E-07	3.08E-04	1.82E-04
114	Livermore	2.5	5.10E-07	1,000	250	1.51E-06	8.90E-07	6.19E-07	5.57E-08	1.51E-04	8.90E-05
115	Altamont	14.2	5.10E-07	100	250	8.67E-06	5.12E-06	3.56E-06	3.20E-07	8.67E-04	5.12E-04
116	Tracy	3.9	5.10E-07	3,000	250	2.36E-06	1.39E-06	9.67E-07	8.70E-08	2.36E-04	1.39E-04
117	Lathrop	8.2	5.10E-07	100	250	5.01E-06	2.96E-06	2.05E-06	1.85E-07	5.01E-04	2.96E-04
118	French Camp	8.0	5.10E-07	1,000	250	4.89E-06	2.88E-06	2.00E-06	1.80E-07	4.89E-04	2.88E-04
119	Stockton	7.9	5.10E-07	10,000	250	4.83E-06	2.85E-06	1.98E-06	1.78E-07	4.83E-04	2.85E-04
120	Lodi	4.1	5.10E-07	100	250	2.47E-06	1.46E-06	1.01E-06	9.13E-08	2.47E-04	1.46E-04
121	Lodi	3.4	5.10E-07	5,000	250	2.07E-06	1.22E-06	8.49E-07	7.64E-08	2.07E-04	1.22E-04
122	Acampo	5.5	5.10E-07	100	250	3.36E-06	1.98E-06	1.38E-06	1.24E-07	3.36E-04	1.98E-04
123	Galt	1.6	5.10E-07	4,000	250	9.53E-07	5.62E-07	3.91E-07	3.52E-08	9.53E-05	5.62E-05
124	Hicksville	8.6	5.10E-07	100	250	5.24E-06	3.09E-06	2.15E-06	1.93E-07	5.24E-04	3.09E-04
125	Elk Grove	1.0	5.10E-07	100	250	5.83E-07	3.44E-07	2.39E-07	2.15E-08	5.83E-05	3.44E-05
126	Elk Grove	5.8	5.10E-07	5,000	250	3.52E-06	2.08E-06	1.44E-06	1.30E-07	3.52E-04	2.08E-04
127	Sacramento	4.2	5.10E-07	1,000	250	2.57E-06	1.51E-06	1.05E-06	9.47E-08	2.57E-04	1.51E-04
128	Sacramento	4.6	5.10E-07	10,000	250	2.78E-06	1.64E-06	1.14E-06	1.03E-07	2.78E-04	1.64E-04

Table 4.7.17 Summary of Unit Train Accident and Spill Rates by Segment for the Nevada to Roseville to SMR via Altamont Pass

Segment	*Segment Description*	*Length (miles)*	*Accident Probability (per mile)*	*Population Density (per sq.mi.)*	*# of Trains (per year)*	*Project Oil Spill with Ignition*			*Project Oil Spill with no Ignition*		
						All Spill Probability (per year)	*Small Spill Probability (per year)*	*Large Spill Probability (per year)*	*All Spill Probability (per year)*	*Small Spill Probability (per year)*	*Large Spill Probability (per year)*
101	Parkland	0.8	5.10E-07	100	250	4.94E-07	2.91E-07	2.02E-07	1.82E-08	4.94E-05	2.91E-05
102	Sacramento	3.1	5.10E-07	3,000	250	1.89E-06	1.11E-06	7.74E-07	6.97E-08	1.89E-04	1.11E-04
103	North Highlands	2.6	5.10E-07	1,000	250	1.56E-06	9.23E-07	6.41E-07	5.77E-08	1.56E-04	9.23E-05
104	North Highlands	4.4	5.10E-07	3,000	250	2.67E-06	1.57E-06	1.09E-06	9.85E-08	2.67E-04	1.57E-04
105	Roseville Yard	1.3	5.10E-07	100	250	7.70E-07	4.54E-07	3.16E-07	2.84E-08	7.70E-05	4.54E-05
129	Roseville	1.4	8.20E-07	3,000	250	1.38E-06	8.16E-07	5.67E-07	5.10E-08	1.38E-04	8.16E-05
130	Roseville	1.1	8.20E-07	3,000	250	1.08E-06	6.37E-07	4.43E-07	3.98E-08	1.08E-04	6.37E-05
131	Roseville	2.1	8.20E-07	1,000	250	2.08E-06	1.23E-06	8.52E-07	7.66E-08	2.08E-04	1.23E-04
132	Roseville	0.5	8.20E-07	3,000	250	4.44E-07	2.62E-07	1.82E-07	1.64E-08	4.44E-05	2.62E-05
133	Rocklin	2.5	8.20E-07	1,000	250	2.47E-06	1.46E-06	1.01E-06	9.11E-08	2.47E-04	1.46E-04
134	Placer Co	8.0	8.20E-07	100	250	7.83E-06	4.62E-06	3.21E-06	2.89E-07	7.83E-04	4.62E-04
135	Newcastle	0.5	8.20E-07	1,000	250	4.43E-07	2.61E-07	1.82E-07	1.63E-08	4.43E-05	2.61E-05
136	Placer Co	2.5	8.20E-07	100	250	2.46E-06	1.45E-06	1.01E-06	9.08E-08	2.46E-04	1.45E-04
137	Auburn	5.3	8.20E-07	1,000	250	5.24E-06	3.09E-06	2.15E-06	1.93E-07	5.24E-04	3.09E-04
138	Placer Co	13.6	8.20E-07	100	250	1.34E-05	7.88E-06	5.47E-06	4.93E-07	1.34E-03	7.88E-04
139	Colfax	0.7	8.20E-07	1,000	250	6.62E-07	3.91E-07	2.71E-07	2.44E-08	6.62E-05	3.91E-05
140	Placer Co	61.6	8.20E-07	100	250	6.05E-05	3.57E-05	2.48E-05	2.23E-06	6.05E-03	3.57E-03
141	Truckee	2.1	8.20E-07	1,000	250	2.08E-06	1.23E-06	8.54E-07	7.69E-08	2.08E-04	1.23E-04
142	Nevada Co	13.9	8.20E-07	100	250	1.36E-05	8.04E-06	5.59E-06	5.03E-07	1.36E-03	8.04E-04
143	Floriston	0.2	8.20E-07	1,000	250	2.27E-07	1.34E-07	9.32E-08	8.39E-09	2.27E-05	1.34E-05
144	Sierra Co	5.8	8.20E-07	100	250	5.69E-06	3.36E-06	2.33E-06	2.10E-07	5.69E-04	3.36E-04

The public safety risk, which is shown in the risk profiles (Figure 4.7-5) covers only the portion of the routes between the SMR and Roseville/Colton. Figure 4.7-7 shows the risk profiles for several routes between the SMR, Nevada and Oregon. The cumulative societal risk of injuries and fatalities) associated with the additional route segments in California is not substantially different than the risks shown in Figure 4.7-5 since the segments between Roseville/Colton and Nevada/Oregon would not pass through any additional HTUA. These are areas with high population densities in close proximity to long stretches of track, which increase the risk of larger numbers of injuries and facilities. With the additional track in California the impact to public safety in the event of a derailment that leads to a fire or explosion would remain significant.

If the track outside of California was included the public safety risk would increase and would remain significant. Depending upon the route taken, the crude oil train could pass though a number of HTUA such as Las Vegas, Denver, Phoenix, Seattle, etc.

Mitigation Measures

HM-2a Only rail cars designed to FRA, July 23, 2014 Proposed Rulemaking Option 1: PHMSA and FRA Designed Tank Car as listed in Table 4.7.6, shall be allowed to unload crude oil at the Santa Maria Refinery.

HM-2b For crude oil shipments via rail to the SMR a rail transportation route analysis shall be conducted annually. The rail transportation route analysis shall be prepared following the requirements in 49 CFR 172.820. The route with the lowest level of safety and security risk shall be used to transport the crude oil to the Santa Maria Refinery.

HM-2c The Applicant's contract with UPRR, shall include a provision to require that Positive Train Control (PTC) be in place for all mainline rail routes in California that could be used for transporting crude oil to the SMR.

HM-2d The refinery shall not accept or unload at the rail unloading facility any crude oil or petroleum product with an API Gravity of 30^{o} or greater.

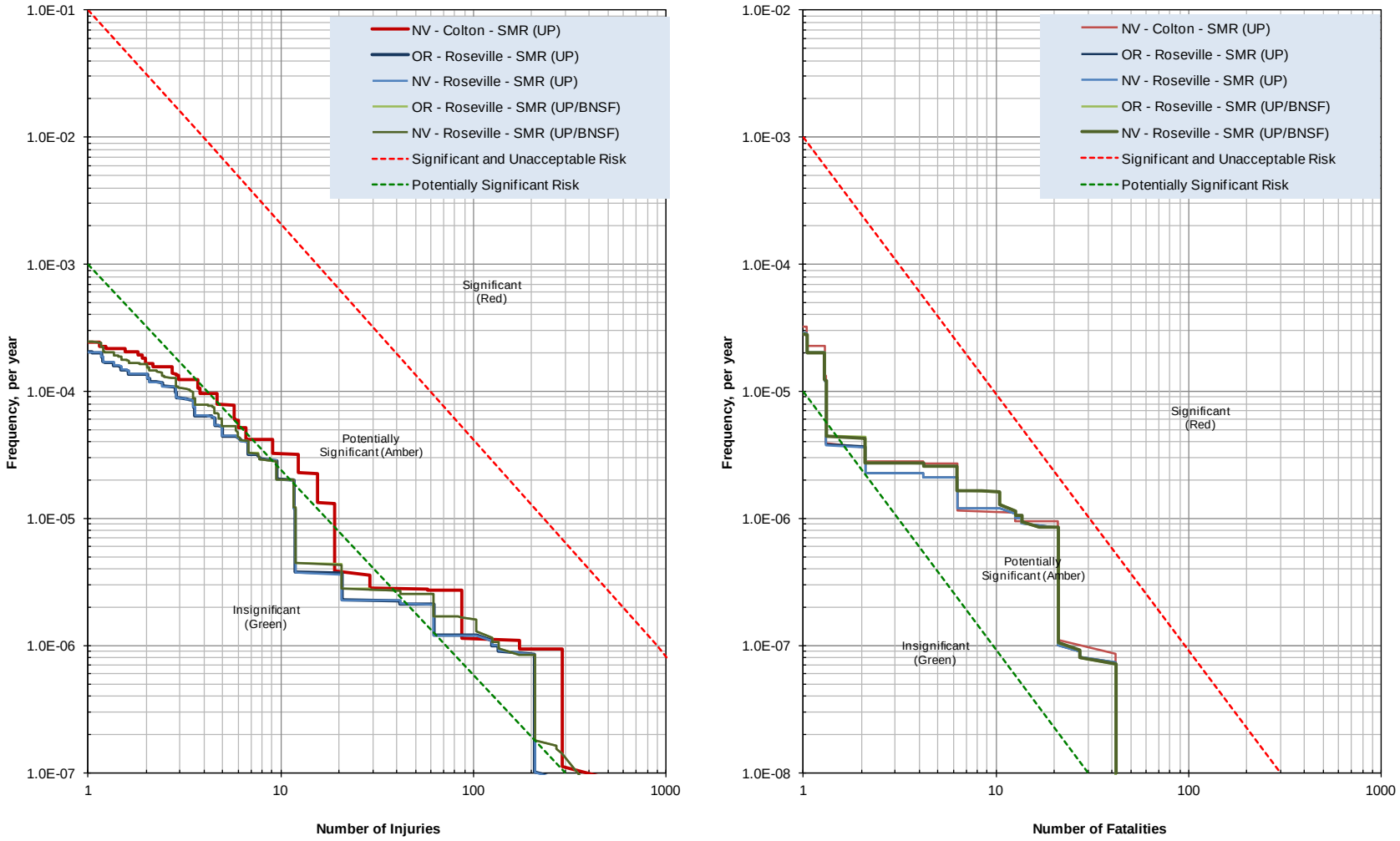
Implement mitigation measures PS-4a through PS4e.

Residual Impacts

Mitigation measures HM-2a through HM-2d would reduce the potential for a potential rail accident and loss of containment, and would also improve emergency response in the event of an accident. Implementation of HM-2a would reduce the probability of a release from a rail car by about 74 percent over the rail car design that is currently proposed by the Applicant. Figure 4.7-8 shows the risk for the mainline rail transport between the SMR and Colton/Roseville rail yards with implementation of the proposed mitigation measures. Figure 4.7-9 shows the risk for the mainline rail transport between the SMR and state line with implementation of the proposed mitigation measures.

Even with this reduction in release probability, the hazards associated with the Rail Spur Project risk along the UPRR right-of-way would still be potentially *significant (Class I)* in the event of a release of crude oil that resulted in a fire or explosion.

Figure 4.7-7 Risk Associated with Mainline Rail Crude Oil Unit Train Transportation – SMR to the California State Line



Note: Some lines overlap and may not be visible.

Figure 4.7-8 Risk Associated with Mainline Rail Crude Oil Unit Train Transportation-With Mitigation

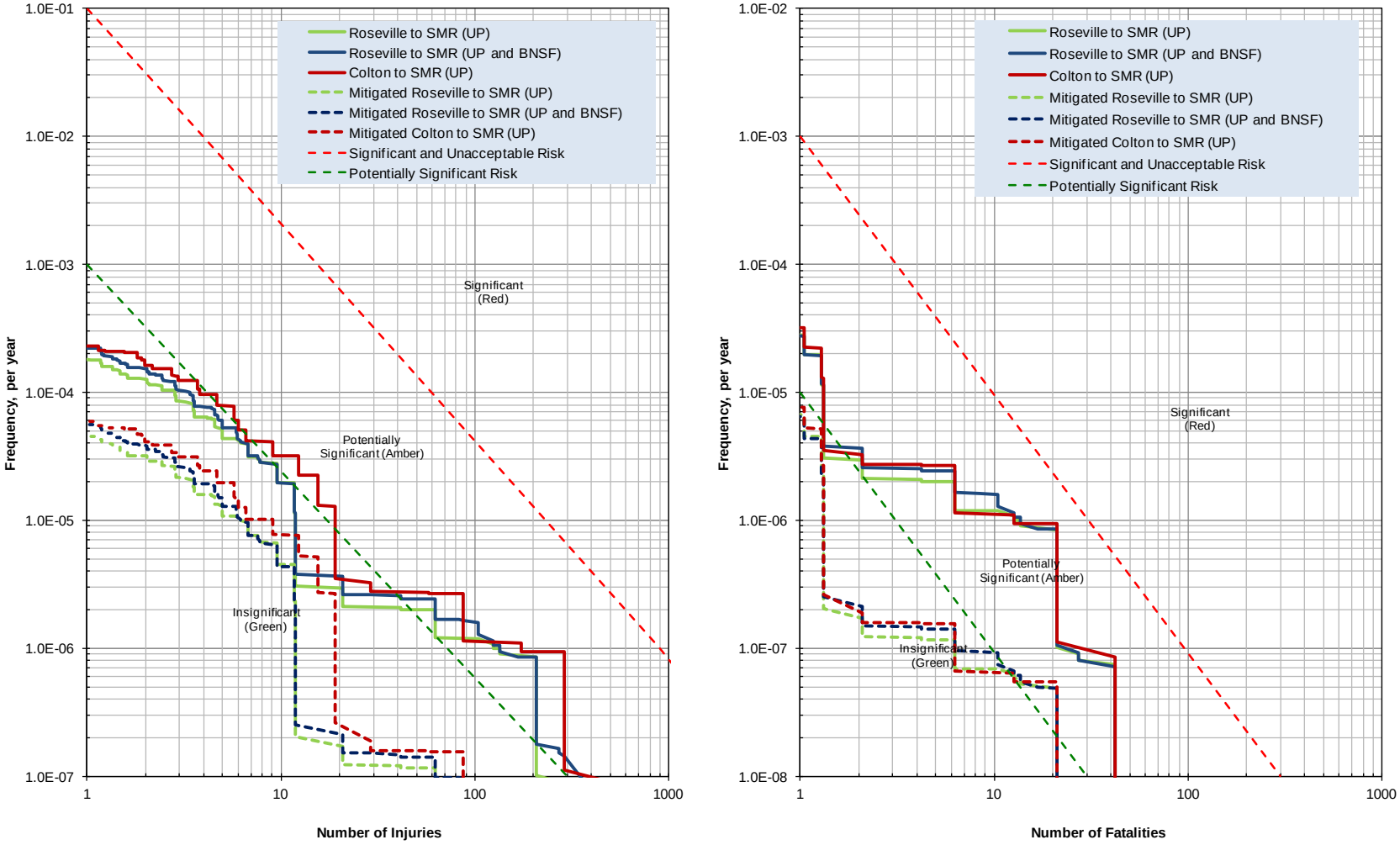
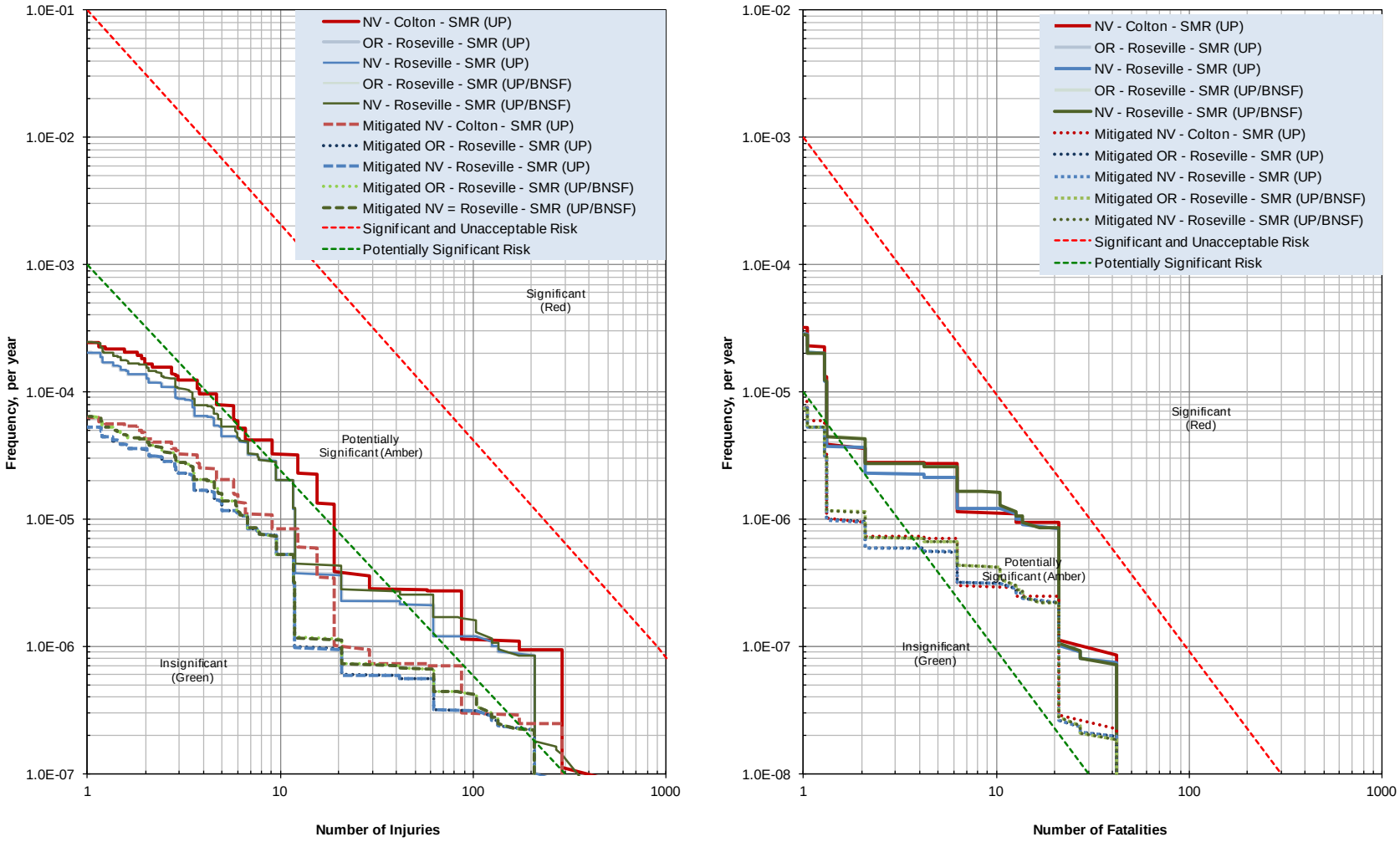


Figure 4.7-9 Risk Associated with Mainline Rail Crude Oil Unit Train Transportation-With Mitigation – SMR to California State Line



Note: Some lines overlap and may not be visible.

The County may be preempted by federal law from implementing these measures as they require particular contractual provisions that might be determined to improperly impact interstate commerce or conflict with the Interstate Commerce Commission Termination Act (ICCTA), which preempts state and local laws with respect to rail transportation.

As discussed above, the USDOT was proposing to implement new rules that would result in stricter regulation of crude by rail transportation. The rules were final on May 1, 2015. The impact of final rule is discussed below in Section 4.7.5.

With or without preemption, the hazards associated with the Rail Spur Project risk along the UPRR right-of-way would still be potentially *significant (Class I)* in the event of a release of crude oil that resulted in a fire or explosion. However, if the County is preempted, the potential severity of the Class I impact would be greater.

Impact #	Impact Description	Phase	Impact Classification
HM.3	A change in crude slate from rail deliveries could increase hazards at the refinery that would impact the public.	Operations	Class III

The SMR is designed to handle heavy sour crude, to only partially refine crude oil to extract intermediates and gases, and uses the heavier crude oil components to produce petroleum coke.

The SMR, as with all refineries, is similar to other manufacturing facilities that regularly evaluate their principal manufacturing feedstocks in terms of availability, suitability, and economics. This is certainly true of the crude oil feedstock used at the SMR. The refinery processes a range of crude oils from different sources, and the crudes have varied over time. In addition, the refinery often blends crudes from multiple sources prior to processing to assure the crude is within the processing design limits of the refinery.

For the SMR, key crude slate parameters that could impact hazards and potential releases at the refinery have to do with the corrosivity of the crude oil. Table 4.7.18 provides the key corrosivity driving properties (sulfur and total acid number (TAN)) of the typical crude blend and range of major crudes processed at the SMR as well as a range of typical crudes that could be delivered by rail.

Naphthenic acids are natural constituents in many petroleum sources, including bitumen from oil sands. Naphthenic acids can create corrosion problems. This type of corrosion is referred to as naphthenic acid corrosion (NAC). Because of the lack of available naphthenic acid concentration data for crude oil, the petroleum industry uses a measurement known as the total acid number (TAN) to qualitatively measure the potential for an oil to produce such corrosion problems. High sulfur levels can lead to sulfide related corrosion.

Table 4.7.18 Key Corrosivity Properties of Current and Potential Future Crude Oils at the Santa Maria Refinery

Property	Unit of Measure	Current SMR Operations		Potential Crude by Rail Sources	
		Typical Crude Blend	Range of Major Crude Sources	Access Western Blend	Peace River Heavy
Sulfur Concentration	Weight %	4.2	2.1-5.2	4.0	5.0
Total Acid Number (TAN)	mgKOH/g	1.0	0.4-4.0	1.7	2.5

1. Typical blend properties based upon 3-year average.
2. Range of major crudes represent the major sources of current crudes to the refinery and include a number of OCS and local onshore sources.

Source: Data provided by Phillips 66, 2014.

SMR currently processes sour, heavy crudes with elevated levels of sulfur and organic acids. The SMR follow the guidelines laid out in the American Petroleum Institute Recommended Practice "Guidelines for Avoiding Sulfidation Corrosion Failures in Oil Refineries". Phillips 66 also has a required standard for their refineries (M-42-RS-03 "Sulfidation Service Equipment."), which the SMR is in compliance with. Both these documents provide rules and guidelines to monitor, mitigate and prevent sulfidation corrosion of process equipment.

With respect to organic acid corrosion, SMR follows generally accepted industry practices and the Phillips 66 Consensus Best Practice for "Naphthenic Acid Service Equipment." This document provides guidelines and recommendations for appropriate metallurgy and wide-spread risk based inspection including inspection frequency and methods, use of corrosion inhibitors and suggestions for possible equipment locations, material types, fluid velocities and temperature ranges where naphthenic acid corrosion may be expected to occur. SMR has a comprehensive inspection and monitoring program for naphthenic acid corrosion and has made numerous metallurgical upgrades of piping and equipment in response to program findings. Phillips 66 has approved capital projects planned between now and 2015 to further upgrade piping and equipment and improve organic acid corrosion resistance at SMR.

Phillips 66 has a number of existing process safety policies and procedures that would apply to the SMR rail project, including the equipment and operating procedures. These programs are designed to prevent releases of hazardous materials, minimize risk, and ensure the refinery's ability to process crude without increasing risk of releases. For example, the Mechanical Integrity Program covers equipment used to process, control, and store hazardous chemicals and assigns responsibility for equipment inspection and testing as well as maintenance. This program meets the requirements of CCR Title 8 Sec 5189, "Process Safety Management of Acutely Hazardous Materials" (f), (j) and 29 CFR 1910.119, "Process Safety Management of Highly Hazardous Chemicals" (j).

The refinery uses a Positive Material Identification (PMI) program to ensure the integrity of all mechanical and pressurized systems. This program is overseen by the refinery's Inspection Supervisor.

Any new feedstock coming to the refinery undergoes a complete Management of Change (MOC) analysis to ensure that all hazards, as well as the refinery's systems are safe and operable. The

MOC program is part of the refinery's Process Safety Management program and tracks equipment modification, addition of new systems and process changes. MOC covers all changes that involve specific chemicals at or above threshold limits as defined in California Code of Regulation, Section 5189, Appendix A or flammable liquids or gasses as defined by California Code of Regulations, Section 5194(c) including new construction, modifications, changes in chemicals or materials, changes in feedstock, and changes in concentrations, temperatures, pressures, or flow rates outside of established Safe Process Limits.

A review of the data in Table 4.7.14 shows that the expected range of sulfur and TAN would be within the range of the crudes that are currently being processed at the SMR. Therefore, the change in crude slate would not be expected to change the sulfur or TAN levels compared to the crude sources that are currently being processed at the SMR. It is possible that the TAN could increase when compared to the typical crude blend. However, with the programs and management systems, discussed above, in place, this potential increase would not be expected to increase the hazards or likelihood of a release at the SMR. Therefore, the impact would be less than significant.

Mitigation Measures

No mitigation measures are required since the impacts are less than significant.

Residual Impacts

Hazards associated with crude slate changes would be *less than significant (Class III)*.

4.7.5 USDOT Final for High-Hazard Flammable Trains (HHFT)

On May 1, 2015, the DOT issued their final rule covering enhanced tank car standards and operational controls for high-hazard flammable trains. The final rule defines certain trains transporting large volumes of flammable liquids as "high-hazard flammable trains" (HHFT) and regulates their operation in terms of speed restrictions, braking systems, and routing. The final rule also adopts safety improvements in tank car design standards, a sampling and classification program for unrefined petroleum-based products, and notification requirements. Table 4.7.19 provides a summary of the elements of the final rule. Table 4.7.20 further summarizes the design specifications for tank cars allowed under the final rule. New tank cars built after October 1, 2015 would be required to meet the new DOT-117 standard. All existing Non-Jacketed CPC-1232 tank cars in Packing Group I service (tank cars proposed for use by Applicant) would have to meet the DOT-117R standard by April 1, 2020.

Table 4.7.19 Final Regulatory Requirements for HHFT (USDOT May 1, 2015)

Proposed Requirement	Effected Entity
Enhanced Standards for Both New and Existing Tank Cars Used in HHFTs • New tank cars constructed after October 1, 2015 are required to meet enhanced DOT Specification 117 design or performance criteria. • Existing tank cars must be retrofitted in accordance with the DOT-prescribed retrofit design or performance standard. • Retrofits must be completed based on a prescriptive retrofit schedule and a retrofit reporting requirement is triggered if initial milestone is not achieved.	Tank Car Manufacturers, Tank Car Owners, Shippers / Offerors and Rail Carriers

Table 4.7.19 Final Regulatory Requirements for HHFT (USDOT May 1, 2015)

Proposed Requirement	Effected Entity
More Accurate Classification of Unrefined Petroleum-Based Products • Develop and carry out sampling and testing program for all unrefined petroleum-based products, such as crude oil, to address: (1) Frequency of sampling and testing that accounts for any appreciable variability of the material (2) Sampling prior to the initial offering of the material for transportation and when changes that may affect the properties of the material occur; (3) Sampling methods that ensures a representative sample of the entire mixture, as offered, is collected; (4) Testing methods that enable classification of the material under the HMR; (5) Quality control measures for sample frequencies; (6) Duplicate samples or equivalent measures for quality assurance; (7) Criteria for modifying the sampling and testing program; (8) Testing or other appropriate methods used to identify properties of the mixture relevant to packaging requirements • Certify that program is in place, document the testing and sampling program outcomes, and make information available to DOT personnel upon request.	Offerors / Shippers of unrefined petroleum-based products
Rail routing - Risk Assessment • Perform a routing analysis that considers, at a minimum, 27 safety and security factors and select a route based on its findings. These planning requirements are prescribed in 49 CFR § 172.820. ***Rail routing - Notification*** • Ensures that railroads notify State and/or regional fusion centers and State, local, and tribal officials who contact a railroad to discuss routing decisions are provided appropriate contact information for the railroad in order to request information related to the routing of hazardous materials through their jurisdictions. This replaces the proposed requirements to notify State Emergency Response Commissions (SERCs) or other appropriate state delegated entity about the operation of these trains through their States. ***Reduced Operating Speeds*** • Restrict all HHFTs to 50-mph in all areas. • Require HHFTs that contain any tank cars not meeting the enhanced tank car standards required by this rule operate at a 40-mph speed restriction in high-threat urban areas.	Rail Carriers
Enhanced Braking • Require HHFTs to have in place a functioning two-way end-of-train (EOT) device or a distributed power (DP) braking system. • Require trains meeting the definition of a "high-hazard flammable unit train" (HHFUT) be operated with an electronically controlled pneumatic (ECP) braking system by January 1, 2021, when transporting one or more tank cars loaded with a Packing Group I flammable liquid. • Require trains meeting the definition of a HHFUT be operated with an ECP braking system by May 1, 2023, when transporting one or more tank cars loaded with a Packing Group II or III flammable liquid.	Rail Carriers

HHFT-High-Hazard Flammable Trains (A train comprised of 20 or more loaded tank cars of a Class 3 flammable liquid in a continuous block or 35 or more loaded tank cars of a Class 3 flammable liquid across the entire train.
HHFUT-High-Hazard Flammable Unit Train (a train comprised of 70 or more loaded tank cars containing Class 3 flammable liquids traveling at speeds greater than 30 mph.)
Source: USDOT, 2015a.

Table 4.7.20 Final Safety Features by Tank Car Option (USDOT May 1, 2015)

Tank Car	Bottom Outlet Handle	GRL (lbs)	Head Shield Type	Pressure Relief Valve	Shell Thickness	Jacket	Tank Material	Top Fittings Protection	Thermal Protection System	Braking
DOT-117	Bottom outlet handle removed or designed to prevent unintended actuation during a train accident	286k	Full- height, 1/2 inch thick head shield	Reclosing pressure relief device	9/16 inch Minimum	Minimum 11-gauge jacket constructed from A1011 steel or equivalent. The jacket must be weather-tight	TC-128 Grade B, normalized steel	Equipped per AAR Specifications Tank Cars, appendix E paragraph 10.2.1	Thermal protection system in accordance with §179.18	In trains with DP or EOT devices
DOT-117R for Unjacketed CPC-1232	Bottom outlet handle removed or designed to prevent unintended actuation during a train accident	286k	Full Height 1/2 inch thick head shield	Reclosing pressure relief device	7/16 inch-Minimum	Minimum 11-gauge jacket constructed from A1011 steel or equivalent. The jacket must be weather-tight	TC-128 Grade B, normalized steel	Equipped per AAR Specifications Tank Cars, appendix E paragraph 10.2.1	Thermal protection system in accordance with §179.18	In trains with DP or EOT devices
CPC-1232[1]	Bottom Outlets are Optional	263K	Optional; Bare Tanks half height; Jacket Tanks full height	Reclosing pressure relief valve	7/16 inch-Minimum	Jackets are optional	TC-128 Grade B, normalized steel	Not required, but when Equipped per AAR Specifications Tank Cars, appendix E paragraph 10.2.1	Optional	Not required

2. This is referred to as a post October 1, 2011 tank car and is the tank car design proposed for use by Valero.
ECP-Electronically controlled pneumatic; DP-Distributed power; EOT-End of Train
HHFUTs transporting at least one car of Packing Group I flammable liquid to operate with ECP breaking system by January 1, 2021. Requires all other HHFUTs to operate with ECP braking system by May 1, 2013 or operate at a maximum speed of 30 miles per hour.
Non –Jacketed CPC-1232 tank cars in Packing Group I (Applicant proposed tank cars) must meet DOT-117R standard by April 1, 2020.
Source: Adapted from USDOT 2015a.

Use of DOT-117 tanker cars would reduce the probability of a release from a rail car by about 73.9% percent over the rail car design that is currently proposed by the Applicant. Use of the DOT-117R tanker cars would reduce the probability of a release from a rail car by about 65.9% percent over the rail car design that is currently proposed by the Applicant. Figure 4.7-10 shows the risk for the mainline rail transport between the SMR and state line assuming the use of either DOT-117 or DOT-117R tanker cars.

4.7.6 Cumulative Analysis

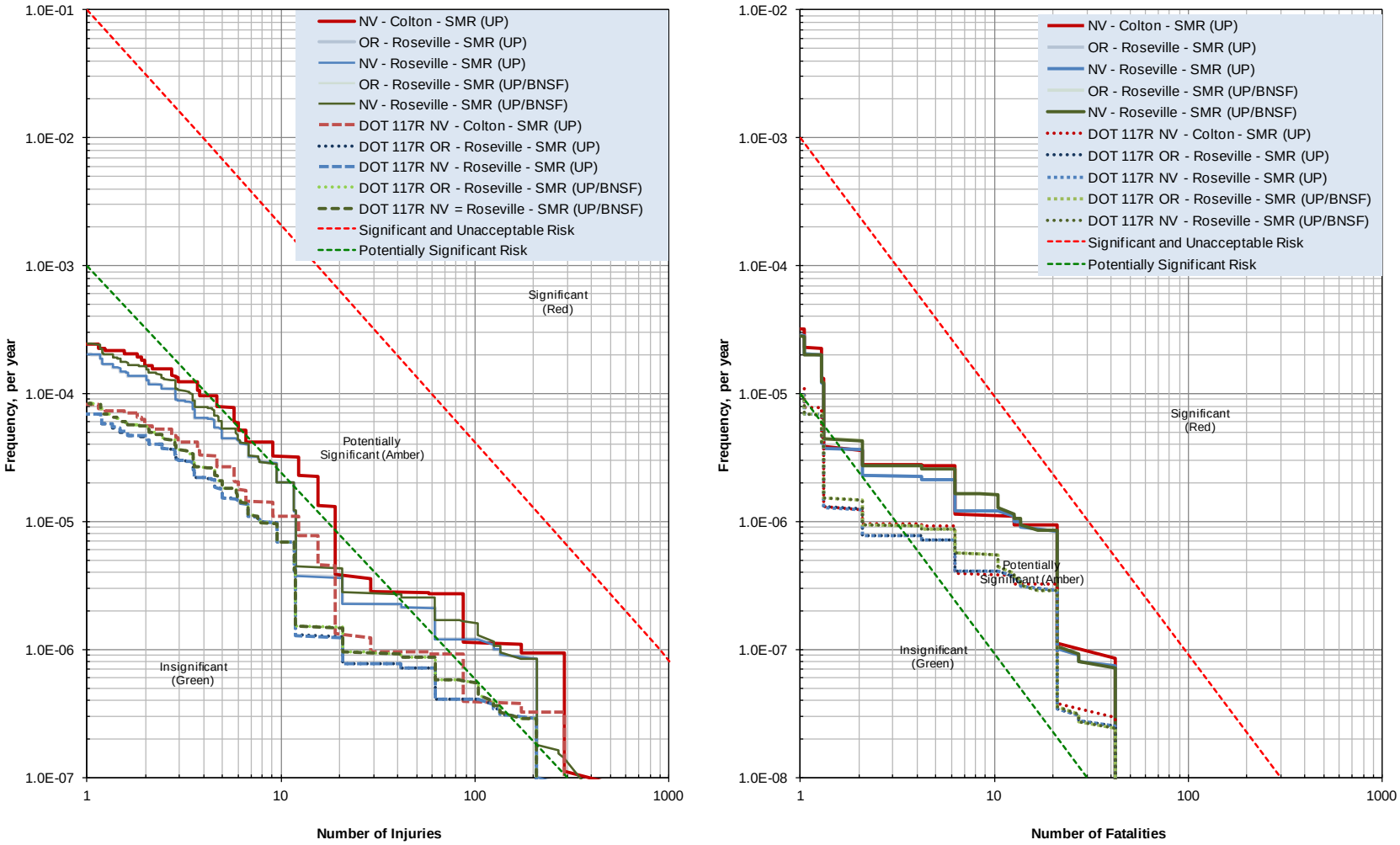
The Rail Spur Project would not significantly contribute to the risk associated with any of the proposed development projects at or in the vicinity of the SMR found under the cumulative projects list (see Chapter 3.0, Cumulative Scenario and Methodology). A brief description of potential cumulative hazards for relevant projects is provided below:

SMR Throughput Increase Project. As noted in the Refinery Throughput Increase FEIR releases of hazardous materials from the project site would not acutely impact nearby residences, agriculture, or industrial facilities due to the distance for offsite receptors. The closest population to the crude oil tanks at the SMR is an industrial area 425 feet northeast of the crude oil storage facilities. The closest residence to the crude oil tanks, which is located within the industrial area, is 1,200 feet northeast of the tank storage area. The gas processing equipment and piping are approximately 1,700 feet from the fence line and the closest receptor on industrial property. Given the limited population and significant distance between these receptors and the SMR, there would not be a significant risk level. The same is the case for the proposed rail spur unloading facilities, where worst-case hazards would not extend beyond the SMF property. Therefore, there is no increase in cumulative risk associated with the proposed Rail Spur Project and Refinery Throughput Increase Project.

Phillips 66 Pipeline Project/Freeport-McMoRan Oil & Gas Oil Field Expansion. The proposed Phillips pipeline route would be located relatively close to the UPRR railroad in Price Canyon. There is the potential for some overlap in hazards associated with a pipeline crude oil spill and a unit train derailment. The probability of a train derailment and oil spill on the Price Canyon segment of the UPRR route is approximately 5.2 in a million, with the probability of a spill and crude oil fire being less than one in a million for this segment. Given the low probability of a train derailment, oil spill and fire in the vicinity of the proposed Phillips 66 Pipeline and Freeport-McMoRan Oil & Gas Oil Field Expansion Projects, the Rail Spur Project would not significantly contribute to the potential cumulative risk in Price Canyon. Therefore, potential cumulative risks are considered less than significant.

Crude by Rail Projects. There is the potential for cumulative impacts associated with the crude by rail project discussed in Chapter 3.

Figure 4.7-10 Risk Associated with Mainline Rail Crude Oil Unit Train Transportation Using DOT-117 or DOT-177R Tanker Cars – SMR to California State Line



Note: Some lines overlap and may not be visible.

In conducting the cumulative analysis for crude by rail it has been assumed that the cumulative projects listed in Table 3.1 would use the same rail car tank design as the SMR Rail Spur Project, and that the cumulative crude by rail projects, with the exception of the Phillips Rail Spur Project, would transport a Bakken type crude, which is a worst case assumption.[6] It has also been assumed that all of the Rail Spur Project crude oil trains would use routes discussed below.

From Sacramento the crude oil trains servicing the Valero Benicia and Kinder Morgan projects could use the same UPRR tracks as the Rail Spur Project from Sacramento to the Bay Area a distance of about 53 miles. This portion of track could have up to four crude oil trains per day (two for Valero, one for Kinder Morgan, and one for the SMR).

From Sacramento the crude oil trains servicing the Alon, Targa, and Plains All American projects could use the same tracks as the Rail Spur Project from Sacramento to Stockton a distance of about 46 miles. This portion of track could have up to five crude oil trains per day (two for Alon, one for Targa, one for Plains All American, and one for the SMR).

If all of the crude by rail projects travel via the Roseville area, then up to eight crude oil trains per day could travel on the stretch of track between Sacramento and the California boarder (two for Valero, one for Kinder Morgan, two for Alon, one for Targa, one for Plains All American, and one for the SMR). From Roseville, rail traffic would likely follow two different routes; one following the I-80 corridor to Reno, Nevada, with the other heading north along the I-5 corridor to Oregon. A third route through the Feather River Canyon was not considered for further analysis.

None of the other cumulative crude by rail projects would use the mainline tracks along the southern route thorough the Los Angeles Basin since the crude oil trains going to Bakersfield would use Tehachapi Pass via Barstow and would not travel has far west as Colton. However, up to four unit trains per day could share the route between Nevada and Barstow (two for Alon, one for Plains All American, and one for the SMR). Given the sparse population densities along the Union Pacific mainline between the Nevada state line and Barstow, the societal risk is very low.

Along this route, there are potential cumulative impacts on the mainline stretch beginning at Barstow. However, it is unlikely that crude oil trains from Alon and Plains All American terminals would use the UPRR mainline east of Barstow since trains coming from Bakersfield would be utilizing the BNSF mainline. In this case, eastbound Alon and Plains All American crude oil trains would likely continue on the BNSF mainline to Arizona via Needles and crossing the Colorado River at Topock.

Using the QRA conducted for the Rail Spur Project a cumulative risk profile was developed for two stretches of mainline track (Roseville to Valero and Roseville to Stockton). Figure 4.7-11 shows the cumulative risk profiles for these two stretches of track. This figure shows that the cumulative risk would be significant. Risk profiles were also prepared for the continuation of these routes to the Nevada and Oregon state lines, as well as the southern route between Barstow and Nevada. Figure 4.7-12 shows the cumulative risk profiles for these five stretches of track.

[6] Canadian Crude, as specified in the Project Description, was assumed for the Phillips Rail Spur Project as part of the project and cumulative analysis.

Figure 4.7-11 Cumulative Risk Associated with Mainline Rail Crude Oil Unit Train Transportation – Rail Yards to Terminals

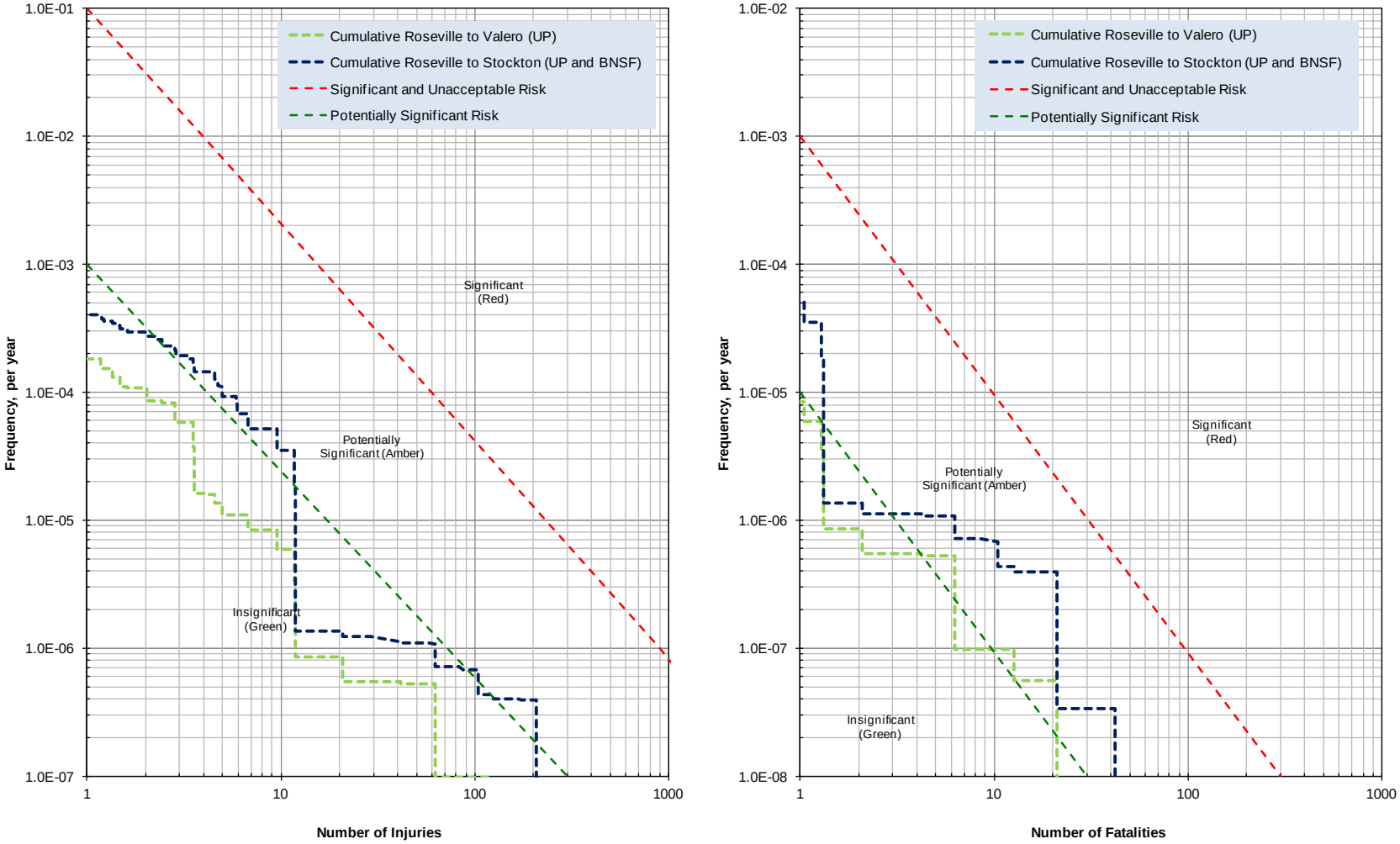
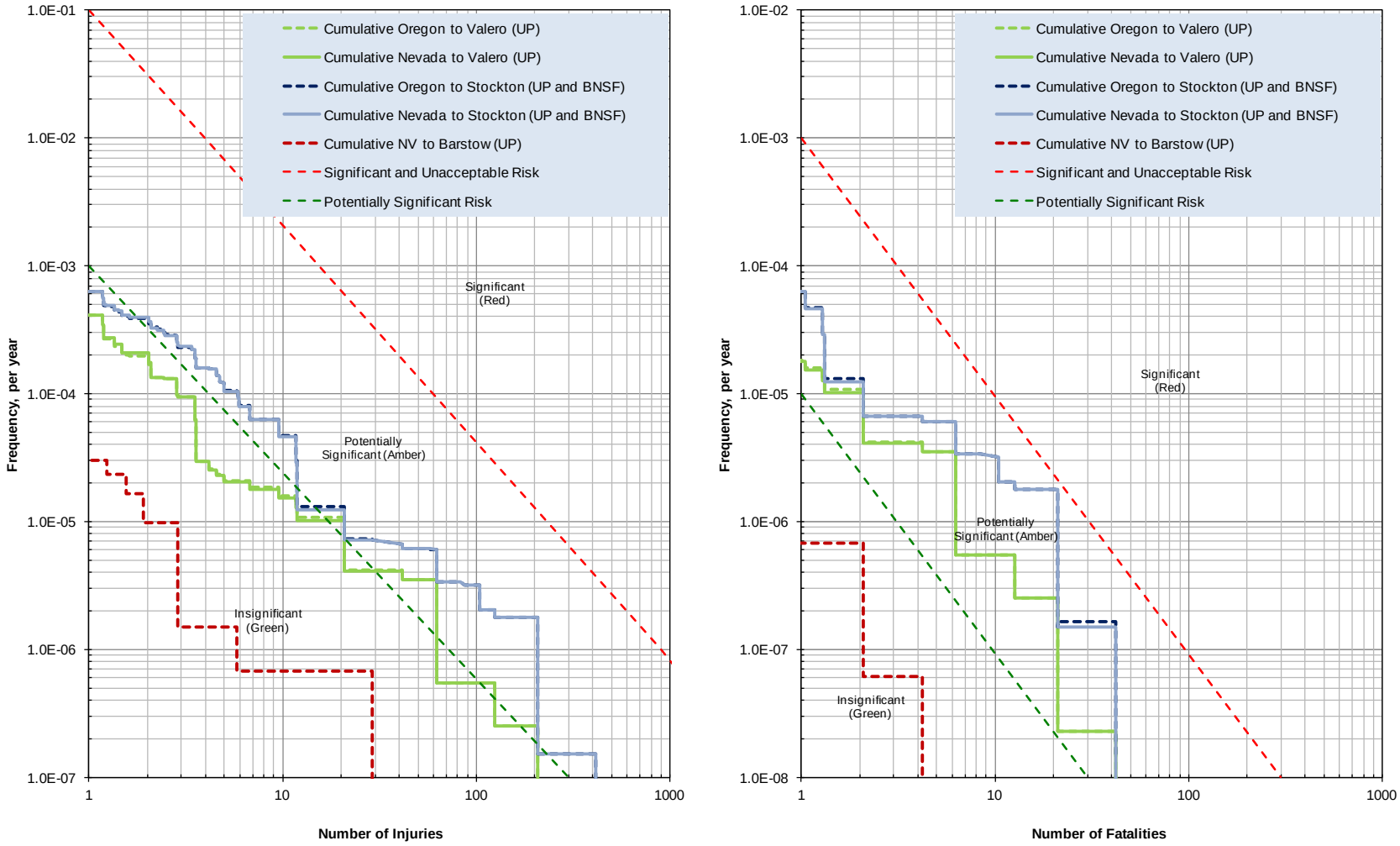


Figure 4.7-12 Cumulative Risk Associated with Mainline Rail Crude Oil Unit Train Transportation – California State Line to Terminals



Depending upon what tank car design USDOT adopts, the risk along this section of mainline track could be reduced to less than significant. However, since these are proposed regulations at this time, the cumulative risk would remain significant and unavoidable along this stretch of track.

Northern Santa Barbara County Oil Projects

The main hazards associated with the cumulative Northern Santa Barbara County oil development projects would involve the of flammable gas and oil spills. The release of flammable gases would be associated with production equipment and wells. Releases of flammable gases can produce flame jets, fires and explosions, or toxic impacts due to the presence of H_2S. Distances that these types of scenarios could impact would generally be less than 1,000 feet. Since the SMR is located over 20 miles from these Northern Santa Barbara County oil development projects, the hazards would not impact the same areas. This would also be true for the mainline rail routes through Northern Santa Barbara County which are located about 10 miles for the cumulative oil development projects.

As these cumulative oil development projects produce and transport crude oil, a failure in the tanks or pipelines could cause a release of crude oil into the environment. Spill volumes from tanks and processing equipment could produce spills as large as the largest tank. However, as all tanks and processing equipment are typically located within bermed areas, the frequency of spills that would impact areas outside the berms is very low.

Spill volumes from a pipeline rupture are based on the pipeline diameter and the terrain profile, which would limit the amount of oil that could drain out of the pipeline, given a rupture. In addition, the pumping rate also affects the size of a release as oil pumped into the pipeline would contribute to the release size until the pumps are shut down. None of the cumulative oil projects in Northern Santa Barbara County would have pipelines in the vicinity of the SMR or the mainline UPRR routes. Therefore, there would be no overlap in the spill hazard areas, and as such, no cumulative spill impacts.

Future oil development projects in the Santa Maria Valley and Sisquoc surrounding areas may involve the use of some amount of hazardous materials during construction and/or operation and may generate hazardous wastes. The potential use and transport of hazardous materials in the project vicinity would potentially expose persons and/or the environment to hazardous materials. Cumulative impacts could result from an increase in the frequency and/or magnitude of public safety risks to those populations exposed, however, there would be no overlap in hazard areas between the Rail Spur Project and these oil development project due to the distance between the projects. Therefore, the Rail Spur Project's contribution to cumulative hazard impacts with the Northern Santa Barbara County oil development projects would be less than significant. All cumulative oil development project in Northern Santa Barbara would be required to comply with regulatory agency requirements to implement appropriate measures that reduce the risk associated with the use and transport of hazardous materials.

4.7.7 Mitigation Monitoring Plan

Mitigation Measure	Plan Requirements and Timing	Compliance Verification		
		Method	Timing	Responsible Party
HM-2a	Only rail cars designed to Option 1: PHMSA and FRA Designed Tank Car as listed in Table 4.7.6, shall be allowed to unload crude oil at the Santa Maria Refinery.	Review of tank car specification sheets Site Inspection	Prior to Notice to Proceed During Operations	County Planning and Building
HM-2b	For crude oil shipments via rail to the SMR a rail transportation route analysis shall be conducted annually. The rail transportation route analysis shall be prepared following the requirements in 49 CFR 172.820. The route with the lowest level of safety and security risk shall be used to transport the crude oil to the Santa Maria Refinery.	Review of transportation route analysis	Annually	USDOT
HM-2c	The Applicant's contract with UPRR, shall include a provision to require that Positive Train Control (PTC) be in place for all mainline rail routes in California that could be used for transporting crude oil to the SMR.	Review of Agreement with UPPR and CTC documentation	Prior to trains arriving at the SMR	County Planning and Building
HM-2d	The refinery shall not accept or unload at the rail unloading facility any crude oil or petroleum product with an API Gravity of 30^{o} or greater.	Review of shipping papers Site Inspection	On-going during operations	County Planning and Building

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4.8 Land Use and Recreation

This section of the EIR addresses potential impacts resulting from implementation of the Rail Spur Project on existing land uses and future land use compatibility in the vicinity of the Project Site and along the UPRR mainline rail routes. The land uses and recreational resources for all portions of the Project Site and those parcels adjacent to the proposed Emergency Vehicle Access (EVA) route are described below. The section provides a discussion on land use and recreational impacts and provides mitigation measures for any significant impacts. Cumulative impacts for land use and recreation are also discussed in this section.

4.8.1 Environmental Setting

The Project Site is predominantly within the South County Coastal planning area, except for the easternmost 0.1 mile (approximately 600 feet), which extends beyond the coastal zone boundary into the South County Inland planning area (refer to Figure 4.8-1, below).

4.8.1.1 Existing Land Uses and Designations

The Rail Spur Project would be located on the approximately 1,600-acre SMR Site, which is comprised of the following parcels: Assessor Parcel Numbers: 091-192-034, 092-401-005, 092-401-011, 092-401-013, 092-411-002, and 092-411-005. The site currently supports heavy industrial uses associated with the Santa Maria Refinery, a crude oil and carbon processing facility, including the refinery and associated storage tanks, pipelines, offices, parking and appurtenant structures. Other areas of the Project Site are undeveloped and support coastal scrub and native and non-native grasses. This area is used for grazing. A majority of the Project Site is within the Industrial land use category, and a small portion of the southeast corner is within the Agriculture land use category (refer to Figure 4.8-2). Surrounding land uses and land use designations are as follows:

Table 4.8.1 Surrounding Land Uses

Surrounding Area	Land Use Category	Existing Uses
North	Industrial Residential Suburban Residential Rural	Single-family residences, industrial uses in Callender-Garrett
South	Agriculture	Intensive agriculture, row crops, Oso Flaco Creek
East	Recreation Commercial Retail Commercial Service	Golf course, single family residences, rural resort-style residential developments
West	Open Space	Undeveloped dune land, Oceano Dunes State Vehicular Recreation Area

Source: San Luis Obispo County Interactive GIS Mapping Tool, http://www.sloplanning.org/PermitViewMap/MapSearch

4.8.1.2 Combining Designations

Combining designations are special overlay categories applied in areas of the county with hazardous conditions or special resources, where more detailed project review is needed to avoid adverse environmental impacts or effects of hazardous conditions on proposed projects. Combining designations applicable to the Project Site and the surrounding areas include: Coastal Appealable Zone (CAZ), Flood Hazard (FH), Local Coastal Plan (LCP), and Sensitive Resource Area (SRA), including the Environmentally Sensitive Habitat sub-categories of Coastal Streams and Sensitive Riparian Vegetation (SRV). The SRA designations are associated with the tributary of Oso Flaco Creek that runs adjacent to the southern boundary of the Project Site.

The large majority of the Project Site is in the Coastal Zone, and is subject to the County's Local Coastal Program, including Coastal Policies, the South County Coastal Area Plan, and Coastal Zone Land Use Ordinance. This portion of the site is within an area where County decisions can be appealed to the California Coastal Commission, known as the Coastal Appealable Zone (CAZ).

The FH designation applies to the southern portion of the site, and is associated with the 100-year floodplain of Oso Flaco Creek and its tributaries. The SRA, Coastal Stream, and SRV designations apply to a tributary to Osos Flaco Creek, which is located adjacent to the southern property boundary.

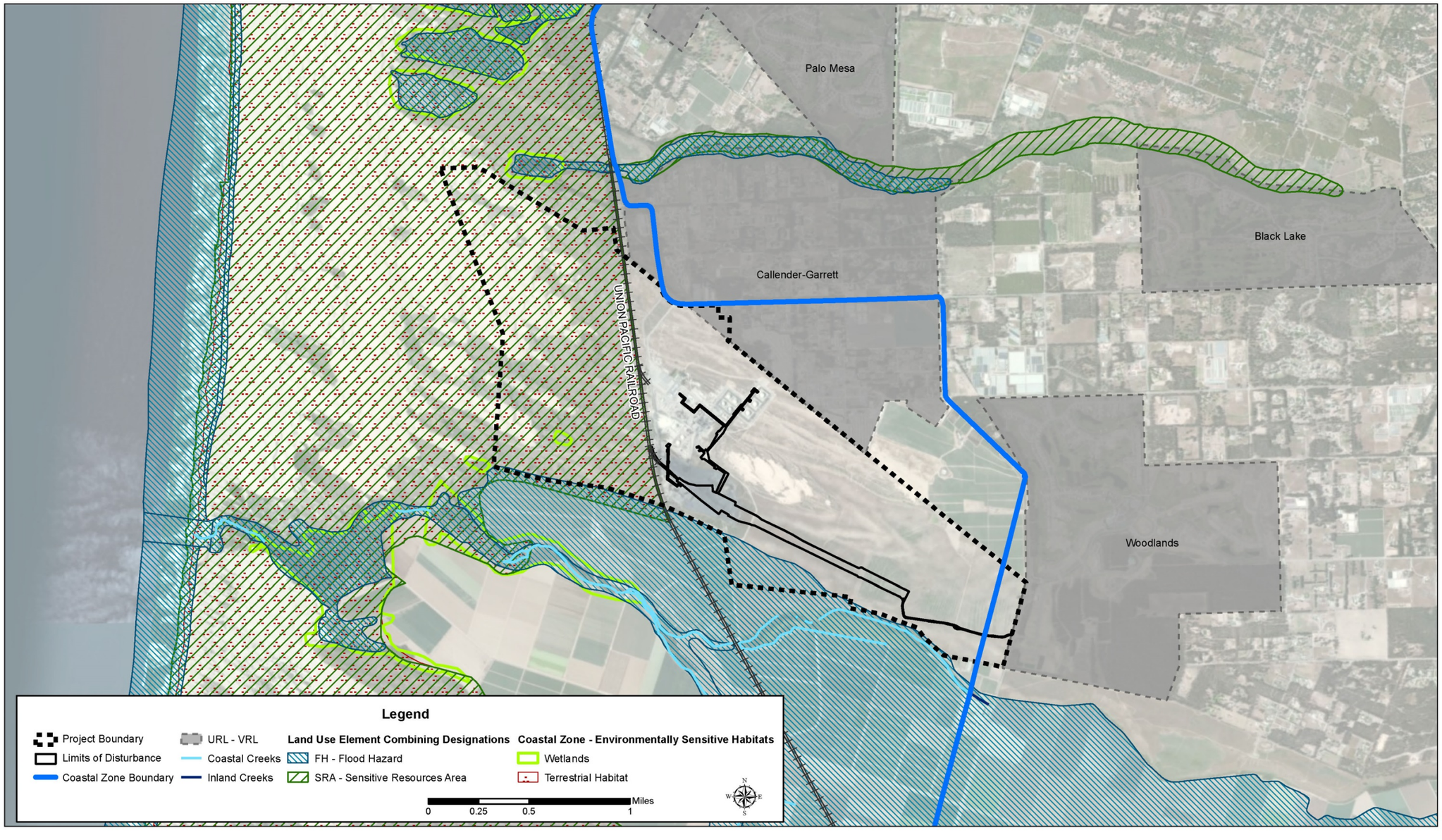
Areas west of proposed Disturbance Area and the Union Pacific Rail Road (UPRR) and owned by the applicant are within the SRA designations for Terrestrial Habitat (TH) and Wetlands (WET). These areas are not included as part of the Rail Spur Project. The Coastal Access Project and associated designations are discussed in Chapter 9 of this EIR.

Aside from the LCP and CAZ designations, no other designations overlay the proposed Rail Spur Project disturbance area, although the County will be required to adopt applicable findings pursuant to the CZLUO to ensure compliance with the ordinance and LCP.

4.8.1.3 Recreational Resources

The Project Site is located east of the Oceano Dunes State Vehicular Recreation Area, and northeast of the Oso Flaco Day Use Area and Oso Flaco Lake Trail. The Nipomo Bluff Trail terminates approximately 0.6 mile east of the rail spur location, and the Juan Batista de Anza National Historic Trail follows State Route 1 through the project area. Numerous public and/or private recreational facilities are located within or near the adjacent Woodlands development, including pedestrian and equestrian trails, golf courses, monarch butterfly habitat, public sidewalks, pocket parks and green spaces, outdoor concert areas, tennis courts, and a bocce court.

Figure 4.8-1 Combining Designations Map



Source: Digital Flood Insurance Rate Map Database, San Luis Obispo County, California, USA. Federal Emergency Management Agency. Washington DC. August 28, 2008; des-coastal_zone, des-coastal_creeks, des-inland_creeks, des-flood-FEMA, des-sra, des-wetlands, des-terrestrial, url_vrl_polygon_2009. SLO County Planning & Building Geographic Technology & Design. April 23, 2009.

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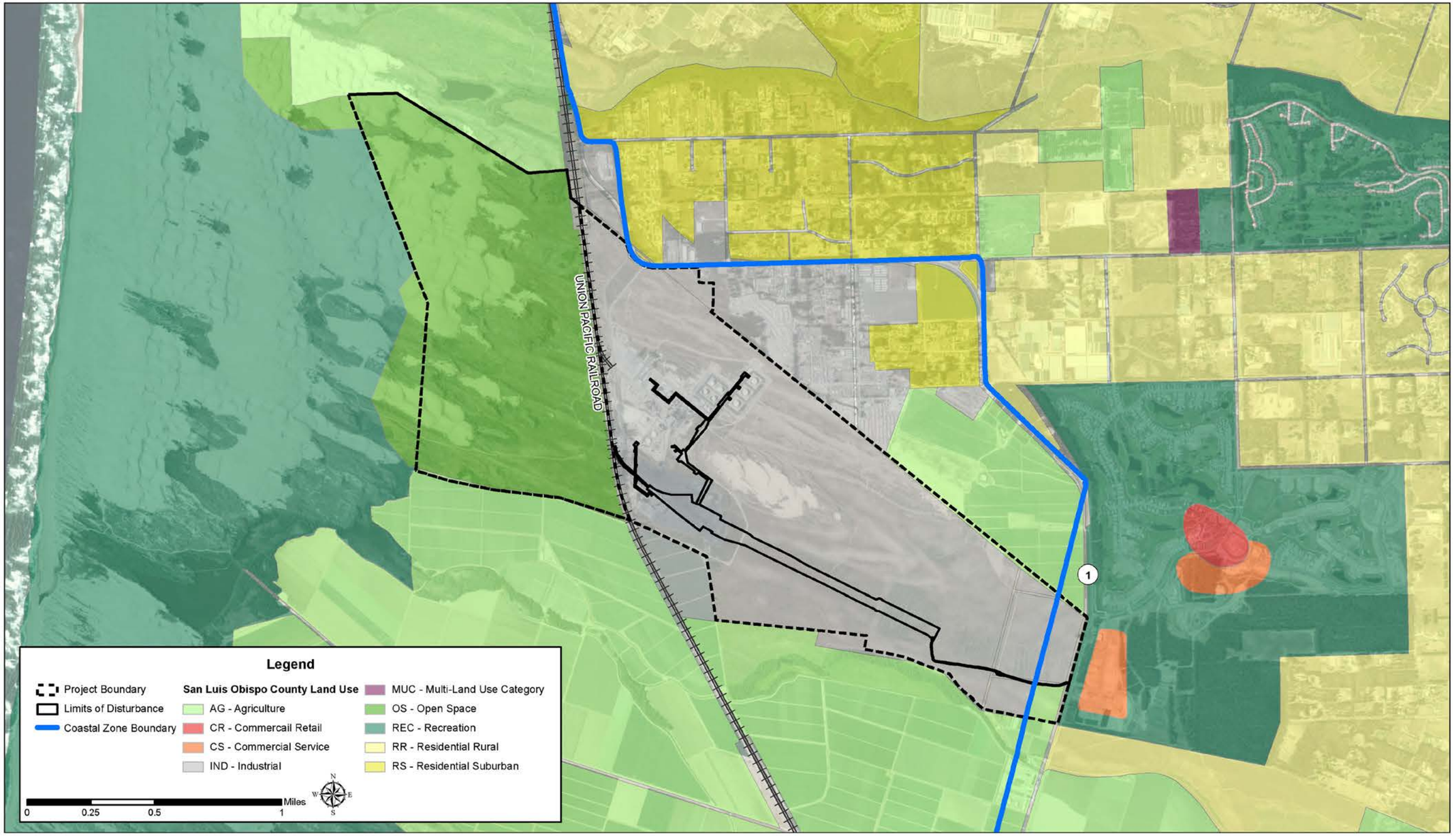
Figure 4.8-2 Land Use Designations



Source: Countywide_luc. SLO County Planning & Building Geographic Technology & Design. April 23, 2009

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The nearest vertical coastal access points are located approximately 3.6 miles to the north (pedestrian and vehicle) and 0.74 mile south (pedestrian only). A permit previously approved for the project site (DRC2008-00146, the "Phillips 66 Throughput Project") included a requirement for an offer of dedication for vertical access at this location as well as evaluation of the suitability and the appropriate intensity of use at this location.

The above referenced permit was reviewed September 11, 2013 on appeal to the California Coastal Commission as a result of an appeal filed with their office of the action taken (approval) by the County Board of Supervisors on the Throughput project in February 2013. The Coastal Commission determined at the September 11, 2013, hearing that no substantial issue existed with the appeal and the appeal was therefore denied.

Please refer to Chapter 9 of this EIR for a discussion regarding the Coastal Access Project. Significant recreational resources in the project vicinity are discussed in further detail below.

Juan Bautista de Anza National Historic Trail

The Juan Bautista de Anza National Historic Trail corridor passes through the Project Site, and a recreational segment of the Anza Trail has been developed along State Route 1 east of the Project Site (refer to Figure 4.8.3, below). The presumed historic trail corridor has been mapped by the National Park Service to indicate the general path believed to have been traveled by the 1776 Anza expedition, the first colonizing expedition from New Spain to come overland into California. The mapped historic corridor does not relate to any physical recreational facility that has been developed on the ground. However, it connects a variety of historic sites related to the Spanish Colonial era and areas along the route, particularly areas where the expedition is known to have camped, have the potential to contain significant artifacts related to the expedition.

Oceano Dunes State Vehicle Recreation Area

Oceano Dunes State Vehicle Recreation Area (SVRA) is a geologically unique sand dune complex that provides over 2,500 acres for public off-highway vehicle (OHV) use. The SVRA is located approximately 1 mile west of the western boundary of the Project Site. One of several OHV areas administered by the California Department of Parks and Recreation, Oceano Dunes SVRA also offers visitors other recreational activities such as swimming, surfing, fishing, camping, and hiking.

Oso Flaco Lake Natural Area

Oso Flaco Lake Natural Area is a public State Park located south of and adjacent to Oceano Dunes SVRA, approximately 1.75 miles southwest of the Project Site. The Natural Area includes public walking trails and opportunities for wildlife viewing.

Guadalupe-Nipomo Dunes National Wildlife Refuge

The Guadalupe-Nipomo Dunes National Wildlife Refuge, administered by the USFWS, was established in August 2000 to protect breeding habitat for the endangered California least tern, California red-legged frog, and threatened Western snowy plover. The Refuge is located in the heart of the Guadalupe-Nipomo Dunes Preserve, along an 18-mile stretch of coastline. Public visitors may hike in from either the Rancho Guadalupe Dunes County Park to the south or the Oso Flaco Lake Natural Area to the north. The Refuge is located approximately 2 miles

southwest of the Project Site and offers numerous recreational opportunities including hiking, wildlife viewing, and fishing.

Recreational resources in the project vicinity are shown in Figure 4.8-3, below.

4.8.1.4 Land Use and Recreational Designations along the UP Mainline Routes

Trains would arrive from different oilfields and/or crude oil loading points depending on market availability. The exact location of the source of crude oil that would be delivered to the refinery is unknown and could change over time based upon market conditions and availability. UPRR would be responsible for delivering the trains to the SMR. Trains could enter California at four different locations (one at the north end of the state from Oregon, one at the northeast from Nevada, one at the southeast from Nevada, and one at the south from Arizona). Depending upon the route taken by the train they could arrive at the Phillips 66 site from the north or the south. It is unknown what route UPRR would use to deliver the trains to the SMR. A map showing the UPRR mainline routes is provided in Figure 2-8 in the Project Description.

The UP Mainline Route extends through a wide range of land uses, including undeveloped open space, agricultural land, rural areas, unincorporated communities, recreational areas, and heavily urbanized areas in major metropolitan cities. Other land uses along the UPRR mainline rail routes include various types of residential, light and heavy industrial, business park, and commercial/retail.

Prominent recreational resources along the Mainline Route include San Francisco Bay National Wildlife Refuge, Los Padres National Forest, Pismo State Beach, Gaviota State Park, Refugio State Beach, the Santa Barbara Zoo, extensive stretches of the Pacific Coast Highway (State Route 1), the Ventura Fairgrounds, and multiple local and regional beaches, parks, golf courses, and other recreational facilities.

4.8.2 Regulatory Setting

The Rail Spur Project is located in the Coastal Appealable Zone of the County of San Luis Obispo. Development of the project would require compliance with the California Coastal Act (CCA) and LCP, County CZLUO and Combining Designation Standards, South County Coastal Area Plan, County of San Luis Obispo General Plan, Central Coast Basin Plan, and San Luis Obispo County CAP. These plans are described below. A preliminary policy consistency analysis is provided in Appendix G. Approval of the Project is appealable to the California Coastal Commission.

4.8.2.1 State Regulations and Policy

California Coastal Act

The California Coastal Act (Public Resources Code [PRC] §30000 et. seq.) is intended to "protect, maintain, and, where feasible, enhance and restore the overall quality of the coastal zone environment and its natural and artificial resources."

Figure 4.8-3 Surrounding Recreational Uses

Source:url_vrl_polygon_2009. SLO County Planning & Building Geographic Technology & Design. April 23, 2009; PWD.SDE.PWD_BIKEWAYS , v2. San Luis Obispo County Public Works and Transportation Department. 09/01/2010; Anza_Trail_SanLuisObispo. National Park Service, U.S. Department of the Interior, Juan Bautista de Anza National Historic Trail. http://www.anzahistorictrail.org. July 24, 2012.

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By state law, the coastal zone is established by the California Coastal Commission, which has authority to permit, restrict, or prohibit certain development within the zone. The Coastal Act mandates protection of public access, recreational opportunities, and marine and land resources. This umbrella legislation requires local governments to prepare a land use plan and schedule of implementing actions to carry out the policies of the Coastal Act within local jurisdictions.

4.8.2.2 Local Regulations and Policy

Coastal Plan Policies – Local Coastal Program Policy Document
The Local Coastal Program (LCP) Policy Document is part of the County's Local Coastal Program and Land Use Element (LUE). Some of the policies have been implemented in the Coastal Zone Land Use Ordinance (CZLUO) and planning areas standards. The LUE is the coordinating mechanism for incorporating the policies of this document that have land use implications. In addition to amended portions of the LUE and the CZLUO, this document states the policy commitment of the County to implement the mandates of the Coastal Act. The document includes policies related to shoreline access, recreation and visitor-serving facilities, coastal watershed, visual and scenic resources, hazards, and air quality, among others.

Land Use Element, Framework for Planning – Coastal Zone
The LUE is a plan describing the official County policy on the location of land uses and their orderly growth and development. The LUE is one of several parts (elements) of the San Luis Obispo County General Plan. The LUE also incorporates the Land Use Plan portion of the County LCP. The plan has been prepared in accordance with state law regulating General Plans and LCPs, and has been adopted by the County Board of Supervisors and California Coastal Commission. The LUE coordinates policies and programs in other County General Plan Elements that affect land use, and provides policies and standards for the management of growth and development in each unincorporated community and the rural areas of the Coastal Zone. The Framework for Planning includes "General Objectives" of combining designations. These objectives are codified and implemented through the CZLUO combining designation standards.

Coastal Zone Land Use Ordinance
The CZLUO, Title 23 of the County Code, regulates land use in a manner that seeks to encourage and support the orderly development and beneficial use of lands within the county, minimize the effects on the public from such development, and protect and enhance the significant natural, historic, archaeological and scenic resources within the county. The CZLUO includes permit requirements, site design and site development standards, operational standards, and combining designation standards to implement the County General Plan and LCP and meet these goals.

Combining designations are used to identify and highlight areas of San Luis Obispo County having natural or manmade features that are sensitive, hazardous, fragile, of cultural or educational value, or of economic value as extractable natural resources. The purpose of combining designation standards is to require project design that will give careful consideration to the land features, structures, and activities identified by the combining designations. These

standards provide for more detailed project review where necessary to support public safety or proper use of public resources, or to satisfy the requirements of the Coastal Act and the LCP.

South County Coastal Area Plan

The majority of the Project Site is within the South County Coastal Area Plan. The South County Coastal Area Plan describes County land use policies for the coastal zone portion of the South County Planning Area, including regulations which are also adopted as part of the Land Use Ordinance and Local Coastal Program. The Area Plan allocates land use throughout the planning area by land use categories. The land use categories determine the varieties of land use that may be established on a parcel of land, as well as defining their allowable density and intensity. Specific development standards are included to address special problems and conditions in individual communities.

County of San Luis Obispo General Plan – Agriculture Element

The Agriculture Element of the San Luis Obispo County General Plan (separated from the Open Space Element in May 2010) provides a background on agricultural resources within the County. Through the goals, policies, implementation programs, and measures provided within the document, the County's intent is to "Identify those areas of the county with productive farms, ranches and soils, and establish goals, policies and implementation measures that will enable their long-term stability and productivity".

County of San Luis Obispo General Plan – Conservation and Open Space Element

The County Conservation and Open Space Element (COSE) consists of a policy and program document and a technical appendix. The COSE policy and program document includes separate chapters to address air quality, biological resources, cultural resources, energy, mineral resources, open space, visual resources, and water resources. The technical appendix includes the County's first baseline greenhouse gas (GHG) emissions inventory. The COSE is based on the principles of strategic growth, with the intent to preserve unique or valuable natural resources, to manage development within the sustainable capacity of the county's resources, and to reduce the county's contribution to global climate change.

County of San Luis Obispo General Plan – Parks and Recreation Element

The Parks and Recreation Element is an optional component of the County General Plan. The County has had a Recreation Element as part of its General Plan since 1968, showing an early commitment by the County to provide adequate park and recreation opportunities for both residents and visitors. The Parks and Recreation Element establishes goals, policies, and implementation measures for management, renovation, and expansion of existing, and development of new, parks and recreation facilities in order to meet existing and projected needs and to ensure an equitable distribution of parks throughout the county. The purpose of the Parks and Recreation Element is to: 1) provide policy guidance regarding the provision of park and recreation services, 2) document the county's existing park and recreation resources, and 3) facilitate the evaluation of park and recreation needs including those resources that are outside the County's management during the land use decision process.

County of San Luis Obispo General Plan - Noise Element

The County Noise Element provides a policy framework for addressing potential noise impacts in the planning process, and minimizing future noise conflicts. The Noise Element identifies

transportation-related, stationary, and potential operational noise generators in the county, provides a list of noise-sensitive land uses, and identifies acceptable and unacceptable thresholds of noise exposure based on land use. The Noise Element also provides mitigation measures that should be applied to projects when noise attenuation is required to meet identified thresholds.

County of San Luis Obispo General Plan – Safety Element

The two primary principles of the County Safety Element are emergency preparedness and managed development to reduce risk. The Safety Element identifies potential emergency situations and natural disasters within the county, and includes goals and policies for response during an emergency or natural disaster, and avoidance of unnecessary risk.

County of San Luis Obispo EnergyWise Plan

The EnergyWise Plan is required by the COSE of the General Plan and is intended to facilitate the goals of the COSE, though implementation of the reduction measures contained in this plan will require action by the Board of Supervisors. This plan builds upon the goals and strategies of the COSE to reduce local GHG emissions. It identifies how the County will achieve the GHG emissions reduction target of 15% below baseline levels by the year 2020 in addition to other energy efficiency, water conservation, and air quality goals identified in the COSE. This Plan will also assist the County's participation in the regional effort to implement land use and transportation measures to reduce regional greenhouse gas emissions from the transportation sector by 2035. Energy policies relevant to the project are addressed in the COSE consistency analysis.

Land Use Element, Framework for Planning – Inland

The first part of the County Land Use Element is the Framework for Planning. The Inland Framework contains policies and procedures that apply to the unincorporated area outside the coastal zone, and defines how the Land Use Element is used together with the LUO and other adopted plans. The Framework also explains the criteria used in applying land use categories and combining designations to the land, and the operation of the Resource Management System.

Land Use Ordinance

The County LUO, Title 22 of the County Code, includes regulations established and adopted to protect and promote public health, safety and welfare. Regulations are also adopted to implement the County General Plan, guide and manage the future growth of the county in accordance with those plans, and regulate land use in a manner that will encourage and support the orderly development and beneficial use of lands within the county. In addition, ordinance regulations are in place to minimize adverse effects on the public resulting from land use and development, as well as to protect and enhance the significant natural, historic, archeological, and scenic resources within the county as identified by the County General Plan. Article 9 of the LUO includes standards for proposed development and new land uses that are specific to each of the planning areas defined by the Land Use Element, including standards specifically applicable to the Nipomo Urban Area and rural areas. These standards are mandatory requirements, intended to address the local planning issues of each planning area.

County of San Luis Obispo South County Inland Area Plan
The easternmost edge of the Project Site is located outside of the California Coastal Zone, in the area of the South County Inland Area Plan. The plan acts as a guide for the cohesive and comprehensive development of the South County Inland Area, and seeks to guide future development that will balance the social, economic, environmental and governmental resources and activities affecting the quality of life within the area. This plan includes planning area standards for the South County Planning Area and seeks to preserve the character of the communities and rural areas that currently exist in the area.

Basin Plan for the Central Coast Region
The Water Quality Control Plan for the Central Coast Region (Basin Plan) is the Central Coast Regional Water Quality Control Board's (RWQCB) master water quality control planning document. It designates beneficial uses and water quality objectives for waters of the state, including surface waters and groundwater. It also includes programs of implementation to achieve water quality objectives. Periodically, the RWQCB considers amendments to the Basin Plan. Each amendment is subject to an extensive public review process. At a public hearing, the RWQCB may act to adopt the amendment. Adopted amendments are subject to approval by the State Water Resources Control Board (SWRCB), the Office of Administrative Law, and, in most cases, the U.S. Environmental Protection Agency (EPA).

2001 Clean Air Plan
As part of the California Clean Air Act, the San Luis Obispo County Air Pollution Control District (SLOAPCD) is required to develop a plan to achieve and maintain the state ozone standard by the earliest practicable date. The Clean Air Plan (CAP) outlines the SLOAPCD's strategies to reduce ozone precursor emissions from a wide variety of stationary and mobile sources. The 2001 CAP was adopted by the SLOAPCD on March 26, 2002.

4.8.3 Significance Criteria

The significance of potential land use and recreation impacts is based on thresholds identified within the County of San Luis Obispo Initial Study Checklist, which was developed in accordance with Appendix G of the CEQA Guidelines. The County Checklist provides the following thresholds for determining impact significance with respect to land use and recreation. Impacts would be considered significant if the proposed project would:

Land Use
- Be potentially inconsistent with land use, policy/regulation (e.g., general plan [County Land Use Element and Ordinance], Local Coastal Plan, specific plan, Clean Air Plan, etc.) adopted to avoid or mitigate for environmental effects;
- Be potentially inconsistent with any habitat or community conservation plan;
- Be potentially inconsistent with adopted agency environmental plans or policies with jurisdiction over the project; or
- Be potentially incompatible with surrounding land uses.

Recreation

- Increase the use or demand for parks or other recreation opportunities; or
- Affect the access to trails, parks or other recreation opportunities.

4.8.4 Project Impacts and Mitigation Measures

The following sections discuss the Rail Spur Project's potential to result in adverse environmental effects to land use and recreational resources based on the thresholds identified above.

4.8.4.1 Land Use

CEQA Guidelines §15125(d) requires an EIR to discuss any inconsistencies between the proposed project and applicable general plans, specific plans and regional plans. While CEQA requires a discussion of consistency with public plans, inconsistency does not necessarily lead to a significant impact. Inconsistency with public plans creates significant impacts under CEQA only when an adverse physical effect on the environment would result from the inconsistency. The key plans and policies applicable to the proposed project are described in Section 4.8.2, above. It is the responsibility of the County, the lead CEQA decision maker, to make the final determination regarding consistency issues as it relates to applicable County of San Luis Obispo policies. Appendix G provides a preliminary analysis of the Rail Spur Project's consistency with relevant goals, policies, regulations, and implementation measures set out in these County of San Luis Obispo plans. The EIR does not attempt to determine consistency with other County and City polices since the local decision makers can only determine consistency with their land use policies. In addition, no other local or State agency has a discretionary action on this project. The County of San Luis Obispo's discretionary action is related to approval of the onsite portion of the project that is being proposed by Phillips 66. No discretionary action is required by any governmental agency regarding the movement of crude oil trains by UPRR along their mainline tracks.

Some of the impacts discussed in various issue areas are based upon consistency with San Luis Obispo County local plans and/or policies. For example, the Noise section includes an assessment of the Rail Spur Project's consistency with the standards identified in the Noise Element of the County's General Plan. The air quality section addresses impacts as it relates to applicable air quality standards. Therefore, there may be instances where a potential inconsistency is identified that could result in adverse physical effects on the environment, but those effects have already been discussed as a potentially significant impact in other sections of this EIR (i.e., an exceedance of the noise thresholds identified in the Noise Element would be considered a potentially significant impact in the Noise section of the EIR). In those instances, this section will refer to the discussion in the individual resource section, rather than discuss the potential for an additional significant impact under a land use threshold, based on the same adverse environmental effect.

The remainder of this section discusses applicable San Luis Obispo County land use plans, policies, or regulations where it was determined an inconsistency may result in significant adverse physical effects on the environment.

Conservation and Open Space Element-Chapter 8 Soil Resources (Impacts to Important Agricultural Soils)

The Rail Spur Project would convert Important Agricultural Soils identified in the COSE, but mitigation through development of an agricultural easement or preserve is not recommended in the EIR. Therefore, the Rail Spur Project would be potentially inconsistent with this policy. Permanently converted Important Agricultural Soils would include approximately 22.3 acres of Farmland of Statewide Importance (associated with underlying Oceano Sand, 0 to 9 percent slopes) and 0.25 acres of Other Important Soils (associated with underlying Oceano Sand, 9 to 30 percent slopes). Refer to Figures 4.2-2 and 4.2-3 for Soils and Important Agricultural Soils Maps.

As described in Section 4.2, Agricultural Resources, the conversion of 22.3 acres of Farmland of Statewide Importance was determined to be a less than significant impact on agricultural resources due to a variety of factors that limited the area's potential for agricultural production. Factors minimizing the agricultural viability of the area include minimal existing agricultural use (grazing of between 0 to 30 head on the undisturbed 750-acre portion of the Rail Spur Project Site), existing and historic industrial uses at the site and potential soil contamination issues, private land use preferences, the Industrial zoning designation, coastal development permitting requirements, and the presence of a known endangered State- and Federally-listed plant species that would likely preclude authorization of a request to convert this area to row crops. Despite the presence of Important Agricultural Soils, the area is not otherwise particularly well suited for agricultural use. Therefore, the conversion of these soils to the proposed Rail Spur Project, consistent with existing uses and zoning, was not considered a significant loss of important agricultural farmlands.

The conversion of 0.25 acres of Other Important Soils would result from pipeline installation adjacent to an existing dirt roadway and industrial infrastructure within the fenced refinery area. Soils within this area are heavily disturbed by industrial development activities, and are limited in their use for agricultural production by the same factors described above. Therefore, this conversion would also be an insignificant loss of agricultural farmlands.

Without a significant impact, the County is not required to implement mitigation such as an agricultural easement pursuant to CEQA Guidelines Section 15041(a) and relevant case law (regularly cited cases on the nexus required to implement mitigation include *Nollan v. California Coastal Commission* (1987) 483 U.S. 825 and *Dolan v. City of Tigard* (1994) 512 U.S. 374).

The conversion and loss of these agricultural soils and farmlands would be less than significant. Because multiple site and regulatory constraints would likely preclude intensive agricultural use of this area in the future, the absence of a mitigating agricultural easement would not result in a loss in the amount of agriculturally viable farmland in the County, which is what the policy is designed to protect. The conversion of this area would also therefore not impact the County's immediate or long-term agricultural economy or any other agricultural commodity or supporting

industry. Therefore, construction impacts would be potentially consistent with this policy. Therefore, from a land use perspective the impacts would be less than significant.

There is the potential for oil spills occurring at the SMR rail unloading facility. As discussed in the Agricultural Section (Section 4.2), the maximum oil spills are likely to be contained within the project site. If an oil spill was to impact surface water or groundwater it could impact agricultural soils and farmland. However, given the composition of the soils on the project site it is unlikely that an oil spill would impact surface waters. With the implementation of the mitigation measures identified for oil spills at the SMR, the project would be potentially consistent with this policy. Therefore, from a land use perspective the impacts would be less than significant.

The UPRR Coastal Line is an existing transportation corridor that is currently used to transport crude oil and other hazardous materials through San Luis Obispo County. The Rail Spur Project would increase the use of this existing transportation corridor, which would increase the potential for oil spills to impact agricultural soil and farmland. Based upon the hazards analysis, the probability of an incident on the UPRR mainline tracks involving a crude oil spill greater than 100 gallons in San Luis Obispo County would be about one in 126 years. This represents the probability for the entire length of the mainline tracks within San Luis Obispo County. The probability of impacting agricultural soils and farmland would be less since the spill would have to occur in proximity to these resources, and not all of the Coast Line is in proximity to agricultural soils and farmland. Given this low probability and the fact that the mainline rail is an existing transportation corridor the project would be potentially consistent with this policy. Therefore, from a land use perspective the impacts would be less than significant within San Luis Obispo County.

South County Coastal Area Plan-Chapter 6 Land Use (Rural Area Land Use-Industrial-Buffer Area Around Santa Maria Refinery)

Although the Rail Spur Project would expand industrial uses into the undeveloped portion of the SMR site, the proposed development in this area would be limited in scale and located in the central portion of the large (approximately 750-acre) undeveloped area, leaving remaining buffers of approximately 400 feet between any proposed development and the closest adjoining property, which is to the south. Approximately 18.6 acres would be converted into industrial use as part of the Rail Spur Project, consisting of approximately 2.5 percent of the total undeveloped buffer area.

The proposed unloading facility would be located within the existing refinery area, and uses proposed within the undeveloped area would be limited to the intermittent holding, movement and staging of trains. Therefore, the buffer would continue to serve as an area where wind-carried air pollutants from the heavy refining and processing activities within the coke processing facility and fenced refinery area could be deposited. However, the primary source of emissions of Reactive Organic Gases (ROG), Nitrous Oxide (NO_x) and Diesel Particulate Matter (DPM) would be the diesel-powered train locomotives that would operate within the buffer area. Environmental effects related specifically to air quality are discussed in Section 4.3, Air Quality and Greenhouse Gases. The DPM would represent a potential health hazards to the surrounding residential areas. A health risk assessment conducted as part of the air quality analysis

determined that the health risk associated with the existing SMR was above the thresholds established by the SLOAPCD using the most recent California Office of Environmental Health Hazard Assessment (OEHHA) methodology for estimating health risk impacts from toxic air emissions. With the addition of the Rail Spur Project the health risk would be above the thresholds established by the SLOAPCD. Implementation of the identified mitigation measures would not reduce the health risk to below the thresholds established by the SLOAPCD. Therefore, this impact could potentially be inconsistent with this policy.

The policy identifies the buffer as particularly important to surrounding agricultural uses. The operation of train locomotives in this area is not expected to result in significant impacts to agricultural crops in the area, as these uses currently co-exist throughout the project vicinity in very close proximity to the UPRR, with intensive row crops extending within 50 feet of both sides of the UPRR through the Nipomo Mesa area. The proposed development within the buffer area would still accommodate an approximately 400-foot buffer between the nearest agricultural areas; therefore, no land use incompatibility issues would occur.

The buffer zone is also important for protecting surrounding residential areas for increased noise and hazards at the SMR. The use of the buffer zone for the Rail Spur Project would increase noise levels within this area. As discussed in Section 4.9, Noise and Vibration, the noise associated with the positioning of the trains for unloading could result in an exceedence of the exterior noise standards in the County's Noise Ordinance and Element. With the implementation of the identified noise mitigation measures (N-1a through N-1c) and the air mitigation that limits the hours when trains can be unloaded (AQ-4c). The noise levels would be below the thresholds established in the County Noise Ordinance and Element. Baseline noise levels would be projected to increase by about one to five decibels at night and less than one decibel during the daytime hours. These noise levels would only occur during the time there are trains being positioned for unloading. During the actual unloading operations the noise levels would be lower. Positioning of trains would be expected to occur for about two hours five times per week. Therefore, the noise impact of the Rail Spur Project would be less than significant.

Section 4.7, Hazards and Hazardous Materials, found that the hazards associated with the unloading operations at the Project Site would not extend off of the SMR property, and therefore, were found to be less than significant.

The policy recognizes the potential for additional oil and gas processing facilities at this location in the future and identifies this location as potentially appropriate for such uses. Although the language specifically references offshore drilling activities, no known expansions or alterations to the existing operations were foreseen at the time the plan was adopted. The Rail Spur Project would allow the SMR to receive crude oil by rail rather than exclusively by pipeline and truck (oil is currently trucked to the Santa Maria Pump Station and then delivered by pipeline to the SMR), and would not otherwise substantially alter the amount or type of processing activities that occur at the SMR. This proposed modification is within the reasonable range of potential modifications or expansions of the refinery referred to in the policy language. Therefore, the Rail Spur Project would likely be consistent with the intent of the policy, and any remaining inconsistencies would not result in adverse physical effects on the environment due to the compatibility of the proposed use with existing uses and surrounding areas and the limited nature of the changes proposed to existing operations.

Due to the significant and unavoidable health risk impact, the Rail Spur Project could be inconsistent with this policy. Therefore, from a land use perspective the impacts would be significant and unavoidable.

Coastal Plan Policies/Title 23 Coastal Zone Land Use Ordinance–Environmentally Sensitive Habitat Areas (ESHA)

The Rail Spur Project was evaluated for consistency with coastal policy law and policies including the County's Local Coastal Program including Coastal Plan Policies, the South County Coastal Area Plan, and the Coastal Zone Land Use Ordinance (see Appendix G) The Rail Spur Project is not located within any mapped combining designations for ESHA as currently shown in the South County Coastal Area Plan. The County also has not historically identified areas in the County as unmapped ESHA.

To determine whether the Rail Spur Project area qualifies as unmapped ESHA, the County reviewed the wildlife and botanical survey reports prepared by the applicant's consultant (Arcadis), conducted a site visit to review the reports content and accuracy, conducted independent review of existing literature, database queries, and mapping data, and corresponded with species experts. The results of these efforts were compared to the criteria within the County ordinance defining Unmapped ESHA.

The Department of Planning and Building made a preliminary determination that the Rail Spur Project site did not qualify as Unmapped ESHA. However, based on the best available information that was collected during the preparation of the EIR, the presence of sensitive communities and sensitive plants Unmapped ESHA was determined to be present within the project area. This is discussed in greater detail in Section 4.4.4 of this Final EIR.

Following the circulation of the Public Draft EIR, additional survey efforts were conducted in 2015 by Arcadis and Leidos to ensure accuracy and consistency with vegetation type mapping. Based on the best available information, it was determined that the Project Site:

1) Is not currently occupied by rare, threatened or endangered species protected under the California or Federal Endangered Species Act;
2) Is not currently occupied by "fully protected species", but does provide habitat for, and has been occupied by, "species of special concern" by the California Department of Fish and Wildlife;
3) Is currently occupied by plant species that are listed as Rank 1B status by the California Native Plant Society; and,
4) Is currently occupied by sensitive communities recognized by the California Department of Fish and Wildlife.

Due to these factors, the Rail Spur Project area meets the definition of ESHA as defined in the guidelines set forth by the California Coastal Commission for defining ESHA (CCC 2013). The Rail Spur Project site also appears to meet the definition of Unmapped ESHA in the County's LCP (CZLUO Section 23.11) since the area contains sensitive plant and animal species needing protection, which includes California Rare Plant Rank 1B species (i.e., Blochman's leafy daisy

and dune larkspur), burrowing owls, and coast horn lizard. Utilizing this definition, and as discussed below in impact BIO.5, the Rail Spur Project would permanently impact approximately 20.88 acres of habitat that is considered sensitive by California Department of Fish and Wildlife (CDFW).

It is important to also consider that the Rail Spur Project area has been highly disturbed and degraded from agricultural, industrial, and human activities for several decades and does not appear to contain features that have an equivalent characteristic or natural function as other mapped ESHA. This conclusion is based on a qualitative comparison with ESHA habitat that is located to the west of the UPRR mainline, which contains a high habitat value and supports numerous special-status species. Removal of agricultural practices and large-scale restoration efforts would be necessary to restore the functions and values to the area. Similar efforts have shown to be successful in the area east of the UPRR east and north of the SMR and the area west of the UPRR.

Potential impacts to habitat and vegetation was identified in the Public Draft EIR, and mitigation is identified to mitigate potential effects. This analysis, including potential impacts to Unmapped ESHA, is provided in EIR Section 4.4 Biological Resources.

Coastal Plan Policies/Title 23 Coastal Zone Land Use Ordinance - Coastal Access

The project applicant (Phillips 66) was recently required to provide a vertical public right of coastal access at the Rail Spur Project Site as a condition of approval of the Phillips 66 Throughput Increase Project (approved by the County Board of Supervisors in February 2013), unless it is determined that an exemption to the coastal access requirement applies. In March 2015 the County issued a final notice to proceed for the Throughput Project. As part of the requirements for a notice to proceed, Phillips 66 provided to the County an Irrevocable Offer to Dedicate Vertical Public Access Easement.

Unless exempted, the condition of approval for the Throughput Increase Project requires that the coastal accessway be developed within 10 years of permit issuance or at the time of any subsequent use permit approval at the project site, whichever occurs first. Therefore, if the Rail Spur Project is approved (presumably in less than 10 years), the Throughput coastal accessway requirement would have to be met at that time to be consistent with the County's conditions.

The County's condition of approval on the Throughput Project requires that the access be consistent with the standards of Section 23.04.420, including provisions that a vertical right of access be provided for each mile of coastal frontage, unless that access would be inconsistent with public safety, military security needs, or the protection of fragile coastal resources. Compliance with this condition would ensure consistency with Section 23.04.420 regardless of whether the coastal access is ultimately developed at this location. If developed, then adequate vertical access would already exist at the Project Site and no additional access would be necessary as a result of the Rail Spur Project. If, on the other hand, it was determined that coastal access at this location was not feasible or appropriate due to safety concerns, sensitive resources, or other conditions that fall within the exceptions listed in Section 23.04.420, then those conditions would be equally applicable to a consideration of coastal access as a component of the Rail Spur Project.

Because the Applicant has already been required to comply with the coastal access requirement at the Project Site, and the requirement is conditioned such that timing could coincide with approval of the Rail Spur Project (if approved), there is no reason to conduct an additional assessment of coastal access requirements for the Rail Spur Project. Compliance with the previous conditions of approval would ensure the Rail Spur Project's consistency with these policies. Therefore, the Rail Spur Project would be potentially consistent with this policy. Therefore, from a land use perspective the impacts would be less than significant.

Conservation and Open Space Element - Chapter 2 Air Quality

As discussed in Section 4.3, Air Quality and Greenhouse Gases, San Luis Obispo County is in non-attainment for the State 1-hr and 8-hr ozone standards and well as for the State PM_{10} standard. The Rail Spur Project would generate NO_x and ROG emissions, which are precursors to ozone. The NO_x and ROG emissions at the SMR can be offset using emission reduction credits. However, the NO_x and ROC emissions from the locomotives on the mainline rail routes likely cannot be offset due to Federal preemption. These additional NO_x and ROG emissions would further exacerbate the ability of the County to attain the State ozone standard. This was found to be a significant and unavoidable impact in the air quality section of the EIR.

The Rail Spur Project would generate fugitive dust and DMP that would contribute to PM_{10} emissions within the County. It is unlikely that these PM_{10} emissions could be offset at the SMR due to a lack of available emission reductions. Also, the PM_{10} emissions from the locomotives on the mainline rail routes likely cannot be offset due to Federal preemption. These additional PM_{10} emissions would further exacerbate the ability of the County to attain the State PM_{10} standard, and were found to be a significant and unavoidable impact in the air quality section of the EIR.

As discussed in Section 4.3, Air Quality and Greenhouse Gases, the air toxic emissions from the operation of the Rail Spur Project would exceed the acceptable cancer risk levels determined by the SLOCAPCD, based upon a health risk assessment. Operation of the proposed Rail Spur Project at the SMR would exceed the cancer risk threshold. Toxic emissions from the locomotives operating on the mainline rail routes would exceed the cancer risk threshold for areas where speeds are limited to 30 miles per hour or less. The Rail Spur Project would not result in the violation of any air quality standards at the SMR property fence line. These toxic emissions were found to be a significant and unavoidable impact in the air quality section of the EIR.

General Plan - Safety Element

As discussed in Chapter 2, Project Description and Section 4.11 Public Services and Utilities, the Rail Spur Project would have a fire protection system installed at the unloading racks at the SMR. Mitigation measure PS-3a requires the facility to have a Fire Protection Plan that meets the applicable requirements of API, NFPA, UFC, and Cal Fire. Implementation of this measure would reduce the threat to life, structures and the environment from a fire at the rail unloading facility. Therefore, the portion of the Rail Spur Project at the SMR would be potentially consistent with the requirements of Safety Element. Impacts to fire protection and emergency response were found to be less than significant at the SMR as discussed in Section 4.11 of the EIR.

As discussed in Section 4.11, Public Services and Utilities, there is the potential for fire and explosions along the mainline rail tracks due to a train derailment, which could impact life, structures, and the environment depending upon the location of the accident. A number of mitigation measures were identified (PS-4a through PS-4e) that would serve to improve emergency response to crude train accidents. However, the County may be preempted from implementing these measures so the project could potentially be inconsistent various Safety Element policies. Impacts to fire protection and emergency response along the mainline rail routes was found to be significant and unavoidable as discussed in Section 4.11 of the EIR.

Conflict with Adopted Habitat or Natural Community Conservation Plans

There are no adopted habitat conservation plans (HCP) or natural community conservation plans (NCCP) that encompass the Project Site that would be affected by onsite operations of the Rail Spur Project. Based on a search of the USFWS HCP Database, the closest HCPs to the Project Site are located in Los Osos and Morro Bay, over 20 miles away from the project site.

A HCP is currently being drafted by the California Department of Parks and Recreation (State Parks) for all state parks in the County, including the Oceano Dunes SVRA west of the Project Site (refer to Figure 4.8-3). However, the HCP has not yet been adopted; therefore, no inconsistency would occur. Additionally, because the Rail Spur Project proposes only internal modifications and improvements to its on-site processing operations, it would not likely affect uses within the adjacent Oceano Dunes SVRA that would have implications under any HCP ultimately adopted for the site.

The UPRR Coastal Line is an existing transportation corridor is currently used to transport crude oil and other hazardous materials through San Luis Obispo County. The Rail Spur Project would increase the use of this existing transportation corridor, which would increase the potential for oil spills to impact areas that are covered by HCPs. Based upon the hazards analysis, the probability of a incident involving a crude oil spill greater than 100 gallons in San Luis Obispo County would be one in 126 years. This represents the probability for the entire length of the Coast Line within San Luis Obispo County. The probability of impacting an HCP area would be less since the spill would have to occur in proximity to this area, and not all of the Coast Line is in proximity to an HCP. Given this low probability and the fact that the mainline rail is an existing transportation corridor the project would be potentially consistent with this policy. Therefore, from a land use perspective the impacts would be less than significant within San Luis Obispo County.

Compatibility with Surrounding Land Uses

The Rail Spur Project would modify existing industrial refinery operations that have been ongoing at the Project Site since 1955. Therefore, it would not introduce a new industrial use in the area. The Rail Spur Project would not affect the amount (throughput volume) of material processed at the refinery, as these are capped by the County and San Luis Obispo Department of Planning and Building and the local APCD, and would not affect the existing processing methods utilized at the refinery. Although the Rail Spur Project would increase the transport of crude along the UPRR mainline routes, the addition of up to five trains per week would not constitute a change in existing use of that route, which currently transports crude oil, coke processed at the Santa Maria Refinery, and other hazardous materials.

Although an existing rail spur extends into the coke processing area and is currently used to transfer coke off-site via the UPRR, development of the project would accommodate receipt of crude oil by rail as opposed to only pipeline. This would require an expansion of necessary infrastructure beyond the existing footprint of the refinery into undeveloped areas in the eastern portion of the Project Site currently used for grazing.

Therefore, while not introducing a new use at this location, the proposed expansion would bring industrial uses within closer proximity to sensitive residential and recreational areas immediately east of the Project Site and agricultural lands northeast and southeast of the Project Site.

The South County Coastal Area Plan specifically identifies the undeveloped areas of the Project Site as providing a desirable buffer from the heavy industrial activities and more sensitive adjacent land uses. The rail spur extension would extend a total of approximately 1.3 miles (6,915 feet), including approximately 0.5 mile (2,445 feet) within the existing industrial coke area. This would result in an extension of industrial uses approximately 0.85 mile into the undeveloped area in the eastern portion of the Project Site. The buffer between residential and recreational uses east of State Route 1 would be reduced from approximately 1.4 miles to 0.6 mile. The rail spur extension would similarly reduce existing buffers between the industrial structures and agricultural crops located northeast and southeast of the Project Site.

The proposed unloading facility where all train cars carrying crude oil would be unloaded would be located entirely within the existing refinery area (see Figure 2-4). Therefore, the operational uses proposed in the area currently serving as an undeveloped buffer between adjacent land uses would be limited to the rail extension for the movement, staging and holding of train cars (both full and empty) and an emergency vehicle access road. This area would also include safety lighting and fencing, and routine maintenance activities in this area.

Development of the secondary emergency vehicle access would encompass approximately 0.7 acre in this area; the alignment would follow and stay within an existing dirt road to the extent feasible. Increased use of the road is not anticipated because use would be limited to emergency situations.

Mitigation required in Section 4.5 of this EIR would require a minor realignment of the emergency vehicle access road to avoid a known cultural resource. Therefore, if approved, the emergency access road would actually follow the existing dirt road as described above, except for the small portion affected by measure CR-1a. The area of disturbance and types of soils affected by this change would not be substantial. These secondary impacts that would result from the implementation of this mitigation measure are discussed in Section 4.5, Cultural Resources.

The project-related impacts that would affect other issue areas evaluated in the EIR provide a good indication of the Rail Spur Project's compatibility with surrounding land uses, including the evaluation of air quality, noise, odor, and hazards of the Rail Spur Project. Typical effects of impacts associated with these types of incompatibilities include health risks, public safety issues, and the inability to sleep, relax, or enjoy the full use of one's property. More detailed information on the impacts associated with each of these issue areas is provided in their

respective section in Chapter 4.0 of the EIR. A significant impact to one of these other issue areas would constitute a significant impact related to land use incompatibility.

The Air Quality analysis identifies significant impacts from ROG, NO_x and DPM emissions, some of which may not be mitigable. Operation of the Rail Spur Project at the SMR would exceed the cancer risk threshold at the nearest residential receptor. Cancer risk impacts along the mainline would exceed the allowable threshold or areas where train speeds are limited to 30 miles per hour or less. The operation of the Rail Spur Project would result in ROG, NO_x and DPM emissions that exceed the daily thresholds and therefore, would be significant. These health-related impacts (cancer risk) and ROG, NO_x and DPM emissions generated by the Rail Spur Project would result in land use incompatibilities that would be significant and unavoidable.

The Noise section of the EIR (Section 4.9) indicates that, after implementation of mitigation measures N-2a through N-2c, the nighttime noise level at one noise-sensitive receptor would increase 3.6 dBA (residences along Louise Lane). Daytime noise levels would only increase by as much as 1.4 dBA at the most significantly impacted residential noise-sensitive receptor (Olivera Street). A three dBA increase is considered "barely perceptible" to most people, while a five dBA increase is "readily noticeable". Therefore, the nighttime noise level increase at Louise Lane would be the only barely perceptible noise impact to a sensitive adjacent use to result from the project, and the increase in this area would likely be perceptible.

Despite the perceptible increase at night, the total noise level after development of the Rail Spur Project would not exceed recommended daytime or nighttime noise levels established in the County Noise Element. The ambient noise levels would be within the reasonable range for residential uses and, therefore, the Rail Spur Project would not be likely to disrupt sleep patterns or cause significant disturbances to adjacent residential or recreational activities. These sensitive areas are also currently exposed to similar noise associated with the UPRR located approximately 1.5 miles to the west, as well as traffic noise along State Route 1. Mitigation AQ-4c would limit the hours trains could be unloaded to between 7 A.M. and 7 P.M. This would serve to further reduce the nighttime noise impacts. Therefore, noise generated by the Rail Spur Project would not result in land use incompatibilities, and potential land use impacts would be less than significant.

While visual impacts may be disliked by adjacent land uses, they pose no real risk of harm other than annoyance and disturbance caused by the perceived negative visual and aesthetic effect and any resulting economic effect. The visual and aesthetic effects of the Rail Spur Project are discussed in Section 4.1, and any indirect economic effects would be less than significant. Industrial use has existed at this site long before the residential areas to the east were developed, and views of SMR are prominent in the otherwise undeveloped views towards the Pacific Ocean. Mitigation has been proposed to minimize visual impacts of the development, which include development of an earthen berm that would be designed to look like the surrounding natural dunes. Therefore, visual impacts generated by the Rail Spur Project would not result in land use incompatibilities, and potential land use impacts would be less than significant.

Potential onsite impacts include oil spills and fires associated with the operation of the rail tank car unloading facilities. Public hazards from the onsite Rail Spur project facilities would be limited to the Santa Maria Refinery Site and were found to be less than significant. Impacts to

agricultural, biological and water resources from onsite oil spills were found to be less than significant with mitigation. Therefore, the impacts of an oil spill and public hazards for the Rail Spur Project at the SMR on surrounding land use compatibility would be less than significant.

A quantitative risk assessment (QRA) was conducted of the hazards associated with rail transportation along various mainline rail routes within California. The results of the QRA found that the rail transportation risks associated with the Rail Spur Project were significant and unavoidable for all of the mainline rail routes evaluated.

The proposed Rail Spur Project has the potential to result in oil spills and resultant fires that could impact natural resources, scenic areas, and agricultural land along the mainline rail routes. An oil spill could result in significant impacts to agricultural, biological, and water resources, as was discussed in each of the respective issue areas. Within San Luis Obispo County, the trains would use the UPRR Coastal Line, which is an existing transportation corridor that is currently used to transport crude oil and other hazardous materials through San Luis Obispo County. The Rail Spur Project would increase the overall probability of an oil spill occurring along the UPRR Coastal Line.

Due to the significant and unavoidable health risk impacts, ROG, NO_x and DPM emissions, and potential oil spill impacts to agricultural, biological, and water resources, the Rail Spur Project impacts to surrounding land use compatibility would be significant and unavoidable.

4.8.4.2 Recreation

Impact #	Impact Description	Phase	Impact Classification
REC.1	The Rail Spur Project would increase use or demand for parks and recreational opportunities.	Construction and Operations	Class III

The Rail Spur Project would expand and/or modify existing industrial uses at the Project Site and is not expected to induce population growth or increase demand on recreational resources in the project vicinity. No increase in demand for parks and recreational opportunities would result from use of the UPRR mainline rail routes for transporting crude oil to the SMR, as this would not constitute a change in use from existing UPRR operations. The project would, however, generate the need for as many as 200 temporary construction workers and 12 permanent operational employees to construct and operate the new facilities.

Phillips 66 anticipates that most or all of these employees would come from the local workforce (up to 90%). This increase would not cause a significant permanent increase in population or demand on local recreational resources. Any marginal increase in demand resulting from employment demands associated with development of the project could be easily met with existing recreational parks and recreation facilities in the project vicinity (refer to Figure 4.8-3, above). Therefore, impacts would be less than significant.

Mitigation Measures

No mitigation measures would be necessary because the potential impact would be less than significant.

Residual Impacts

Residual impacts associated with the increase in demand for parks and recreational opportunities would be *less than significant (Class III).*

Impact #	Impact Description	Phase	Impact Classification
REC.2	The Rail Spur Project would affect access to existing trails, parks or recreational opportunities.	Construction and Operations	Class III

The Rail Spur Project would be predominantly located within an area designated for industrial use, which currently supports the Santa Maria Refinery and grazing activities outside of the active refinery area, as well as a small section of Agricultural designated land in the southeast portion of the Project Site where the emergency vehicle access is proposed. There are no trails, parks or other recreational opportunities within the Project Site other than the historic Anza corridor, which is not supported by any physical recreational facilities or uses within the Project Site. Development of the Rail Spur Project (particularly the proposed secondary emergency access which would connect to State Route 1) would not affect existing trails or bike paths adjacent to State Route 1. No closure or detour of any portion of the existing bike paths adjacent to State Route 1 would occur during the construction of the EVA road.

The Anza Trail staff of the National Park Service (NPS) was consulted during preparation of the EIR regarding potential effects to the de Anza Trail. The NPS concluded that it did not have any concerns associated with the Rail Spur Project because the proposed modification of the existing refinery operation would not result in any impacts to Anza Trail resources, including historic resources and existing or planned recreational resources. NPS determined that it was extremely unlikely that there would be any artifacts from the Anza expedition within the historic corridor at this location due to the very transitory nature of the expedition and lack of a camp near the Project Site. NPS staff also concluded that views of the project from the recreational trail along State Route 1 would be largely obstructed by existing vegetation and topography; therefore, no direct or indirect impacts to the experience of visitors on the trail would occur.

Additional information related to potential visual impacts resulting from development of the Rail Spur Project from the Anza recreational trail, is provided in Section 4.1, Aesthetics and Visual Impacts. That section similarly determined that views of the Rail Spur Project from the Anza recreational trail would be generally precluded by intervening topography and development until an approximately 0.5 mile segment located generally from the State Route 1 / Via Concha Road intersection south to the southeastern corner of the Rail Spur Project Site. Mitigation is proposed in Section 4.1 to minimize potential effects through construction of an earthen berm designed to appear as a natural dune landform consistent with surrounding undeveloped areas (refer to AV-1a).

The probability of a crude oil train release incident is discussed in the Hazardous and Hazardous Materials Section (Section 4.7) for between the SMR and Roseville/Colton and the California border. These probabilities represent the probability of a release incident for the entire length of the rail routes. In order for there to be an impact to recreational areas, the incident would need to occur in the vicinity of these facilities. This would lower the probability of an oil train release impacting recreational areas.

As discussed in the Hazards and Hazardous Materials Section (Section 4.7), the worst case spill from a unit train on the mainline tracks was assumed to be 180,000 gallons (about six tanker cars).

The northern and southern UPRR mainline track from the Santa Maria Refinery the California border, would pass in close proximity to a number of recreational areas. Although it is unlikely, derailment of a train could result in the release of crude oil from rail tanker cars, which could affect a recreational area. This could prevent public access to these areas during the cleanup process. Depending upon the location and extent of the spill, the cleanup effort could take anywhere from a few days to months. During this period, public access to the affected recreational area could be limited, but would be temporary.

In the event of a crude oil spill UPRR would rely first upon local emergency response agencies (police and fire). If needed, UPRR has standing contracts with emergency response firms that are available around the clock to manage any release of crude oil. UPRR maintains spill response contracts with companies throughout their rail network in California. All of the UPRR response firms are rated Oil Spill Response Organization (OSRO) by the State of California and classified Oil Spill Removal Organization by the United States Coast Guard. Depending upon the location and extent of a spill local response teams, UPRR response personnel, and State and Federal response agencies would be involved in the containment and cleanup operations.

Given the low probability of a spill impacting recreational areas and that access to a recreational area would be temporary, the impact would be considered less than significant.

Mitigation Measures

Implement of mitigation measures BIO-11 and PS-4a through PS-4e would serve to further reduce any potential impact on access to recreational areas from an oil spill.

Residual Impacts

Implementation of mitigation measure BIO-11 and PS-4a through PS-4e would serve to reduce the likelihood of an oil spill and the ability of first response agencies to respond to a crude oil spill. In particular, PS-4b would require the use of safer tank cars that would reduce the likelihood of a spill in the event of an accident.

The County may be preempted by federal law from implementing BIO-11, and PS-4a through PS-4e as they require particular contractual provisions that might be determined to improperly impact interstate commerce.

OSPR is currently in the process of implementing the requirements of SB 861, which will require railroads to have detailed oil spill response plans and to conduct oil spill response drills. This

legislation also would require UPRR to pay for and cleanup any spilled oil. The final rules to implement this legislation are expected to be issued in the fall of 2014. However, the timing of when the plans will have to be in place and the drill would start is not yet know. Implementation of this legislation would improve oil spill response for train derailments that lead to spills.

In addition, the USDOT is evaluating proposed rules that would require rail operators of crude oil trains to have a comprehensive OSRP that addresses may of the same requirements as the plans required by SB 861. If the DOT adopts a final rule covering crude oil trains, it would improve oil spill response for train derailments that lead to spills.

The USDOT has also proposed rules covering enhancements to tank car standards and operational controls for high-hazardous flammable trains, which would include crude oil trains. If this proposed rule is adopted, it would serve to reduce the likelihood of a train derailment and release of crude oil. Section 4.7, Hazards and Hazardous Materials provides additional information on this proposed USDOT rule.

Given the low probability of a spill impacting recreational areas and that access to a recreational area would be temporary, the impact would be considered *less than significant (Class III)*.

4.8.5 Cumulative Analysis

Land Use

Consistency of projects listed as part of the cumulative development scenario for the Rail Spur Project with applicable San Luis Obispo County plans and policies is generally addressed on a project-by-project basis. The Rail Spur Project would be consistent with existing uses at the Project Site and along the UPRR mainline rail routes, the Industrial land use designation, and generally consistent with plans and policies applicable to the Rail Spur Project (refer to Appendix G). Therefore, no substantial inconsistency with applicable planning documents would contribute to a more cumulative impact.

The cumulative development scenario includes several additional industrial land use proposals, and the potential for cumulative land use compatibility impacts associated with an increase in industrial use throughout the County is possible. However, potential cumulative impacts are minimized through proper designation of industrial areas, and all developments are proposed in areas currently used for similar industrial purposes or designated or otherwise appropriate for the proposed use. Proposed developments are also not limited to industrial development, but also include clean up and remediation of existing industrial activities, which would further reduce potential impacts.

Therefore, cumulative impacts related to land use would be less than significant. Potential cumulative impacts related to a specific resource area (i.e., biological resources, air quality, noise and vibration, agricultural resources, etc.) are analyzed and discussed in the relevant impact sections of this EIR.

Recreation

The Rail Spur Project would potentially result in a less than significant increase in demand on recreational resources and potentially cause an insignificant construction-related effect on

recreational trails. Several proposed developments in the project vicinity would result in additional population growth and increase demand; however, recreational projects are also proposed in the vicinity, including the Nipomo Community Park Master Plan and the Coastal Access Project discussed in Chapter 9 of this EIR. The growth that would occur is within the reasonable growth expectations in the South County area, and there is no indication that recreational resources would be insufficient to serve the growing population. Cumulative impacts to recreational resources would be less than significant.

There is the potential for cumulative impacts associated with the crude by rail project discussed in Chapter 3. In conducting the cumulative analysis for crude by rail it has been assumed that the cumulative projects listed in Table 3.1 would use the same rail car tank design as the SMR Rail Spur Project, and that the cumulative crude by rail projects, with the exception of the Phillips Rail Spur Project, would transport a Bakken type crude, which is a worst case assumption.[1] It has also been assumed that all of the Rail Spur Project crude oil trains would use routes discussed below.

If all of the crude by rail projects travel via the UPRR Roseville Rail Yard, then up to eight crude oil trains per day could travel on the stretch of track between Sacramento and the California boarder (two for Valero, one for Kinder Morgan, two for Alon, one for Targa, one for Plains All American, and one for the SMR). From Roseville, rail traffic would likely follow two different routes; one following the I-80 corridor to Reno, Nevada, with the other heading north along the I-5 corridor to Oregon. A third route through the Feather River Canyon was not considered for further analysis.

From Sacramento the crude oil trains servicing the Valero Benicia and Kinder Morgan projects could use the same UPRR tracks as the Rail Spur Project from Sacramento to the Bay Area. This portion of track could have up to four crude oil trains per day (two for Valero, one for Kinder Morgan, and one for the SMR).

From Sacramento the crude oil trains servicing the Alon, Targa, and Plains All American projects could use the same tracks as the Rail Spur Project from Sacramento to Stockton a distance of about 46 miles. This portion of track could have up to five crude oil trains per day (two for Alon, one for Plains All American, one for Targa, and one for the SMR).

This level of crude oil train traffic would increase the probability of an oil spill along these mainline routes. Assuming all of the cumulative crude oil trains use the same route from Sacramento to the California border, the cumulative probability of a 100 gallon or greater oil spill would be about once every seven years for the route from the SMR to the Oregon border, and once every six years for the route from the SMR to the Nevada border.

None of the other cumulative crude by rail projects would use the mainline tracks along the southern route thorough the Los Angeles Basin since the crude oil trains going to Bakersfield

[1] Canadian Crude, as specified in the Project Description, was assumed for the Phillips Rail Spur Project as part of the project and cumulative analysis.

would use Tehachapi Pass via Barstow and would not travel has far west as Colton. However, up to four unit trains per day could share the route between Nevada and Barstow (two for Alon, one for Plains All American, and one for the SMR). Assuming these cumulative crude oil trains use the same route from Barstow to the California border, the cumulative probability of a 100 gallon or greater oil spill would be about once every 25 years for the southern route from the SMR to the Nevada border.

For all of these route segments, in order for there to be an impact to recreational access, the incident would need to occur in the vicinity of a recreational area. This would lower the probability of an oil train release impacting recreational access. In the event of an accident along these stretches of track, a spill of transported crude could occur, potentially impacting access to recreational areas during the cleanup process.

Implementation of mitigation measures PS-4a through PS-4e identified for the Rail Spur Project would reduce the likelihood of an oil spill and the ability of first response agencies to respond to a crude oil spill. In particular, PS-4b would require the use of safer tank cars that would reduce the likelihood of a spill in the event of an accident by about 74 percent.

Implementation of the requirements specified in SB 861 could also serve to reduce the impacts of a spill by having equipment staged in places near sensitive biological resources, and improving the response activities to an oil spill.

Under Federal and State law, UPRR and the owner of the crude oil would be responsible for cleanup and remediation of any oil spill. SB 861 requires that operators demonstrate they have the financial resources to pay for spill response, cleanup, and damages based upon a reasonable worst case spill volume.

In the unlikely event that a spill reached a recreational area, and was sufficient enough to limit public access to the recreational area, the limits on access would be temporary, during the clean up period. Given the low probability of an oil spill impacting a recreational area, and the temporary nature of the cleanup, cumulative impacts on public access to recreational areas would be less than significant.

4.8.6 Mitigation Monitoring Plan

A mitigation summary/monitoring plan for land use is not included in this section because the mitigation measures that were used to address land use impacts are outlined in other issue areas. See the specific issue area sections for the applicable mitigation monitoring plans.

No mitigation was required for recreational impacts. Therefore, no mitigation monitoring plan is needed.

4.8.7 References

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4.9 Noise and Vibration

This section describes the concepts and terminology of noise, defines the existing noise levels at noise-sensitive locations nearest to the Project Site, and describes the regulatory settings associated with the Project. This section also identifies the applicable significance thresholds for noise impacts, assesses potential impacts of the Rail Spur Project and recommends measures to mitigate significant impacts. The section also provides a discussion of cumulative noise impacts.

4.9.1 Environmental Setting

Noise is often defined as unwanted sound, which is perceived subjectively by individuals. Noise levels at various locations of an area fluctuate and change character during different periods of the day. 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. The following sections describe the concepts and terminology of noise and vibration and documents existing noise levels at noise sensitive locations nearest to the Project Site.

4.9.1.1 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 wavefronts. 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: 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 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 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% humidity, air absorption of sound at frequencies of 16,000 hertz (Hz) occurs at approximately 8 dB per 100 feet. However, at 0% humidity, the rate drops to approximately 1 dB per 100 feet.

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 feet (at 68°F and 70% humidity).

The speed that sound propagates in a gas depends on the temperature of the gas. Higher temperatures produce higher speeds of sound. Since the temperature of the atmosphere is not uniform, there are local variations in the sound speed. For example, under normal conditions the atmosphere is cooler at higher altitudes. This results in sound waves being 'bent' upwards. This will result in the formation of a shadow zone, which is a region in which sound does not penetrate. In reality, some sound will enter this zone due to scattering. Scattering occurs when sound waves are propagating through the atmosphere and meet a region of inhomogeneity (a local variation in sound speed or air density) and some of their energy is re-directed into many other directions. In environmental noise situations, scattering is caused by air turbulence, rough surfaces, and obstacles, such as trees. The scattering of sound by rain, snow, or fog at ordinary frequencies is insignificant.

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 winter 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.

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 feet. Temperature inversions and winds can also result in the effectiveness of a barrier being dramatically reduced. These variables are addressed as part of the noise modeling conducted for the Rail Spur Project.

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 feet at 2000 Hz. High frequencies are generally attenuated more than low frequencies.

Reflection from the ground can result in another mechanism by which sound levels are reduced. When the source and receiver are both close to the ground, the sound wave reflected from the ground may interfere destructively with the direct wave. This effect, called the ground effect, is

normally noticed over distances of several yards and more, and in the frequency range of 200 to 600 Hz.

Research on propagation through trees yields conflicting results. Dense shrubbery can produce effective noise attenuation. A band of trees several hundred feet deep is required to achieve significant attenuation.

Significant attenuation can be achieved with solid barriers. A barrier should be 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 40 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.

The propagation of sound is very complex and influenced by a large number of factors. This report only examines the attenuation of sound due to geometry, barriers specifically placed by the Project or mitigation measures, and barriers such as the terrain, as well as air absorption for the linear decibel scale analysis.

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 5-dBA penalty to the measured noise level. Section 4.9.1.2, Noise Terminology, describes the dBA rating scale.

Effects on Wildlife

Wildlife response to sound is dependent not only on the magnitude but also the characteristic of the sound, or the sound frequency distribution and whether the sound is natural or human made (noise). Wildlife is affected by a broader range of sound frequencies than humans. Therefore, a linear decibel scale (non-A weighted) analysis is preferred for wildlife impact analysis. Noise is known to affect an animal's physiology and behavior, and chronic noise-induced stress can be deleterious to an animal's energy budget, reproductive success, and long-term survival (Radle 2001).

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 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 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 March 1998, the Federal Highway Administration (FHWA) released the traffic noise model (TNM), 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 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.

For assessing rail noise, the Federal transportation Administration (FTA) has developed specific noise models to assess railroad noise (FTA 2006) based on a variety of factors including locomotive types, number of locomotives, number of cars, speed, track type and horn activity.

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 4.9.1 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 4.9.1 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 4.9-1). 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.

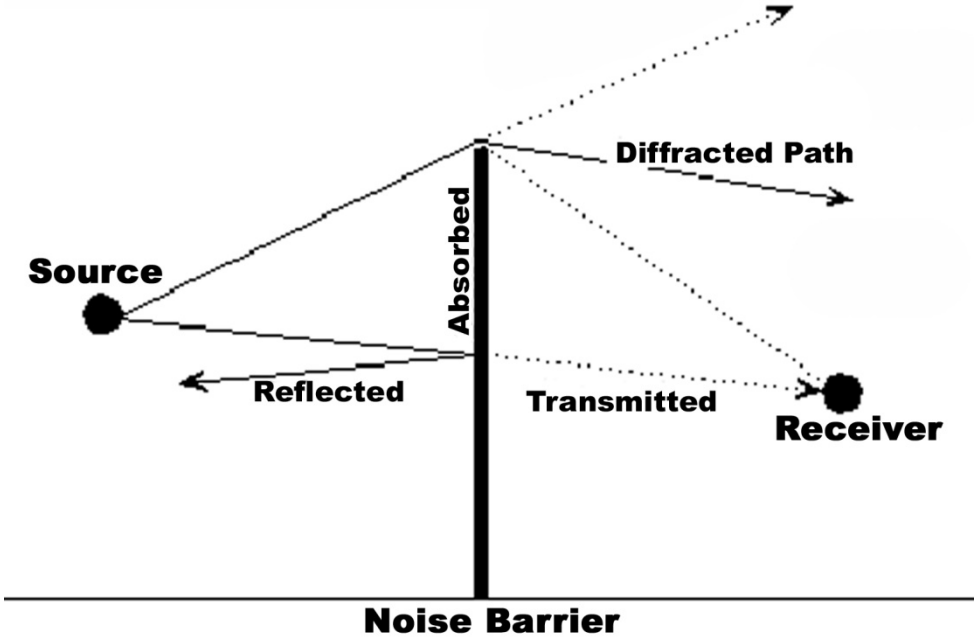
Transmitted noise is typically not taken into consideration when modeling noise attenuation by noise barriers because this noise is typically significantly lower than the source noise (FHWA 2006). The highest noise is from the diffracted portion of the attenuated noise.

4.9.1.2 Noise Terminology

Sound is technically described in terms of amplitude (loudness) and frequency (pitch). The standard unit of sound amplitude measurement is the decibel (dB). The decibel scale is a logarithmic scale that describes the physical intensity of the pressure vibrations that make up any sound. The pitch of the sound is related to the frequency of the pressure vibration. Because the human ear is not equally sensitive to a given sound level at all frequencies, a special frequency-dependent rating scale has been devised to relate noise to human sensitivity. The A-weighted

decibel scale (dBA) provides this compensation by discriminating against frequencies in a manner approximating the sensitivity of the human ear.

Figure 4.9-1 Noise Attenuation Mechanisms



Source: Adopted from FHWA 2000

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. Table 4.9.2 lists representative noise levels for specific activities.

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 scales of Equivalent Continuous Sound Level (Leq), minimum instantaneous noise level (Lmin), and the maximum instantaneous noise level (Lmax) are measures of ambient noise, while the Day-Night Average Level (Ldn) and Community Noise Equivalent Level (CNEL) are measures of community noise (or noise levels with penalties for noise in the evening or nighttime). Leq is the average A-weighted sound level measured over a given time interval. Leq can be measured over any time period, but is typically measured for 1-minute, 15-minute, 1-hour, and 24-hour periods. CNEL is another A-weighted average sound level measured over a 24-hour time period.

Table 4.9.2 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—	
	—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

This noise scale is adjusted to account for some individuals' increased sensitivity to noise levels during the evening and nighttime hours. Leq, Lmin, and Lmax, as well as Ldn and CNEL are all applicable to this analysis and defined as follows:

- Leq, the equivalent energy noise level in dBA, is the average acoustic energy content of noise for a stated period of time. Thus, the Leq of a time-varying noise and that of a steady noise are the same if they deliver the same acoustic energy to the ear during exposure. For evaluating community impacts, this rating scale does not vary, regardless of whether the noise occurs during the day or the night.
- Ldn, the Day-Night Average Level, is a 24-hour average Leq with a 10 dBA 'weighting' or penalty added to noise the hours of 10:00 p.m. to 7:00 a.m. to account for people's increased noise sensitivity during the nighttime. The logarithmic effect of these additions is that a 60 dBA 24-hour Leq would result in a measurement of 66.4 dBA Ldn.
- CNEL, the Community Noise Equivalent Level, is a 24-hour average Leq with a 5 dBA "weighting" during the hours of 7:00 p.m. to 10:00 p.m. and a 10 dBA "weighting" added to noise during the hours of 10:00 p.m. to 7:00 a.m. to account for noise sensitivity in the evening and nighttime, respectively. The logarithmic effect of these additions is that a 60 dBA-24 hour Leq would result in a measurement of 66.7 dBA CNEL.

- Lmin is the minimum instantaneous noise level experienced during a given period of time, in dBA.
- Lmax is the maximum instantaneous noise level experienced during a given period of time, in dBA.

Noise environments and consequences of human activities are usually well represented by average noise levels during the day or night, or over a 24-hour period, as represented by the Ldn or the CNEL. Environmental noise levels are generally considered low when the CNEL is less than 60 dBA, moderate in the 60 to 70 dBA range, and high greater than 70 dBA. Examples of low daytime noise levels are isolated, natural settings that can provide noise levels under 30 dBA and quiet, suburban, residential streets that can provide noise levels around 40 dBA. Noise levels above 45 dBA 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 more noisy 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.

When evaluating changes in 24-hour community noise levels, a difference of 3 dBA is a barely perceptible increase to most people (Caltrans 1998). A 5-dBA increase is readily noticeable, while a difference of 10 dBA would be perceived as a doubling of loudness. New development within a community could potentially lead to activities that increase the 24-hour community noise levels.

4.9.1.3 Vibration

Vibration is acoustic energy transmitted as pressure waves through a solid medium, such as soil or concrete. 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.

Ground-Borne Vibration
The extent that vibration is transmitted through the ground depends on the soil type, the presence of rock formations or man-made features and the topography between the vibration source and the receptor location. These factors vary considerably from site to site and make accurate predictions of vibration levels at receptors distant from the source extremely difficult (often impossible) in practice.

As a general rule, vibration waves tend to dissipate and reduce in magnitude with distance from the source. Also, 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 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

Vibration may be defined in terms of the displacement, velocity, or acceleration of the particles in the medium material. 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/s). The amplitude of vibration can be expressed in terms of the wave peaks 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 4.9.3 below.

Table 4.9.3 Typical Levels of Ground-Borne Vibration

Source	Typical Velocity at 50 feet (inches/second, rms)[a]	Human or Building Response
Pile Driver, impact, sheetpiling	0.54	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

a. rms = root mean square
Source: FTA 2006, FHWA 1995

Vibration can produce several types of wave motion in solids including, compression, shear, and torsion, so the direction in which vibration is measured is significant and should generally be

stated as vertical or horizontal. Human perception also depends to some extent on the direction of the vibration energy relative to the axes of the body. In whole-body vibration analysis, the direction parallel to the spine is usually denoted as the z-axis, while the axes perpendicular and parallel to the shoulders are denoted as the x- and y-axes respectively.

Large vehicles can also increase ground vibration along streets that they travel. Vibration would be 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.

4.9.1.4 Sensitive Receptors

Some land uses are more sensitive to noise than others, due to the amount of noise exposure and the types of activities typically involved. Residential areas, schools, libraries, religious institutions, hospitals, nursing homes, parks, some wildlife areas, and quiet outdoor recreation areas are generally more sensitive to noise than are commercial and industrial land uses. Receptors near the Project Site include:

- Oceano Dunes State Vehicular Recreation Area (ODSRVA);
- Oso Flaco Lake and Dunes;
- Fire Station No. 22 to the north on State Route 1 (Willow Road);
- Residences along Monadella Street and areas to the north and south of State Route 1 (Willow Road);
- Commercial uses north and south of State Route 1 (Willow Road);
- Agricultural uses to the east and south along State Route 1 (Cabrillo Highway);
- Golf course and residences to the east along State Route 1 (Cabrillo Highway); and
- Residences along routes to and from U.S. Highways 101 and 166.

In addition, areas along the railroad route that runs from the SMR are exposed to elevated noise levels due to the passenger and freight trains that run along the railroad route.

4.9.1.5 Existing Noise Sources

Existing operations at the Project Site constitute one noise source. Other noise sources near the Project Site and nearby vicinity contributing to the noise environment include traffic on adjacent roads, railroad operations, and commercial and industrial operations at neighboring facilities. The following sections discuss each of these noise sources.

Traffic Noise

The predominant sources of traffic noise at the Project Site are vehicles on State Route 1. Noise levels from traffic are estimated in the San Luis Obispo County General Plan Noise Element for 2010 traffic levels, which are estimates generated at the time of the Noise Element adoption in 1992 (San Luis Obispo 1992). The Noise Element estimates that CNEL (or Ldn) noise levels along State Route 1 near the Rail Spur Project site exceed 65 dBA due to roadway noise. Table 4.9.4 shows centerline distances to specific noise levels.

Table 4.9.4 Roadway Noise Levels: Noise Element and Calculated Current

Roadway	Segment	Noise at 100 feet, CNEL	Distance to Noise Contour, feet		
			60 CNEL	65 CNEL	70 CNEL
FHWA Model Calculated Values: Current Traffic Levels (2008)					
State Route 1	At Santa Maria Refinery entrance	65.3	342	108	34
Noise Element Values (estimated for 2010)					
State Route 1	Santa Barbara County to Valley Road	-	136	63	29
State Route 1	Valley Road to Halcyon Road	-	223	104	48
Railroad	Grade Crossing	-	525	244	113

Notes: Distances are in feet from roadway centerline. Local streets based on San Luis Obispo County Public Works Traffic Counts December 2008. Time of day distribution based on Noise Element Technical Reference Document.

Existing traffic-generated noise levels were also modeled using a version of the Federal Highway Administration Traffic Noise Model and traffic data provided by the County of San Luis Obispo and Caltrans (FHWA 1998). This analysis was conducted in order to demonstrate the noise levels associated with current traffic levels (the Noise Element addresses estimated traffic levels for 2010). The analysis indicates that properties along State Route 1 near the Refinery are exposed to a traffic-generated CNEL of 65 dBA (at 100 feet from the road centerline) and noise levels of 60 dBA are experienced as far as 136 to 342 feet from the roadway.

Railroad Noise

The railroad runs through the SMR Site. Noise levels due to railroad activity are estimated in the San Luis Obispo County General Plan Noise Element. These estimates are based on ten freight and four passenger trains per day. Distances to the 60 dB contour value range up to 525 feet from a grade crossing (see Table 4.9.3). Other areas along the mainline track would experience similar higher rail road noise levels depending upon the amount of rail traffic. Increase levels of rail traffic such as in the Bay Area and the Los Angeles basin would tend to generate higher levels of noise than for areas with less train traffic.

Commercial, Industrial, Residential, and Recreational Noise

The area near the Project Site includes some industrial and commercial uses, as well as residential and recreational uses that could generate noise which include the following:

- Recreational vehicular uses to the west at the ODSVRA;

- County Fire Department activities to the north at Fire Station No. 22;
- Residential activities to the north along Monadella Street;
- Industrial and commercial uses along State Route 1 (Willow Road);
- Industrial uses, such as a junk yard, recreational vehicle storage and repair, and auto sales, to the northeast on Alley Oop Way and Gasoline Alley Place;
- Agricultural activities to the east and southwest; and
- Recreational and golf activities to the east at Monarch Dunes Golf Club along State Route 1 (Cabrillo Highway).

All of these locations potentially produce noise on an intermittent basis due to activities.

Agricultural Noise
The San Luis Obispo County General Plan Noise Element discusses noise associated with agricultural operations. Noise levels from agricultural sources that could be in the project vicinity include diesel engines (74 to 85 dBA at 50 feet) and tractors (72 to 75 dBA at 50 feet).

4.9.1.6 Noise Measurements

Noise measurements were obtained as part of previous EIR analysis' (SLOCAPCD 2012) on June 21, 2011 and January 27, 2014, in the vicinity of the Project Site, and along transportation routes. The 2011 measurements were taken at four locations during the day, evening, and nighttime to allow for a calculation of CNEL. The 2014 measurements were taken at three locations near residential areas and were monitored continuously from the afternoon of January 27 to the evening of January 29, 2014. The results of these measurements and their locations are shown in Table 4.9.5.

The noise baseline in the area is generally dominated by traffic noise, which produces a CNEL close to 69 dBA for areas close to roadways (along State Route 1). Residential areas close to the SMF experience noise levels ranging from approximately 52 to 69 dBA CNEL.

The Applicant also conducted noise measurements as submitted in their Application materials. Noise measurements were conducted October 18-19, 2012 at specific locations listed in Table 4.9.5 (measurements 1-4 and A1-A4).

Table 4.9.5 Existing Ambient Noise Levels Near the Project Site: Short Term Monitoring

#	Location	Daytime Leq (dBA)	Evening Leq (dBA)	Nighttime Leq (dBA)	CNEL (dBA)	Noise Sources
1	Oso Flaco Lake Parking lot	43.6	40.1	48.9	54.9	Visitors, wind, surf, automobiles, birds, frogs (at night) tractors
2	Willow Road and Guadalupe Road	65.8	65	60.9	68.9	Traffic noise on Willow and Highway 1

Table 4.9.5 Existing Ambient Noise Levels Near the Project Site: Short Term Monitoring

#	Location	Daytime Leq (dBA)	Evening Leq (dBA)	Nighttime Leq (dBA)	CNEL (dBA)	Noise Sources
3	Winterhaven Way	59.2	51.5	42.0	57.3	Traffic noise on Highway 1, dogs, fire station alarms, occasional alarms from the Refinery
4	Monadella Street	49.3	45	43.6	51.5	Traffic noise from Highway 1, birds, wind in trees
A1	Hwy 1 and Via Concha	54.5	-	45.6	-	-
A2	Near Nathan Way	51.0	-	40.0	-	-
A3	Olivera Avenue	49.5	-	40.4	-	-
A4	Gasoline Alley	56.1	-	41.7	-	-
5	Mesa View Storage	59.7	56.3	49.3	64.8	Traffic noise from Hwy 1
6	Olivera and Los Reyes	43.2	41.0	40.2	55.2	Traffic noise, occasional residential noise
7	1918 Eucalyptus Rd.	48.7	46.5	38.6	54.1	Traffic noise, occasional residential noise

Note: Source: In-field measurements 1-4 taken June 21, 2011 by MRS with a Quest 1900 noise meter. Measurements A1-A4 taken October 18-19, 2012 by Applicant. Measurements 5-7 taken January 27-29 by SRA under contract to MRS.

The Applicant also conducted long-term monitoring. The long-term monitoring was conducted at the eastern end of the refinery property for 9 days from October 10, 2012. The long-term monitoring showed that the average daytime noise levels range from 40.9 to 50.9 dBA Leq, and the average nighttime noise levels ranged from 37.5 to 42.8 dBA Leq. The average Leq over the week-long noise monitoring period during the daytime was 44.9 dBA and during the nighttime was 41.0 dBA. Noise monitoring conducted in January, 2014 by the EIR consultant, indicated that the nighttime periods were quieter than previous measurements by about 2.0 dBA along Eucalyptus Road.

The January 29, 2014 measurements were also taken during the daytime both at the residential areas and at the SMR during train movements. These measurements were taken by the EIR consultant. On January 29th, in the morning, 34 rail cars of coke were picked up by 2 locomotives from the coke area at the SMR (i.e., in the western portion of the proposed Rail Spur Project footprint). Noise monitoring was conducted during these activities to refine the noise levels used in the noise model and to assess the potential impacts of actual rail movements on area receptors. See Appendix D.1 for the monitoring report. Generally, the noise levels produced by the rail movements were slightly less than those estimated by the FTA models, most likely due to the inaccuracies of the FTA model at slower speeds. In each case, the estimated train noise level from the spur is more than 10 dBA below the daytime ambient noise levels at the receptors, which indicates that activity on the existing rail spur (which occurs only during the daytime) is inaudible. This conclusion is supported by review of the audio recordings made at 1918 Eucalyptus Road in which no discernable train noise could be heard.

4.9.2 Regulatory Setting

Regulations generally pertain to state regulations and local ordinances and codes. These are described below.

4.9.2.1 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 that is free from noise that jeopardizes their health or welfare.

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, prepared by the California Department of Health Services and included in the 1990 State of California General Plan Guidelines published by the State Office of Planning and Research, 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.

4.9.2.2 County Local Ordinances and Policies

The applicable noise standards governing the project area are the criteria in the County's Noise Element of the General Plan, which covers noise exposure from major sources in the County including roadways, railways, airports, and stationary sources, and the criteria in the County's Municipal Code, covering stationary noise sources such as loading docks, parking lots, and ventilation equipment.

The San Luis Obispo County Noise Element of the General Plan provides a policy framework for addressing potential noise impacts in the planning process. The Noise Element is directed at minimizing future noise conflicts, whereas a noise ordinance focuses on resolving existing noise conflicts. The Noise Element includes maps showing the extent of noise exposure from the major noise sources in the County (roadways, railways, airports, and stationary sources), along with the goals, policies, and implementation program adopted by the County to reduce future noise impacts. The goals of the Noise Element, compiled under the mandate of Section 65302(f) of the California Government Code and guidelines prepared by the California Department of Health Services, are to ensure that all areas of the County are free from excessive noise and that appropriate maximum levels are adopted for residential, commercial, and industrial areas; to reduce new noise sources to the maximum extent possible; to reduce, to the maximum extent possible, the impact of noise within the county; and to ensure that land uses are compatible with the related noise characteristics of those uses.

Among the most significant policies of the Noise Element are numerical noise standards that limit noise exposure within noise-sensitive land uses and performance standards for new commercial and industrial uses that might adversely impact noise-sensitive land uses. When the potential for adverse noise impacts is identified, mitigation is required to carry out the specific recommendations of an expert in acoustics or, under some circumstances, by implementing standard noise mitigation packages. When mitigation is required, highest priority is given to avoiding or reducing noise impacts through site planning and project design, and lowest priority given to structural mitigation measures such as construction of sound walls and acoustical treatment of buildings.

The County has identified these noise-sensitive uses:

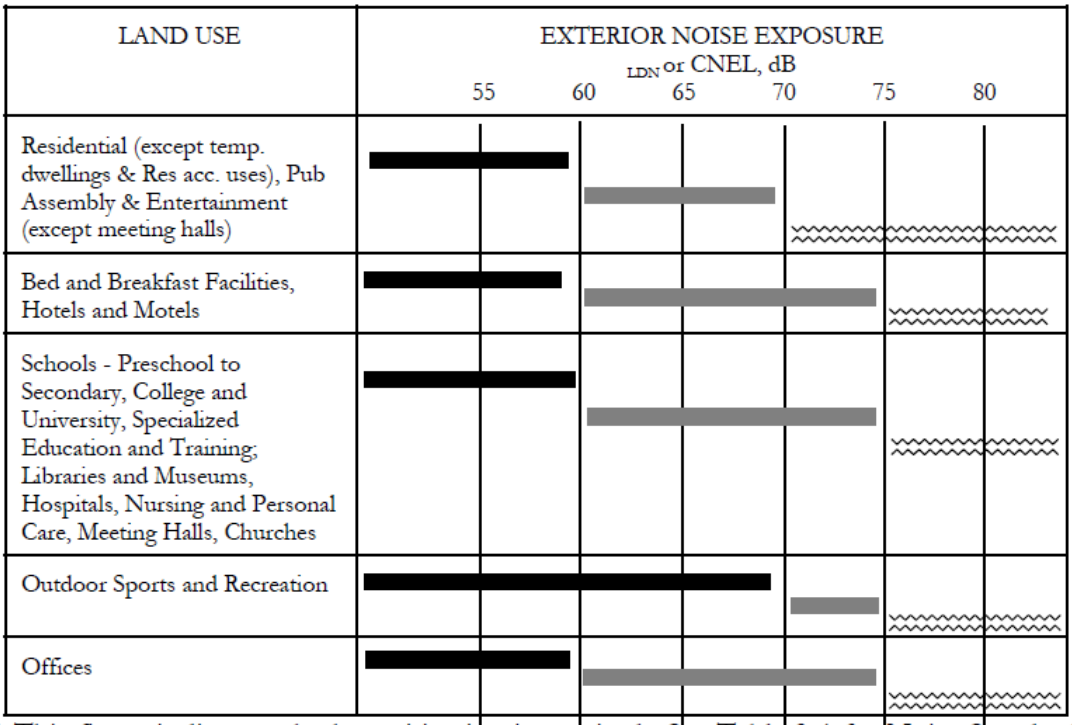
- Residential development, except temporary dwellings;
- Schools preschool to secondary; colleges and universities; specialized education and training;
- Health care services (hospitals);
- Nursing and personal care;
- Churches;
- Public assembly and entertainment;
- Libraries and museums;
- Hotels and motels;
- Bed and breakfast facilities;
- Outdoor sports and recreation; and
- Offices.

The Noise Element specifies the ranges of noise exposure from transportation noise sources which are considered to be acceptable, conditionally acceptable, or unacceptable for the development of different land uses. Figure 4.9-2 shows whether mitigation is needed for development of land uses near major transportation noise sources. In areas where the noise environment is acceptable, new development may be permitted without requiring noise mitigation. For areas where the noise environment is conditionally acceptable, new development would be allowed only after noise mitigation has been incorporated into the design of the project to reduce noise exposure. For areas where the noise environment is unacceptable, new development is usually not feasible.

For residential land uses, the Noise Element recommends an exterior noise standard of 60 dBA CNEL and an interior noise standard of 45 dBA CNEL. Table 4.9.6 lists the County's maximum exterior noise levels for stationary noise sources. Table 4.9.7 lists the County's maximum allowable noise exposure for noise from transportation noise sources.

If the baseline noise level during the day at some noise-sensitive locations exceed the thresholds, as per Title 22, section 22.10.120b2, "the applicable standard shall be adjusted so as to equal the ambient noise level plus one dB", which equates to an allowable increase of 1 dBA. When the receiving noise-sensitive land use is outdoor sports and recreation, the noise level standards shall be increased by 10 dB.

Figure 4.9-2 Land Use Compatibility for New Development near Transportation Noise Sources



* This figure indicates whether mitigation is required. See Table 3-1 for Noise Standard.

INTERPRETATION

ACCEPTABLE
(no mitigation required)

Specified land use is satisfactory.

CONDITIONALLY ACCEPTABLE
(mitigation required)

Use should be permitted only after careful study and inclusion of mitigation measures as needed to satisfy policies of the Noise Element.

UNACCEPTABLE
(mitigation may not be feasible)

Source: SLOC 1992

Table 4.9.6 Noise Element Maximum Allowable Noise Exposure - Stationary Sources

Level	Daytime (7:00 a.m.–10:00 p.m.)	Nighttime (10:00 p.m.–7:00 a.m.)
Hourly Leq	50	45
Maximum Level, Lmax	70	65
Maximum Level – Impulsive Noise, Lmax	65	60

Notes: As determined at the property line of the receiving land use. When determining the effectiveness of noise mitigation measures, the standards may be applied on the receptor side of the noise barrier or other property line noise mitigation measures. Nighttime applies only where the receiving land use operates or is occupied during nighttime hours.
Source: SLOC 1992

Table 4.9.7 Noise Element Maximum Allowable Noise Exposure - Transportation Sources

Land Use	Outdoor Areas	Interior Spaces	
	Ldn/CNEL, dB	Ldn/CNEL, dB	Leq dB
Residential (except temporary dwellings and residential accessory uses)	60	45	--
Bed and Breakfast Facilities, Hotels, and Motels	60	45	--
Hospitals, Nursing and Personal Care	60	45	--
Public Assembly and Entertainment (except Meeting Halls)	--	--	35
Offices	60	--	45
Churches, Meeting Halls	--	--	45
Schools – Preschool to Secondary, College and University, Specialized Education and Training, Libraries and Museums	--	--	45
Outdoor Sports and Recreation	70	--	--

Source: SLOC 1992

Chapter 6, Section 40 of Title 23 (23.06.040) of the County Code establishes standards for acceptable exterior and interior noise levels and describes how noise shall be measured. These standards are intended to protect persons from excessive noise levels, which are detrimental to the public health, welfare, and safety. Excessive noise levels are also contrary to the public interest because they can interfere with sleep, communication, relaxation, and full enjoyment of one's property; contribute to hearing impairment and a wide range of adverse physiological stress conditions; and adversely affect the value of real property. The interior and exterior noise standards established in the County's Land Use Ordinance are consistent with the noise exposure standards in the County's General Plan Noise Element.

The County Code exempts construction activities from the noise standards between the hours of 7:00 a.m. and 9:00 p.m., Monday through Friday, and between 8:00 a.m. and 5:00 p.m. Saturdays and Sundays.

4.9.3 Significance Criteria

The significance of potential noise and vibration impacts is based on thresholds identified within the County of San Luis Obispo Initial Study Checklist, which was developed in accordance with Appendix G of the CEQA Guidelines. The County Checklist provides the following thresholds for determining impact significance with respect to noise and vibration. Noise and vibration impacts would be considered significant if the proposed project would:

- Expose people to noise levels that exceed the County Noise Element thresholds.
- Generate permanent increases in the ambient noise level in the project vicinity.
- Cause a temporary or periodic increase in the ambient noise in the project vicinity.
- Expose people to sever noise or vibration.

The second and third significance criteria are associated with the issue of the issue of noise perceptibility, and do not assign a threshold of acceptability from increased levels of perceptibility. Due to the wide range of ambient noise levels between the urban and rural environments and the range of noisy activities allowed within each, this issue is evaluated on a case-by-case basis. For the purposes of CEQA, the County has determined that the following thresholds apply to new development.

- Any increase above background (ambient) noise that is less than 3 dBA is less than significant.
- When a project (plus the background noise) results in an increase in noise between 3 and 10 dBA as measured from the nearest sensitive receptor, it is considered adverse. Also, based on consideration of the factors specified below, there is a potential for a significant noise impact that needs further consideration.
- When a project (plus the background noise) results in an increase in noise greater than 10 dBA, as measured from the nearest sensitive receptor that is a potentially significant impact warranting mitigation.

A project-related noise increase of between 3 and 10 dBA is considered adverse, but could be either significant or insignificant, depending upon the particular circumstances of a particular case. Factors to be considered in determining the significance of an adverse impact as defined above include, but are not necessarily limited to:

- The resulting noise level;
- The duration and frequency of the noise;
- The number of people affected; and
- The land use designation of the affected receptor sites.

The significance criteria described above are based on hourly Leq noise levels. The intent is to provide a relatively simple, easily understood description of the noise environment that does not require overly complex analysis to measure or enforce.

Leq has been found to correlate well with subjective reaction to many environmental noise sources and has been widely-adopted in environmental noise impact studies. Because it is an energy average, Leq allows complex, time-varying noise environments to be described with a single figure, capturing contributions from noise sources that vary rapidly with time as well as those with a steady-state noise characteristic.

For this EIR a 5-dBA increase on the baseline noise level has been selected as a significance criterion is derived from typical human response to changes in noise level. A 5 dBA change in noise level is generally acknowledged to be readily perceptible to most people (a perceived increase in noise level of more than 40%, as per Caltrans). A 5-dBA change is low in the 3- to 10-dBA range indicated in the County Initial Study checklist for determining significance, and the 5-dBA change is used to provide a conservative estimate of significance.

For noise-sensitive land uses, Noise Element and County Code Tile 23, Section 23.06.040 defines threshold as 45 dBA Leq hourly nighttime, 50 dBA daytime at the receiving property parcel boundary. Noise-sensitive uses that have been identified by the County are the following:

1. Residential development, except temporary dwellings
2. Schools-preschool to secondary, college and university; specialized education and training
3. Health care services (hospitals)
4. Nursing and personal care
5. Churches
6. Public assembly and entertainment
7. Libraries and museums
8. Hotels and motels
9. Bed and breakfast facilities
10. Outdoor sports and recreation
11. Offices

If the baseline noise level during the day at some noise-sensitive locations exceed the thresholds, as per Title 23, Section 23.06.044(b), "the applicable standard shall be adjusted so as to equal the ambient noise level plus one dB", which equates to an allowable increase of 1 dBA.

Noise due to construction activities is considered to be insignificant when it falls under the hours and definition specified in the County's Noise Ordinance exception for construction activities. In terms of CEQA compliance, construction noise is usually considered less than significant if construction activities only occur during a fraction of the project lifetime, intermittently affect any one location, and limit heavy construction equipment use and noisy activities to daytime hours.

Long-term offsite impacts from traffic noise are measured against multiple criteria. Both of these criteria must be met for a significant impact to be identified:

- Traffic noise levels would increase by more than 3 dBA compared to existing conditions on a roadway and rail segment adjacent to a noise-sensitive land use; and
- The resulting traffic noise level would exceed the County criteria level for the noise-sensitive land use. In this case, the criteria level is 60 dBA CNEL for residential, hotel, hospital, and office uses and 70 dBA CNEL for outdoor sports and recreation uses land uses (as per the County Code).

Vibration impacts would be considered significant if the vibration levels generated by the project equipment exceeded a velocity of 0.01 inches/sec (0.25 mm/sec) at the property line of a neighboring use. This value corresponds with the perceptible level, and other jurisdictions, including the County of Los Angeles, define this level as a threshold for vibration impacts.

4.9.4 Project Impacts and Mitigation Measures

The Rail Spur Project would generate noise due to the following activities:

- Internal combustion engines associated with construction equipment;
- Trains positioning, idling, and unloading at the SMR;
- Electrical equipment including pumps, transformers, HVAC systems and air compressors that are used during the unloading operations; and
- Trains moving along the UPRR mainline tracks.

The remainder of this section discusses the impacts associated with the construction and operational noise levels.

Impact #	Impact Description	Phase	Impact Classification
N.1	Construction activities would generate noise that could exceed San Luis Obispo thresholds.	Construction	Class II

Noise impacts during construction would result from construction equipment with internal combustion engines (e.g., backhoes, cranes) operating at the site for grading, earth moving and

the installation of project related equipment. The Federal Highway Administration (FHWA) noise model was used to estimate the noise levels associated with construction activities. The peak construction noise levels are provided in Table 4.9.8.

Table 4.9.8 Construction Noise Levels

Location	Project Noise Level (dBA)		Baseline Noise Level (dBA)		Combined Noise Level (dBA)		Noise Level Increase (dBA)	
	Lmax	Leq	Day	Night	Day	Night	Day	Night
Trilogy Residences	41.4	44.7	48.7	38.6	50.2	45.7	1.5	7.1
Olivera Residences	45.2	48.6	43.2	40.2	49.7	49.2	6.5	9.0
Monadella Residences	42.5	45.8	49.3	43.6	50.9	47.8	1.6	4.2
Nathan Way Residences	42.1	45.5	51.0	40.0	52.1	46.6	1.1	6.6

The County Code exempts construction activities from the noise standards between the hours of 7:00 a.m. and 9:00 p.m., Monday through Friday, and between 8:00 a.m. and 5:00 p.m. Saturdays and Sundays. If construction activities were to occur outside of these times they would be subject to the County noise standards. As the data in Table 4.9.8 shows, all of the nighttime noise levels at the sensitive receptors would exceed the 45 dBA hourly threshold. Therefore, if construction was to occur outside of the allowable hours specified in the County Code, the impacts would be significant.

Mitigation Measures

N-1 *The Applicant shall ensure that all construction activity at the Project Site is limited to the hours of 7:00 A.M. to 9:00 P.M., Monday through Friday, and 8:00 A.M. to 5:00 P.M. on Saturdays and Sundays. This restriction shall be a note placed on all construction plans.*

Residual Impacts

Limiting the hours of construction activities to the hours specified in the County Code would reduce the impact of construction noise to *less than significant with mitigation (Class II).*

Impact #	Impact Description	Phase	Impact Classification
N.2	Operational activities would generate noise levels that exceed San Luis Obispo thresholds.	Operations	Class II

Noise generated during operations would result from a number of different sources and activities. These would include:

- Noise from the unit or manifest train approaching and entering the facility along the mainline;

- Noise from the locomotive engines doing switching activities along the spur to the east of the unloading area due to positioning of full tank cars before unloading and the delivery of empty tank cars to the empty tank car track after unloading;
- Noise from locomotive engines switching and idling near the unloading area associated with movement of empty and full tank cars;
- Noise from the locomotive engines idling along the spur to the east of the unloading area due to positioning of full tank cars before unloading;
- Noise from pumps operating to unload rail cars, 2 transformers, an HVAC system and an air compressor (to recharge the train brakes); and
- Noise from locomotive engines associated with a second train entering the facility, if two trains overlap.

The noise impact analysis has been based upon a unit train since this is the option that would generate the most amount of noise since the positioning activities would require more time.

Noise from locomotive engines and from trains during switching and idling were estimated using the FTA computational algorithms to estimate hourly equivalent noise levels based on train activity and characteristics (FTA 2006) and the noise monitoring conducted on the coke train in January, 2014 (see Appendix D). The FTA has developed a set of equations that estimates the noise levels of trains based on the number of train locomotives, the number of rail cars, the train speed, the track type, the locomotive type, and the throttle setting. These equations were used to estimate the noise levels of the trains traversing the spur and moving cars around on the spur in combination with the measured actual noise levels (from the January 2014 measurements) generated by coke trains moving on the existing spur. As the trains would be moving around along the entire length of the rail spur, these noise sources were treated like line sources.

For idling locomotives, the FTA equations associated with stationary sources were utilized, where the noise levels are a function of the number of sources and the duration of the source and the type of locomotive. As these sources would be located at a single location, these sources were considered point sources.

For pumps and other equipment at the unloading area, various sources were used to estimate the noise levels from this stationary equipment, including the FHWA Roadway Construction Noise Model (FWHA 2013) and the Applicant noise study conducted for this project. As these sources would be located at a single location, these sources were also considered point sources. Noise source levels used in the study are shown in Table 4.9.9.

The various sources associated with the rail spur would operate a varying amount of time. As described in Section 2.0, Project Description, idling of locomotives could occur at various locations along the spur for periods in excess of 1 hour increments during the course of the entire unloading operation. Movements along the rail spur to the far eastern end would occur associated with initial positioning of the rail cars into the unloading area, with 2 locomotives operating down the spur (sometimes one of those locomotives would be idling), as well as potential delivery of the empty rail cars (in sets of 10) by a single locomotive to the far end of the

rail spur empty car track after unloading. These various locomotive movements and the time in each mode and at each location were entered into the noise model. The Applicant has proposed various options for train movements, and the option related to nighttime movements was used in the noise model as the nighttime background noise levels are the lowest. Train activity during the nighttime would produce the greatest increase in noise.

Table 4.9.9 Operational Noise Source Levels

Source	Type	Number	Sound Level at 50 feet, dBA	Reference
Locomotives idling	Point	Up to 3	73.4	FTA Stationary source model
Locomotives (2) moving along spur, 3mph, with 10-80 cars	Line*	1	71.1**	2014 Coke Activity monitoring
Pumps	Point	20	81	FHWA construction database
Transformers	Point	2	65	Applicant data
HVAC	Point	1	65	Applicant data
Air Compressors	Point	1	80	FHWA construction database

Notes: * Line sources are the hourly average noise level experienced by a receptor located 50 feet from the railway centerline. Maximum sound level at 50 feet would be higher. ** Monitoring from January 2014 monitored sound level at 25 feet, which would be equivalent to 74.1 at 25 feet for a line source. For a single locomotive running with 1 locomotive idling, noise levels are reduced by 1 dBA.

In addition, the pumps would operate and produce noise while pumping crude oil from a rail car, but then would be shut off while the rail cars are switched and each car is re-connected and the pumps started again. It was determined that the pumps would operate a maximum of 60% of each hour.

This sequencing of locomotives and rail cars were entered into the noise model for the worst case scenario, starting at 11 p.m. and continuing all night long. It was also assumed that a second train would arrive during unloading operations, and wait until the first train had unloaded. Locomotives were assumed to be shut down on the second train after arrival.

The resulting noise levels at each receptor are listed in Table 4.9.10. Figure 4.9-3 shows the noise contours for the Rail Spur Project peak hour operating scenario.

Noise levels could increase at night by as much as 10.9 dBA at the closest area to the Project Site. However, for noise-sensitive receptors, the largest nighttime noise increase would be along Olivera Street (which has residences considered noise-sensitive receptors) and at the west end of Louise Lane. Noise levels at Monadella Street would increase above the allowable nighttime noise threshold of 45 dBA, and would have an increase of less than 5 dBA. Note that there are many exceptions to the codes and requirements, related to noise sensitive definitions and existing background noise levels (if already above the allowed code levels) and these are discussed in the footnotes to Table 4.9.10.

Table 4.9.10 Operational Noise Levels at Receptors: Unmitigated

Receptor	Baseline Night	Baseline Day	Noise Level with Project, Night	Noise Level Increase, Night	Noise Level with Project, Day	Noise Level Increase, Day	Signif-icant ?
Agricultural Area	43.6[1]	43.6	53.1	9.5	53.1	9.5	No[a]
Gentle Breeze	43.6[2]	49.3	44.6	1.0	49.6	0.3	No
Industrial Residence	40.4[3]	49.3	51.3	10.9	53.2	3.9	No[c]
Lake Oso	43.6[1]	43.6	45.3	1.7	45.3	1.7	No[b]
Louise Lane	38.6[7]	48.7	42.9	4.3	49.4	0.7	No
Monadella Street	43.6[2]	49.3	47.6	4.0	50.8	1.5	Yes
Nathan Way	40.0[4]	51.0	44.0	4.0	51.5	0.5	No[e]
Olivera Street	40.2[8]	49.3	47.5	7.3	48.3	5.1	Yes
Trilogy Pkwy	38.6[7]	48.7	42.9	4.3	49.4	0.7	No
Via Entrada	45.6[5]	54.5	46.9	1.3	54.7	0.2	No[d]
Winterhaven Residence	42.0[6]	59.2	47.7	5.7	59.4	0.2	No[c]

Notes: Baseline noise levels are based on the following locations 1) Oso Flaco 2) Monadella 3) Applicant ST Location 3 4) Nathan Way 5) Highway 1 and Concha 6) Winterhaven 7) 1918 Eucalyptus Road 8) Olivera

a) Agricultural areas are not considered to be noise-sensitive receptors.

b) This location is considered an outdoor sports and recreation location and its threshold is increased by 10 dBA.

c) Although this is a residential location, the land use category is industrial

d) This is not a noise-sensitive residential land use, but is currently zoned industrial. It could be developed with a noise-sensitive use if the business is a church or a daycare/school.

e) This location produces a daytime noise level above 50 dBA, but as the current background is above 50 dBA and the noise increase is less than 1 dBA, it would be less than significant.

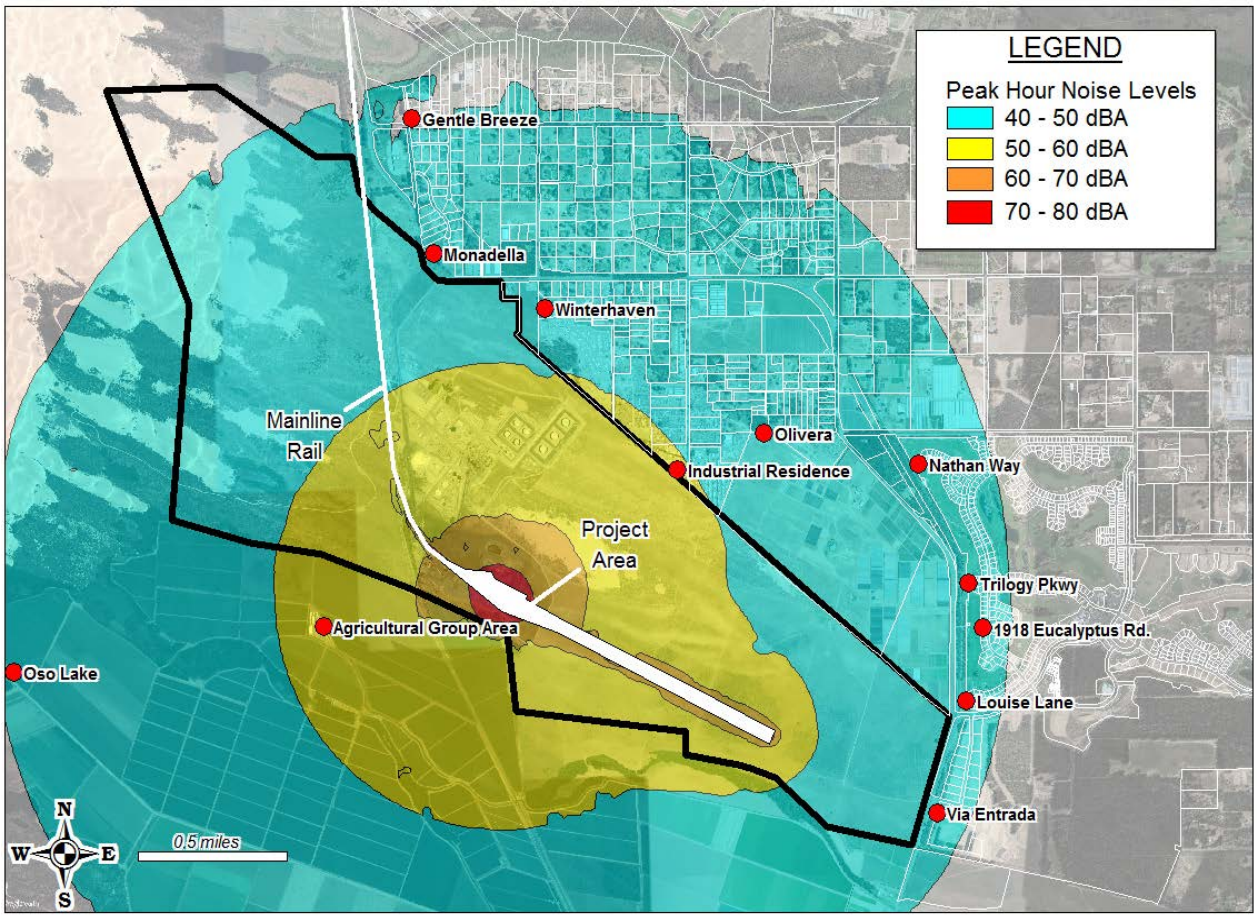
See Appendix D for the SoundPlan modeling files.

The primary sources contributing to the peak hour noise levels at these sources are activities along the spur east of the unloading area and the pumps.

Daytime noise levels would increase at the agricultural areas to the immediate south of the project site and at the closest noise-sensitive receptor.

There are a number of uncertainties associated with estimating noise impacts. Meteorological conditions can strongly affect noise propagation and impacts, as most people have had experiences of hearing noisy activities a long distance from the source when the conditions are right. In addition, characterizing noise sources is challenging, as there are a number of potential activities, including hooking up rail cars, potential emergency annunciators and the low frequency locomotive noises that can travel long distances. The models capture many of these issues, but there is not extensive data available on some of the issues, such as good octave band analysis of different locomotive arrangements, for example, that bring in a range of potential errors into the analysis. However, the noise levels estimated by the SoundPlan model are considered to be conservative and provide a good estimate of the peak hour noise levels associated with the Rail Spur Project.

Figure 4.9-3 Operational Noise Levels Contours Peak Hour: Unmitigated



Source: MRS SoundPlan Modeling Results. See Appendix D for the SoundPlan modeling files.

The noise levels measures in 2014 during the coke rail activities demonstrated that the FTA noise levels were very conservative in the November 2013 DEIR. Onsite noise measurements provide better quantification of actual noise levels that could be generated by the activities. These measured values were used in the noise model for the movements of the rail cars. This produced a decrease in the estimated noise levels at the receptors. Idling and arrival noise levels continued to utilize the FTA estimates. In addition, the lower background nighttime levels were used at the applicable noise receptors. The use of lower background noise levels caused a corresponding increase in the noise differentials. In summation, the noise model produced similar noise increases with the project as the November 2013 DEIR.

The exceedances of the noise thresholds at noise-sensitive receptors are a potentially significant impact. Mitigation measures recommended to reduce exceedances include modifications to the operational procedures to minimize locomotive use of the east end of the rail spur and a reduction in pumping noise.

Mitigation Measures

N-2a *Prior to issuance of the Notice to Proceed, the Applicant shall develop for review and approved by the County Department of Building and Planning a Rail Unloading and Management Plan that addresses procedures to minimize noise levels at the rail spur, including but not limited to the following: 1) All locomotives operating to the east of the unloading rack area between the hours of 10 P.M. and 7 A.M. shall be limited to a combined total of 100 locomotive-minutes (e.g. 2 locomotives for 50 minutes each or 1 locomotive for 100 minutes, etc. including switching and idling); 2) Arriving trains that enter the refinery between the hours of 10 P.M. and 7 A.M. and are not being immediately unloaded shall shutdown all locomotives once the train is on the refinery property; 3) No horns, annunciators or other signaling devices are allowed unless it is an emergency. If horns and annunciators are needed for worker safety, then warning devices shall be developed, to CPUC standards, to alert the safety of plant personnel when trains are in motion without an audible warning device; 4) No horns are to be used on the mainline siding track adjacent to the refinery unless it is an emergency; 5) Any trains repairs shall be conducted only between the hours of 7 A.M. and 7 P.M.; and (6) The Plan shall include a copy of the agreement between the Applicant and UPRR demonstrating the two parties have entered into a legally binding contractual arrangement ensuring implementation of the above requirements.*

N-2b *Prior to issuance of the Notice to Proceed, the Applicant shall provide to the County Department of Planning and Building evidence that each unloading pump and associated electric motor can achieve a noise level no greater than 71 dBA at 50 feet, including the installation of pump enclosures, or similar devices if necessary.*

N-2c *Prior to issuance of the Notice to Proceed, the Applicant shall submit to the County Department of Planning and Building for review and approval a Noise Monitoring Plan that outlines procedures for regular noise monitoring of the operational aspect of the Rail Spur facility. The Plan shall specify at a minimum the duration and location of monitoring activities with and without trains present at the SMR site. The monitoring locations shall include at least one location within 100 to 200 feet of the unloading activities and a monitoring location located at the property line of the nearest noise-sensitive receptor. The noise monitoring shall be conducted within one month of rail spur operations commencing. The results of the monitoring shall be reported to the County 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 Rail Unloading and Management Plan with additional mitigation measures that would reduce noise levels below County thresholds. Additional mitigation could include, but not be limited to, additional limits on the times of unloading activities.*

Residual Impacts

Noise levels with mitigation are shown in Table 4.9.11. The mitigated noise contours for the peak hour are shown in Figure 4.9-4.

Limiting the activities east of the unloading area closer to receptors, ensuring stationary equipment operates at or below the prescribed noise limits, and conducting monitoring to ensure compliance would ensure that impacts are *less than significant with mitigation (Class II)*.

Visual resources mitigation AV-1a requires the installation of a berm-type system to address potential visual impacts of the rail spur on areas located to the east.

Table 4.9.11 Operational Noise Levels at Receptors: Mitigated

Receptor	Baseline Night	Baseline Day	Noise Level with Project, Night	Noise Level Increase, Night	Noise Level with Project, Day	Noise Level Increase, Day	Signif-icant ?
Agricultural Area	43.6[1]	43.6	46.5	2.9	46.5	2.9	No[a]
Gentle Breeze	43.6[2]	49.3	43.8	0.2	49.3	0.0	No
Industrial Residence	40.4[3]	49.3	44.7	4.3	50.2	0.9	No[c]
Lake Oso	43.6[1]	43.6	43.9	0.3	43.9	0.3	No[b]
Louise Lane	38.6[7]	48.7	42.2	3.6	49.2	0.5	No
Monadella Street	43.6[2]	49.3	44.4	0.8	49.5	0.2	No
Nathan Way	40.0[4]	51.0	41.6	1.6	51.2	0.2	No[e]
Olivera Street	40.4[3]	49.3	42.6	2.4	44.6	1.4	No
Trilogy Pkwy	38.6[7]	48.7	41.2	2.6	49.0	0.3	No
Via Entrade	45.6[5]	54.5	46.7	1.1	54.7	0.2	No[d]
Winterhaven Residence	42.0[6]	59.2	43.4	1.4	59.2	0.0	No[c]

Notes: Baseline noise levels are based on the following locations 1) Oso Flaco 2) Monadella 3) Applicant ST Location 3 4) Nathan Way 5) Highway 1 and Concha 6) Winterhaven 7) 1918 Eucalyptus Road 8) Olivera

a) Agricultural areas are not considered to be noise-sensitive receptors.

b) This location is considered an outdoor sports and recreation location and its threshold is increased by 10 dBA.

c) Although this is a residential location, the land use category is industrial

d) This is not a noise-sensitive residential land use, but is currently zoned business and could be if the business is a church or a daycare/school.

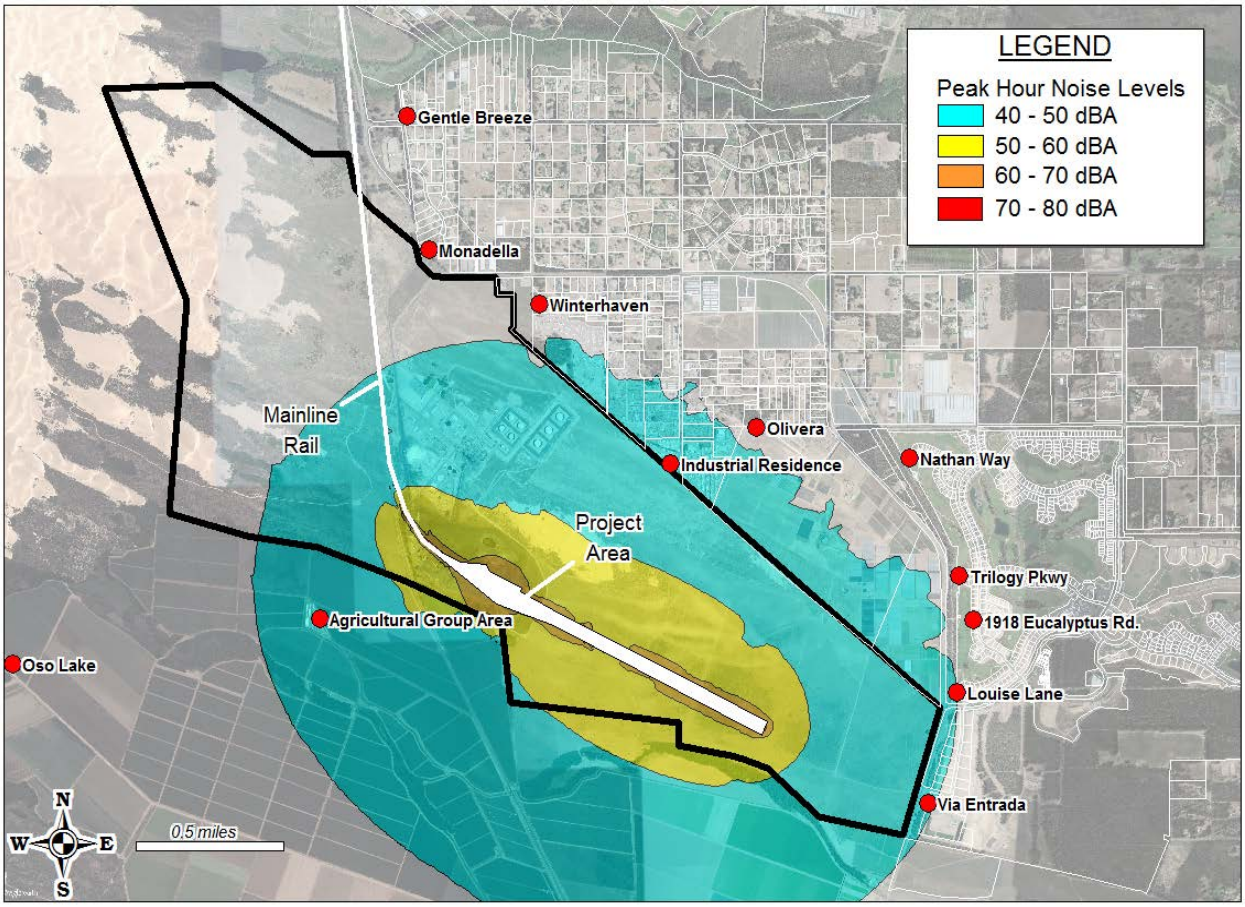
e) This location produces a daytime noise level above 50 dBA, but as the current background is above 50 dBA and the noise increase is less than 1 dBA, it would be less than significant.

See Appendix D for the SoundPlan modeling files.

The visual resource mitigation measures recommended a 10 to 20 foot tall berm at the top of the sloped grade at the end of the rail spur. The installation of a berm along the eastern portion of the rail spur could reduce noise impacts depending on the size and location of the berm. In order for berms to be effective noise mitigation, they need to be relatively close to the noise source and be higher than the noise source. The end of the rail spur would be about 15 feet below the surrounding grade. With a 10 to 20 foot tall berm the total height of the berm would be 25 to 35 feet (15 feet of grade and 10 to 20 foot berm). Assuming a 30 foot berm is located on the eastern 1,000 feet of spur track along the north side, noise levels at sensitive receptors could be reduced by about 0.2 dBA. This nominal reduction is due primarily to the relatively large width of the rail spur, constituting some 5 rail tracks, as well as the roadways alongside the rail tracks which requires that the berm be placed farther away from the noise sources.

The air quality mitigation measure AQ-4c would limit the unloading of trains at the SMR from between 7 A.M. and 7 P.M. This would serve to reduce the nighttime noise levels associated with the rail operations. There could still be some nighttime noise associated with trains arriving at the SMR. Trains that arrived at night would need to pull on to the SMR property and then would shutdown. Mitigation measure AQ-2b limits idling at the SMR to no more than 15 minutes. These air quality mitigation measures would reduce the frequency and level of nighttime noise at the SMR.

Figure 4.9-4 Operational Noise Levels Contours Peak Hour: Mitigated



Source: MRS SoundPlan Modeling Results. See Appendix D for the SoundPlan modeling files.

Impact #	Impact Description	Phase	Impact Classification
N.3	Operational activities along the UPRR mainline tracks would generate transportation related noise levels that exceed San Luis Obispo thresholds.	Operations	Class III

Noise from locomotive engines and from trains during mainline transportation while traveling along the mainline were estimated using the FTA computational algorithms to estimate hourly equivalent noise levels.

For freight trains, while the UPRR's primary California rail route runs through the Central Valley, the Coast Route serves markets along the coast and acts as a secondary route, providing "surge capacity" between the Los Angeles Basin and the San Francisco Bay area, northern California and the Pacific Northwest. Whenever UPRR experiences a line outage through the Central Valley, the Coast Route provides an available alternative route. The Coast Route also handles a number of daily passenger trains.

Caltrans had estimated in their 2013 Coast Daylight Service Development Plan that the existing freight train traffic on the Coast Line is two trains per day that travel the entire length of the line. The LOSSAN 2010 Corridor Strategic Assessment estimated that a peak of 8 freight trains per day currently operate on the Coast Line between Santa Barbara and San Luis Obispo, when there is an outage on the rail route through the San Joaquin Valley.

CNEL levels are increased for operations at night due to the 10 dBA penalty applied to nighttime activities. Therefore, for a train travelling at night, increases to that period's CNEL would be greater than traveling during the daytime. It was assumed that the trains would travel on the mainline tracks evenly by hour across day, evening and night time periods producing an annual average CNEL.

If one assumed the baseline traffic on the Coast Route is two freight trains and six passenger train per day, the addition of two crude oil trans would increase the CNEL noise level by about 2.5 dBA. With six freight trains and six passenger trains per day the CNEL noise level would increase by about 1.0 dBA with the addition of two crude oil trains per day. The higher increases would be for areas that have less existing train traffic. Increases to CNEL would be less than 1 dBA in areas that have higher levels of existing train traffic. In the Bay Area, Sacramento, and Los Angeles Basin where there are in excess of 20 freight and passenger trains per day, the increase in CNEL from two additional crude oil unit trains per day would be about 0.5 dBA. For all areas along the mainline within California an increase of between 1.0 and 2.5 dBA CNEL would be less than significant.

CNEL levels at the closest receptors near the SMR would be between 59 and 63 dBA with the additional unit train, depending upon the level of daily train traffic along the Coast Line. The higher number would be when freight trains are routed along the Coast Line due to an outage through the San Joaquin Valley. The contribution of the crude oil unit train would be between 1 and 2 dBA CNEL, which would be less than significant.

Mitigation Measures
No mitigation measures are required since the impact is less than significant.

Residual Impacts
Transportation related noise impacts associated with the project would be *less than significant (Class III).*

Impact #	Impact Description	Phase	Impact Classification
N.4	Operational activities would produce vibration levels that exceed San Luis Obispo thresholds.	Operations	Class III

Vibration from locomotive engines and from train cars during mainline transportation or from unloading operations at the site would produce vibrations. The FTA has developed vibration criteria and vibration assessment methods in order to assess whether train activities could exceed the given criteria. Train vibrations are a function of train type, locomotive type, track arrangement and configuration and of the soil types between the train tracks and the receptor.

Although the perceptibility threshold for vibration is about 0.002 inches/sec, human response to vibration is not usually significant unless the vibration exceeds 0.003 inches/sec. Because of the heavy locomotives on diesel rail systems, the vibration levels can exceed the 0.01 inches/sec threshold defined in this EIR. The FTA has established a 0.004 inches/sec as an acceptable threshold.

The FTA screening assessment for residential locations indicates that residences should be located more than 200 feet from a railway with diesel locomotives traveling at 50 mph. For the rail spur area located within the SMR, locomotive speeds would be substantially below this and distances to receptors would be substantially more than 200 feet. Therefore, vibration impacts from the rail spur operations would be less than significant.

The addition of one train per day along the mainline would increase the frequency of trains passing by residential and other areas, but would not increase the peak vibration levels along the railway as freight trains already pass along the mainline track. Therefore, impacts from vibration would be less than significant.

Mitigation Measures
No mitigation measures are required since the impact is less than significant.

Residual Impacts
Vibration impacts associated with the project would be *less than significant (Class III).*

4.9.5 Cumulative Analysis

None of the proposed development in the vicinity of the SMR found under the cumulative projects list (see Chapter 3.0, Cumulative Scenario and Methodology) would be constructed in the immediate vicinity of the Project (the closest project is greater than 4,000 feet to the north of project related activities) where there would be overlapping noise impacts associated with cumulative projects. All cumulative projects must comply with County noise standards. 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 SMR would generate operational noise such that it would impact the operational noise levels in the vicinity of the SMR. This is primarily due to the types of cumulative projects and the fact that the nearest cumulative project is greater than 4,000 feet to the north of the SMR. All of the cumulative oil projects in Santa Barbara County (see Table 3.1) are located sufficiently far from the SMR that there would be no cumulative noise impacts. Therefore, none of the cumulative projects in the vicinity of the SMR or in Santa Barbara County would contribute to a cumulative noise effect, so the cumulative operational noise would be less than significant with the proposed project mitigation.

The level of noise impacts on the community would not increase due to the Throughput Increase Project at the SMR. Alarm frequency would remain the same. Although equipment use, such as the crude heaters, would increase, noise levels would not increase at receptors near the Refinery. The Throughput Increase Project would add less than four trucks per day to area traffic. Noise levels generated by this traffic scenario were estimated to increase by less than 0.1 dBA CNEL for a receptor 100 feet from the center of State Route 1. As such, there would be no cumulative effect associated with the Throughput Increase Project and the Rail Spur Project. Cumulative operational noise would be less than significant with the proposed mitigations.

There is the potential for cumulative impacts associated with the crude by rail project discussed in Chapter 3. If all of the crude by rail projects travel via the Roseville area, then up to eight crude oil trains per day could travel on the stretch of track between Sacramento, Roseville, and the California Boarder (two for Valero, one for Kinder Morgan, two for Alon, one for Targa, one for Plains All American, and one for the SMR). Using the FTA noise model it was estimated that CNEL noise levels could increase by about 0.7 dBA assuming baseline train traffic of about 60 trains per day, which is the estimate provided in the 2013 State Rail Plan for this stretch of track. This cumulative increase would be less than significant since it would be less than a 3 dBA increase.

From Sacramento the crude oil trains servicing the Valero Benicia and Kinder Morgan projects could use the same UPRR tracks as the Rail Spur Project from Sacramento to the Bay Area a distance of about 53 miles. This portion of track could have up to four crude oil trains per day (two for Valero, one for Kinder Morgan, and one for the SMR). Using the FTA noise model it was estimated that CNEL noise levels could increase by about 1.0 dBA assuming baseline train traffic of about 20 trains per day, which is the estimate provided in the 2013 State Rail Plan for this stretch of track. This cumulative increase would be less than significant since it would be less than a 3 dBA increase.

From Sacramento the crude oil trains servicing the Alon, Targa, and Plains All American projects could use the same tracks as the Rail Spur Project from Sacramento to Stockton a distance of about 46 miles. This portion of track could have up to five crude oil trains per day (two for Alon, one for Targa, one for Plains All American, and one for the SMR). Using the FTA noise model it was estimated that CNEL noise levels could increase by about 0.5 dBA assuming baseline train traffic of about 60 trains per day, which is the estimate provided in the 2013 State Rail Plan for this stretch of track. This cumulative increase would be less than significant since it would be less than a 3 dBA increase.

None of the other cumulative crude by rail projects would use the mainline tracks along the southern route thorough the Los Angeles Basin since the crude oil trains going to Bakersfield would use Tehachapi Pass via Barstow and would not travel has far west as Colton. However, up to four unit trains per day could share the route between Nevada and Barstow (two for Alon, one for Plains All American, and one for the SMR). Using the FTA noise model it was estimated that CNEL noise levels could increase by about 0.3 dBA assuming baseline train traffic of about 80 trains per day, which is the estimate provided in the 2013 State Rail Plan for this stretch of track. This cumulative increase would be less than significant since it would be less than a 3 dBA increase.

4.9.6 Mitigation Monitoring Plan

Mitigation Measure	Plan Requirements and Timing	Compliance Verification		
		Method	Timing	Responsible Party
N-1	The Applicant shall ensure that all construction activity at the Project Site is limited to the hours of 7:00 A.M. to 9:00 P.M., Monday through Friday, and 8:00 A.M. to 5:00 P.M. on Saturdays and Sundays. This restriction shall be a note placed on all construction plans.	Review of construction plan documents Site Inspection	Prior to grading permits	County Planning and Building
N-2a	Prior to issuance of the Notice to Proceed, the Applicant shall develop for review and approved by the County Department of Building and Planning a Rail Unloading and Management Plan that addresses procedures to minimize noise levels at the rail spur, including but not limited to the following: 1) All locomotives operating to the east of the unloading rack area between the hours of 10 P.M. and 7 A.M. shall be limited to a combined total of 100 locomotive-minutes (e.g. 2 locomotives for 50 minutes each or 1 locomotive for 100 minutes, etc. including switching and idling); 2) Arriving trains that enter the refinery between the hours of 10 P.M. and 7 A.M. and are not being immediately unloaded shall shutdown all locomotives once the train is on the refinery property; 3) No horns, annunciators or other signaling devices are allowed unless it is an emergency. If horns and annunciators are needed for worker safety, then warning devices shall be developed, to CPUC standards, to alert the safety of plant personnel when trains are in	Review of plan documents Site Inspection	Prior to construction permits	County Planning and Building

Mitigation Measure	Plan Requirements and Timing	Compliance Verification		
		Method	Timing	Responsible Party
	motion without an audible warning device; 4) No horns are to be used on the mainline siding track adjacent to the refinery unless it is an emergency; 5) Any trains repairs shall be conducted only between the hours of 7 A.M. and 7 P.M.; and (6) The Plan shall include a copy of the agreement between the Applicant and UPRR demonstrating the two parties have entered into a legally binding contractual arrangement ensuring implementation of the above requirements.			
N-2b	Prior to issuance of the Notice to Proceed, the Applicant shall provide to the County Department of Planning and Building evidence that each unloading pump and associated electric motor can achieve a noise level no greater than 71 dBA at 50 feet, including the installation of pump enclosures, or similar devices if necessary.	Review of plan documents Site Inspection	Prior to construction permits	County Planning and Building
N-2c	Prior to issuance of the Notice to Proceed, the Applicant shall submit to the County Department of Planning and Building for review and approval a Noise Monitoring Plan that outlines procedures for regular noise monitoring of the operational aspect of the Rail Spur facility. The Plan shall specify at a minimum the duration and location of monitoring activities with and without trains present at the SMR site. The monitoring locations shall include at least one location within 100 to 200 feet of the unloading activities and a monitoring location located at the property line of the nearest noise-sensitive receptor. The noise monitoring shall be conducted within one month of rail spur operations commencing. The results of the monitoring shall be reported to the County 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 Rail Unloading and Management Plan with additional mitigation measures that would reduce noise levels below County thresholds. Additional mitigation could include, but not be limited to, additional limits on the times of unloading activities.	Review of plan documents Site Inspection	Prior to construction permits	County Planning and Building

4.9.7 References

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San Luis Obispo County Air Pollution Control District (SLOCAPCD). 2012. Phillips 66 Santa Maria Refinery Throughput Increase Project Final Environmental Impact Report, SCH #20081010111, ED10-248, DRC 2008-00146

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4.10 Population and Housing

This section of the EIR discusses the existing status of the population and housing conditions in the vicinity of the Project Site, and determines the Rail Spur Project's potential impacts on population and housing balance. Mitigation measures are identified for any significant impacts. The section also provides a discussion of the cumulative population and housing impacts.

4.10.1 Environmental Setting

The Project Site is located in southwest San Luis Obispo County, approximately 2.5 miles west of the community of Nipomo and 3.5 miles south of the community of Oceano. It is located within two miles of the village of Callendar-Garrett (to the north), the Blacklake residential area (to the northeast), and the Woodlands residential area (to the east), which are U.S. Census-designated places. Callender-Garrett is characterized by significant industrial uses south of State Route 1, adjacent to the Project Site. Blacklake and the Woodlands area, which encompasses Trilogy at Monarch Dunes, are rural resort-style communities featuring residential neighborhoods integrated among golf courses, trails, natural woodlands and open space areas (San Luis Obispo County 1999). The Project Site is almost entirely within the South County Coastal Planning Area, although the easternmost 0.1 mile (or approximately 600 feet) extends beyond the coastal zone boundary into the South County Inland Planning Area (refer to Figure 4.8-1, Combining Designations Map). The population and housing characteristics of these areas are discussed below.

4.10.1.1 Population

The average annual growth rate countywide from 1990 to 2005 was just over 1 percent. The unincorporated county grew by almost 2 percent per year over the same period (San Luis Obispo County 2009). In the previous decade, between 1980 and 1990, San Luis Obispo county's population grew by 40 percent, from 155,435 to 217,162 residents. Between 1990 and 2000, population growth slowed to 14 percent and between 2000 and 2005 grew by only 6 percent. Historic growth patterns in the unincorporated county and communities near the project site are shown in Table 4.10.1, below.

Table 4.10.1 Historic Population Growth in Project Vicinity

Area	1950	1960	1970	1980	1990	2000	2010
Nipomo	2,125	5,210	5,939	5,247	7,109	12,626	16,714
Oceano	--	2,430	3,642	4,478	6,169	7,228	7,286
Blacklake	--	--	--	--	--	--	1,014
Callender-Garrett	--	--	--	--	--	--	1,262
Woodlands	--	--	--	--	--	--	576
Total Unincorporated	21,853	36,065	39,026	65,420	90,117	103,980	118,118
Total County	51,417	81,044	105,690	155,435	217,162	246,681	269,637

Source: 2010 U.S. Census; Housing Element of the San Luis Obispo County General Plan, 2009

The growth rate of the inland portion of the South County Planning Area has been significant when compared to other planning areas and the county as a whole. Historically, the majority of the new residential construction has been in the Nipomo urban area, but the Nipomo Mesa has experienced a similar rate of new construction (San Luis Obispo County 1989). As shown in Table 4.10.1, above, the population of Nipomo grew by 24.5 percent between 2000 and 2010, compared to 0.8 percent in Oceano and 12 percent in the total unincorporated county.

Rural areas have experienced approximately 40 percent of the total growth in unincorporated areas of the county since 2000 (San Luis Obispo County 2013). Rural areas have been attractive for affordable living away from urban life, and for luxury country estates. However, the County's recent emphasis on strategic growth and resource management may focus future growth away from rural areas with limited resources and into more urbanized areas in the county.

The unincorporated areas in the county include 10 urban communities and 14 smaller villages. Growth is projected to occur within these urban areas because of their size, the extent of available public facilities and services, and local employment areas. Due to their size, location attraction or other factors, Nipomo and Los Osos are projected to absorb almost half of projected growth in unincorporated urban areas through 2030, with Nipomo projected to absorb approximately 30 percent of the total growth (San Luis Obispo 2013). However, existing water supply and wastewater disposal problems in these areas greatly limit their ability to accommodate their anticipated shares of projected growth.

Growth since 2010 has continued in the unincorporated County and Nipomo Mesa area at a rate above other areas of the County. Per the County's recently updated Housing Element (2014-2019), population in the unincorporated County is estimated to have grown from 121,330 in 2010 to 124,458 in 2015 (a 2.6 percent increase). The Nipomo area is estimated to have grown from 15,267 in 2010 to 15,725 in 2015 (a 3 percent increase). These increases compare to an estimated 1.9 percent increase in the total incorporated areas of the County (San Luis Obispo County 2014). Heavy residential development has also occurred in the Woodlands area east of the Project Site in recent years.

4.10.1.2 Housing

California's housing needs are regulated by the California Department of Housing and Development (HCD). The purpose of the HCD is to ensure that cities and counties have designated sufficient land to accommodate its assigned share of housing needs pursuant to the requirements of California Housing Element law (Government Code Section 65580 et seq.). California Housing Element law recognizes that the availability of decent and suitable housing is of vital statewide importance and requires counties and cities to proportionately contribute to the attainment of the state housing goal.

There are a significant number of residences within 1 mile of the Project Site, predominantly located to the north and northeast, in the villages of Callender-Garrett, the Woodlands, Blacklake, and substantially developed rural areas west of the community of Nipomo (refer to Figure 4.8-3, Surrounding Land Uses).

4.10.1.3 Housing Availability

A desirable rate of housing vacancy is generally between 4 and 6 percent for rental units and 1 and 3 percent for owner occupied units (San Luis Obispo County 2009). The residential areas in the project vicinity currently maintain a vacancy rate of approximately 10 percent, except in Woodlands, where approximately 35.6 percent of the new residential developments are still vacant (Census Bureau 2010). However, much of the county's vacant housing stock is made up of seasonal, recreational, or occasional use units (San Luis Obispo County 2009). Therefore, these units are not generally available for regular rental use and do not provide housing opportunities to residents. Table 4.10.2, below, shows information related to housing availability for the communities and villages surrounding the project area.

Table 4.10.2 2010 Housing Status in Project Vicinity

Housing Status Category	Nipomo	Oceano	Callender-Garrett	Woodlands	Blacklake
Total Units	5,759	3,117	481	421	629
Total Occupied Units	5,474	2,603	439	271	449
Owner-Occupied Units	3,898	1,355	289	256	384
Average Persons Per Owner-Occupied Unit	2.96	2.54	2.86	2.13	2.34
Renter-Occupied Units	1,576	1,248	150	15	65
Average Persons Per Renter-Occupied Unit	3.25	3.08	2.9	2.13	1.75
Vacant Units	285	514	42	150	180
Vacancy Rate	4.9%	16.5%	8.7%	35.6%	28.6%
Units for Rent	51	79	2	0	21
Units for Sale	66	52	7	50	11

Source: 2010 U.S. Census

4.10.1.4 Housing Stock Characteristics

In December 2002, the County conducted a housing condition survey of the county's 10 urban communities. Approximately 98 percent of the housing units were determined to be in sound condition (San Luis Obispo 2009). The survey looked at housing foundation, roofing, siding, windows, and doors. The survey was updated in 2008 for the communities of Los Osos, Nipomo, Oceano, San Miguel, and Templeton.

In 2002, Nipomo had 80 units considered "deteriorated" (approximately 1.7 percent) and five units classified as "dilapidated". "Deteriorated" units were in need of several non-structural or at least one structural repair. "Dilapidated" units required replacement of the foundation, roof structure, siding, and windows. In 2008, Nipomo had 27 deteriorated and seven dilapidated structures. Additional housing stock characteristics of areas in the project vicinity are shown in Table 4.10.3, below.

Table 4.10.3 Housing Stock Characteristics

Category	Nipomo	Oceano	Callender-Garrett	Woodlands	Blacklake
Year Built					
2000 or later	1,120 (24.5%)	283 (9.1%)	98 (21.3%)	239 (93%)	166 (26.4%)
1990 to 1999	993 (17.1%)	232 (7.4%)	21 (4.6%)	18 (7%)	305 (48.5%)
1980 to 1989	1,466 (25.3%)	777 (24.9%)	122 (26.5%)	0	129 (20.5%)
1970 to 1979	1,006 (17.3%)	727 (23.3%)	94 (20.4%)	0	29 (4.6%)
Prior to 1970	918 (15.8%)	1,096 (35.2%)	126 (27.3%)	0	0
Number of Bedrooms					
0 (i.e., studio apts)	20 (0.3%)	55 (1.8%)	27 (5.9%)	0	13 (2.1%)
1	174 (3%)	553 (17.8%)	115 (24.9%)	0	40 (6.4%)
2	1,171 (20.2%)	1,157 (37.1%)	44 (9.5%)	87(33.9%)	228 (36.2%)
3	3,077 (53%)	1,122 (36%)	179 (38.8%)	152 (59.1%)	282 (44.8%)
4	1,198 (20.6%)	190 (6.1%)	69 (15%)	18 (7%)	66 (10.5%)
5 or more	163 (2.8%)	38 (1.2%)	27 (5.9%)	0	0

Source: 2010 U.S. Census

4.10.1.5 Housing Affordability

In 2000, 30.5 percent of owner households in the county (including incorporated cities) were considered to be overpaying for housing (more than 30 percent of total household income). Approximately 11.4 percent of households spent more than 50 percent of their income on housing. Overpayment by renters was worse, with approximately 46.2 percent of renter households paying more than 30 percent of their income on housing, and 25.2 percent paying more than 50 percent (San Luis Obispo County 2009).

Housing market value and affordability statistics from the 2010 Census are shown in Table 4.10.4, below.

Table 4.10.4 Housing Costs and Value

Category	Nipomo	Oceano	Callender-Garrett	Woodlands	Blacklake
Value of Owner-Occupied Units					
Less than $100,000	55 (1.3%)	318 (23.2%)	0	13 (6.9%)	16 (4.2%)
$100,000 to $200,000	388 (9.3%)	206 (15%)	15 (5.2%)	0	8 (2.1%)
$200,000 to $300,000	494 (11.8%)	242 (17.6%)	0	18 (9.6%)	30 (7.8%)
$300,000 to $500,000	3,134 (75%)	606 (44.2%)	200 (69.4%)	157 (83.5%)	46 (12%)
$500,000 or more	108 (2.6%)	0	73 (25.3%)	0	284 (74%)
Mortgage Status of Owner-Occupied Units					
With a mortgage	3,186 (76.2%)	805 (58.7%)	257 (89.2%)	114 (60.6%)	302 (78.6%)
Without a mortgage	993 (23.8%)	567 (41.3%)	31 (10.8%)	74 (39.4%)	82 (21.4%)
Owner-Occupied Monthly Housing Costs (with a mortgage)					
Less than $300	0	0	0	0	0
$300 to $500	36 (1.1%)	0	0	0	16 (5.3%)
$500 to $700	37 (1.2%)	0	0	0	0
$700 to $1,000	145 (4.6%)	104 (12.9%)	0	10 (8.8%)	28 (9.3%)
$1,000 to $1,500	404 (12.7%)	254 (31.6%)	29 (11.3%)	0	0

Table 4.10.4 Housing Costs and Value

Category	Nipomo	Oceano	Callender-Garrett	Woodlands	Blacklake
$1,500 to $2000	578 (18.1%)	242 (30.1%)	12 (4.7%)	0	32 (10.6%)
$2000 or more	1,986 (62.3%)	205 (25.5%)	216 (84%)	104 (91.2%)	226 (75%)
Owner-Occupied Monthly Housing Costs as a Percentage of Household Income					
Less than 20%	512 (16.5%)	190 (23.6%)	58 (22.6%)	23 (20.2%)	86 (28.5%)
Between 20 and 25%	316 (10.2%)	162 (20.1%)	40 (15.6%)	33 (28.9%)	8 (2.6%)
Between 25 and 30%	351 (11.3%)	28 (3.5%)	15 (5.8%)	22 (19.3%)	61 (20.2%)
Between 30 and 35%	318 (10.2%)	97 (12%)	0	0	66 (21.9%)
More than 35%	1,610 (51.8%)	328 (40.7%)	144 (56%)	36 (31.6%)	81 (26.8%)
Renter-Occupied Monthly Housing Costs					
Less than $300	0	11 (0.8%)	0	0	0
$300 to $500	14 (1.1%)	51 (3.9%)	0	0	0
$500 to $750	97 (7.6%)	172 (13.1%)	60 (50.8%)	0	0
$750 to $1,000	91 (7.1%)	566 (43%)	15 (12.7%)	0	0
$1,000 to $1,500	555 (43.5%)	331 (25.1%)	43 (36.4%)	0	18 (27.7%)
$1,500 or more	520 (40.7%)	186 (14.1%)	0	10 (100%)	47 (72.3%)
Renter-Occupied Monthly Housing Costs as a Percentage of Household Income					
Less than 15%	133 (10.9%)	24 (1.8%)	13 (11%)	0	0
Between 15 and 20%	21 (1.7%)	147 (11.2%)	75 (63.6%)	0	17 (26.2%)
Between 20 and 25%	103 (8.4%)	103 (7.8%)	0	0	0
Between 25 and 30%	147 (12.1%)	189 (14.4%)	14 (11.9%)	0	0
Between 30 and 35%	203 (16.7%)	25 (1.9%)	0	0	0
More than 35%	612 (50.2%)	829 (62.9%)	16 (13.6%)	10 (100%)	48 (73.8%)

Source: 2010 U.S. Census

4.10.1.6 UPRR Mainline Routes

Trains would arrive from different oilfields and/or crude oil loading points depending on market availability. The exact location of the source of crude oil that would be delivered to the refinery is unknown and could change over time based upon market conditions and availability. Union Pacific Railroad (UPRR) would be responsible for delivering the trains to the SMR. Trains could enter California at four different locations (one at the north end of the state from Oregon, one at the northeast from Nevada, one at the southeast from Nevada, and one at the south from Arizona). Depending upon the route taken by the train they could arrive at the Phillips 66 site from the north or the south. In is unknown what route UPRR would use to deliver the trains to the SMR. Coming from the north the routes merge at the UPRR Roseville Rail Yard. From the south the routes merge at the Colton Rail Yard. Given that the route the trains would travel to get to these two UPRR yards is speculative, the EIR has evaluated the impacts of trains traveling from these two UPRR yards to the SMR.

The UPRR mainline routes extend through numerous additional urbanized areas, including the heavily populated areas surrounding San Francisco, Sacramento and Los Angeles. The urbanized cities and communities the mainline route passes through or adjacent to are listed below (refer to Figures 4.10-1 through 4.10-4):

From Project Site North to Roseville

- San Luis Obispo County: Oceano, Grover Beach, Pismo Beach, San Luis Obispo, Santa Margarita, Atascadero, Templeton, Paso Robles, and San Miguel.
- Monterey County: Bradley, San Ardo, San Lucas, King City, Soledad, Gonzalez, Chualar, Salinas, Castroville, Elkhorn, Royal Oaks, and Pajaro.
- Monterey County and San Benito County: Aromas.
- Santa Clara County: Gilroy, San Martin, Morgan Hill, Coyote, San Jose, and Milpitas.

- Alameda County: Fremont, Pleasanton, Livermore, Union City, Hayward, San Lorenzo, Castro Valley, San Leandro, Alameda, Oakland, Emeryville, Berkeley, and Albany.
- Contra Costa County: El Cerrito, Richmond, North Richmond, San Pablo, Bayview Mountain, Pinole, Hercules, Rodeo, Crockett, Port Costa, and Martinez.
- Solano County: Benicia, Suisun City, Fairfield, Vacaville, Elmira, and Dixon.
- Yolo County: Davis and West Sacramento.
- San Joaquin Valley: Tracy, Manteca, Lathrop, French Camp, Taft Mosswood, Stockton, Lakeview, Lodi, and Acampo.
- Sacramento County: Galt, Elk Grove, Florin, Sacramento, McClellan Park, Foothill Farms, North Highlands, Antelope, and Citrus Heights.
- Placer County: Roseville.

From Project Site South to Colton

- Santa Barbara County: Guadalupe, Casmalia, Vandenberg Air Force Base, Gaviota, Goleta, Santa Barbara, Montecito, Summerland, Toro Canyon, and Carpinteria.
- Ventura County: Ventura, Oxnard, Camarillo, Somis, Moorpark, and Simi Valley.
- Los Angeles County: Chatsworth, Van Nuys, Burbank, Glendale, Los Angeles, East Los Angeles, Alhambra, San Gabriel, Rosemead, Temple City, El Monte, Avocado Heights, West Puente Valley, City of Industry, La Puente, South San Jose Hills, Walnut, and Pamona.
- San Bernadino County: Montclair, Ontario, Fontana, Bloomington, Rialto, and Colton.

4.10.2 Regulatory Setting

4.10.2.1 State Regulations and Policy

California Housing Element Law

California's Housing Element Law (Government Code Sections 65580 through 65589.8) recognized that early attainment of decent housing and a suitable living environment for every Californian, including farmworkers, was a "priority of the highest order".

Figure 4.10-1 UPRR Mainline Route Populations (Sheet 1 of 4)

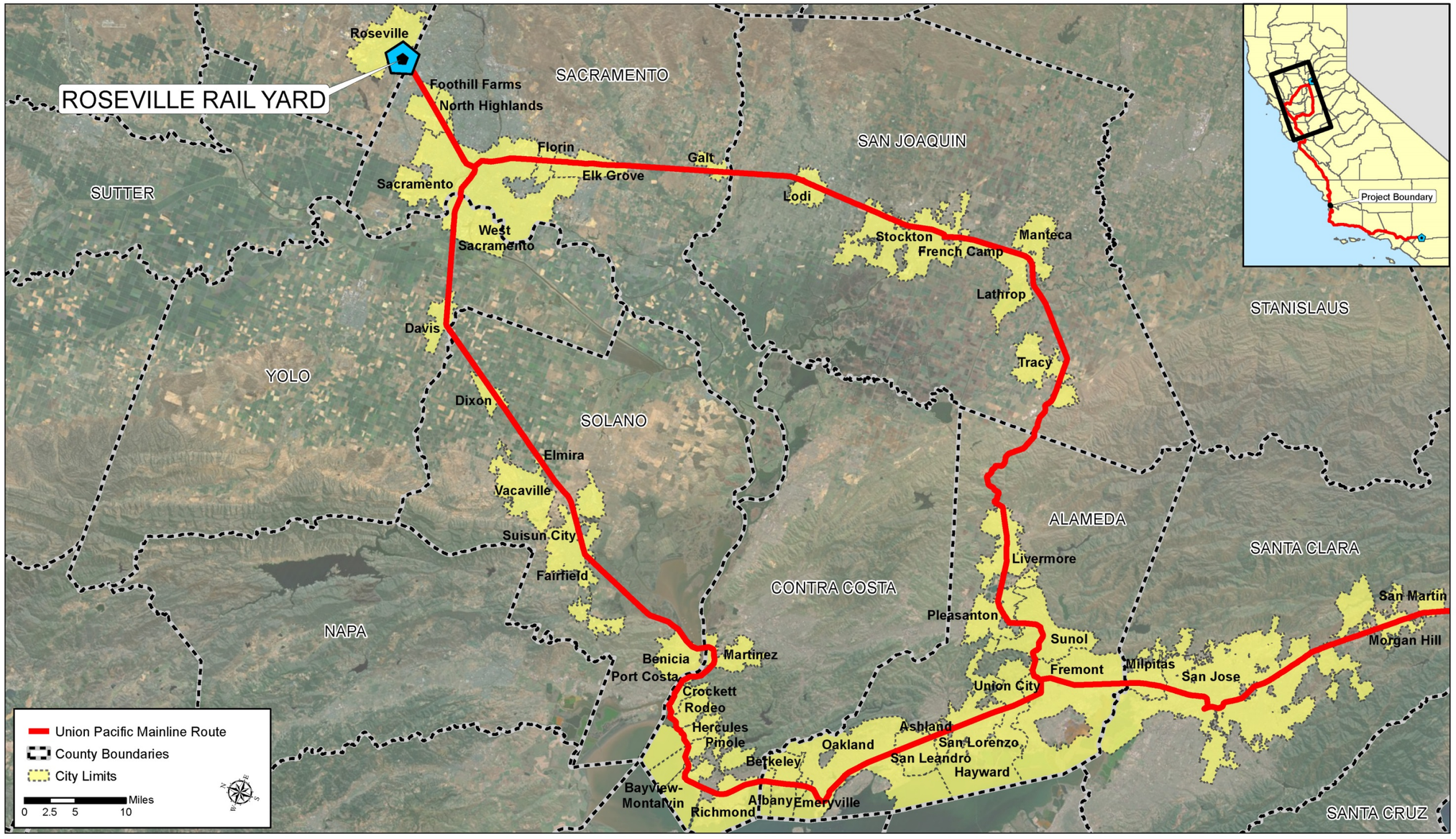

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Figure 4.10-2 UPRR Mainline Route Populations (Sheet 2 of 4)

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Figure 4.10-3 UPRR Mainline Route Populations (Sheet 3 of 4)

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Figure 4.10-4 UPRR Mainline Route Populations (Sheet 4 of 4)

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The law was enacted to ensure that counties and cities recognize their proportionate responsibilities in contributing to the attainment of state housing goals, to establish the requirement that all counties and cities adopt housing elements to help meet state goals, to recognize that each locality is best capable of determining what efforts it is required to take to contribute to attainment of state housing needs, and to encourage and facilitate cooperation between local governments to address regional housing needs.

4.10.2.2 Local Regulations and Policy

San Luis Obispo County General Plan

The San Luis Obispo County General Plan serves as the County's "constitution" for land use and development. The plan analyzes issues of importance to the community, sets forth policies for conservation and development, and outlines specific programs for implementing these policies. By virtue of state statutes and case law, all zoning, subdivision approvals, and public works projects must be consistent with the General Plan. Adopting and maintaining a General Plan allows local governments to analyze local and regional conditions and needs in order to respond effectively to the problems and opportunities facing the community. The Plan also defines the County's environmental, social and economic goals, creates a record of the County's policies and standards for the maintenance and improvement of existing development and the location and characteristics of future development, and provides citizens with information about their community and with opportunities to participate in setting goals and determining standards for community development.

San Luis Obispo County Housing Element

Each local government in California is required to adopt a comprehensive, long-term General Plan for the physical development of the city or county. The Housing Element is one of seven required elements of the General Plan, and is the only one subject to substantial oversight and regulatory approval by the state. The purpose of the Housing Element is to identify the community's housing needs, state the community's goals and objectives with regard to housing production, rehabilitation and conservation to meet those needs, and define the policies and programs that the community will implement to achieve the stated goals and objectives.

4.10.3 Significance Criteria

The significance of potential population and housing impacts is based on thresholds identified within the County of San Luis Obispo Initial Study Checklist, which was developed in accordance with Appendix G of the CEQA *Guidelines*. The County Checklist provides the following thresholds for determining impact significance with respect to population and housing. Impacts would be considered significant if the Rail Spur Project would:

- Induce substantial population growth in an area either directly (e.g., construct new homes or businesses) or indirectly (e.g., extension of major infrastructure);
- Displace existing housing or people, requiring the construction of replacement housing elsewhere; or

- Create the need for substantial new housing in the area.

4.10.4 Project Impacts and Mitigation Measures

The following sections discuss the Rail Spur Project's potential to result in adverse environmental effects to population and housing based on the thresholds identified above.

Impact #	Impact Description	Phase	Impact Classification
P/H.1	The Project would induce substantial population growth in the area.	Construction and Operations	Class III

The project proposes installation of a rail spur extension and related infrastructure to allow the refinery to access a wider range of competitively priced crude oil via the Union Pacific rail line. It does not propose any use that would directly or indirectly induce population growth, such as the development of new housing units or recreational, commercial or retail uses that may stimulate population growth in the area. The project would not remove any existing obstacles to growth, such as water availability in the Nipomo Mesa area, and does not propose any expansions to existing infrastructure other than those necessary to serve the proposed unloading facility and related project components. The proposed transport of crude would not induce population growth in any area along the UPRR mainline route since the train would just pass though the areas to and from the SMR. Potential impacts would be less than significant.

For a discussion of potential impacts related to project employee demands and housing needs, refer to impact P/H.3 below.

Mitigation Measures

No mitigation measures would be necessary because the potential impact would be less than significant.

Residual Impacts

Residual impacts associated with inducement of substantial population growth would be *less than significant (Class III).*

Impact #	Impact Description	Phase	Impact Classification
P/H.2	The project would increase the transfer of hazardous substances through residential areas, potentially resulting in the indirect displacement of people.	Construction and Operations	Class III

The Project Site consists of an existing oil refining facility and undeveloped adjacent areas currently used for grazing. No residential uses or structures are located on the Project Site and development of the Rail Spur Project would not directly displace any existing housing or people or require the development of replacement housing elsewhere.

All crude oil is currently brought to the Project Site by pipeline, whereas the Rail Spur Project would enable crude delivery of up to five trains per week, or approximately 250 annual deliveries, via the proposed rail spur extension. The ability to transfer crude oil by rail would increase exposure to potentially hazardous substances in residential areas adjacent to the UPRR mainline routes.

However, development of the project is not expected to result in the displacement of people located along the proposed UPRR mainline routes. The transfer of crude oil by rail to the refinery does not significantly differ from existing uses of the rail line, including the refinery's existing use of the rail to deliver solid petroleum coke products from the Project Site. The U.S. Department of Transportation Federal Railroad Administration administers a comprehensive set of safety standards for rail operations in the U.S., particularly those involving the transport of hazardous materials, to minimize the potential for dangerous incidents.

Therefore, development of the project is not expected to cause significant displacement of people along the proposed UPRR mainline routes. Potential impacts would be less than significant.

For additional information related to potential impacts associated with hazards or the transport of hazardous materials, refer to Section 4.7.

Mitigation Measures

No mitigation measures would be necessary because the potential impact would be less than significant.

Residual Impacts

Residual impacts associated with the potential indirect displacement of people would be *less than significant (Class III).*

Impact #	Impact Description	Phase	Impact Classification
P/H.3	The project would generate temporary and permanent employment needs, which could result in the need for new housing in the project vicinity.	Construction and Operations	Class III

Construction of the project would require up to 200 workers during the peak of construction activities, while less intensive construction activities would require as few as eight employees. Construction workers are expected to consist of Phillips 66 construction contractors. After construction, the number of additional permanent employees required to operate the proposed rail spur and offloading facility would vary based on the frequency and timing of train deliveries, but is expected to be no more than 12 at any given time.

At this time, the residential location of potential future employees is unknown. However, Phillips 66 expects that a large majority (up to 90%) of the workers would come from the local work force and would not generate the need for any new housing in the area. Construction activities would be short-term, with total construction estimated to occur over a nine to 10 month

period and peak activities (necessitating up to 200 workers) limited to four to six months in time. Certain construction activities may require the utilization of some non-local workers with specialized skills. Nipomo, Arroyo Grande, and the surrounding areas have a variety of hotels and motels that would be adequate to serve short-term housing needs of any non-local construction contractors.

Permanent employment demands that would result from the project are expected to be filled almost entirely from the local workforce. However, in the event non-local workers move to the area to fill the project's operational needs, 2010 Census data indicates that there is sufficient existing housing stock available in the project area to accommodate the potential increase and no new housing would be necessary (refer to Table 4.10.2, above).

Based on the short construction schedule, anticipated utilization of the local work force and limited increase in permanent employment positions, potential impacts would be less than significant.

Mitigation Measures

No mitigation measures would be necessary because the potential impact would be less than significant.

Residual Impacts

Residual impacts associated with a potential increase in demand for housing would be *less than significant (Class III).*

4.10.5 Cumulative Analysis

Implementation of the Rail Spur Project would result in a less than significant increase in population and housing demand in the area. While independently insignificant, other development proposals in the vicinity of the SMR would likely induce population growth and generate additional demand for housing (i.e., development of an assisted living/memory support facility and the Nipomo Community Health Center). However, several residential development projects are also currently proposed or have been approved and yet to be built-out and growth would be within anticipated levels for the South County area and no significant imbalance between jobs and housing is expected to occur as a result of cumulative development in the area of the SMR. Therefore, cumulative impacts to population and housing resources would be less than significant, and Rail Spur Project's contribution to cumulative impacts to population and housing would be less than significant.

The Increased Throughput Project at the SMR would not result in the addition of any new jobs at the refinery, so it would not contribute to cumulative population and housing impacts. The northern Santa Barbara County Oil Development would likely add some additional oil related jobs, but these would likely draw from the local labor pool in the area of the City of Santa Maria, which would not contribute to cumulative population and housing impacts.

Movement of the cumulative crude oil trains in the along the routes would not result in an increase in population and therefore would not contribute to cumulative population and housing impacts.

4.10.6 Mitigation Monitoring Plan

All potential impacts to population and housing that could result from the Rail Spur Project would be less than significant. No mitigation would be necessary and no mitigation monitoring plan would be required for this issue area.

4.10.7 References

San Luis Obispo County Department of Planning and Building. December 8, 2009. *Housing Element 2009-2014 of the San Luis Obispo County General Plan.*

____. February 1999. *The Woodlands Specific Plan.*

____. March 1989. *South County Coastal Area Plan.*

____. October 14, 2009. *South County Inland Area Plan.*

____. May 2012. *Growth Management Ordinance, Title 26 of the San Luis Obispo County Code.*

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____. 2013. *Growth Assessment, Comparing Conventional and Strategic Growth.* Available at: http://www.slocounty.ca.gov/Assets/PL/Smart+Growth/Growth+Assessment.pdf. Accessed July 25, 2013.

United States Census Bureau. 2013. *United States 2010 Census Interactive Population Search.* Available at: http://www.census.gov/2010census/popmap/ipmtext.php?fl=06. Accessed July 24, 2013.

____. November 2002. *2000 Census of Population and Housing. California: 2000, Summary Population and Housing Characteristics.*

4.11 Public Services and Utilities

This section details the environmental and regulatory setting of the Rail Spur Project relevant to public services and utilities. It also identifies significance thresholds and impacts to public services and utilities related to the Rail Spur Project, as well as proposed mitigations for the significant impacts. Cumulative impacts to public services and utilities are also discussed. The public services and utilities relevant to the Rail Spur Project include:

- Solid Waste (non-hazardous);
- Electrical Utilities;
- Fire Protection Services; and
- Police Services.

Preparing of the Initial Study determined that the Rail Spur Project would not cause significant impacts to libraries, or schools; therefore, this section does not address those public services. In addition, the Rail Spur Project would not use natural gas, so natural gas utilities are not discussed.

Water supply for the Rail Spur Project would be provided by groundwater wells that are not part of a public service or utility. Impacts associated with water supply are addressed in Section 4.13 (Water Resources). In addition, potential impacts to Amtrak service, a public transit service provider, are addressed in Section 4.12, Transportation and Circulation.

Appendix F of CEQA requires an EIR to include discussion of the potential energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy (see Public Resources Code section 21100(b)(3)). According to Appendix F of the State CEQA Guidelines, the goal of conserving energy implies the wise and efficient use of energy including: (1) decreasing overall per capita energy consumption; (2) decreasing reliance on natural gas and oil; and (3) increasing reliance on renewable energy sources. The discussion of energy conservation is provided in Chapter 6 of the EIR.

4.11.1 Environmental Setting

This section discusses the environmental setting for the applicable utilities and public services.

4.11.1.1 Solid Waste Disposal

This section the existing conditions for the landfills operated in the County of San Luis Obispo.

San Luis Obispo County Integrated Waste Management Authority
The Project Site is within the San Luis Obispo Integrated Waste Management Authority (IWMA) jurisdiction. The County of San Luis Obispo consists of seven incorporated cities and numerous unincorporated areas within its 3,304 square miles and has a population of 272,177 people (2013 estimate) (California Department of Finance 2013). Each jurisdiction of the County

is responsible for its own solid waste management. Solid waste generated in San Luis Obispo County is mostly residential waste, construction wastes, commercial and industrial wastes, and sludge residues (wastes remaining at the end of the sewage treatment process). In most cases, solid waste is hauled directly to major Class III landfills, and the remainder is taken to transfer stations, resource recovery centers, and composting facilities.

According to the Department of Resources Recycling and Recovery (CalRecycle) (formerly the California Integrated Waste Management Board or CIWMB), in 2011 the residents and businesses of San Luis Obispo County disposed of approximately 228,975 tons of solid waste in permitted landfill facilities with a calculated disposal rate (pounds/person/day) of 4.6, which meets the target rate of 7.4. (CalRecycle 2013a).

Table 4.11.1 shows that solid waste is disposed of at three Class III landfills within the County of San Luis Obispo: Cold Canyon, Chicago Grade, and City of Paso Robles. Figure 4.11-1 shows the location of these three landfills.

In 2011, a total of approximately 226,220 tons were disposed of at these landfills (CalRecycle 2013b). According to CalRecycle's Solid Waste Information System database, approximately 15.5 million cubic yards remained among landfills in the County (CalRecycle 2013c). The Cold Canyon Landfill will probably be the primary landfill serving the Rail Spur Project. The SMR is served by South County Sanitary Services.

Table 4.11.1 San Luis Obispo County Class III Landfill Capacity and Usage

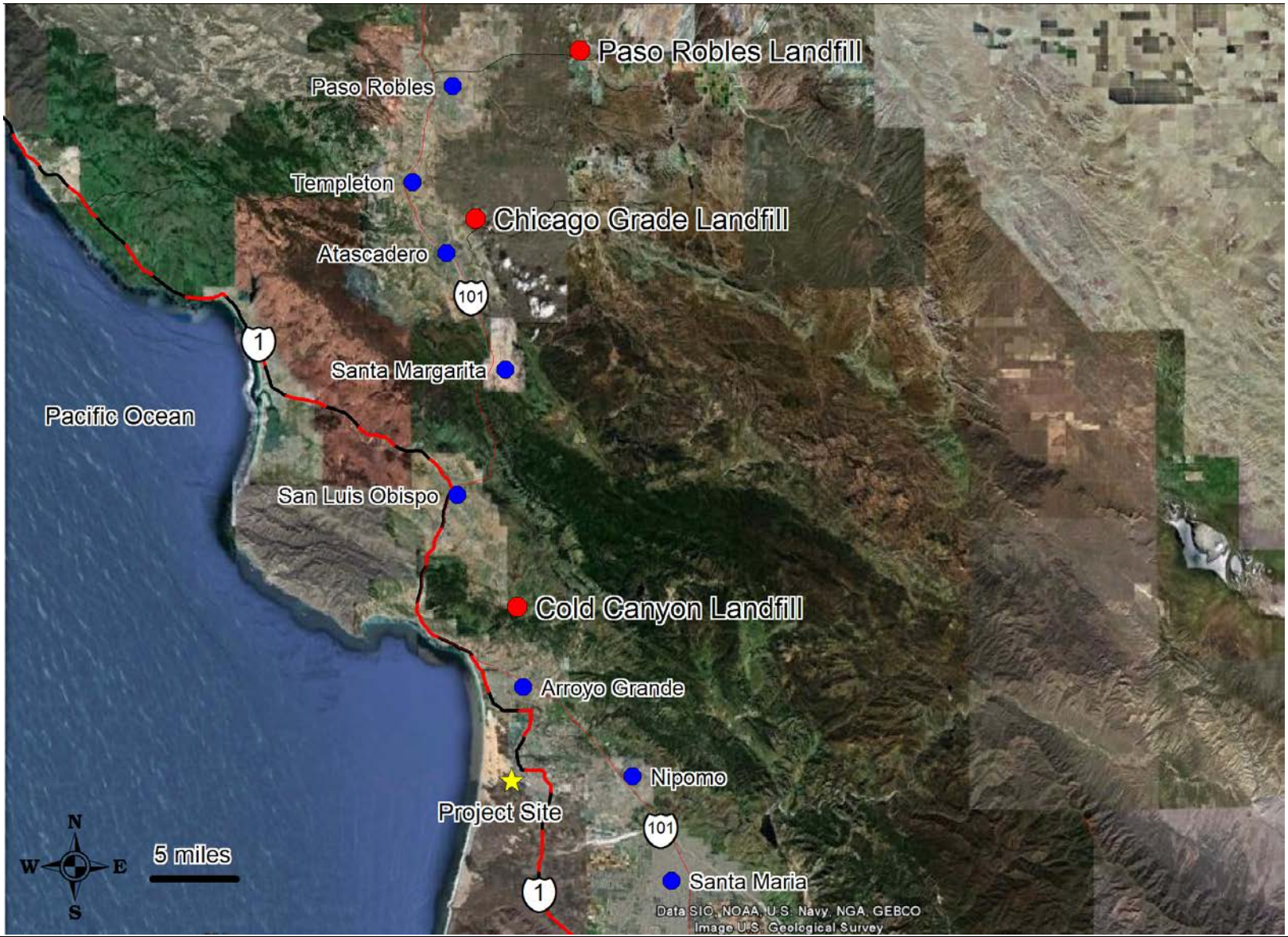
Landfill	Permitted Daily Capacity (tons)[a]	2011Total Solid Waste Disposal (tons)[b]	2011 Average Daily Disposal (tons)[c]	Maximum Permitted Capacity (cubic yards)[a]	Estimated Remaining Permitted Capacity (cubic yards)[ad]
Cold Canyon	1,200	146,176	412	10,900,000	1,830,000
Chicago Grade	500	46,752	132	8,950,220	8,329,699
City of Paso Robles	450	33,292	108	6,495,000	5,327,500
Total	**2,150**	**226,220**	**652**	**26,345,220**	**15,487,199**

a. Source: CalRecycle 2013b
b. Source: CalRecycle 2013b
c. The average daily disposal for each landfill was found by dividing the 2007 total solid waste disposal by the approximate number of days the landfill opened per year. Excluding holidays, both Cold Canyon and Chicago Grade Landfill landfills are open every day of the year. City of Pas Robles is closed every Sunday and on Holidays. Federal law (5 U.S.C. 6103) establishes 10 legal public holidays a year.
d. The remaining capacity for each landfill was estimated on the following date: Cold Canyon Landfill on June 2, 2010; Chicago Grade Landfill on May 1, 2007; and City of Paso Robles Landfill on May 1, 2007.

Cold Canyon Landfill

The Cold Canyon Landfill is approximately 11 miles north of the Project Site on State Route 227. The landfill currently operates six days per week and is closed on Sunday. The Cold Canyon Landfill is a Class III landfill and currently operates on Solid Waste Permit Facility # 40-AA-0004 (issued January 29, 2002).

Figure 4.11-1 Area Landfills



The facility accepts or permits: agricultural waste, construction and demolition waste, dead animals, industrial waste, mixed municipal waste, tires, contaminated soil, green materials, inert waste, and sludge (i.e., biosolids).

Based on the figures provided in Table 4.11.1, in 2011, the landfill operated at approximately 34 percent of its permitted daily capacity. As of June 2010, the landfill had a remaining capacity of approximately 1.83 million cubic yards. In November 2012, the Board of Supervisors approved a proposal to expand the landfill's disposal-area footprint by approximately 46 acres (to total 134 acres), creating capacity for an additional 13.1 million cubic yards, which would extend the landfill operation date until the year 2040. This increase would accommodate anticipated increases in recyclable materials and maintain existing disposal limits.

Chicago Grade Landfill

The Chicago Grade Landfill, open 7 days per week, is a 76.4-acre permitted landfill on a 188-acre parcel at 2290 Homestead Road in Templeton, California. The Chicago Grade Landfill is also a Class III facility and was recently expanded in fall 2007. As shown in Table 4.11.1, the current permitted daily maximum capacity is 500 tons. In 2009, total waste disposal in the landfill was approximately 56,757 tons. The Chicago Grade Landfill accepts or permits: agricultural waste, construction and demolition waste, contaminated soil, food wastes, industrial waste, metals, tires, asbestos, dead animals, green materials, inert waste, mixed municipal waste, and sludge (i.e., biosolids). The landfill is scheduled to close around 2042.

Paso Robles Landfill

The City of Paso Robles owns and operates Paso Robles Landfill, 8.5 miles east of Paso Robles off of State Route 46. As indicated in Table 4.11.1, the Paso Robles Landfill's permitted daily maximum capacity is 450 tons, which was recently expanded from 250 tons in Solid Waste Facility Permit #40-AA-0001 (issued January 23, 2008). In 2009, total waste disposal in the landfill was 34,288 tons; the San Luis Obispo County IWMA was the primary jurisdiction sending materials. The landfill is scheduled to close around 2051.

4.11.1.2 Electrical Utilities

Pacific Gas and Electric Company (PG&E) currently provides electricity to the Project Site that is not otherwise produced by the power-generating unit at the SMR. PG&E operates a local planning office at 4325 Higuera Street in the City of San Luis Obispo and operates the San Luis Obispo Substation on the corner of Orcutt Road and Johnson Avenue, approximately 19 miles north of the Project Site.

As shown in Table 4.11.2, the County of San Luis Obispo consumed approximately 1,650 thousand megawatt-hours of electricity in 2010 and 1,674 megawatt-hours of electricity in 2011.

PG&E generates electricity from the following sources: (1) PG&E-owned hydropower, gas-fired steam, and nuclear generators; (2) independent generators; and (3) out-of state generators. A network of high-voltage transmission lines carries electricity generated from the power plants to substations. Substations use transformers to decrease the voltage of electricity to connect with the distribution system.

Table 4.11.2 San Luis Obispo County Electricity Consumption

Land Use	Electricity Consumption (Thousands of MW-hrs)	
	2010	2011
Non–Residential	990	1,014
Residential	660	660
Total	**1,650**	**1,674**

Sources: Source: California Consumption Data Management System, accessed from: http://www.ecdms.energy.ca.gov/elecbycounty.aspx, and http://www.ecdms.energy.ca.gov/gasbycounty.aspx on April 23, 2013

Individual services or "drops" connect the distribution system to the industrial, commercial, agricultural, and residential customers. Table 4.11.3 shows megawatt-hours of electricity consumed in the PG&E planning area from 2004 through 2011. As shown in the table, commercial, industrial, and residential land uses consumed the majority of the kilowatt-hours of electricity in planning area.

Table 4.11.3 PG&E Planning Area Electricity Consumption (Thousands of MW-hrs)

Land Use	2004	2005	2006	2007	2008	2009	2010	2011
Agriculture & Water Pump	6,778	5,402	6,010	7,908	7,908	7,659	7,182	5,930
Commercial Building	35,741	35,819	36,943	39,191	39,474	37,491	37,890	37,039
Commercial Other	4,987	5,113	5,407	5,394	5,910	6,193	6,018	6,283
Industry	18,352	18,619	18,561	19,011	18,678	17,226	17,247	16,987
Mining & Construction	2,642	2,863	2,912	3,521	3,461	3,429	3,605	4,005
Residential	32,708	33,106	34,345	34,324	35,320	34,939	34,625	35,086
Streetlight	532	537	542	457	475	511	515	499
Total Usage	**101,740**	**101,459**	**104,720**	**109,806**	**111,226**	**107,448**	**107,082**	**105,829**

Source: California Consumption Data Management System, accessed from: http://www.ecdms.energy.ca.gov/elecbyplan.aspx, on April 23, 2013.

The rail spur operations would require additional electricity to operate pumps and unloading equipment, which would be received from the SMR electrical generation systems and/or the grid. Electrical demand for the additional equipment and operations would average 900 kW assuming 250 trains per year. The peak power consumption would be about 1,000 kW.

4.11.1.3 Fire Protection Services

The Rail Spur Project is within a Local Responsibility Area and in a High Fire Hazard Zone. This subsection identifies the fire-protection service providers for the Project Site and potential and expected response times from the fire stations, analysis of the adequacy of reliable or adequate fire flow, water pressure, and other fire department resources during a major fire, and an analysis of emergency access routes. The Project Site is currently under the jurisdiction of the California Department of Forestry and Fire Protection/San Luis Obispo County Fire Department (Cal Fire), which would continue to serve the site.

California Department of Forestry and Fire Protection / San Luis Obispo County Fire Department (Cal Fire)
The Project Site currently receives fire protection and paramedic service from Cal Fire. Cal Fire, a California state agency, functions as the San Luis Obispo County Fire Department under a contract with the County.

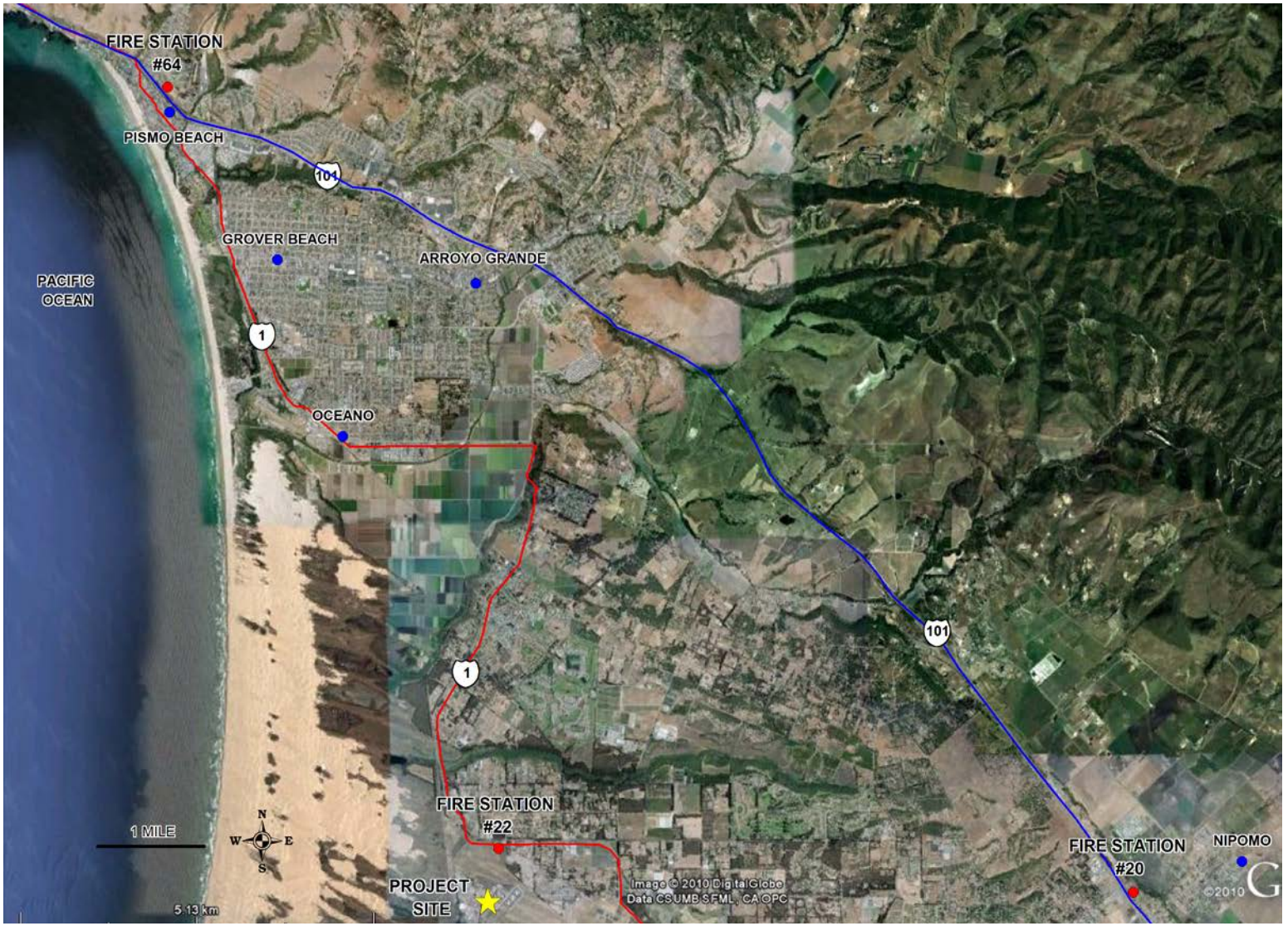
Fire Station #22 (Mesa Fire Station) at 2391 Willow Road in Arroyo Grande, less than 0.5 miles away from the SMR, is the jurisdictional station ("first in") for the Project Site and has a five minute response time. Station 22 staffs up to 29 firefighter personnel, including one Fire Captain, one Fire Apparatus Engineer, two licensed paramedics, and 25 paid call firefighters dispatched via radio pager (Cal Fire 2013).

The next closest station to the Project Site is Fire Station #20 (Nipomo Fire Station) at 450 Pioneer Avenue in Nipomo, which is approximately 8 miles away and has an eight minute response time. Station 20 staffs up to 29 firefighter personnel, including one Fire Captain, one Fire Apparatus Engineer, two licensed paramedics, and 25 paid call firefighters dispatched via radio pager (Cal Fire 2013). Figure 4.11-2, San Luis Obispo County Fire Stations, shows the proximity of the fire stations to the Project Site.

Cal Fire has two specialized teams, which include the Urban Search and Rescue Team comprised of 19 members, and a Hazardous Materials Team comprised of 30 members from Cal Fire, San Luis Obispo City, Arroyo Grande Fire, Paso Robles City, Atascadero Fire, San Luis Obispo County Environmental Health, and the California Men's Colony. (Cal Fire 2014). The hazmat team is an Incident Command System (ICS) Type 2 team. While the Hazmat team has not been certified by the California Office of Emergency Services as an ICS Type 2, the team meets all of the certification requirements (Laurie Donnelly 2014). Given the unique hazards found at the SMR, these two teams would be involved in most responses to the Project Site.

The Department operates under a regional approach to providing fire protection and emergency medical services, and emergency response units are dispatched as needed to an incident anywhere in the district's service territory based on distance and availability, without regard to jurisdictional or municipal boundaries.

Figure 4.11-2 Location of San Luis Obispo County Fire Stations



Source: Cal Fire 2013.

Mutual Aid Agreements

In California, virtually all fire departments are signatories to the California Master Mutual Aid Agreement. This agreement secures assistance across jurisdictional boundaries, when requested, in response to a disaster or an emergency that exceeds local resources. Cal Fire is a member to this agreement and acts as the County Coordination Dispatch Center, which, in the event of an emergency, requests assistance from mutual aid companies.

As part of this agreement, the counties of Santa Barbara and Ventura are responsible for providing the initial response to fires that request mutual aide (in addition to SLO County) in the State Responsibility Areas within San Luis Obispo County. Cal Fire response teams will assist should the initial attack prove unsuccessful.

In addition to the statewide agreement, cooperative agreements between Cal Fire, San Luis Obispo County, Los Osos and Avila Community Service Districts, and the City of Pismo Beach provide for a regionalized approach ensuring cost effective professional fire protection (Cal Fire 2013).

Phillips 66 Santa Maria Refinery Fire Brigade

Given the complexity of the SMR and the unique hazards, the refinery maintains a fire brigade and a designated Fire Department Liaison. The fire brigade is staffed 24-hours per day, 365-days per year with a minimum of eight people. All members of the fire brigade undergo yearly training and conduct regular response drills. Some of these response drills are conducted with Cal Fire staff (Anderson 2013).

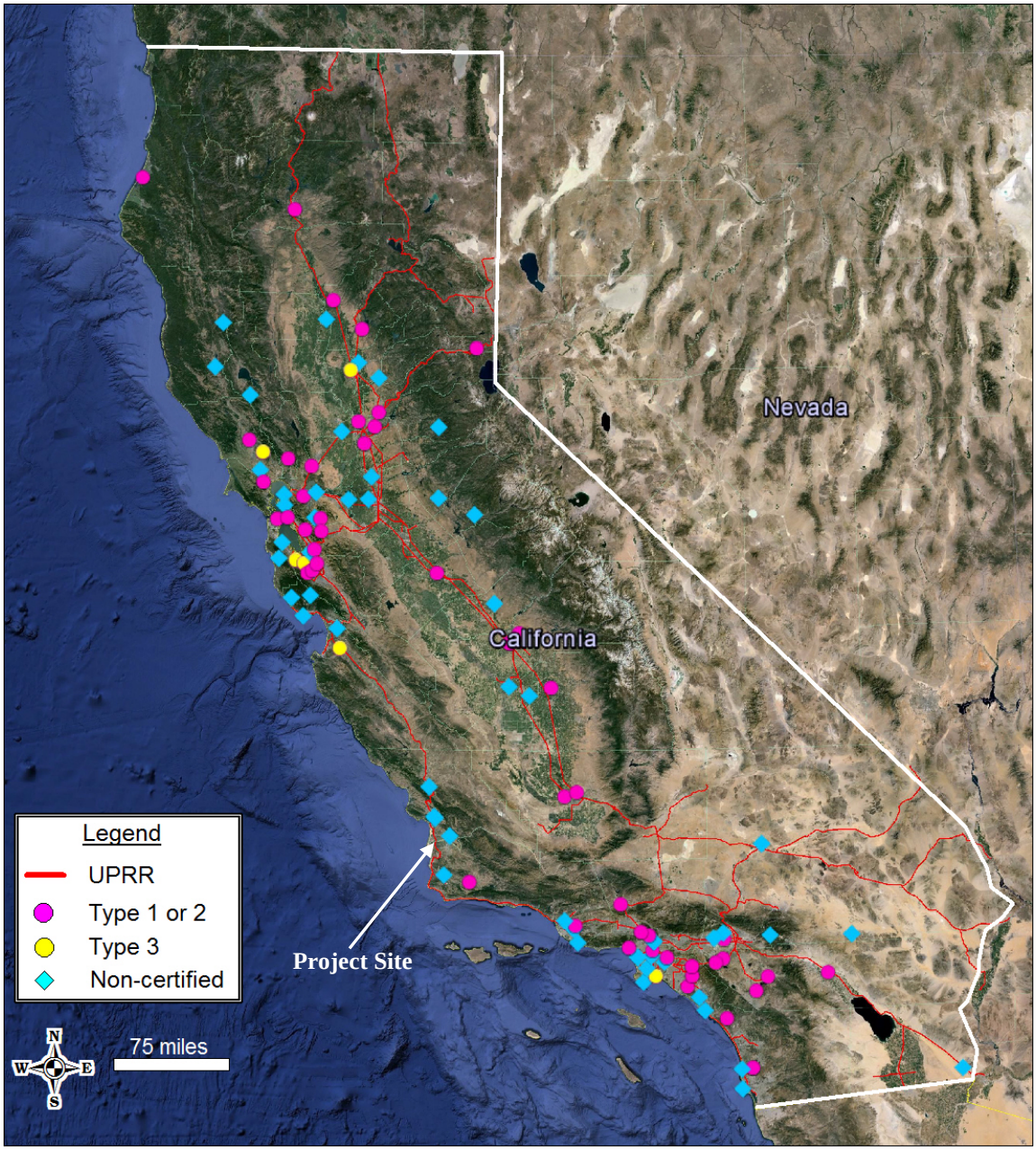
Phillips 66 fire and safety staff provides emergency coordination of teams to perform required rescue operations for confined space entries, trenching operations and monitoring of hazardous materials handling during routine maintenance and construction. The fire brigade serves as the initial responder to an incident until Cal Fire arrives at the SMR. Once Cal Fire arrives at the SMR a joint command is established to deal with the incident.

Emergency Response Agencies Along Mainline Rail Routes

Various state agencies engage in prevention, planning, emergency response, and cleanup activities applicable to oil by rail, including the Office of Emergency Services (OES), the Office of State Fire Marshal (OSFM), California Environmental Protection Agency (CalEPA), and the Office of Spill Prevention and Response (OSPR). These state agencies are all beginning to prepare for the heightened risks posed by oil by rail. Local agencies, including the local Certified Unified Program Agencies (CUPAs), also play critical roles in emergency preparedness and response. There are local Fire and Emergency Response Departments within counties and cities along the various rail routes. Figure 4.11-3 shows the location of the various types of hazardous material response teams along the mainline rail routes in California.

Hazardous material response teams are classified based upon their operational capability. There are three levels (types) of hazardous material operational capability (see Table 4.11.4). These levels are based upon an increasing capability of intervention with an identified minimum amount of training and equipment. Type 1 teams have the highest level of training and equipment, with Type 3 being the lowest. Non-certified teams are ones that have not been certified by OES. However, this does not mean they do not meet one of the type requirements.

Figure 4.11-3 Location of Hazards Material Response Teams Along the Mainline Rail Routes in California



Source: Data from State of California (2014)

Table 4.11.4 Hazardous Material Team Type Minimum Standards

	Type 1	Type 2	Type 3
Type of Incident	• Known Industrial Chemicals • Unknown Industrial Chemicals • WMD / CBRN Substances	• Known Industrial Chemicals • Unknown Industrial Chemicals	• Known Industrial Chemical
Air Monitoring	• Combustible Gas • Carbon Monoxide • Hydrogen Sulfide • Specialty Gases • WMD/CBRN	• Combustible Gas • Carbon Monoxide • Hydrogen Sulfide • Specialty Gases	• Combustible Gas • Carbon Monoxide • Hydrogen Sulfide
Chemical Protective Ensembles	• Liquid-Splash Protective • Vapor Protective • WMD/CBRN Protective	• Liquid-Splash Protective • Vapor Protective • Hi-Temp. Protective Gloves	• Liquid-Splash Protective
Ancillary Protective Clothing	• Hi-Temperature Gloves • Cryogenic Protective Gloves • WMD/CBRN Protective Gloves • Radiological Protective Gloves	• Hi-Temperature Gloves • Cryogenic Protective Gloves	
Radiation Monitoring	• Gamma • Beta • Alpha • Radionuclide	• Gamma • Beta	• Gamma • Beta
Technical References	• Printed & Electronic • Plume Air Modeling, Overlays • WMD/CBRN Sources	• Printed & Electronic • Plume Air Modeling, Overlays	• Printed & Electronic
Intervention Capability	• Dyking, Absorption • Liquid & Solid Plugging, Patch • Vapor Leak Plugging, Patch • Neutralization • WMD/CBRN Containment	• Dyking, Absorption • Liquid & Solid Plugging, Patch • Vapor Leak Plugging, Patch • Neutralization	• Dyking, Absorption • Liquid & Solid Plugging, Patch
Decontamination	• Known Industrial Chemicals • Unknown Industrial Chemicals • WMD / CBRN Substances	• Known Industrial Chemicals • Unknown Industrial Chemicals	• Known Industrial Chemicals
Training	• Hazardous Materials Specialist (240 hour) • Terrorist Technician/Specialist • (16 hour)	• Hazardous Materials Specialist • (240 hour)	• Hazardous Materials Technician (160 hour)

Source: OES Hazmat Company Resource Types-Quick Reference

4.11.1.4 Police Services

This subsection discusses the police protection providers serving the Project Site, potential and expected response times from the police stations, and the police department resources. The Project Site is under the jurisdiction of the San Luis Obispo County Sheriff's Department. The California Highway Patrol (CHP) provides additional law enforcement support for the Project area.

All law enforcement jurisdictions (state, County, and City) operate under the California Emergency Management Agency's Law Enforcement Mutual Aid Plan (2009 Edition), which allows one law enforcement agency to request assistance from other law enforcement agencies, if necessary.

San Luis Obispo County Sheriff's Department

The San Luis Obispo County Sheriff's Department provides police protection and law enforcement services within the unincorporated portions of the County, including the Project Site. The Department's Headquarters Station is located at 1585 Kansas Avenue in the City of San Luis Obispo. The Headquarters Station provides dispatch, watch commander (shift oversight), administration, detectives, records and warrants, as well as property and custody services for the department.

The Department's South Station, located at 1681 Front Street in Oceano, would serve the Project Site. Currently, this station serves a population of about 36,000 people living in the communities of Oceano, Nipomo, unincorporated Arroyo Grande, Los Berros, New Cuyama, Huasna Valley, Blacklake-Callendar, and the Woodlands. The area served extends from Pismo Beach to the Santa Barbara County line and from the Pacific Ocean to the Kern County line. The station has one commander, two sergeants, four senior deputies, and 23 sheriff deputies to serve approximately 850 square miles (SLO Sheriff 2013).

The department's Coast Station participates in mutual aid agreements with the City of San Luis Obispo Police Department, CHP, and other law enforcement agencies, so the department can call these stations for assistance, if necessary.

Volunteers donate their time, equipment, and expertise to the San Luis Obispo County Sheriff's Department. The Sheriff's Auxiliary Volunteer Patrol was established to help the San Luis Obispo County Sheriff's Department satisfy its law enforcement mission. Citizen volunteers are trained in a variety of law enforcement topics, such as observation skills, radio procedures, first aid, and supplemental patrol in neighborhoods and business districts. The Sheriff Department's Search and Rescue Team, Aero Squadron, Posse, and Dive Team also enlist the aid of volunteers.

The California Highway Patrol (CHP) is primarily responsible for traffic-related calls and issues along Coast Route 1 in the unincorporated areas of the County. The types of issues resulting from the Rail Spur Project would most likely not impact the San Luis Obispo County Sheriff's Department as much as CHP, however, any project such as this does have the potential to affect law enforcement resources due to increased calls for service for other types of incidents (i.e., vandalism, burglary, trespassing issues, etc.) (Mann 2013).

California Highway Patrol
The California Highway Patrol (CHP) provides traffic law enforcement in the unincorporated areas of the County and on all freeways within the County. The CHP also provides general law enforcement services and security on all state property and facilities. San Luis Obispo County is served by the CHP Coastal Division, which included the coastal counties from Ventura to Monterey. The Project Site is served by the CHP's San Luis Obispo Station, which serves approximately 900 square miles and is located at 675 California Boulevard in the City of San Luis Obispo. Currently, 39 sworn officers staff the San Luis Obispo Station. The CHP operates three shifts in a 24-hour period: 5:30 a.m. to 6:00 p.m., 10:30 a.m. to 11 p.m., and 5:30 p.m. to 6:00 a.m. Average deployment for each shift is six, two, and four officers, respectively (Day 2011).

The CHP has a Memorandum of Understanding (MOU) with the County Sheriff's Department, which is an agreement between public agencies to share resources and information among themselves in response to a large-scale emergency.

Police Services Along Mainline Rail Routes
The police services along the mainline rail routes include County Sheriff Departments, City Police Departments, and CHP. The jurisdictions along the route would vary based upon the location of the mainline tracks.

4.11.2 Regulatory Setting

4.11.2.1 Federal

Federal law governs most major aspects of rail transport, and preempts most state regulation. The principal agency responsible for promulgating and enforcing the safety of rail shipments of crude oil is Department of Transportation (DOT), and specifically within DOT the Federal Railroad Administration (FRA) and the Pipeline and Hazardous Materials Safety Administration (PHMSA). PHMSA has issued an advanced notice of proposed rulemaking that would expand the applicability of comprehensive oil spill response plans (OSRPs) to high-hazard flammable trains (HHFTs), which would include train transporting 20 or more carloads in a single train of a Class 3 flammable liquid, which would include crude oil.

4.11.2.2 State

California Public Utilities Commission
The California Public Utilities Commission (CPUC) regulates privately owned telecommunications, electric, natural gas, water, railroad, rail transit, and passenger transportation companies. CPUC is responsible for ensuring that California utility customers have safe, reliable utility service at reasonable rates; protecting utility customers from fraud; and promoting the health of California's economy. CPUC establishes service standards and safety rules and authorizes utility rate changes, as well as enforcing CEQA compliance for utility construction (CPUC 2010).

CalRecycle

In January 2010, the CalRecycle was established in an effort to streamline state recycling and waste diversion efforts. These responsibilities were formerly administered by the California Integrated Waste Management Board. CalRecycle is now comprised of the Waste Management Division and the Recycling Division, which manage programs created through the Integrated Waste Management Act (AB 939).

AB 939 required that each County prepare a new Integrated Waste Management Plan and required each city to prepare a Source Reduction and Recycling Element by July 1, 1991. Each source reduction element was to include a plan for achieving a solid waste goal of 25 percent reductions by January 1, 1995, and 50 percent reductions by January 1, 2000.

Senate Bill (SB) 2202 made a number of changes to the municipal solid waste diversion requirements under the Integrated Waste Management Act. These changes included a revision to the statutory requirement for 50 percent diversion of solid waste to clarify that local government should continue to divert 50 percent of all solid waste after January 1, 2000.

Moreover, in 1997, some of the regulations adopted by the State Water Quality Control Board pertaining to landfills (Title 23, Chapter 15) were incorporated with CalRecycle regulations (Title 14) to create Title 27 of the California Code of Regulations.

Fire Protection

California Code Title 8, Division 1 (Department of Industrial Relations) Chapter 4 (Division of Industrial Safety), Subchapter 14 (Petroleum Safety Orders--Drilling and Production), addresses several issues related to confined space and testing of vapor. Article 6, section 6529 addresses issues related to fire and explosions, such as:

- Firefighting equipment should be inspected, tested, and maintained in serviceable condition. A record should be kept recording when fire extinguishers were last inspected, tested, and recharged.
- A plan shall be established and implemented to ensure the safe and orderly evacuation of employees.

Emergency Response

The State of California Emergency Plan (SEP) addresses the state's response to extraordinary emergency situations associated with natural disasters or human-caused emergencies. In accordance with the California Emergency Services Act (ESA), this plan describes the methods for carrying out emergency operations, the process for rendering mutual aid, the emergency services of governmental agencies, how resources are mobilized, how the public will be informed and the process to ensure continuity of government during an emergency or disaster. The SEP has a Hazardous Material and Oil Spill annex that defines the organization, scope, and coordination of oil and hazardous materials response and emergency management activities in a disaster or large scale incident. The California Hazardous Materials and Oil Emergency Function provides for a coordinated response from agencies and governmental entities with jurisdictional and regulatory authority to conduct all phases of emergency management in the response to and recovery from a release of oil or hazardous materials. CalEPA Emergency Response

Management Committee is currently revising the Hazardous Material and Oil Spill annex of the SEP.

The State has Hazardous Materials Emergency Response Plans for each of the six planning districts established by the California Emergency Response Commission. These Hazardous Materials Emergency Response Plans build on the local agencies Hazardous Materials Area Plans and facility Hazardous Materials Business Plans located in planning areas. The plans include the identity, location and emergency contacts for facilities that handle threshold quantities of extremely hazardous substances. The plans also contain chemical release response procedures, public protective action notification information, county government emergency coordinators and plans for exercising the Hazardous Materials Emergency Plan.

Various state agencies engage in prevention, planning, emergency response, and cleanup activities applicable to oil by rail, including the Office of Emergency Services (OES), the Office of State Fire Marshal (OSFM), California Environmental Protection Agency (CalEPA), and the Office of Spill Prevention and Response (OSPR). These state agencies are all beginning to prepare for the heightened risks posed by oil by rail. Local agencies, including the local Certified Unified Program Agencies (CUPAs), also play critical roles in emergency preparedness and response, and have expressed growing concern about increased oil by rail transport.

Several aspects of the state's emergency response framework are currently being updated: The CalEPA Emergency Response Management Committee is revising the Hazardous Material and Oil Spill annex of the State Emergency Plan, OES is leading an effort to review and update the six Regional Plans for Hazardous Materials Emergency Response, and OES has also re-started meetings of the State Emergency Response Commission (SERC), the federally-mandated state coordinating body for hazardous materials release response planning (State of California 2014).

OES has also formed a task force made up of local and state emergency responders to specifically address emergency response to crude oil trains in California.

Senate Bill (SB) 861 Oil Spill Prevention and Response

In 2014, Governor Brown expanded California's oil spill prevention and response program to cover all statewide surface waters at risk of oil spills. This expansion provided funding for industry preparedness, spill response, and continued coordination with local, state and federal government along with industry and non-governmental organizations. Senate Bill 861 authorized the Office of Spill Prevention and Response (OSPR) with the statewide expansion and regulatory oversight. The key objectives are:

- Target critical locations to stage spill responders and equipment for the best response to rail and pipeline incidents;
- Develop effective regulations in close collaboration with local government, non-governmental organizations, and industry;
- Implement regulations that will guide industry, local and state government, and the public and build relationships with local governments through workshops and presentations;
- Create inland response plans that have the depth and breadth of the marine Area Contingency Plans; and,

- Work with communities to build a strong response spill team.

The changes would apply to railroads, pipelines, and oil well/production facilities. These facilities will be required to have oil spill contingency plans. The legislation also requires announced and unannounced drills to test response and cleanup operations, equipment, contingency plans, and procedures. All elements of the plan must be excised at least one very three years. Operators of covered facilities must be able to demonstrate financial resources to pay for spill response and damages based upon a reasonable worst case spill volume.

The regulation requires a six and one-half cent per barrel tax on crude oil and petroleum products received at refineries or marine terminals within California to cover the cost of the expanded oil spill response program. On Tuesday, October 7, 2014, a group of railroad companies, led by Union Pacific Railroad Company, filed a complaint in the United States District Court, Eastern District of California, alleging that SB 861 is preempted by federal law.

4.11.2.3 San Luis Obispo County

Public Facilities Fees Ordinance, Title 18 of the San Luis Obispo County Code
The County of San Luis Obispo Public Facilities Fees Ordinance, Title 18 of the County Code, allows the County to collect fees for new development projects within the County to mitigate impacts caused by such projects. The County uses the fees to finance the new development's fair share of public facilities (e.g., parks, libraries, and fire and police stations).

County of San Luis Obispo Public Facilities Financing Plan for Unincorporated Area Facilities
The County of San Luis Obispo Public Facilities Financing Plan for Unincorporated Area Facilities documents the number and cost of new capital facilities required to serve development in unincorporated areas through 2025. One potential source of funding is public facilities fees paid by new developments to fund their fair share of necessary facilities. The Public Facilities Financing Plan identifies the maximum justified level of those fees. The fees finance public capital facilities (including land purchases, construction of buildings, and the purchase of major equipment) and ensure that new development projects contribute their fair share for these facilities. The fees cannot fund employee salaries.

County Fire Standards
San Luis Obispo County, and other jurisdictions in the county, adopted both the California Fire Code and the California Building Code, with amendments, into local ordinance. These local ordinances include but are not necessarily limited to:

- Water requirements;
- Minimum access road requirements;
- Construction requirements;
- Hazard abatement; and
- Turnaround requirements.

San Luis Obispo County General Plan

The San Luis Obispo County General Plan contains two elements that outline the county's goals and policies with respect to public services.

Safety Element

The Safety Element of the General Plan contains the following goals and policies relevant to public services in relation to the Rail Spur Project:

- Goal S-1: Attain a high level of emergency preparedness.
  - Policy S-1 Response: Support the response programs that provide emergency and other services to the public when a disaster occurs. The focus of response activities is saving live and preventing injury, and reducing immediate property damage.
  - Policy S-2 Emergency Preparedness: Continue to improve preparedness programs that educate and organize people to respond appropriately to disasters. They include education and awareness programs for individuals, families, institutions, businesses, government agencies and other organizations.
  - Policy S-3 Coordination: Improve coordination among City, County and State programs, and among others working to reduce the risks of disasters. This should also include improved coordination with the news media. This will result in more effective preparedness, response and recovery from disasters.
  - Policy S-4 Information Systems and Research: Expand and keep current the database of safety related information. Knowledge about disasters and the area we live in is growing. New information must be made available to the public and decision makers. Regularly update the GIS data as new information becomes available.
  - Policy S-5 Risk Assessment: Continue investigations that reduce or eliminate long term risks. Risk assessment activities, effectively carried out, can improve the efficiency and reduce the cost of response and recovery from disasters.
- Goal S-4: Reduce the threat to life, structures and the environment caused by fire.
  - Policy S-14 Facilities, Equipment and Personnel: Ensure that adequate facilities, equipment and personnel are available to meet the demands of fire fighting in San Luis Obispo County based on the level of service set forth in the fie agency's master plan.
  - Policy S-15 Readiness and Response: The CDF/County Fire Department will maintain and improve its ability to respond and suppress fires throughout the County.
  - Policy S-16 Loss Prevention: Improve structures and other values at risk to reduce the impact of fire. Regulations should be developed to improve the defensible area surrounding habitation.
- Goal S-6: Reduce the potential for harm to individuals and damage to the environment from aircraft hazards, radiation hazards, hazardous materials, electromagnetic fields, radon, and hazardous trees.
  - Policy S-26 Hazardous Materials: Reduce the potential for exposure to humans and the environment by hazardous substances.

Energy Element
The Energy chapter of the General Plan's Conservation and Open Space Element contains the following goals and policies relevant to public services in relation to the Rail Spur Project:

- Goal E 5: Recycling, waste diversion, and reuse programs will achieve as close to zero waste as possible.
  - Policy E 5.1 Source reduction and waste diversion: Encourage source reduction and diversion of solid waste generated to as near zero waste as possible, in order to reduce energy consumption.

San Luis Obispo County Municipal Code
Title 8, Chapter 8.12, Solid Waste Management, regulates wastes handled within the county. This document complies with the California Integrated Waste Management Act of 1989. Title 8, Chapter 8.66, Discharge of Contaminants into Ocean Waters of the County, and Chapter 8.68, Stormwater Pollution Prevention and Discharge Control, regulate methods to protect the environment from discharge-related contamination.

San Luis Obispo County Integrated Waste Management Authority
Ordinance No. 2008-3 establishes requirements for recycling materials generated from residential facilities, commercial facilities, and special events. These requirements should increase diversion of recyclable materials from landfill disposal, reduce greenhouse gas emissions by recycling more materials, and avoid the potential financial and other consequences of failing to meet and maintain AB 939 requirements (SLOC 2008).

4.11.2.4 Other Codes and Standards

Several codes and standards apply to fire protection and emergency response for facilities such as the one in which the Rail Spur Project is located.

National Fire Protection Association
The NFPA, established in 1896, publishes numerous codes and standards that cover issues ranging from foam systems to dry cleaning facilities. Several NFPA codes and standards apply to the Proposed Project.

NFPA Standard 11 addresses foam application to protect outdoor atmospheric storage tanks containing flammable and combustible liquids. Fire-fighting foam is an aggregate of air-filled bubbles formed from aqueous solutions and is lower in density than flammable liquids. It is used principally to form a cohesive floating blanket on flammable and combustible liquids and prevents or extinguishes fire by excluding air and cooling the fuel. It also prevents re-ignition by suppressing formation of flammable vapors. Foam is prepared by utilizing a water supply along with a foam concentrate.

Foam for tank fires can be applied through fixed foam discharge outlets permanently fixed to the tank top, by portable hose streams using foam nozzles, or by large-capacity monitor nozzles close to the tank. Foam can be applied to a liquid spill into a dike to suffocate a fire or prevent

ignition of the flammable material spill, utilizing fixed systems, portable systems, or monitors. Foam systems should be inspected annually, including foam performance tests.

For fires on the roof of the tank, NFPA 11 requires a foam supply with a minimum discharge rate of 0.16 gallons per minute per square feet (gpm/ft^2) (for hand-held and foam monitors) and a minimum discharge time of 65 minutes for crude petroleum (section 5). The minimum foam application rate and discharge time for discharge outlets fixed to the tank are 0.10 gpm/ft^2 and 30 minutes, respectively. For diked areas, foam rates shall be 0.16 gpm/ft^2 for 30 minutes.

NFPA 11 also requires that fixed foam systems have automatic fire detection (thermal and hydrocarbon detection) and alarms.

NFPA 15, Standard for Water Spray Fixed Systems for Fire Protection, addresses water spray systems and issues such as installation requirements; design requirements, including hydraulic calculations; water supplies; and maintenance.

NFPA 22 addresses the installation of private firewater tanks to supply firewater to a facility.

NFPA 24 and 25 address the installation of private fire service equipment, including service mains and fire hydrants, as well as inspection, testing, and maintenance.

NFPA 30 addresses issues related to flammable and combustible liquids. NFPA 30 addresses fire prevention and risk control, electrical systems, storage in containers, processing facility issues, aboveground storage tanks requirements, and piping systems. NFPA 30 also addresses separation distances from vessels and tanks to property lines and to buildings and structures.

Uniform Fire Code

The UFC addresses issues ranging from egress and emergency escapes to fumigation, hot work, and cryogenic fluids.

Article 9 addresses site access and water supply for buildings, including access road minimum width requirements of 20 feet and all-weather driving capabilities.

Article 79 addresses flammable and combustible liquids issues, including:

- Overfill prevention;
- Automatic shut-off;
- Tank venting;
- Required use of foam systems on crude tanks with on-site storage of foam; and
- Diked areas equal to or greater than the largest tank.

4.11.3 Significance Criteria

The following criteria are based on Appendix G of the California Environmental Quality Act Guidelines. The effects of the Rail Spur Project on solid waste, energy, fire protection, and police services would be considered significant if the Rail Spur Project would:

- Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for fire protection and police protection;
- Be served by a landfill with insufficient permitted capacity to accommodate the Proposed Project's solid waste disposal needs;
- Use a substantial amount of fuel or energy that would consume energy beyond PG&E capacity to supply or produce;
- The Project Site does not contain adequate fire water or fire foam supplies to meet the recommended NFPA Standards, or the Cal Fire requirements;
- The Project equipment layout and access structure do not meet the API, NFPA, UFC, or Cal Fire recommendations for equipment spacing and clearances;
- The Project facilities do not have sufficient capabilities in early fire detection according to the NFPA requirements;
- The Project Site is more than 10 miles (15-minute response time) from an emergency response location with fire-fighting capabilities (i.e., a fire station or facility with fire-fighting and emergency response capabilities) or accessibility to the site is difficult or limited causing issues in terms of access, evacuations, and response; or
- The Project Site does not have an emergency response plan.

4.11.4 Project Impacts and Mitigation Measures

This section discussed the impacts and any mitigation measures associated with the Rail Spur Project related to solid waste (non-hazardous), electrical utilities, fire protection, and police services.

Water supply for the Rail Spur Project would be provided by groundwater wells that are not part of a public service or utility. Impacts associated with water supply are addressed in Section 4.13 (Water Resources). In addition, potential impacts to Amtrak service, a public transit service provider, are addressed in Section 4.12, Transportation and Circulation.

Impact #	Impact Description	Phase	Impact Classification
PS.1	The Rail Spur Project would generate solid waste requiring disposal at landfills.	Construction and Operations	Class III

Waste from the construction activities would include waste generated by the workers as well as general construction waste. CalRecycle has estimated that about three tons per employee per year is disposed of in landfills from construction activities (CalRecycle 1999). It is estimated that

there would be about 15 employee-years for the construction activities. Using these numbers it is estimated that approximately 45 tons of construction waste would be disposed of in landfills during the construction activities.

The operational solid waste would be generated by the workers at the facility. For industrial facilities an estimated waste disposal rate for the state of California was 10.8 pounds per employee per day (CalRecycle 2013d). It has been estimated that on average the facility would generate about 0.4 tons of solid waste per week from general operations. This trash and rubbish would be collected in waste bins and disposed of by a local waste hauler.

The local landfills have more than sufficient capacity to meet the increased need resulting from the project. Based on the available capacity of the landfill, potential impacts due to solid waste generation would be considered less than significant.

Mitigation Measures

No mitigation measures are required since the impact would be less than significant. However, a mitigation measure is recommended that addresses recycling to further reduce potential solid waste impacts.

PS-1 *Prior to issuance of grading permits, the Applicant shall submit a Solid Waste Management Plan (SWMP) for approval by San Luis Obispo County to maintain a diversion rate of at least 50 percent of construction waste from reaching the landfill. The SWMP shall consist of information regarding, but not limited to:*

- *a. The name and contact information of who will be responsible for implementing the recycling plan;*
- *b. A brief description of the Project wastes to be generated, including types and estimated quantities of each material to be salvaged, reused, or recycled during the construction phase of this Project;*
- *c. Waste sorting/recycling and/or collection areas shall be clearly indicated on the Site Map;*
- *d. A description of the means of transportation and destination of recyclable materials and waste, and a description of where recyclable materials and waste will be sorted (whether materials will be site-separated and hauled to designated recycling or landfill facilities, or whether mixed materials will be removed from the site to be processed at a mixed waste sorting facility);*
- *e. The name of the landfill(s) where trash will be disposed of and a projected amount of material that will be landfilled;*
- *f. A description of meetings to be held between Applicant and contractor to ensure compliance with the recycling plan;*
- *g. A contingency plan shall identify an alternate location to recycle and/or stockpile construction debris in the event of local recycling facilities becoming unable to accept material (for example: all local recycling facilities reaching the maximum tons per day due to a time period of unusually large volume);*

h. Disposal information including quantity of material landfilled, which landfill was used, total landfill tipping fees paid, and copies of weight tickets, manifests, receipts, and invoices;

i. Recycling information including quantity of material recycled, receiving party, and copies of weight tickets, manifests, receipts, and invoices; and

j. Reuse and salvage information including quantities of salvage materials, storage locations if they are to be used on-site, or receiving party if resold/used off-site.

Residual Impacts

The majority of the construction waste would be wood, metal, and concrete, which could be recycled. Of the three tons per employee estimated by CalRecycle, over 65 percent of the disposed material was paper, wood, and metal, which could have been recycled (CalRecycle 2009). By developing and implementing a SWMP for construction the amount of material disposed in local landfills would be reduced. The residual impacts associated with solid waste generation would be considered *less than significant (Class III)*.

Impact #	Impact Description	Project Phase	Impact Classification
PS.2	The Rail Spur Project would potentially impact electricity supplies.	Operations	Class III

The Rail Spur Project would use a peak of about 1,000 kW, with the average consumption being about 900 kW. Assuming 250 trains per year and eight hours per train unloading, the amount of electrical use by the Rail Spur Project would be about 1,600 MW-hrs for the unloading operations.

Electrical requirements at the SMR are met by an onsite cogeneration unit that produced both steam and electricity, and via purchases from Pacific Gas and Electric Company (PG&E). In 2009, the SMR generated 20,732 MW-hrs of electricity onsite and purchased 23,273 MW-hrs of electricity from Pacific Gas and Electric Company. This amount of energy was generated with a crude oil throughput of 35,838 bpd. In 2007 and 2008 electricity purchased from PG&E decreased (19,293 and 22,736 MW-hrs, respectively) due to the increased fuel gas production at the refinery, which was used to produce steam and electricity.

The Applicant indicates that the amount of electricity purchased would continue to decrease with increased crude oil throughputs. However, although this trend would most likely continue, it would also be a function of the crude types and the amount of decreased electricity purchased by the SMR cannot be definitively estimated. Therefore, with the Rail Spur Project, electricity purchased from PG&E would most likely remain the same as historical levels since the SMR would be able to generate more onsite electricity due to increased fuel gas production. Therefore, the impacts to electrical utilities form the Rail Spur Project would be less than significant.

Mitigation Measures

No mitigation measures are necessary since the impacts on electrical utilities would be less than significant.

Residual Impacts

The impacts of the Rail Spur Project on electrical utilities would be *less than significant (Class III).*

Impact #	Impact Description	Phase	Impact Classification
PS.3	The Rail Spur Project would increase demand for fire protection and emergency response services at the SMR.	Operations	Class II

The Rail Spur Project would increase demand for fire protection and emergency response services due to increased transportation and handling of crude oil at the SMR. While unlikely events, rail accidents, crude oil spills, fires during the unloading operations are the refinery could occur. These hazards are discussed further in the Hazards and Hazardous Materials Section of the EIR (Section 4.7). Depending upon the extent of the event, Cal Fire and other local fire jurisdictions would need to respond.

A new fire protection system would be installed for the unloading rack, consisting of fire detection equipment, safety showers, eyewash stations, hydrants, controls and piping. The unloading rack would be equipped with a foam sprinkler deluge system and firewater monitors with foam generators at the unloading rack periphery. The foam spray system would require a foam concentrate storage tank. The fire protection system would be capable of providing 4,155 gallons per minute of fire water. The project would also include a secondary Emergency Vehicle Access route from the eastern end of the rail spur to Highway 1. A copy of a Preliminary Fire Protection Plan, prepared by the Applicant, is provided in Appendix E.

The fire protection system would have to meet all of the applicable provisions in the current California Fire Code (CFC), the current California Building Code (CBC), the Public Resources Code (PRC), California Code of Regulations (CCR), Code of Federal Regulations (CFR), current edition of applicable NFPA requirements, and Title 16 of the San Luis Obispo County Code.

Given the complexity of the SMR and the unique hazards, the refinery maintains a fire brigade and a designated Fire Department Liaison. The fire brigade is staffed 24-hours per day, 365-days per year with a minimum of eight people. All members of the fire brigade undergo yearly training and conduct regular response drills. Some of these response drills are conducted with Cal Fire staff.

In the event of an oil spill or fire at the unloading facility, the SMR fire brigade would initially respond until Cal Fire arrived at the site. Fire Station #22 (Mesa Fire Station) at 2391 Willow Road in Arroyo Grande, less than 0.5 miles away from the SMR, is the jurisdictional station ("first in") for the SMR, and has a five minute response time.

The SMR is a high hazard facility due to the volume of operational and facility risks. The technical personnel and equipment requirements to mitigate incidents, and the response time for specialized teams to arrive and implement mitigation plans, increases the potential negative impact of an incident to the community, local businesses and the environment. The addition of a rail unloading facility at the SMR would serve to increase the facility hazards and risks.

A single significant event at the rail unloading facility could overwhelm the first responder resources and additional emergency responders and equipment could be required. Without proper fire protection design, training, and resources the impacts of a release of crude oil or fire could have significant impacts on fire protection and emergency response services.

Mitigation Measures

PS-3a *Prior to issuance of construction permits, the Applicant shall submit to Cal Fire/County Fire for review and approval a final Fire Protection Plan for the Rail Spur Project that meets all the applicable requirements of API, NFPA, UFC, and Cal Fire/County Fire.*

PS-3b *Prior to notice to proceed for the rail unloading facility, the Applicant shall update the SMR Emergency Response Plan to include the rail unloading facilities and operations.*

PS-3c *Prior to notice to proceed for the rail unloading facility, the Applicant shall update the existing SMR Spill Prevention Control and Countermeasure Plan to include the rail unloading facilities and operations.*

PS-3d *Prior to notice to proceed for the rail unloading facilities, the Applicant shall assure that the existing SMR fire brigade meets all the requirements outlined in Occupational Safety and Health Administration 29 CFR 1910.156, and NFPA 600 & 1081.*

PS-3e *Prior to issuance of grading permits, the Applicant shall have an executed operational Memorandum of Understanding (MOU) (now called the Operating Plan) with Cal Fire/County Fire that includes fire brigade staffing/training requirements and Cal Fire/County Fire funding requirements. This MOU shall be reviewed and updated annually by Cal Fire and the Applicant.*

PS-3f *Prior to issuance of grading permits, the Applicant shall have an agreement to reimburse Cal Fire/County Fire for time spent by a qualified fire inspector to conduct the annual fire inspections at the SMR including all structures, and support facilities consistent with Cal Fire/County Fire's authority and jurisdiction. The Applicant shall reimburse all costs associated with travel time, inspections, inspection training, and documentation completion. The reimbursement rate shall be according to the most recent fee schedule adopted by the San Luis County Board of Supervisors.*

PS-3g *Prior to issuance of grading permits, the Applicant shall have an agreement to reimburse Cal Fire/County Fire for offsite training for emergency responders to railcar emergencies, such as the 40 hour course offered by Security and Emergency Response Training Center Railroad Incident Coordination and Safety (RICS) meeting*

Department of Homeland security, NIIMS, OSHA 29CFR 1910.120 compliance. Initial training shall be two members of the Interagency Hazardous materials Response Team, two members of the interagency Urban Search and Rescue Team, and two members annually from Cal Fire/County Fire or fire districts in San Luis Obispo that have automatic aid agreements with Cal Fire/County Fire for a total of six slots per year for the life of the project.

PS-3h *Prior to issuance of grading permits, the Applicant shall have an agreement to reimburse Cal Fire/County Fire for Fire Chief Officer attendance such as the 40 hour course offered by Security and Emergency Response Training Center; Leadership & Management of Surface Transportation Incidents. Funding shall be for two Fire Chief Officers annually for the life of the project.*

PS-3i *Prior to issuance of grading permits, the Applicant shall have an agreement with Cal Fire/County Fire to conduct annual emergency response scenario/field based training including Emergency Operations Center Training activations with the Applicant, Cal Fire/County Fire, UPRR, and other San Luis Obispo County First response agencies that have mutual aid agreements with Cal Fire/County Fire. These annual emergency response drills shall occur for the life of the project.*

Residual Impacts

Implementation of the above mitigation measures would assure that the emergency responders who might have to respond to an incident at the SMR would have adequate training and capabilities to address the hazards that could occur with operation of the rail unloading facilities. This would reduce the impacts to fire protection services to *less than significant with mitigation (Class II).*

Impact #	Impact Description	Phase	Impact Classification
PS.4	Operations of the crude oil train on the mainline UPRR tracks would increase demand for fire protection and emergency response services along the rail routes.	Operations	Class I

Trains could enter California at least five different locations (one at the north end of the state from Oregon, two at the northeast from Nevada, one at the southeast from Nevada, and one at the south from Arizona). Depending upon the route taken by the train they could arrive at the SMR from the north or the south. It is unknown what route UPRR would use to deliver the trains to the SMR. Coming from the north the routes merge at the UPRR Roseville Rail Yard. From the south the routes merge at the Colton Rail Yard. Given that the route the trains would travel to get to these two UPRR yards is speculative, the EIR has evaluated in more detail the impacts of trains traveling from these two UPRR yards to the SMR.

Beyond the two UPRR Yards, trains could travel any number of routes (refer to Figure 2-8). Also, crude oil delivered to California by UPRR would generally pass through either of these two rail yards in route to the SMR. Depending upon the source of the crude oil, crude oil trains

could use any portion of the UPRR network between Roseville/Colton and the source location for the crude oil. The exact route that would be taken would depend upon a number of factors, that could include the source of the crude oil, weather conditions, train traffic conditions, etc. Since the routes past Roseville and Colton are somewhat speculative, the EIR has discussed in a more qualitative nature the potential fire protection and emergency response impacts of train accidents beyond these two rail yards.

The CPUC has identified a number of local safety hazard sites (LSHS) within California along the mainline rail routes. These are discussed in more detail in the Hazards and Hazardous Materials Section (see Section 4.7). These sites were identified based upon past accident history and difficulty in traversing or the potential for greater consequences as a result of derailment (CPUC 2014).

For the three rail routes between Roseville/Colton and the SMR, only one LSHS would be used, which is Cuesta Grade in San Luis Obispo County. Over the past five years (2009-2013), California experienced a total of 58 derailments at or near Local Safety Hazard Sites (LSHS). None of these derailments have occurred on or near the Cuesta Grade (CPUC 2014).

In San Luis Obispo County, the Cuesta Grade represents an area where a runaway train could occur. A runaway train coming down the Cuesta Grade could result in spills of crude oil and associated fires. The Rail Spur Project would use two additional locomotives (for a total of five locomotives) on the crude oil unit train for crossing the Cuesta Grade. These two additional locomotives would be added to the train at Santa Margarita and removed from the train in the City of San Luis Obispo once the train had crossed the Cuesta Grade. These additional locomotives would help to assure that the train can safely traverse the Cuesta Grade.

The probability of a crude oil train release incident is discussed in the Hazardous and Hazardous Materials Section (Section 4.7). This probability represents the probability of a release incident for the length of the rail routes between the SMR and Roseville or Colton. As discussed in the Hazards and Hazardous Materials Section (Section 4.7), the worst case spill from a unit train on the mainline tracks was assumed to be 180,000 gallons (about six tanker cars). An accident along the UPRR mainline tracks could result in an oil spill or fire, which would place demand on fire and emergency responders. If a fire or explosion resulted from the train accident it could initiate a wildfire depending upon the location of the accident. The resultant wildfire could also place additional demands on fire and emergency response services. The Hazards and Hazardous Materials Section (Section 4.7) provides more information on the potential hazards of a mainline rail accident.

As shown in Figure 4.11-3 there are various tiers of hazmat teams located along the mainline routes. In the event of an incident on the mainline, State and local emergency responders (hazmat teams, fire fighters, and police) along with UPRR would be responsible for the response. State and local agencies have important, complementary responsibilities in this area. OES is responsible for coordinating emergency response statewide, while local agencies typically are the first on the scene responding following an incident. These agencies handle initial emergency response and immediate actions to abate the hazard. In the event of an oil spill with no resultant fire, OSPR would manage the incident, including cleanup, natural resource protection, hazardous

waste management, and cost recovery from responsible parties. Local and State fire and hazardous material responders would be the ones to handle a train accident with any fire or explosion. Once the fire and explosion hazards were abated, OSPR would manage cleanup, natural resource protection, hazardous waste management, and cost recovery from responsible parties.

Based upon a recent voluntary agreement between the American Association of Railroads (AAR) and DOT the railroads have agreed to the following actions which would serve to reduce the probability of a rail accident and help to improve emergency response.

Increased Track Inspections – Railroads perform at least one additional internal-rail inspection each year above those required by new FRA regulations on mainline routes over which trains moving 20 or more carloads of crude oil travel. In addition, for mainline routes carrying these trains, railroads will conduct high-tech track geometry inspections – inspections that are above and beyond those currently required by FRA.

Braking Systems – Railroads are equipping all trains with 20 or more carloads of crude oil with either distributed power or two-way telemetry end-of-train devices. These technologies allow train crews to apply emergency brakes from both ends of the train in order to stop the train faster.

Rail Traffic Routing Technology – Railroads have begun using the Rail Corridor Risk Management System (RCRMS) to aid in the determination of the safest and most secure rail routes for trains with 20 or more cars of crude oil.

Lower Speeds – Railroads carrying 20 or more tank cars of crude oil that include at least one older DOT-111 may go no faster than 40 miles-per-hour in 46 federally designated high-threat-urban areas, as established by DHS regulations. Railroads also committed to implementing a nationwide 50 mile-per-hour speed limit for these trains.

Community Relations – Railroads are working with communities through which crude oil trains move to address location-specific concerns those communities may have.

Increased Trackside Safety Technology – Railroads have begun installing additional wayside wheel bearing detectors along tracks with trains carrying 20 or more crude oil cars, as other safety factors allow. These further help prevent derailments.

Increased Emergency Response Training and Tuition Assistance – Railroads are providing $5 million to develop specialized crude by rail training and tuition assistance program for local first responders. The funding will provide program development as well as tuition assistance for an estimated 1,500 first responders in the first year.

Emergency Response Capability Planning – Railroads are developing an inventory of emergency response resources and equipment for responding to the release of large amounts of crude oil along routes over which trains with 20 or more cars of crude oil operate (AAR 2014).

UPRR has been reaching out to fire departments as well as other emergency responders along their mainline routes to offer comprehensive training to hazmat first-responders in communities where we operate. UPRR annually trains approximately 2,500 local, state and federal first-

responders on ways to minimize the impact of a derailment in their communities. UPRR has trained nearly 38,000 public responders and almost 7,500 private responders (shippers & contractors) since 2003. This includes classroom and hands-on training (UPRR 2014).

UPRR has been offering training to state first responders at the Pueblo, Colorado Security and Emergency Response Training Center (SERTC) for a 3-day training course called *"Crude By Rail Emergency Response."*

According to a recent analysis conducted by OES, numerous local emergency response offices lack adequate resources to respond to oil by rail accidents. Many of these first responders are in rural areas and have little or no funding for firefighters and rely on volunteer firefighters. Many departments lack the necessary capacity to support a hazmat team to purchase or maintain necessary specialized vehicles and equipment, or to obtain training in the specialized areas of oil rail safety and flammable liquid, and their response time to significant oil by rail accident could be hours. Moreover, these small departments cannot rely on the assistance of larger, certified departments because those departments could be engaged in an incident locally and would be unavailable (State of California 2014).

There are gaps in local emergency response training, equipment, and planning capabilities needed to adequately prepare for oil by rail incidents. Emergency responders lack adequate training in the specialized areas of oil rail safety and flammable liquid, lack critical information needed to help plan for and respond to oil by rail incidents, including what resources railroads can provide in the event of an accident, and how they would respond to potential worst case scenarios (State of California 2014).

Spill Impacts beyond Roseville and Colton Yards

Beyond the two UPRR Yards, trains could travel any number of routes (refer to Figure 2-8). Also, crude oil delivered to California by UPRR would generally pass through either of these two rail yards in route to the SMR. Depending upon the source of the crude oil, crude oil trains could use any portion of the UPRR network between Roseville/Colton and the source location for the crude oil. The exact route that would be taken would depend upon a number of factors, that could include the source of the crude oil, weather conditions, train traffic conditions, etc.

While the exact route the trains would take to get to these two rail yards is speculative, all of the routes within California would have to traverse a number of LSHS. LSHS account for a disproportionate share of derailments occurring in California. Most of these LSHS past Colton and Roseville are in remote areas of the State where there are limited emergency response capabilities Most of these LSHS are primarily located in the mountains, with at least one such site along every rail route into California. Some of the LSHS are also located in more urban areas, such as in the San Bernardino-Riverside area. A lot of the local fire departments in these mountain areas, who would likely be the first responders, are made up of voluntary firefighters.

Forty percent of the firefighters in California are volunteer firefighters, with many fire departments entirely staffed by volunteer firefighters. These departments lack the necessary capacity to support a hazmat team to purchase or maintain necessary specialized vehicles and equipment, or to obtain training in the specialized areas of oil rail safety and flammable liquid,

and their response time to a significant oil by rail accident could be hours (State of California 2014).

The OES analysis clearly indicates that fire and emergency responders lack resources, training and information in order to adequately respond to a crude oil train incident along the mainline tracks. Without proper training, information, and resources the impacts of a release of crude oil or fire along the mainline tracks could have significant impacts on fire protection and emergency response services.

Mitigation Measures

PS-4a *The Applicant shall provide advanced notice of all crude oil shipments to the Santa Maria Refinery, and quarterly hazardous commodity flow information documents to all first response agencies along the mainline rail routes within California that could be used by trains carrying crude oil to the Santa Maria Refinery for the life of the project. Only first response agencies that are able to receive security sensitive information as identified pursuant to Section 15.5 of Part 15 of Title 49 of the Code of Federal Regulations, shall be provided this information. The plan for providing notice to first response agencies shall be in place and verified by the County Department of Planning and Building prior to delivery of crude by rail to the Santa Maria Refinery.*

PS-4b *Only rail cars designed to FRA, July 23, 2014 Proposed Rulemaking Option 1: PHMSA and FRA Designed Tank Car shall be allowed to unload crude oil at the Santa Maria Refinery.*

PS-4c *The Applicant shall provide annual funding for first response agencies along the mainline rail routes within California that could be used by the trains carrying crude oil to the Santa Maria Refinery to attend certified offsite training for emergency responders to railcar emergencies, such as the 40 hour course offered by Security and Emergency Response Training Center Railroad Incident Coordination and Safety (RICS) meeting Department of Homeland security, NIIMS, OSHA 29CFR 1910.120 compliance. The Applicant shall fund a minimum of 20 annual slots per year for the life of the project. The plan for funding the emergency response training shall be in place and verified by the Cal Fire/County Fire prior to delivery of crude by rail to the Santa Maria Refinery.*

PS-4d *As part of the Applicant's contract with UPRR, it shall require annual emergency responses scenario/field based training including Emergency Operations Center Training activations with local emergency response agencies along the mainline rail routes within California that could be used by the crude oil trains traveling to the Santa Maria Refinery for the life of the project. A total of four training sessions shall be conducted per year at various locations along the rail routes. This contract provision shall be in place and verified by the Cal Fire/County Fire prior to delivery of crude by rail to the Santa Maria Refinery.*

PS-4e *As part of the Applicant's contract with UPRR, it shall require that all first response agencies along the mainline rail routes within California that could be used by trains*

carrying crude oil traveling to the Santa Maria Refinery be provided with a contact number that can provide real-time information in the event of an oil train derailment or accident. The information that would need to be provided would include, but not be limited to crude oil shipping papers that detail the type of crude oil, and information that can assist in the safe containment and removal of any crude oil spill. This contract provision shall be in place and verified by the Cal Fire/County Fire prior to delivery of crude by rail to the Santa Maria Refinery.

Residual Impacts

Implementation of mitigation measures PS-4a through PS-4e would help to assure that the emergency responders who might have to respond to an incident along the mainline rail routes would have adequate training, information, and capabilities to address the hazards that could occur with operation of the crude oil train along the mainline route.

The County may be preempted by federal law from implementing these measures as they require particular contractual provisions that might be determined to improperly impact interstate commerce or conflict with the Interstate Commerce Commission Termination Act (ICCTA), which preempts state laws with respect to rail transportation.

OSPR is currently in the process of implementing the requirements of SB 861, which will require railroads to have detailed oil spill response plans and to conduct oil spill response drills. This legislation also would require UPRR to pay for and cleanup any spilled oil. The final rules to implement this legislation are expected to be issued in the fall of 2014. However, the timing of when the plans will have to be in place and the drill would start is not yet know. Implementation of this legislation would improve oil spill response for train derailments that lead to spills.

In addition, the DOT is evaluating proposed rules that would require rail operators of crude oil trains to have a comprehensive OSRP that addresses may of the same requirements as the plans required by SB 861. If the DOT adopts a final rule covering crude oil trains, it would improve oil spill response for train derailments that lead to spills.

The DOT has also proposed rules covering enhancements to tank car standards and operational controls for high-hazardous flammable trains, which would include crude oil trains. If this proposed rule is adopted, it would serve to reduce the likelihood of a train derailment and release of crude oil. Section 4.7, Hazards and Hazardous Materials, provides additional information on this proposed DOT rule.

If and when all these rules are adopted and in place, they would serve to reduce train derailments and improve emergency response in the event of an accident.

However, it is not certain that implementation of these various regulations would address all of the mitigation measures discussed above. Given that the County may be preempted from implementing mitigation measures PS-4a through PS-4e, oil spills impacts to fire protection and emergency response services along the UPRR mainline tracks would be s*ignificant and unavoidable (Class I).*

Impact #	Impact Description	Phase	Impact Classification
PS.5	The Rail Spur Project would increase demand for police services at the SMR.	Operations	Class III

The SMR maintains an onsite security service that is at the refinery 24-hours per day, 365 days per year. The operational areas of the refinery are fenced and entrances to these areas of the SMR are controlled by guards. The Rail Spur Project site would be fenced with night time perimeter lighting. The SMR would provide security for this area of the refinery as part of the existing security service. This onsite security service would limit the demands for police services.

In the event of an incident at the rail unloading services, police services would be needed to manage traffic on Highway 1, and to assist with any evacuations that may be needed in the developed areas that are in close proximity to the SMR. These would be similar services that would be required for the current refinery operations.

Given that the SMR maintains an onsite security service, which limits the need for police services, the Rail Spur Project would not be expected to affect the overall response time for police services at the SMR, or result in the need for the construction of new police services facilities to maintain adequate response times. Therefore, the impacts of the Rail Spur Project on police services would be less than significant.

Mitigation Measures

No mitigation measures are required since the impact would be less than significant. However, a mitigation measure is ***recommended*** that addresses security at the rail unloading facility to further reduce potential impacts to police services.

PS-5 *Prior to notice to proceed for the rail unloading facility, the Applicant shall update their existing Security Plan to include the Rail Spur Project.*

Residual Impacts

The impacts of the Rail Spur Project on police services would be *less than significant (Class III)*.

4.11.5 Cumulative Analysis

The cumulative projects discussed in Section 3.0, Cumulative Projects Description, include construction and use of additional housing units, retail establishments, and a number of oil and gas related projects. None of these projects would contribute to unacceptable strains on the region's solid waste disposal systems, the electricity supply, or police services. Therefore, cumulative impacts to these areas would be less than significant.

Numerous businesses in San Luis Obispo County require specialized rescue services; some examples include 6 significant industrial facilities, approximately 20 medium and light industrial businesses, over 250 wineries, 215 miles of 12-26 inch oil and natural gas transmission pipelines, and 72 miles of mainline railroad. The Rail Spur Project combined with the proposed expansion of the Arroyo Grande Oil Field and the proposed Phillips 66 crude oil pipeline would increase the demand for these specialized rescue services in southern San Luis Obispo County.

The Nipomo Mesa has a well-established commercial business area, and thousands of homes are now in the initial response area of the Mesa Fire Station 22. Some of the cumulative housing development project would increase demand of the Fire and life safety services provided by the Mesa Fire Station 22.

Specialized, rapid and adequately staffed response is crucial to keep incidents small and minimize the impact on citizens and environmental health. Due to the unique hazards associated with the Rail Spur Project and the other oil and gas cumulative projects, and the response time for specialized teams to arrive at these facilities; it is necessary to provide additional prevention and operational staffing to aggressively plan and train for effective mitigation of incidents.

The cumulative increase of anticipated emergency response requirements, which brings additional inherent hazards, additional employees, and associated vehicle traffic, requires adequate staffing to respond to incidents at these facilities. With the Fire Services mitigation measures identified for the Rail Spur Project, project's contribution to cumulative fire fighting and emergency response staffing and training levels would be less than significant at the SMR.

The cumulative oil projects in Northern Santa Barbara County would rely upon Santa Barbara County Fire as the primary first responder in the event of an incident at these oil production facilities. Cal Fire/San Luis Obispo Fire would be the first responder to any incidents associated with the Rail Spur Project at the SMR. Since there is no overlap in with the first responders, there would be no cumulative fire fighting and emergency response impacts with these northern Santa Barbara County projects.

There is the potential for cumulative impacts associated with the crude by rail project discussed in Chapter 3. In conducting the cumulative analysis for crude by rail it has been assumed that the cumulative projects listed in Table 3.1 would use the same rail car tank design as the SMR Rail Spur Project, and that the cumulative crude by rail projects, with the exception of the Phillips Rail Spur Project, would transport a Bakken type crude, which is a worst case assumption.[1] It has also been assumed that all of the Rail Spur Project crude oil trains would use routes discussed below.

If all of the crude by rail projects travel via the UPRR Roseville Rail Yard, then up to eight crude oil trains per day could travel on the stretch of track between Sacramento and the California boarder (two for Valero, one for Kinder Morgan, two for Alon, one for Targa, one for Plains All American, and one for the SMR). From Roseville, rail traffic would likely follow two different routes; one following the I-80 corridor to Reno, Nevada, with the other heading north along the I-5 corridor to Oregon. A third route through the Feather River Canyon was not considered for further analysis.

From Sacramento the crude oil trains servicing the Valero Benicia and Kinder Morgan projects could use the same UPRR tracks as the Rail Spur Project from Sacramento to the Bay Area. This

[1] Canadian Crude, as specified in the Project Description, was assumed for the Phillips Rail Spur Project as part of the project and cumulative analysis.

portion of track could have up to four crude oil trains per day (two for Valero, one for Kinder Morgan, and one for the SMR).

From Sacramento the crude oil trains servicing the Alon, Targa, and Plains All American projects could use the same tracks as the Rail Spur Project from Sacramento to Stockton a distance of about 46 miles. This portion of track could have up to five crude oil trains per day (two for Alon, one for Plains All American, one for Targa, and one for the SMR).

This level of crude oil train traffic would increase the probability of an oil spill along these mainline routes. Assuming all of the cumulative crude oil trains use the same route from Sacramento to the California border, the cumulative probability of a 100 gallon or greater oil spill would be about once every seven years for the route from the SMR to the Oregon border, and once every six years for the route from the SMR to the Nevada border.

None of the other cumulative crude by rail projects would use the mainline tracks along the southern route thorough the Los Angeles Basin since the crude oil trains going to Bakersfield would use Tehachapi Pass via Barstow and would not travel has far west as Colton. However, up to four unit trains per day could share the route between Nevada and Barstow (two for Alon, one for Plains All American, and one for the SMR). Assuming these cumulative crude oil trains use the same route from Barstow to the California border, the cumulative probability of a 100 gallon or greater oil spill would be about once every 25 years for the southern route from the SMR to the Nevada border.

An accident along one of these stretches of the mainline route could result in oil spill or fire. In the event of an accident, State and local emergency responders (hazmat teams, fire fighters, and police) along with UPRR would be responsible for the response. The cumulative increase in crude oil trains along these stretches of track would increase the likelihood that there would be an incident. As discussed in impact PS.4 above, an analysis by OES clearly indicates that fire and emergency responders lack resources, training and information in order to adequately respond to a crude oil train incident along the mainline tracks. Without proper training, information, and capabilities the cumulative impacts of a release of crude oil or fire on the mainline tracks would have significant cumulative impact on fire protection and emergency response services.

Implementation of the mitigation measures PS-4a through PS-4e would provide training, information, and capabilities to all of the local emergency response agencies along these stretches of mainline track. However, The County may be preempted by federal law from implementing these measures as they require particular contractual provisions that might be determined to improperly impact interstate commerce or conflict with the Interstate Commerce Commission Termination Act (ICCTA), which preempts state laws with respect to rail transportation. Therefore, the cumulative impacts to fire protection and emergency services for crude oil trains moving along the mainline tracks would be considered significant and unavoidable.

4.11.6 Mitigation Monitoring Plan

Mitigation Measure	Plan Requirements and Timing	Compliance Verification		
		Method	Timing	Responsible Party
PS-1	Prior to issuance of grading permits, the Applicant shall submit a Solid Waste Management Plan (SWMP) for approval by San Luis Obispo County to maintain a diversion rate of at least 50 percent of construction waste from reaching the landfill. The SWMP shall consist of information regarding, but not limited to: a. The name and contact information of who will be responsible for implementing the recycling plan; b. A brief description of the Project wastes to be generated, including types and estimated quantities of each material to be salvaged, reused, or recycled during the construction phase of this Project; c. Waste sorting/recycling and/or collection areas shall be clearly indicated on the Site Map; d. A description of the means of transportation and destination of recyclable materials and waste, and a description of where recyclable materials and waste will be sorted (whether materials will be site-separated and hauled to designated recycling or landfill facilities, or whether mixed materials will be removed from the site to be processed at a mixed waste sorting facility); e. The name of the landfill(s) where trash will be disposed of and a projected amount of material that will be landfilled; f. A description of meetings to be held between Applicant and contractor to ensure compliance with the recycling plan; g. A contingency plan shall identify an alternate location to recycle and/or stockpile construction debris in the event of local recycling facilities becoming unable to accept material (for example: all local recycling facilities reaching the maximum tons per day due to a time period of unusually large volume); h. Disposal information including quantity of material landfilled, which landfill was used, total landfill tipping fees paid, and copies of weight tickets, manifests, receipts, and invoices; i. Recycling information including quantity of material recycled, receiving party, and copies of weight tickets, manifests, receipts, and invoices; and j. Reuse and salvage information including quantities of salvage materials, storage locations if they are to be used on-site, or receiving party if resold/used off-site.	Review of SWMP Field verification	Prior to Grading Permit During Construction	County Planning and Building
PS-3a	Prior to issuance of construction permits, the Applicant shall submit to Cal Fire/County Fire for review and approval a final Fire Protection Plan for the Rail Spur	Review of Fire Protection	Prior to Construction Permits	Cal Fire

Mitigation Measure	Plan Requirements and Timing	Compliance Verification		
		Method	Timing	Responsible Party
	Project that meets all the applicable requirements of API, NFPA, UFC, and Cal Fire/County Fire.	Plan		
PS-3b	Prior to notice to proceed for the rail unloading facility, the Applicant shall update the SMR Emergency Response Plan to include the rail unloading facilities and operations.	Review of Emergency Response Plan	Prior to Notice to Proceed	Cal Fire County Planning and Building
PS-3c	Prior to notice to proceed for the rail unloading facility, the Applicant shall update the existing SMR Spill Prevention Control and Countermeasure Plan to include the rail unloading facilities and operations.	Review of SPCCP	Prior to Notice to Proceed	Cal Fire County Planning and Building
PS-3d	Prior to notice to proceed for the rail unloading facilities, the Applicant shall assure that the existing SMR fire brigade meets all the requirements outlined in Occupational Safety and Health Administration 29 CFR 1910.156, and NFPA 600 & 1081.	Review of training records	Prior to Notice to Proceed	Cal Fire
PS-3e	Prior to issuance of grading permits, the Applicant shall have an executed operational Memorandum of Understanding (MOU) (now called the Operating Plan) with Cal Fire/County Fire that includes fire brigade staffing/training requirements and Cal Fire/County Fire funding requirements. This MOU shall be reviewed and updated annually by Cal Fire and the Applicant.	Copy of signed MOU	Prior to Grading Permits	Cal Fire County Planning and Building
PS-3f	Prior to issuance of grading permits, the Applicant shall have an agreement to reimburse Cal Fire/County Fire for time spent by a qualified fire inspector to conduct the annual fire inspections at the SMR including all structures, and support facilities consistent with Cal Fire/County Fire's authority and jurisdiction. The Applicant shall reimburse all costs associated with travel time, inspections, inspection training, and documentation completion. The reimbursement rate shall be according to the most recent fee schedule adopted by the San Luis County Board of Supervisors.	Payment received by Cal Fire	Prior to Grading Permits	Cal Fire County Planning and Building
PS-3g	Prior to issuance of grading permits, the Applicant shall have an agreement to reimburse Cal Fire/County Fire for offsite training for emergency responders to railcar emergencies, such as the 40 hour course offered by Security and Emergency Response Training Center Railroad Incident Coordination and Safety (RICS) meeting Department of Homeland security, NIIMS, OSHA 29CFR 1910.120 compliance. Initial training shall be two members of the Interagency Hazardous materials Response Team, two members of the interagency Urban Search and Rescue Team, and two members annually from Cal Fire/County Fire or fire districts in San Luis Obispo that have automatic aid agreements with Cal Fire/County Fire for a total of six slots per year for the life of the project.	Copy of signed agreement	Prior to Grading Permits	Cal Fire
PS-3h	Prior to issuance of grading permits, the Applicant shall have an agreement to reimburse Cal Fire/County Fire for Fire Chief Officer attendance such as the 40 hour course offered by Security and Emergency Response Training	Copy of signed agreement	Prior to Grading Permits	Cal Fire

Mitigation Measure	Plan Requirements and Timing	Compliance Verification		
		Method	Timing	Responsible Party
	Center; Leadership & Management of Surface Transportation Incidents. Funding shall be for two Fire Chief Officers annually for the life of the project.			
PS-3i	Prior to issuance of grading permits, the Applicant shall have an agreement with Cal Fire/County Fire to conduct annual emergency response scenario/field based training including Emergency Operations Center Training activations with the Applicant, Cal Fire/County Fire, UPRR, and other San Luis Obispo County First response agencies that have mutual aid agreements with Cal Fire/County Fire. These annual emergency response drills shall occur for the life of the project.	Copy of signed agreement	Prior to Grading Permits	Cal Fire
PS-4a	The Applicant shall provide advanced notice of all crude oil shipments to the Santa Maria Refinery, and quarterly hazardous commodity flow information documents to all first response agencies along the mainline rail routes within California that could be used by trains carrying crude oil to the Santa Maria Refinery for the life of the project. Only first response agencies that are able to receive security sensitive information as identified pursuant to Section 15.5 of Part 15 of Title 49 of the Code of Federal Regulations, shall be provided this information. The plan for providing notice to first response agencies shall be in place and verified by the County Department of Planning and Building prior to delivery of crude by rail to the Santa Maria Refinery.	Review of plan Review of notices to Agencies with quarterly information	Prior to Notice to Proceed During Operations	Cal Fire
PS-4b	Only rail cars designed to FRA, July 23, 2014 Proposed Rulemaking Option 1: PHMSA and FRA Designed Tank Car shall be allowed to unload crude oil at the Santa Maria Refinery.	Review of tank car specification sheets Site Inspection	Prior to Notice to Proceed During Operations	County Planning and Building
PS-4c	The Applicant shall provide annual funding for first response agencies along the mainline rail routes within California that could be used by the trains carrying crude oil to the Santa Maria Refinery to attend certified offsite training for emergency responders to railcar emergencies, such as the 40 hour course offered by Security and Emergency Response Training Center Railroad Incident Coordination and Safety (RICS) meeting Department of Homeland security, NIIMS, OSHA 29CFR 1910.120 compliance. The Applicant shall fund a minimum of 20 annual slots per year for the life of the project. The plan for funding the emergency response training shall be in place and verified by the Cal Fire/County Fire prior to delivery of crude by rail to the Santa Maria Refinery.	Review of plan Review of training records	Prior to Notice to Proceed During Operations	Cal Fire
PS-4d	As part of the Applicant's contract with UPRR, it shall require annual emergency responses scenario/field based training including Emergency Operations Center Training activations with local emergency response agencies along the mainline rail routes within California that could be	Review of contract Review of annual drill	Prior to Notice to Proceed During Operations	Cal Fire

Mitigation Measure	Plan Requirements and Timing	Compliance Verification		
		Method	Timing	Responsible Party
	used by the crude oil trains traveling to the Santa Maria Refinery for the life of the project. A total of four training sessions shall be conducted per year at various locations along the rail routes. This contract provision shall be in place and verified by the Cal Fire/County Fire prior to delivery of crude by rail to the Santa Maria Refinery.	records		
PS-4e	As part of the Applicant's contract with UPRR, it shall require that all first response agencies along the mainline rail routes within California that could be used by trains carrying crude oil traveling to the Santa Maria Refinery be provided with a contact number that can provide real-time information in the event of an oil train derailment or accident. The information that would need to be provided would include, but not be limited to crude oil shipping papers that detail the type of crude oil, and information that can assist in the safe containment and removal of any crude oil spill. This contract provision shall be in place and verified by the Cal Fire/County Fire prior to delivery of crude by rail to the Santa Maria Refinery.	Review of contract Review of notices to Agencies with contact number	Prior to Notice to Proceed During Operations	Cal Fire
PS-5	Prior to notice to proceed for the rail unloading facility, the Applicant shall update their existing Security Plan to include the Rail Spur Project.	Review of Security Plan	Prior to Notice to Proceed	County Planning and Building

4.11.7 References

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4.12 Transportation and Circulation

This section discusses the road and rail transportation system in the vicinity of the Rail Spur Project and the impacts of the Rail Spur Project on these transportation systems. The section describes the regulatory settings associated with the Project, identifies the applicable significance thresholds for transportation impacts, assesses potential impacts of the Rail Spur Project and recommends measures to mitigate significant impacts. The section also provides a discussion of cumulative transportation impacts.

The analysis in this section is based on available transportation studies, California Department of Transportation (Caltrans) and San Luis Obispo County traffic data, computer modeling of roadway and intersections, local and regional maps, and discussions with appropriate agencies.

4.12.1 Environmental Setting

4.12.1.1 Background

The Phillips Santa Maria Refinery (SMR) has been a petroleum oil refinery since its construction in 1955. The SMR is linked to the San Francisco-area Rodeo Refinery by a 200-mile pipeline through which semi-refined liquid products are transferred for upgrading into finished petroleum products. The SMR also produces solid petroleum coke that leaves the Refinery by rail or haul truck and recovered sulfur that is transported by haul truck.

The SMR is currently surrounded by industrial, recreational, agricultural, residential, and open space land uses. Except when shut down for maintenance, the SMR operates 24 hours per day, 365 days per year.

4.12.1.2 Methods of Describing Vehicle Traffic

Transportation conditions are often described in terms of levels of service (LOS). LOS describes the existing volume of traffic on a roadway compared to the design capacity of the roadway. The design capacity of a roadway or intersection is defined as the maximum rate of vehicle travel (e.g., vehicles per hour) that can reasonably be expected along a section of roadway or through an intersection. Capacity depends on several variables, including road classification and number of lanes, location and presence of turning lanes, signal timing, road condition, terrain, weather, and driver characteristics. LOS is generally a function of the ratio of traffic volume to the capacity of the roadway or intersection or the delays associated with an intersection. The LOS ratings also use qualitative measures that characterize operational conditions within a traffic stream and their perception by motorists. These measures include freedom of movement, speed and travel time, traffic interruptions, types of vehicles, comfort, and convenience.

Trucks and intersections also affect LOS classifications. Trucks and other large, heavy vehicles or slower moving vehicles affect LOS because they occupy more roadway space and have

reduced operating qualities compared to passenger cars. Since heavy vehicles accelerate slower than passenger cars, gaps form in traffic flows that affect the efficiency of the roadway. Intersections present a number of variables that can influence LOS, including curb parking, transit buses, turn lanes, signal spacing, pedestrians, stop sign arrangements, and signal timing.

The Highway Capacity Manual is widely used in traffic studies for predicting LOS for a range of roadways and intersections (TRB 2000). The Highway Capacity Manual establishes LOS classifications depending on roadway volume to capacity (V/C) ratios for different types of roadways and the volume to capacity ratio and delay at intersections. The Highway Capacity Manual is codified into software, the Highway Capacity Software by the Transportation Research Board. Highway Capacity Software was utilized in this analysis to assess project-related traffic inputs.

The LOS of a roadway or intersection is described on a scale from A to F, with A indicating excellent traffic flow quality and F indicating forced flow conditions and very slow speeds. Level E is normally the maximum design capacity that a roadway or intersection can accommodate. LOS A, B, and C are generally satisfactory. LOS D is tolerable in urban areas during peak hours due to the high cost of improving roadways to LOS C. Caltrans recommends providing a target LOS between LOS C and LOS D on state highway facilities (Caltrans 2002). San Luis Obispo County's current California Environmental Quality Act (CEQA) traffic impact thresholds consider LOS C acceptable for County rural roads in the Rail Spur Project area. Table 4.12-1 identifies LOS definitions and roadway volume to capacity ratios for different road types.

Analyzing intersections is more complicated than analyzing roadways. Intersections with stop signs involve analysis of conflicting traffic, vehicle gaps, vehicle movement priorities, shared lane capacities, and pedestrian influences. The approach detailed in the Highway Capacity Manual and codified in the Highway Capacity Software utilizes a probability approach to determine when gaps are available in traffic. The result is a volume to capacity ratio and a delay, both of which are used to determine LOS. Delay is the amount of time, in seconds, between when a vehicle stops at the end of the intersection queue and when the vehicle first enters the intersection. The distance between intersections is a complicating factor, among others. When two intersections are close together, the Highway Capacity Manual analysis approach is more uncertain. Table 4.12.1 also shows intersection LOS, volume to capacity ratio, and delay.

Determining a roadway's potential to present a traffic flow problem is a complicated process; therefore, a screening approach is often utilized. The screening approach involves comparing the roadway class with a traffic volume level for each LOS. The screening levels are developed by making generic assumptions for the data input in the Highway Capacity Manual calculations. The screening approach is only used for roadways and not for intersections.

Table 4.12.2 shows the screening traffic volume levels for determination of LOS for roadways. Caltrans develops its own screening criteria for determining LOS on the roadways under Caltrans jurisdiction. Some factors that affect these capacities are intersections (in the case of surface roadways), degrees of access control, roadway grades, design geometries (horizontal and vertical alignment standards), sight distance, levels of truck and bus traffic, and levels of pedestrian and bicycle traffic.

Table 4.12.1 Level of Service and Volume to Capacity Ratio Parameters

LOS	Traffic Conditions	Roadway Volume to Capacity Ratio				Intersection	
		Multi-Lane Freeway[a]	2-Lane Highway[b]	Arterial	Intersect	Volume to Capacity Ratio	Delay(s) (sec/veh)[c]
A	Free-flow conditions with unimpeded maneuverability. Stopped delay at signalized intersections is minimal.	0.30	0.15 - 0.26	0.00 - 0.60	<0.60	0 - 0.6	< 10
B	In the range of stable flow, but the presence of other users in the traffic streams begins to be noticeable.	0.50	0.27 - 0.42	0.61 - 0.70	0.60 - 0.69	0.61 - 0.70	< 15
C	In the range of stable flow, but marks the beginning of the flow in which the operation of individual users becomes significantly affected by intersections with others in the traffic stream.	0.71	0.43 - 0.63	0.71 - 0.80	0.70 - 0.79	0.71 - 0.80	< 25
D	High-density but stable flow. Speed and freedom to maneuver are severely restricted, and the driver experiences a poor level of comfort.	0.89	0.64 - 0.99	0.81 - 0.90	0.80 - 0.89	0.81 - 0.90	< 35
E	Near capacity. Operations with significant delays and low average speeds.	1.00	> 1.00	0.91 - 1.00	0.90 - 0.99	0.91 - 1.00	< 50
F	Forced or breakdown flow. Operations with extremely low speeds, high delay.	—	___	> 1.00	> 1.00	> 1.00	> 50

a. Volume to capacity ratio for level terrain when passing is allowed
b. Volume to capacity ratio for vehicle speed of 65 miles per hour (mph)
c. sec/veh is the allowable seconds that a vehicle is delayed at the intersection.
Source: TRB 2000, Caltrans 2002, San Luis Obispo County 2009

Table 4.12.2 LOS Screening Classifications and Roadway Daily Volumes

Roadway Class	Number of Lanes	LOS Classes				
		A	B	C	D	E
Santa Barbara County						
Freeway	6	44,000	74,400	88,800	99,900	111,000
Freeway	4	29,600	49,600	59,200	66,600	74,000
Arterial	4	23,900	27,900	31,900	35,900	39,900
Arterial	2	12,000	14,000	16,000	18,000	20,000
Major	4	19,200	22,300	25,500	28,700	31,900
Major	2	9,600	11,200	12,800	14,400	16,000
Collector	2	7,100	8,200	9,400	10,600	11,800
Caltrans						
Freeway	per lane per hour	710	1,170	1,680	2,090	2,350

Sources: TRB 2000; Santa Barbara County 1996

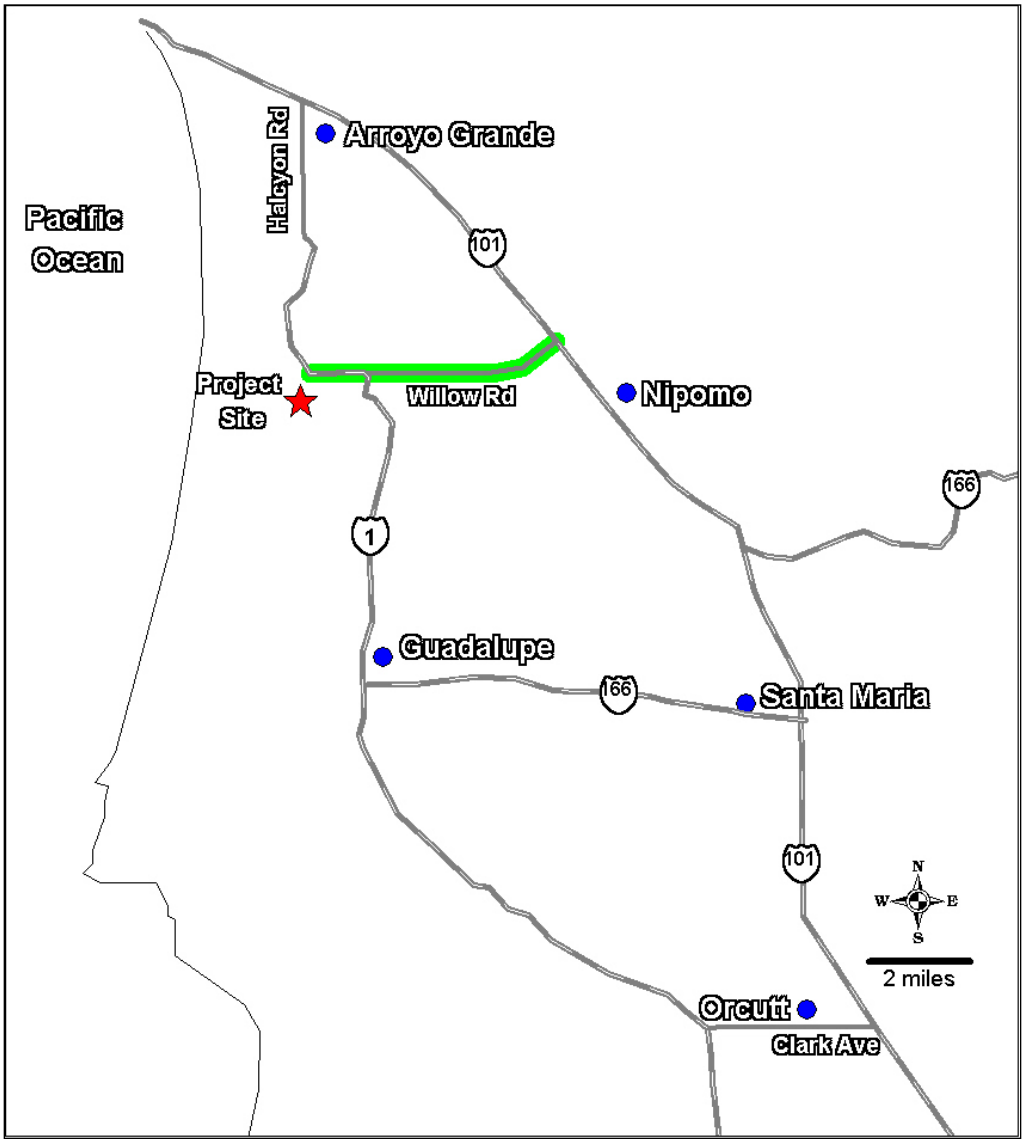
4.12.1.3 Existing Vehicle Traffic Conditions

SMR traffic accessing Highway 101 from the Project Site uses the following route: State Route 1 to Willow Road east to the recently completed Willow Road/Highway 101 interchange. SMR employees living in the Guadalupe, Oceano and Grover Beach areas would likely access the site via State Route 1. Figure 4.12-1 shows the primary traffic route for accessing the SMR from Highway 101.

Access to the SMR is via State Route 1, which is also called Mesa View Drive north of the SMR entrance and is called Willow Road east of the SMR entrance. Access to the freeway system from the SMR would be via the Willow Road interchange. Currently, the SMR personnel generate approximately 160 roundtrips (320 one-way trips) per day. The SMR normal operations generate approximately five truck roundtrips (10 one-way trips) per day, not including green coke and sulfur-related trips. In 2009, the SMR had approximately 15,009 truck trips (roundtrip) related to green coke and sulfur, which is approximately 41 trucks per day, or 82 one-way truck trips per day. In total, the SMR generates approximately 206 vehicle roundtrips per day or 412 one-way vehicle trips per day.

State Route 1 from the SMR entrance north to Halcyon Road is primarily a north-south, two-lane arterial; portions of the roadway have a median turning lane near certain intersections. State Route 1 from the SMR entrance east to Willow Road (local) is an east-west, two-lane arterial. State Route 1 south of Willow Road is a north-south, two-lane arterial. Stretching from Willow Road south to W. Clark Avenue, State Route 1 is locally known as Guadalupe Road. It becomes Cabrillo Highway south of the town of Guadalupe and Casmalia Road south of Black Road.

Figure 4.12-1 Traffic Route to the Santa Maria Refinery



Source: MRS 2013

Willow Road is a county-managed, east-west, two-lane minor arterial with access from the Project Site via State Route 1. The intersection at Willow Road and State Route 1 is controlled by a stop sign on Willow Road. The Willow Road extension, completed in late 2012, provides a full access interchange at Highway 101 and extends Willow Road to N. Thompson Avenue. Willow Road is the County designated truck route from the SMR to Highway 101.

Pomeroy Road is a county-managed, north-south, two-lane collector road with access from the Project Site via Willow Road. The intersection at Pomeroy Road and Willow Road is controlled by a stop sign on Willow Road.

U.S. Highway 101 is a four- to six-lane highway that extends along the Pacific Coast between Los Angeles and San Francisco.

Recent information on roadway traffic volumes is available from Caltrans, San Luis Obispo County, and Santa Barbara County. In addition, as part of the Guadalupe Restoration Project recent traffic counts were conducted along Willow Road and at the Highway 101/Willow Interchange. Using San Luis Obispo County thresholds, the traffic on nearby roadways generally operates at LOS A with the exception of the Highway 101/ 166 East junction which operates at LOC C (see Table 4.12.3).

Table 4.12.3 Existing Traffic for Project-Related Roadway Segments

Roadway	Capacity[a]	AADT	LOS	Source
State Route 1 at SMR entrance	12,000 – 16,000 ADT	6,000	A	Caltrans 2009b
Willow Road east of State Route 1	12,000 – 16,000 ADT	3,817[c]	A	SLOC 2010b
Willow Road west of Pomeroy Road	12,000 – 16,000 ADT	4,304[c]	A	SLOC 2010b
U.S. Highway 101 at Willow Interchange	29,600 – 59,200 ADT	3,212	A	SLOC 2014
U.S. Highway 101 at Junction Route 166 East	29,600 – 59,200 ADT	56,000	C	Caltrans 2009b

a. Approximate design capacities
b. 4-lane arterial plus shared median lane
c. ADT-Average Daily Traffic
AADT-Average Annual Daily Traffic

Table 4.12.4 Existing Traffic for Project-Related Roadway Intersections

Intersection	Control Type	A.M. Peak Hr		P.M. Peak Hr		Source
		Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	
State Route 1/SMR Drive [a]	OWSC	8.6	A	8.5	A	HCS 1998
State Route 1/Willow Road [b]	OWSC	4.2(10.0)	A (A)	4.0(11.2)	A(B)	SLOC 2014
Willow Road/Pomeroy Road	OWSC	10.0	A	11.3	B	SLOC 2014
Willow Road/U.S. Highway 101 Southbound Ramp	Signal	1.6 (9.8)	A (A)	4.4(12.8)	A(B)	SLOC 2014

a. Depicts traffic flow for vehicles travelling on State Route 1 northbound and turning left onto the SMR drive.
b. Side street stop controlled intersection delay reported as average delay with worst approach delay in parenthesis.

4.12.1.4 Rail Traffic

Trains servicing the Rail Spur Project would be delivered to the SMR by Union Pacific Railroad (UPRR). The Union Pacific rail lines within California are shown in Figure 4.12-2. Trains would access the SMR via the Union Pacific Coast Line, which runs from San Jose to about Moorpark. Freight rail services along this line are operated by UPRR, providing service that roughly parallels the Highway 101 corridor between San Jose in the north, and Camarillo in the south.

Trains would arrive from different oilfields and/or crude oil loading points depending on market availability. The exact location of the source of crude oil that would be delivered to the refinery is unknown and could change over time based upon market conditions and availability. Union Pacific Railroad (UPRR) would be responsible for delivering the trains to the SMR. Trains could enter California from at least five different general locations as shown in Figure 4.12-2. Depending upon the route taken by the train they could arrive at the Phillips 66 site from the north or the south. In is unknown what route UPRR would use to deliver the trains to the SMR. Coming from the North the routes merge at the UPRR Roseville Rail Yard. From the South the routes merge at the Colton Rail Yard.

Beyond the two UPRR Yards, trains could travel any number of routes (refer to Figure 4.12-2). Also, crude oil delivered to California by UPRR would generally pass through either of these two rail yards in route to the SMR. Depending upon the source of the crude oil, crude oil trains could use any portion of the UPRR network between Roseville/Colton and the source location for the crude oil. The exact route that would be taken would depend upon a number of factors, that could include the source of the crude oil, weather conditions, train traffic conditions, etc. Since the routes past Roseville and Colton are somewhat speculative, the EIR has discussed in a more qualitative nature the potential train traffic impacts beyond these two rail yards.

Figure 4.12-2 Union Pacific Rail Lines in California

The crude oil unit trains servicing the SMR would use various UPRR tracks that are shared with a number of intercity passenger rail lines. The routes for the major intercity rail line are shown in Figure 4.12-3. The major intercity rail lines that could be impacted by the Rail Spur Project are discussed below.

Coast Starlight and Pacific Surfliner

The Coast Starlight is a Federal Amtrak train that runs between Los Angeles and Seattle. The Coast Starlight operates one round-trip per day. This passenger train makes two stops in San Luis Obispo County (City of San Luis Obispo and Paso Robles). The route of the Coast Starlight is shown in Figure 4.12-3. Both of these trains use UPRR track and would share a considerable distance of UPRR track with a unit oil train traveling to the SMR as shown in Figure 4.12-4.

The Pacific Surfliner is a California Amtrak train that operates between San Diego and San Luis Obispo. The Pacific Surfliner operates two round-trips per day between San Diego and San Luis Obispo, three round-trips between San Diego and Goleta, and eight round-trips between Los Angeles and San Diego. This passenger train makes two stops in San Luis Obispo County (City of San Luis Obispo and Grover Beach). The route of the Pacific Surfliner is shown in Figure 4.12-3.

Figure 4.12-3 Map of Intercity Rail Lines in California

Source: Caltrans 2013.

Figure 4.12-4 Maps of Pacific Surfliner and Coast Starlight Routes

Pacific Surfliner **Coast Starlight**

Source: Amtrak 2013

Both of these passenger trains use the UPRR Coast Line from San Jose to Moorpark. Portions of this stretch of track would be also use by any crude oil unit train servicing the SMR depending upon if the train comes from the north or the south. From Santa Clara (junction with the UPRR's Mulford line to Oakland) to San Jose, there are three main tracks. A Centralized Traffic Control (CTC)[1] signaling system is in place in the Santa Clara to San Jose areas. The CTC segments are dispatched by Caltrain out of San Jose.

The route is double track with CTC control to the Tamien Caltrain station in San Jose. South of Tamien, the line basically is a single track railroad all the way to Moorpark. Trains operating on this stretch of the Coast Line operate on a "shared track". The Federal Railroad Administration (FRA) defines "shared tracks" as trains of two or more service providers operating over the same tracks. For the Coast Line this involves tracks being shared by a freight carrier and inter-city passenger service all sharing the same track, with dispatching performed by the track owner, which in this case is UPRR. Automatic Block Signal (ABS) is used from Tamien south to Goleta, but there are short segments of CTC in several locations. Much of the portion of the

[1] CTC allows dispatchers in remote locations to direct train movements on line segments by signals. CTC results typically in more efficient utilization of track segments that can more passive systems such as Automatic Block Signals (ABS). In effect, it provides for more capacity on otherwise identical track segments than does ABS.

route has hand operated switches that require a train crew member to operate the switches from the ground before and after a train enters a siding.

UPRR dispatches trains on the track segment between San Jose to Moorpark, and Southern California Railroad Authority (SCRRA) dispatches the segment Moorpark to Los Angeles Union Station (LAUS).

The Coast Line presents a mixture of operating speeds and conditions. Where the terrain is flat and the trackage is not restricted by curves, top speeds ranging from 60 to 79 mph are permitted. The curving track north and south of Watsonville Junction contains some limits as low as 30 mph, and curves along the Salinas Valley segment of the line also limit speed in several locations. Between Paso Robles and San Luis Obispo, the 2.2 percent grade and the sharp reversing curves on the Cuesta Grade limit speeds to as low as 25 mph. South of San Luis Obispo, the line traverses a number of hilly segments and then follows the Pacific Ocean coast line to near Ventura. There are numerous locations where curves limit speeds to the 30–50 mph range, but generally passenger speeds of about 60 mph are typical. On the southernmost end of the line, south of Ventura, maximum speeds are 70–79 mph except for the sharp curves at Santa Susanna Pass between Simi Valley and Chatsworth (SLOCOG 2000).

The Coast Line handles both long-haul freight trains, those travelling across the entire corridor or a significant portion of it, and local freight trains which operate over short segments of the corridor, generally travelling no more than 50 miles in any direction (Caltrans 2013). Most of the local freight trains operate between Salinas and San Jose and between Oxnard and Los Angeles (Union Pacific 2010).

The corridor carries low levels of freight traffic – ranging from about two to six trains per day north of Oxnard and eight to 16 trains per day in the San Fernando Valley – and is mostly considered as a “secondary” or “relief” line to the much busier UPRR Central Valley line to the east (Caltrans 2013). Union Pacific periodically shifts trains between Valley and Coast routes, depending on right-of-way maintenance activities and route congestion (Washington International Group 2004). The 2013 State Rail Plan estimated the combined number of daily passenger and freight trains operating on the Coast Line between San Luis Obispo and just south of San Jose to be in the range of 1-10, which was the lowest volume category (Caltrans 2013).

The on-time performance (OTP) of the Coast Starlight and Pacific Surfliner over the past few years is provided in Table 4.12.5. This table provides the percent of time the trains were on-time over the reporting period. The end point OTP measures how a train actually performs compared to the published schedule at the last station on the run. The metric uses the actual departure time at the origin point of the train and the actual arrival time of the train at the last stop for the reporting period. Arrivals at the last station that occurs within 30 minutes or less from schedule is considered "on time (Federal Railroad Administration 2013).

Table 4.12.5 On Time Performance (OTP) of Coast Starlight and Pacific Surfliner (% of time)

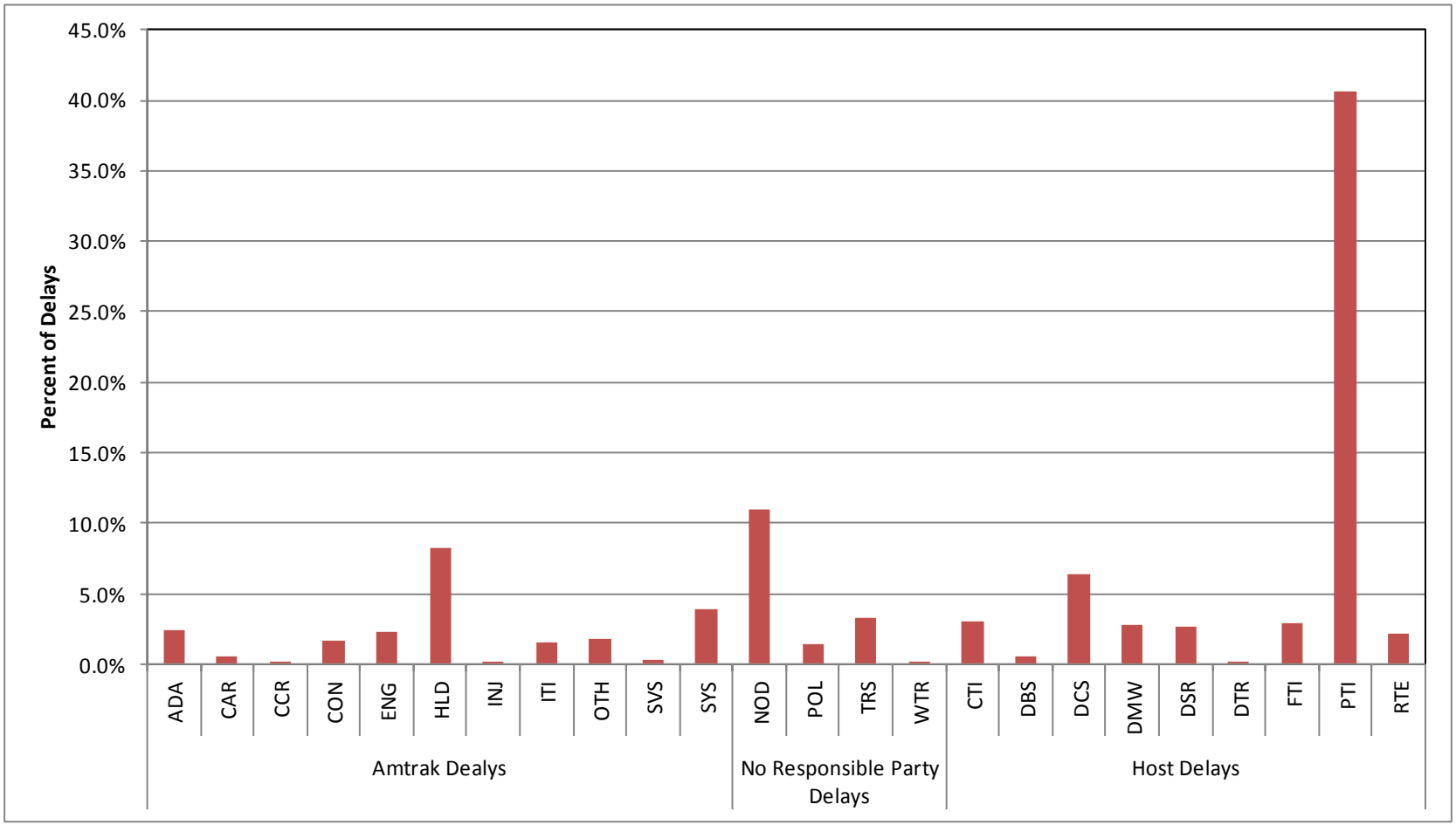
Time Period	Coast Starlight			Pacific Surfliner		
	All Station OTP	Endpoint OTP	Total Delay Minutes per 10,000 Train-Miles	All Station OTP	Endpoint OTP	Total Delay Minutes per 10,000 Train-Miles
April to June 2011	57.9	77.3	3,570	81.0	88.2	4,113
July to September 2011	61.5	84.2	3,461	83.0	69.7	4,777
October to December 2011	71.8	85.9	3,669	84.9	76.9	4,390
January to March 2012	61.0	78.0	3,388	83.0	75.1	4,669
April to June 2012	61.7	79.7	4,066	89.0	80.4	5,304
July to September 2012	50.7	72.3	4,100	83.4	69.9	5,729
October to December 2012	53.5	73.9	4,248	91.2	85.7	4,216
January to March 2013	69.3	91.7	4,049	92.4	89.2	3,831
April to June 2013	67.4	82.4	4,036	90.1	85.0	4,274
July to September 2013	61.7	80.4	3,895	87.9	79.1	4,778
October to December 2013	60.3	77.2	4,249	85.7	73.3	5,488
January to March 2014	58.1	77.2	4,261	78.2	89.1	4,605
Average (April 2011 to March 2014)	*61.2*	*80.0*	3,916	*85.8*	*80.1*	4,681
Target OTP Goal	*80*	*80*	--	*80*	*80*	--

1. Endpoint OTP indicates arrival at endpoint station within tolerance of 10-30 minutes, depending on route length.
2. Stations OTP is within 15 minutes of schedule.
3. Source: Federal Railroad Administration Quarterly Reports on the Performance and Service Quality of Intercity Passenger Train Operations.

The Federal Railroad Administration (FRA) has established a target goal of 80 percent on time performance for these two passenger trains. During the twelve month period from September 2012 to September 2013 the Coast Starlight and Pacific Surfliner have had an endpoint OTP of 84.9% and 84.5% respectively (Amtrak 2013).

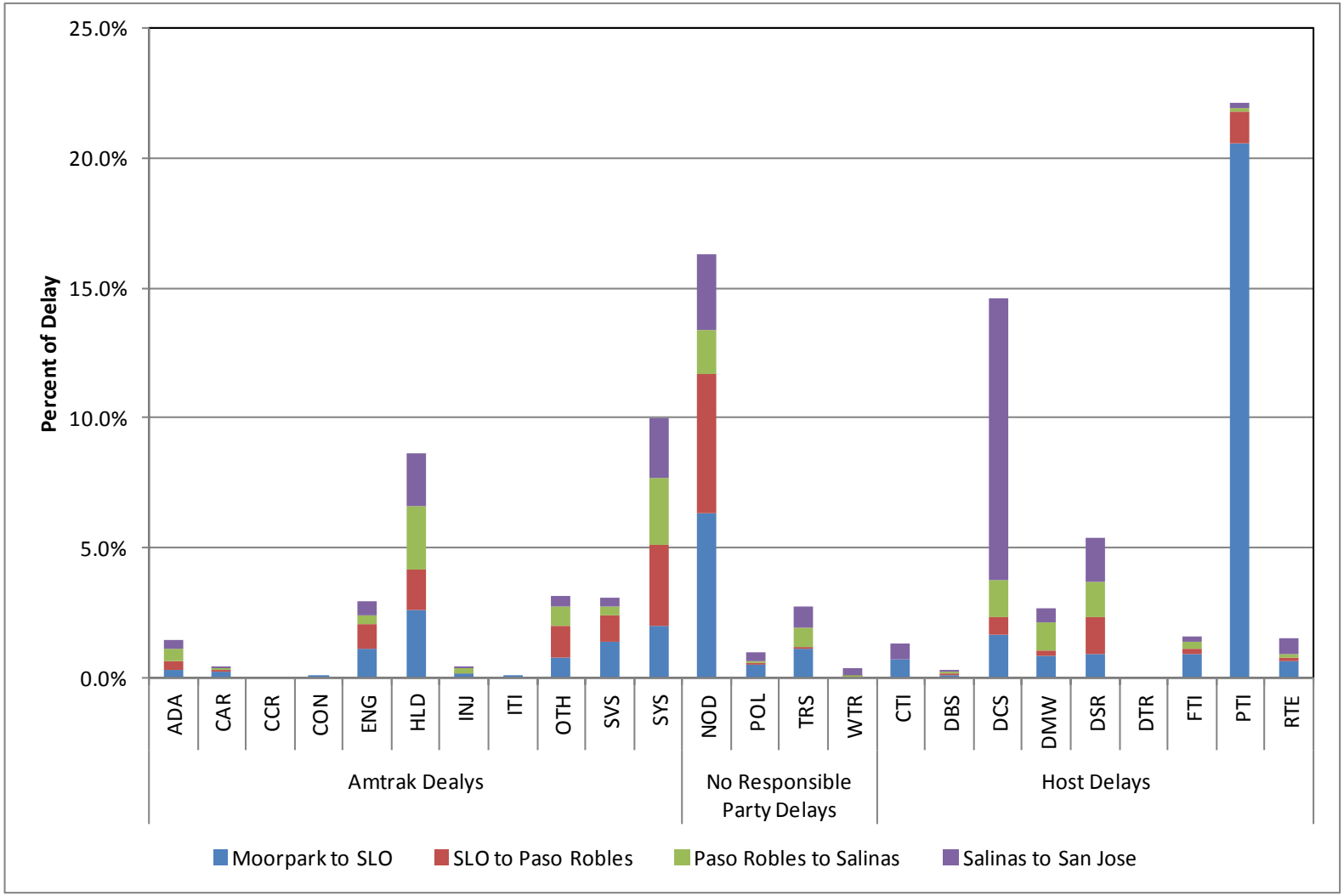
The on-time performance of passenger trains can be affected by many variables and are typically broken down by delays due to Amtrak, no responsible party, and the track host (the company that operates the track). Figures 4.12-5 and Figure 4.12-6 provide the minutes of delay by cause for the Pacific Surfliner and Coast Starlight respectively. The data in the figures covers the portions of the route between Moorpark, CA and San Jose, CA, and covers the period from January 1, 2012 through September 20, 2013. Table 4.12.6 provides the definitions for the codes used in the delay figures. Appendix F contains the detailed data that was used to generate these figures. The delay data was provided by Amtrak.

Figure 4-12-5 Pacific Surfliner Delays by Category between Moorpark and San Luis Obispo (percent of delay January 1, 2012 to September 20, 2013)



Source: Amtrak 2013. See Appendix F for the detailed delay data.

Figure 4.12-6 Coast Starlight Delays by Category between Moorpark and San Jose (percent of delay January 1, 2012 to September 20, 2013)



Source: Amtrak 2013. See Appendix F for the detailed delay data.

Table 4.12.6 Explanation for Amtrak Train Delay Codes

Code	Code Description	Explanation
Amtrak Responsible Delay Codes		
ADA	Passenger Related	All delays related to disabled passengers, wheel chair lifts, guide dogs, etc.
CAR	Car Failure	Mechanical failure on all types of cars
CON	Hold for Connection	Holding for connections from other trains or buses
ENG	Locomotive Failure	Mechanical failure on engines.
HLD	Passenger Related	All delays related to passengers, checked-baggage, large groups, etc.
INJ	Injury Delay	Delay due to injured passengers or employees.
ITI	Initial Terminal Delay	Delay at initial terminal due to late arriving inbound trains causing late release of equipment.
OTH	Miscellaneous Delays	Lost-on-run, heavy trains, unable to make normal speed, etc.
SVS	Servicing (SVS)	All switching and servicing delays
SYS	Crew & System	Delays related to crews including lateness, lone-engineer delays
No Responsible Party Delay Codes		
NOD	Unused Recovery Time	Waiting for scheduled departure time at a station
POL	Police-Related	Police/fire department holds on right-of-way or on-board trains
TRS	Trespassers	Trespasser incidents including road crossing accidents, trespasser / animal strikes, vehicle stuck on track ahead, bridge strikes
WTR	Weather-Related	All severe-weather delays, landslides or washouts, earthquake-related delays, heat or cold orders
Host Responsible Delay Codes		
CTI	Commuter Train Interfere	Delays for meeting or following commuter trains
DBS	Debris	Debris strikes
DCS	Signal Delays	Signal failure or other signal delays, wayside defect-detector false-alarms, defective road crossing protection, efficiency tests, drawbridge stuck open
DMW	Maintenance of Way	Maintenance of Way delays including holds for track repairs or MW foreman to clear
DSR	Slow Order Delays	Temporary slow orders, except heat or cold orders
DTR	Detour	Delays from detours
FTI	Freight Train Interference	Delays from freight trains
PTI	Passenger Train Interfere	Delays for meeting or following other passenger trains
RTE	Routing	Routing-dispatching delays including diversions, late track bulletins, etc.
SMW	Scheduled M/W work	Scheduled maintenance way work

Source: Amtrak 2013

The data shows that the host responsible delays were 61% and 49% for the Pacific Surfliner and Coast Starlight respectively, during the reporting period. Amtrak delays were 23% and 30% for the Pacific Surfliner and Coast Starlight respectively. No responsible party delays were 16% and 20% percent for the Pacific Surfliner and Coast Starlight respectively.

The largest cause of delay for both the Pacific Surfliner and the Coast Starlight was related to passenger train interference (40% for the Pacific Surfliner and 22% for the Coast Starlight). Freight train interference represented about two percent for both the Pacific Surfliner and Coast Starlight.

Capital Corridor

The Capitol Corridor extends 169 rail miles from Auburn to San Jose. The majority of the route is owned by UPRR, except for three miles between Santa Clara and San Jose which is owned by the Peninsula Corridor Joint Powers Board (PCJPB), as shown in Figure 4.12-7.

Amtrak operates the Capitol Corridor under provisions of its contract with UPRR. The route of the Capital Corridor is shown in Figure 4.12-3. For crude oil unit trains traveling south to the SMR they could share some of the same track as the Capital Corridor between San Jose and Roseville. Portions of this route have multiple tracks to facilitate the movement of passenger trains and freight, so it is unknown if the crude oil train would share the same tracks for the entire route. In 2012 this route had combined freight and passenger traffic of somewhere between 51 and 75 trains per day (Caltrans 2013).

Figure 4.12-7 Map of Capital Corridor Route

The Capitol Corridor has 7 daily round trips between Oakland and San Jose, 15 weekday round trips between Sacramento and Oakland (eleven on weekends), with 1 daily round trip extending from Sacramento to Auburn.

The speed between Sacramento and Oakland averages 45 mph in the eastbound direction and 47 mph in the westbound direction. The speed between Oakland and San Jose averages 40 mph in the eastbound direction and 34 mph in the westbound direction. The speed between Auburn and Sacramento averages 33 mph in both directions. Travel Times Current Sacramento-Oakland travel times average 2 hours in the eastbound direction and 1 hour and 54 minutes in the westbound direction. Oakland-San Jose travel times average 1 hour and 4 minutes in the eastbound direction and 1 hour and 17 minutes in the westbound direction. Auburn-Sacramento averages 1 hour and 3 minutes in both directions (Caltrans 2013).

The on-time performance (OTP) of the Capital Corridor over the past few years is provided in Table 4.12.7. This table provides the percent of time the trains were on-time over the reporting period. The end point OTP measures how a train actually performs compared to the published

schedule at the last station on the run. The metric uses the actual departure time at the origin point of the train and the actual arrival time of the train at the last stop for the reporting period. Arrivals at the last station that occurs within 30 minutes or less from schedule is considered "on time" (Federal Railroad Administration 2013).

Table 4.12.7 On Time Performance (OTP) of Capital Corridor and San Joaquin (% of time)

Time Period	Capital Corridor			San Joaquin		
	All Station OTP	Endpoint OTP	Total Delay Minutes per 10,000 Train-Miles	All Station OTP	Endpoint OTP	Total Delay Minutes per 10,000 Train-Miles
April to June 2011	95.9	94.4	544	87.3	88.5	1,443
July to September 2011	96.1	94.2	608	86.4	88.0	1,484
October to December 2011	95.3	94.1	616	87.3	88.4	1,576
January to March 2012	95.7	93.8	620	89.2	89.1	1,534
April to June 2012	95.1	93.3	581	88.1	88.6	1,553
July to September 2012	95.2	94.2	567	86.2	86.5	1,540
October to December 2012	94.6	93.8	509	85.7	87.3	1,461
January to March 2013	95.8	94.6	481	83.4	81.2	1,859
April to June 2013	97.0	96.4	486	65.6	61.3	2,051
July to September 2013	96.5	95.3	481	78.5	80.8	1,536
October to December 2013	97.6	96.3	439	81.6	79.7	1,505
January to March 2014	95.1	94.9	681	80.1	80.9	2,205
Average (April 2011 to March 2014)	*95.8*	*94.6*	*551*	*83.3*	*83.4*	1,646
Target OTP Goal	*80*	*80*	--	*80*	*80*	--

1. Endpoint OTP indicates arrival at endpoint station within tolerance of 10-30 minutes, depending on route length.
2. Stations OTP is within 15 minutes of schedule.
3. Source: Federal Railroad Administration Quarterly Reports on the Performance and Service Quality of Intercity Passenger Train Operations.

All Stations OTP measures how a train actually performs compared to the published schedule at each station from the origin station to the final destination station. The metric uses the actual departure time at the origin point of a train and the actual arrival time at each passenger station, along the train route for all operations of a train during the reporting period.

Each measured departure or arrival at each station may be considered an “instance”; if a route offers one round trip per day, serving ten stations each way, then it would generate 20 “instances” per day (2 times 10), and 600 instances in a 30-day month (30 times 2 times 10). Each instance that occurs with 15 minutes’ or less deviation from schedule is considered "on time (Federal Railroad Administration 2013).

The Federal Railroad Administration (FRA) has established a target goal of 80 percent on time performance for passenger trains. Table 4.12.7 shows the Capital Corridor had an average

endpoint OTP of greater than 95% over the reporting period, which is well above the target goals.

San Joaquin

The San Joaquin route extends 364 route miles between Oakland and Bakersfield with 13 intermediate stops and 49 miles between Sacramento and Stockton with one intermediate stop in Lodi. Amtrak operates the *San Joaquin* under provisions of its contracts with the BNSF and UPRR. BNSF predominantly owns the right-of-way along this route (Port Chicago-Bakersfield); however, UPRR owns 39 miles at the north end of the route between Oakland and Port Chicago and 49 miles in the segment between Stockton and Sacramento. Figure 4.12-8 provides a map of the San Joaquin route.

Figure 4.12-8 Map of San Joaquin Route

Only the portion of the route between Martinez and Oakland, and Sacramento and Stockton which is on UPRR track, would potentially be shared with a crude oil unit train going to or from the SMR.

There are currently six daily round trip trains on the San Joaquin route. Four run between Oakland and Bakersfield and two run between Sacramento and Bakersfield. Between Sacramento and Bakersfield the overall average speed is 53.9 mph. The maximum track speed on the San Joaquin route is 79 mph.

The on-time performance (OTP) of the San Joaquin over the past few years is provided in Table 4.12.6. This table provides the percent of time the trains were on-time over the reporting period. The San Joaquin had an average endpoint OTP of greater than 83% over the reporting period, which is well above the target goals.

Metrolink

Metrolink, operated by the Southern California Regional Rail Authority (SCRRA), offers a large network of commuter rail services between Los Angeles, Orange, Riverside, San Bernardino, and Ventura Counties. Metrolink presently operates about 169 daily trains weekdays, serving 55 stations on seven different routes. Metrolink operates about 44 trains on Saturdays and 38 trains on Sunday. Between 2010 and 2013 Metrolink system has had an on-time performance of about 95% (Metrolink 2013).

Most weekday trains operate during peak commuting hours before 8:30 a.m. and after 3:30 p.m. Metrolink has 512 route miles in its regional rail system. The Metrolink system operates over rail rights-of-way owned by SCRRA member agencies, BNSF, UPRR and North County Transit District (NCTD). SCRRA dispatches and maintains in excess of 60 percent of the territory over which it operates. On a daily basis, SCRRA currently dispatches 169 Metrolink trains, 46 up to 36 Amtrak intercity trains between Moorpark and San Diego, and between 70 and 80 freight trains (Caltrans 2013).

Altamont Corridor Express (ACE)
ACE operates Monday through Friday over 86 miles of track owned by UPRR and Peninsula Corridor Joint Powers Board (PCJPB), providing four round trips between Stockton and San Jose during morning and evening peak periods. ACE serves a total of 10 stations along the route. Between January 2012 and January 2013 the ACE on-time performance was between 85% and 96% (San Joaquin Regional Rail Commission 2013).

4.12.2 Regulatory Setting

4.12.2.1 Federal

The federal government delegates the responsibilities of the maintenance and regulation of roadways to state and local governments.

The Federal Railroad Administration (FRA) is responsible for regulating the safety of the Nation's railroad system and development of inter-city passenger rail. The Federal Railroad Administration's mission is to enable the safe, reliable, and efficient movement of people and goods. The Rail Safety Improvement Act of 2008 (RISA) directed FRA to, among other things, promulgate new safety regulations. These new regulations govern different areas related to railroad safety, such as hours of service requirements for railroad workers, positive train control implementation, standards for track inspections, certification of locomotive conductors, and safety at highway-rail grade crossings.

The Passenger Rail Investment and Improvement Act of 2008 (PRIIA) reauthorized the National Railroad Passenger Corporation, better known as Amtrak, and strengthens the U.S. passenger rail network by tasking Amtrak, the U.S. Department of Transportation (US DOT), Federal Railroad Administration (FRA), states, and other stakeholders in improving service, operations, and facilities. PRIIA focuses on inter-city passenger rail, including Amtrak's long-distance routes and the Northeast Corridor (NEC), state-sponsored corridors throughout the Nation, and the development of high-speed rail corridors.

4.12.2.2 State

California Department of Transportation (Caltrans)
Caltrans maintains the state highway system, including U.S. Highway 101, State Route 166, and State Route 1, which provide access to collector, access, and local roads in the Rail Spur Project area. Caltrans generally regulates maximum load limits for trucks and safety requirements for oversized vehicles for operation on highways.

The Caltrans Division of Rail (DOR) manages and coordinates statewide inter-city passenger rail service known as "Amtrak California." Amtrak California is comprised of two rail routes, the Pacific Surfliner which operates between San Luis Obispo and San Diego, and the San Joaquin which operates Oakland/Sacramento and Bakersfield.

State Government Code 14036 requires Caltrans to produce a State Rail Plan every two years that includes a passenger and freight rail component. In 2013 Caltrans issued the 2013 California State Rail Plan (CSRP) to meet the requirements of this state code. In addition, the CSRP will make the State compliant with 49 United States Code Section 22102 concerning state rail plans and state rail administration. The CSRP establishes a statewide vision and objectives, sets priorities, and develops policies and implementation strategies to enhance passenger and freight rail service in the public interest. The CSRP was developed to assist in meeting the polices of the 2025 California Transportation Plan (CTP).

California Public Utilities Commission (CPUC)
CPUC is the State agency charged with ensuring the safety of freight railroads, inter-city and commuter railroads, and highway-railroad crossings in the State of California. CPUC performs these railroad safety responsibilities through the Railroad Operations and Safety Branch (ROSB) of the Safety & Enforcement Division.

ROSB's mission is to ensure that California communities and railroad employees are protected from unsafe practices on freight and passenger railroads by enforcing rail safety rules, regulations, and inspection efforts; and by carrying out proactive assessments of potential risks before they create dangerous conditions. ROSB personnel investigate rail accidents and safety related complaints, and recommend safety improvements to the Commission, railroads, and the federal government as appropriate.

The Public Utilities Code requires the CPUC to conduct focused inspections and regular inspections of all railroad and light rail transit operations in the State. The Public Utilities Code also requires the CPUC to conduct investigations of all rail accidents occurring within the State resulting in loss of life or injury to person or property. These investigations are conducted alongside the NTSB. The California Local Community Rail Security Act of 2006 requires every operator of rail facilities in the State to submit a risk assessment to the CPUC and the California Emergency Management Agency (CEMA) that identifies potential hazards and emergency response procedures. The Act also requires rail operators to develop and implement an infrastructure protection program, updated annually, to protect their rail facilities from acts of sabotage, terrorism, or other crimes (Caltrans 2013).

4.12.2.3 Local

San Luis Obispo Council of Governments (SLOCOG)
SLOCOG is a joint powers authority with a goal of facilitating cooperative regional and subregional planning, coordination, and technical assistance on issues of mutual concern. SLOCOG is the designated Regional Transportation Planning Agency and thereby responsible for all regional transportation planning and programming activities, including developing the Regional Transportation Plan. The Regional Transportation Plan guides transportation policy and is updated every 5 years. Starting with the 2014 Regional Transportation Plan (underway, expected completion late 2014), SLOCOG will be required to develop a sustainable communities strategy (SCS) that identifies land use patterns expected to reduce vehicle miles traveled (SLOCOG 2010).

The SLOCOG 2010 Regional Transportation Plan establishes the following goal for rail transportation. "Facilitate and support safe, commercially feasible, economically viable, and efficient movement of passengers and goods throughout the region, with minimal adverse impacts." The plan established a number of polices to meet this goal, which include the following.

- Rail 1: Increase the frequency, reliability, and convenience of inter-city passenger rail services and the amenities needed for comfortable and convenient travel.
- Rail 2: Support efforts to maintain or expand the level of railroad passenger service, the acquisition of rolling stock and the rehabilitation/upgrade of railways along the Coast Route between Los Angeles and San Jose.
- Rail 3: Construct rail transportation facilities to accommodate projected growth, including: additional rail layover facilities; industrial spurs where appropriate; and station improvements where needed.
- Rail 4: Continue to facilitate rail improvements with other transportation agencies in the Coast Rail Coordinating Council along the Coast Route Rail Line to ensure the continuation and improvement of passenger rail services.
- Rail 5: Identify, prioritize, and program major improvements as identified in the California's Passenger Rail System.
- Rail 6: Continue to support acquisition of sufficient equipment and construction of necessary improvements to offer services between San Francisco and Los Angeles along and through the coast route.
- Rail 7: Identify commuter rail services options including Paso Robles – SLO - Grover Beach – Santa Barbara County services.
- Rail 8: Minimize street, road and highway conflicts with railroad facilities by encouraging grade separated crossings, safety gates, and closing at-grade facilities where possible and discouraging intensification of vehicles at existing at-grade facilities
- Rail 9: Discourage the establishment of any additional at-grade rail crossings.
- Rail 10: Support capital improvement projects that improve safety for pedestrians and bicyclists at uncontrolled crossing points along the rail line including the construction of pedestrian and bicycle bridges in high conflict areas.
- Rail 11: Support additional federal and state funding for inter-city rail and capital operating costs, including trackage, other signal improvements and grade crossing improvements.
- Rail 12: Encourage no idling zones for locomotives near residential neighborhoods and facilitate a reduction of rail transportation conflicts with other land uses.

San Luis Obispo County General Plan

The recently approved Circulation Element, which is part of the Land Use Element, in the San Luis Obispo County General Plan includes the following goals and objectives:

- Provide for a land use pattern and rate of population growth that will not exceed the financial ability of the county and its residents to expand and maintain the circulation system.
- Plan transportation system improvements to provide for, but not exceed, the capacities that are needed to serve the travel demand generated by the year 2010 population, consistent with the land use patterns allowed by the Land Use Element and the cities' general plans, so that growth is not facilitated or induced in inappropriate amounts or locations.
- Integrate land use and transportation planning so that necessary transportation facilities and services can be provided to accommodate urban and rural development.
- Coordinate the transportation system between different modes of travel, sensitive to the needs and desires of citizens in a manner that will provide an optimum benefit for the investment of public funds.
- Recognize public transit and car pooling as very important components of the county's strategy to provide adequate circulation and to reduce dependency on the automobile.
- Develop and coordinate transportation programs that reinforce federal, state, regional and local agency goals.
- Design a transportation system that provides for safe travel within attainable, feasible economic and technical means.
- Design transportation facilities with the intent to preserve important natural resources and features, promote the esthetic quality of the region and minimize environmental changes.
- Develop and enhance a system of scenic roads and highways through areas of scenic beauty without imposing undue restrictions on private property, or unnecessarily restricting the placement of agricultural support facilities in agricultural and rural areas.
- Encourage policies for new development to finance adequate additional circulation and access as a result of increased traffic it will cause.
- Encourage new development to provide public transit access and pedestrian and bicycle pathways from residential areas to shopping areas, businesses and public facilities.

South County Coastal Area Plan

The 1989 South County Coastal Area Plan discusses potential improvements to the roadway system in the coastal area. Specific goals and objectives are not identified.

San Luis Obispo County Code

The San Luis Obispo County Code implements the General Plan and provides more specific criteria for development. Traffic regulations, including traffic control devices and turning movements, are articulated in the San Luis Obispo County Code, Title 15, Vehicles and Traffic (SLOC 2009c). Title 23, Coastal Zone Land Use Ordinance, provides standards for proposed developments and new land uses to include parking, street, and frontage requirements. Title 13, Roads and Bridges – Streets and Sidewalks, establishes a road improvement fee to pay for road facilities and improvements related to new development. The County can offer a reimbursement agreement to a developer who constructs a road facility or improvement that exceeds the impact mitigation needs of the new development (SLOC 2009d).

4.12.3 Significance Criteria

According to Appendix G of the State CEQA Guidelines, traffic impacts would be considered significant if they:

- Cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume-to-capacity ratio on roads, or congestion at intersections);
- Exceed, either individually or cumulatively, a level of service standard established by the County congestion management agency for designated roads or highways;
- Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that result in substantial safety risks;
- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment);
- Result in inadequate emergency access;
- Result in inadequate parking capacity;
- Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks); or,
- Decrease the performance of public rail transit facilities to less than an 80% on-time performance at the end station, which is the acceptable level of service established by the Federal Railroad Administration for Amtrak trains.

The County's General Plan and Coastal Zone Land Use Ordinance identify specific criteria for determining whether the potential traffic impacts of a project are significant. The criteria include LOS standards for intersections and roadways in the study area and parking requirements. As listed in Table 4.12-1, a total of six LOS designations, A through F, identify the point where volumes exceed the capacity of the roadway system. According to the county, the Rail Spur Project would result in a significant impact if it causes an intersection operating at satisfactory LOS C to operate at LOS D or worse, or contributes any traffic to a location already operating at LOS D, E, or F. Caltrans considers LOS C to be the worst acceptable LOS for a Caltrans roadway or intersection.

4.12.4 Project Impacts and Mitigation Measures

This section discussed the impacts and any mitigation measures associated with the Rail Spur Project related to vehicular and public rail transportation.

Impact #	Impact Description	Phase	Impact Classification
TR.1	Traffic associated with the construction phase of the Rail Spur Project could impact traffic on roadways in the Project vicinity due to construction traffic.	Construction	Class II

The project would generate construction traffic, with trucks transporting equipment and materials to and from the site and employees accessing the site. Trucks would access the site via Willow Road and the Highway 101/Willow Road interchange. Willow Road is designated as a truck route by the County of San Luis Obispo for the SMR.

Table 4.12.8 summarizes the levels of construction traffic expected as a part of the project. Detailed estimates are provided in Appendix A (pages A-20 and A-21). Because trucks typically accelerate, travel, and maneuver at lower rates of speed than passenger cars the number of trips has been expressed in terms of passenger car equivalents (PCEs). Each truck was assumed to be equal to 2.5 passenger cars, per Exhibit 11-10 of the 2010 Highway Capacity Manual. This adjustment reflects the increased size of trucks and the rolling terrain due to the 2 to 3 percent grade along Willow Road extending for more than ½ of a mile.

Table 4.12.8 Peak Day One-Way Vehicle Trips

Phase Name	Anticipated Schedule	Worker Trips	Truck Trips	Truck PCE Trips[3]	Total PCE Trips[3]
Demolition/Removal of Existing Track	July 2016	16	36	90	106
Turnout Track Replacement	July 2016	18	18	45	63
Grading	September-November 2016	40	66	165	205
Unloading Area and Pipeline Construction	December 2016 March 2017	320	110	275	595
Construction of Rail	Mid December 2016 Mid January 2017	24	218	545	569
Commissioning	April-May 2017	40	8	20	60
Mid December Peak		384	394	985	1,369

1. Peak vehicle trip estimates do not account for vehicle movements that are confined to the project site.
2. See Appendix A for details on Vehicle Trips.
3. PCE = Passenger Car Equivalent. Each truck calculated to be equivalent to 2.5 passenger cars per Exhibit 11-10 of the 2010 Highway Capacity Manual.

Source: Developed by MRS from Phillips 66 Land Use Application and Phillips 66 comments on Project Description.

The highest intensity of construction traffic would occur during the construction of the unloading area and pipelines which would generate up to 595 daily one-way passenger car equivalent trips. This overlaps with the portions of the grading, soil transport, and rail construction phases. The worst case of this overlap would be simultaneous grading with construction of the rail line, the pipeline, and the unloading area. These activities occurring simultaneously would result in up to 1,369 daily PCE trips.

State Route 1 and Willow Road near the SMR have a capacity of between 12,000 and 16,000 daily vehicles. Per Table 4.12.3, less than 50 percent of the capacity of both roads is currently utilized. The addition of 1,369 trips would not result in an unacceptable LOS given the excess capacity along these roads. This impact would be less than significant.

Truck trips associated with construction would be spread throughout the workday, while contractor trips may occur during the peak travel periods. Table 4.12.9 provides a worst-case estimate of peak hour trips generated during construction. These estimates reflect mid-December conditions while grading, rail construction, pipeline construction, and unloading area construction activities are underway.

Table 4.12.9 Peak Hour Construction Trips

Trip Type	AM Peak Hour		PM Peak Hour	
	In	Out	In	Out
Employee Trips	182	0	0	182
Truck Trips (PCE[3])	60	60	60	60
Total PCE Trips	242	60	60	242

1. Peak vehicle trip estimates do not account for vehicle movements that are confined to the project site.
2. Worst-case estimate assuming concurrent construction activities in Mid December. All employees assumed to arrive/depart during peak hours, and truck trips assumed to be evenly distributed over 8 hours, half in and half out. See Appendix A for details on Vehicle Trips.
3. PCE = Passenger Car Equivalent. Each truck calculated to be equivalent to 2.5 passenger cars per Exhibit 11-10 of the 2010 Highway Capacity Manual.

Source: Developed by MRS from Phillips 66 Land Use Application and Phillips 66 comments on Project Description.

The addition of peak hour construction trips would temporarily worsen traffic operations at a number of intersections between the SMR and Highway 101. Table 4.12.10 provides a summary of the intersection level of service along the truck route with and without the construction traffic. Construction traffic was assumed to access the site via Highway 101 and Willow Road, with half of the traffic to/from the north on Highway 101 and half to/from the south on Highway 101. This presents a worst case analysis since some employees would use other routes, spreading traffic.

Table 4.12.10 Existing Traffic for Project-Related Roadway Intersections

Intersection	Peak Hour	Existing		Existing Plus Project	
		Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
State Route 1/Willow Road [a]	AM	4.2(10.0)	A (A)	7.4(12.1)	A(B)
State Route 1/Willow Road[a]	PM	4.0(11.2)	A (B)	6.3(14.1)	A(B)
Willow Road/Pomeroy Road	AM	10.0	A	15.9	C
Willow Road/Pomeroy Road	PM	11.3	B	14.1	B
Willow Road/U.S. Highway 101 Southbound Ramp	AM	1.6(9.8)	A(A)	2.9(11.8)	A(B)
Willow Road/U.S. Highway 101 Southbound Ramp	PM	4.4(12.8)	A(B)	4.1(15.0)	A(B)

a. Side street stop controlled intersection delay reported as average delay with worst approach delay in parenthesis.

All of the study intersections operate acceptably at LOS C or better with the addition of construction traffic. At the side street stop controlled intersections the worst approach is LOS B or better with construction traffic. The eastbound 95th percentile queue at the Willow Road/Pomeroy Road intersection would exceed ten vehicles during the PM peak hour with the project. This is the queue that would not be exceeded 95 percent of the time. This is a potentially significant impact.

Mitigation Measures

TR-1 *Prior to issuance of grading permits, the Applicant shall develop a Construction Traffic Management Plan for review and approval by the County Public Works Department and CalTrans. The plans shall include at least the following items:*

a. A scheduling plan showing operational schedules to minimize traffic congestion during peak hours. The plan shall limit project related traffic to and from the refinery during the peak AM and PM hours. This plan shall note the schedule for completing various construction activities, and to the extent feasible avoid an overlap of the construction of the rail spur/unloading area and pipeline construction. The plan shall show the hours of operation to minimize traffic congestion during peak hours.

b. Willow Road shall be use for truck deliveries to and from the refinery.

c. Monitoring program for street surface conditions so that damage or debris resulting from construction of the Project can be identified and corrected by the Applicant.

d. A traffic control plan showing proposed temporary traffic control measures, if any.

e. A delivery schedule for construction materials, including an evaluation of the feasibility of transporting construction materials to the site by rail.

Residual Impacts

The preparation and implementation of an adequate construction traffic management plan would reduce impact TR.1 to *less than significant with mitigation (Class II).*

Impact #	Impact Description	Phase	Impact Classification
TR.2	Traffic associated with operation of the Rail Spur Project could impact traffic on roadways in the Project vicinity due to increased traffic.	Operations	Class III

Project operations would generate additional traffic due to the additional employees required to unload and manage the trains. Up to 12 additional employees would be needed to handle the unloading of a unit train at the SMR. It is also possible that the change in crude slate at the refinery would result in one additional sulfur truck trip per day.

The AADT for the project roads ranges from about 3,200 to 56,000 as shown in Table 4.12.3. The addition of 26 daily one-way trips associated with the 12 employees and sulfur truck would

not result in any of these roadways exceeding their capacity numbers, which are provided in Table 4.12.3. Therefore, operational traffic would be less than significant.

Mitigation Measures

No mitigation measures are required since the impact would be less than significant.

Residual Impacts

Operational traffic impacts would be considered *less than significant (Class III)*.

Impact #	Impact Description	Phase	Impact Classification
TR.3	Crude oil trains servicing the SMR could cause traffic delays in the vicinity of at-grade crossing.	Operations	Class III

The Rail Spur Project would involve up to five unit trains per week being delivered to the SMR via the Union Pacific Coast Line. Once a train arrives at the SMR it is expected to be onsite for about 12 hours. This means that the peak train travel associated with the Rail Spur Project would be one round trip per day. The unit trains that would be delivered to the SMR would be approximately 5,190 feet long and be comprised of 80 tanker cars, two buffer cars, and three locomotives (see Chapter 2, Project Description, for more information on the trains).

The amount of delay at any give intersection would be based upon the speed of the train. The estimated delay time at an intersection as a function of train speed is provide in Table 4.12.11.

Table 4.12.11 Intersection Delay Time as a Function of Train Speed

Train Speed (mph)	At Grade Crossing Time (mins)
10	6.5
15	4.3
20	3.2
25	2.6
30	2.2
35	1.8
40	1.6
45	1.4
50	1.3

1. Includes time for gate to close and open.
2. Based upon road width of 100 feet.

Depending upon the location of the at-grade crossing and the time the crude oil train made the crossing it could affect delay times at an intersection. The greatest chance for this would be if a train crossed the at-grade crossing during the AM or PM peak hours. Under normal operations, only one train would cross an at-grade crossing during the AM and PM peak hours, it would not affect the average delay time for the intersection over the peak three hour period. In addition, there is a 12 percent chance that a train would cross the intersection during the AM or PM peak

hours[3]. Therefore, the impacts of a crude oil train impacting traffic delays in the vicinity of an at-grade crossing would be less than significant.

Mitigation Measures

No mitigation measures are required since the impact would be less than significant.

Residual Impacts

Traffic impacts from delays for at-grade crossing would be considered *less than significant (Class III).*

Impact #	Impact Description	Phase	Impact Classification
TR.4	Increased rail traffic on Union Pacific main rail lines could impact the performance of the public rail transit facilities.	Operations	Class III

The Rail Spur Project would involve up to five unit trains per week being delivered to the SMR via the Union Pacific Coastal Line. Once a train arrives at the SMR it is expected to be onsite for about 12 hours. This means that the peak train travel associated with the Rail Spur Project would be one round trip per day. The unit trains that would be delivered to the SMR would be approximately 5,190 feet long and be comprised of 80 tanker cars, two buffer cars, and three locomotives (see Chapter 2, Project Description, for more information on the trains).

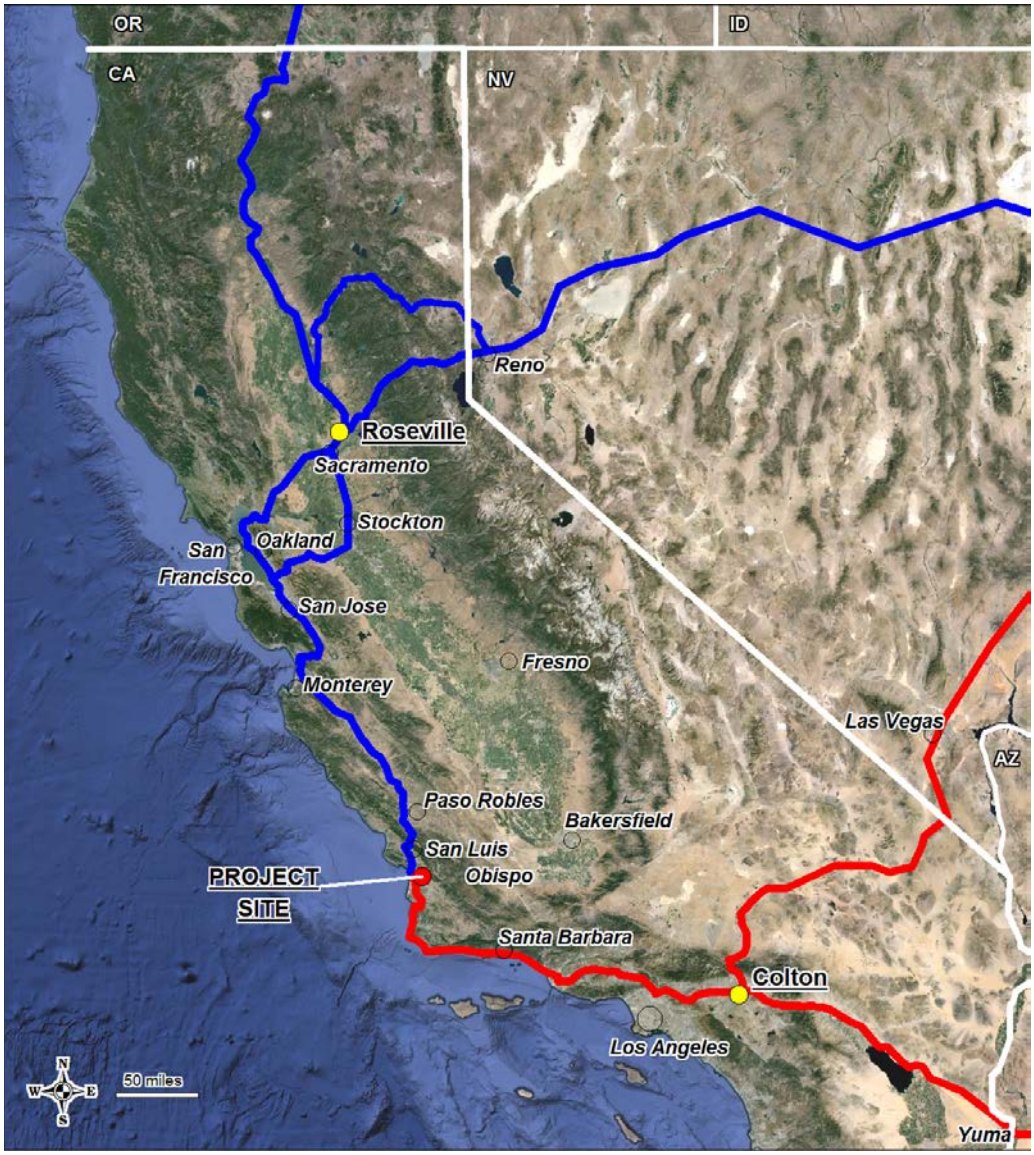
Trains would arrive from different oilfields and/or crude oil loading points depending on market availability. The exact location of the source of crude oil that would be delivered to the refinery is unknown and could change over time based upon market conditions and availability. Union Pacific Railroad (UPRR) would be responsible for delivering the trains to the SMR. Trains could enter California from least five different locations (one at the north end of the state from Oregon, two at the northeast from Nevada, one at the southeast from Nevada, and one at the south from Arizona) as shown in Figure 4.12.9. Depending upon the route taken by the train they could arrive at the Phillips 66 site from the north or the south. In is unknown what route UPRR would use to deliver the trains to the SMR. Coming from the north the routes merge at the UPRR Roseville Rail Yard. From the south the routes merge at the Colton Rail Yard. The EIR has evaluated the impacts of trains traveling from these two UPRR yards to the SMR in detail. Given that the route the trains would travel to get to these two UPRR yards is speculative, the impacts beyond these two rail yards to the California boarder are discussed qualitatively at the end of this impact discussion.

The analysis presented below is based upon all the train coming to the facility from either the north or the south to provide a worst case analysis for both directions. As discussed in the Project Description (Chapter 2.0) the types of crudes that would be delivered to the SMR are heavy sour crudes, which are typical of most of the Canadian crudes. Canadian crudes delivered to the SMR

[3] This is based upon 250 trains per year, 6 peak hours per day (three in the A.M. and three in P.M., and the time that a crude oil could cross an intersection is the same over a 24-hour period.

are more likely to come from the north than the south. However, since it is unknown what route would be taken by the trains servicing the SMR impacts to passenger trains have been addressed from both the north and south.

Figure 4.12-9 Mainline Rail Routes to the Santa Maria Refinery



Source: Adapted by MRS from UPRR maps.

It was not possible to conduct dynamic simulation modeling of rail traffic for the EIR since the data needed for this type of modeling would have to come from UPRR, and they consider this data proprietary. The EIR has used an approach to assess impacts to passenger trains performance based upon available on-time performance and delay data for the various passenger trains that could be affected by the proposed project. In addition, Caltrans has conducted dynamic simulation modeling along portions of the coastal route that provides some insight into

what could be the impacts of adding an additional one unit train per day to this portion of the mainline track.

Trains Traveling to the SMR from the North

Trains coming from the north to the SMR could travel a number of different routes. The two northern routes evaluated in detail in the EIR are shown in Figure 4.12-9. Use of these routes could impact on-time performance for a number of passenger trains including the Coast Starlight, Capital Corridor, San Joaquin, and ACE depending upon the route taken. Potential impacts to passenger train service along various segments of the route are discussed below.

Bay Area/Altamont Pass (San Jose to Roseville Rail Yard)

Once the crude oil train reaches tracks just south of San Jose there are multiple rail lines for both passenger and freight trains, and a large number of passenger, commuter and freight trains that use this corridor.

Therefore, it is unclear and speculative as to how much the crude oil unit train would overlap passenger trains north of San Jose and have a direct affect on their on-time performance. These tracks are handling between 26 and 75 trains per day (Caltrans 2013). All of these trains have the potential to affect on-time performance of passenger trains.

The Capital Corridor has an on time performance well above the targets established by Federal Railroad Administration (See Table 4.12.7). New trackage and signal improvement projects between Oakland and San Jose and the Yolo Causeway Second Main Track project have improved the Capitol Corridor's reliability and on-time performance (OTP) by facilitating both passenger and freight train movements, and by providing more passing opportunities. In addition, funding of a dedicated track maintenance crew and provision of incentive payments to the host railroad have resulted in a significant decrease in slow orders, further improving OTP. OTP on the route since 2008-09 has been over 90 percent, reaching 95.5 percent in 2010-11 (Caltrans 2013).

As the data in Table 4.12.7 shows, the San Joaquin operates for the most part at or above the on-time performance targets established by Federal Railroad Administration. The crude oil unit train could impact the San Joaquin between Oakland and Martinez, when they both are on UPRR tracks. This is a distance of about 36 miles, of which 30 miles have multiple tracks. There is also the possibility of the trains using the same track between Sacramento and Stockton if the trains traveling to the SMR use the Altamont Pass route. However, in this area UPRR has two tracks available one that is primarily used for freight and one used for passenger trains. Therefore, interference with passenger trains along this portion of the route should not be an issue.

Another factor that would limit the impact of the crude oil train on passenger OTP is that freight trains are usually not operated according to a particular schedule, and can be slotted-in between scheduled passenger trains where capacity exists so as to not impede passenger train movements (Caltrans 2013). In the Bay Area UPRR has demonstrated the ability to regularly meet passenger train schedules. The passenger trains dispatched by UPRR are on time over 90% of the time. One can assume that UPRR will have little difficulty scheduling one additional crude oil train, given their success with the on-time performance for the passenger trains that operate on their tracks.

Typically, UPRR currently avoids dispatching freight trains during the commute hours in order to ensure that freight trains do not delay passenger trains.

The addition of one crude oil unit train to a track system that is currently handling between 26 and 75 trains per day, and has OTP values that are above 90% would not likely result in a significant effect on passenger trains operating in the Bay Area north of San Jose.

If the crude oil unit train used the Altamont Pass route, it could impact the OTP of the ACE commuter train. The ACE has had an OTP of between 85% and 95%, which is well above the FRA target of 80%. In addition, the ACE runs a limited number of trains during commute hours only (morning and evening peak periods), which would limit the potential for overlap with the crude oil unit train. In addition, this track has limited traffic of up to about 10 passenger and freight trains per day (Caltrans 2013), of which four of these are associated with the ACE operations. Here again, UPRR has shown the ability to regularly meet passenger train schedules along this stretch of track. The passenger trains dispatched by UPRR on this stretch of track are on time over 90% of the time. Therefore, the addition of one crude oil train per day would not be expected to significantly affect the OTP of the ACE.

Coast Line

Coming from the north, the Rail Spur Project unit trains would travel south beginning on the Coast Line from San Jose to the SMR. Most of this line is a single track that is shared by freight and passenger trains. This track is used by the Coast Starlight, which is an Amtrak train. No other passenger trains use this stretch of track.

As the data in Table 4.12.5 shows the Coast Starlight has had an average endpoint on-time performance (OTP) over the past 32 months just at the target established by Federal Railroad Administration (FRA) of 80%. The average all station OTP over the same period has been below the target (61.2 vs. 80.0%).

Between the City of San Luis Obispo and Coyote, CA, which is located just south of San Jose, (after Coyote there are two main tracks) there are fourteen mainline sidings (not including the siding adjacent to the SMR). All but four of these sidings (Bradley@ 5,150 feet, McKay@5,000 feet, Templeton@4,700 feet, and Chorro@5,100 feet) would be able to accommodate the Rail Spur Project unit train (5,190 feet). The distance between useable sidings would be between about 6 and 37 miles, with the average being about 12.5 miles.

The data in Figure 4.12-5 shows that freight train interference (FTI) represented about 1% of the total delay minutes for the Coast Starlight for the section of the Coast Line between San Jose and San Luis Obispo. This is not surprising given the limited freight trains that use this section of track on a regular basis. This would represent about 0.1% of the total delay minutes associated with the entire Coast Starlight route between Los Angeles and Seattle based upon the delay minutes provided by the FRA in the quarterly Amtrak performance reports.

The other two host delays that could be attributable to freight trains are routing (RTE) and slow order delays (DSR). These two categories represent about 9% of the total delay minutes for the section of the Coast Line between San Jose and San Luis Obispo for Coast Starlight, or about 0.9% of the total delay minutes associated with the entire Coast Starlight route between Los

Angeles and Seattle based upon the delay minutes provided by the FRA in the quarterly Amtrak performance reports.

The majority of this section of the Coast Line has only one mainline track. If a freight train is longer than the mainline sidings, then the passenger train has to pull into the sidings to allow the freight trains to pass. This can lead to possible RTE delays. In some cases the sidings are too short for either the freight or passenger train, which can slow delay orders while trains wait for other traffic to pass on the mainline. This can lead to possible DSR delays.

UPRR has stated that the normal long-haul traffic on the coastal route is about two freight trains per day and that a number of local freight trains operate on various segment of the Coast Line between San Jose and Moorpark. A conservative assumption would be to assume that the addition of the crude oil unit train to this portion of the coast line would double the delay times associated with FTI, RTE, and DSR for the Coast Starlight on this section of the route. Based upon this assumption, the delay minutes would increase from about 1% to 2% for the entire Coast Starlight route between Los Angeles and Seattle based upon the delay minutes provided by the FRA in the quarterly Amtrak performance reports.

An analysis of the FRA quarterly Amtrak performance reports from April 2011 through March 2014 for the Coast Starlight shows that increasing delay minutes typically results in a decrease in the OTP at the train endpoint. While the data is not linear, in the vicinity of the average for the period stated above, an increase of 127 delay minutes per 10,000 train miles would decrease the OTP at the end station by about 1%. A 1% increase in delay minutes due to the crude oil trains would increase the average delay minutes per 10,000 train miles by about 40 minutes, which is small enough that it would not be expected to affect the end point OTP of the Coast Starlight.

These FRA quarterly reports also show that for the period between April 2011 and March 2014 that about 26% of the delay minutes were on UPRR track for the Coast Starlight. The remaining 74% occurred on BNSF and Southern California Regional Rail Authority (SCRRA) track (51% was on SCRRA track in Los Angeles, and 23% was on BNSF track between Portland and Seattle). As can be seen in Figure 4.12-4, 83% of the track miles for the Coast Starlight are on UPRR track, 4% are on SCRRA track, and 13% is on BNSF track. This data would tend to indicate that travel on the UPRR mainline track is not the major cause of delay for the Coast Starlight and would support the conclusion that the addition of a crude oil train traveling to the SMR from the north would not impact the end point OTP of the Coast Starlight.

Caltrans conducted dynamic simulation modeling of rail traffic along the coast line from San Jose to San Luis Obispo as part of the Service Development Plan prepared for the proposed Coast Daylight passenger train. As part of this analysis they included two round trips per day for passenger service (the current baseline is one round trip per day), four long-haul freight trains per day over the entire costal line (the current baseline is two per day), and about 30 local freight trains operating on various stretch of the coast line. The results of this modeling indicated that the addition of one passenger train round trip per day and two freight trains per day would not affect the OTP of the Coast Starlight (Caltrans 2013). The results of this study also support the conclusions presented above with regard to impacts of the crude oil train on the OTP of the Coast Starlight. Therefore, the addition of one crude oil train per day would not be expected to significantly affect the OTP of the Coast Starlight along this portion of the route.

The data for the Coast Starlight stops at the San Luis Obispo station. No OTP data is collected between the San Luis Obispo Station and the SMR, which is about 16 miles further south. Crude oil trains moving down the section of track between the southern edge of the City of San Luis Obispo, which has two tracks, and the SMR would not be expected to impact the OTP of the Coast Starlight. This stretch of track has two siding that are capable of holding the crude oil train. These include the main track siding at the SMR and the Grover Beach siding. Both of these sidings have manual switches (i.e., hand thrown). The short distance of overlap, and the fact that the unit train must pull into the mainline siding at the SMR in order to enter and exit the spur track, would help to limit any impact to the OTP of the Coast Starlight since UPRR would likely hold the crude oil trains if any passenger trains along this short stretch of track.

Crude Oil Trains Traveling to the SMR from the South

Trains coming from the south to the SMR would have to use the coastal route to Moorpark and then would use SCRRA track through Los Angeles. Use of this route could impact on-time performance for a number of passenger trains including the Coast Starlight, Pacific Surfliner, and Metrolink. Potential impacts to passenger train service along various segments of the route are discussed below.

Coast Line

Crude oil trains coming from the south could interfere with Coast Starlight and the Pacific Surfliner between the SMR and Moorpark. Most of this line is a single track that is shared by freight and passenger trains.

Between the SMR and Moorpark there are eighteen mainline sidings. All but six of these sidings (Guadalupe at 3,500 feet, Waldorf at 4,035 feet, Devon at 4,267 feet, Gaviota at 3,747 feet, Capitan at 4,964 feet, and Sea Cliff at 4,960 feet) would be able to accommodate the Rail Spur Project unit train (5,190 feet). The distance between useable sidings would be between about 3 and 30 miles, with the average being about 11.7 miles. The longest stretch without a siding is between Santa Barbara and Ventura. The Los Angeles-San Diego-San Luis Obispo (LOSSAN) 2010 strategic assessment did identify that this stretch of track is operating near its practical daily train capacity (20 trains vs. practical capacity of 25 trains) and noted that additional sidings were needed along this stretch of track (LOSSAN 2010).

The data in Figure 4.12-5 shows that freight train interference (FTI) represented about 2% of the total delay minutes for the Coast Starlight for the section of the Coast Line between the San Luis Obispo and Moorpark. This would represent about 0.2% of the total delay minutes associated with the entire Coast Starlight route between Los Angeles and Seattle based upon the delay minutes provided by the FRA in the quarterly Amtrak performance reports. The slight increase in FTI on this portion of the Coast Line is likely due to a higher number of local freight trains operations on the southern portions of this section of the Coast Line.

The other two host delays that could be attributable to freight trains are routing (RTE) and slow order delays (DSR). These two categories represent about 3% of the total delay minutes for the section of the Coast Line between Moorpark and San Luis Obispo for the Coast Starlight, or about 0.3% of the total delay minutes associated with the entire Coast Starlight route between Los Angeles and Seattle based upon the delay minutes provided by the FRA in the quarterly Amtrak performance reports.

The majority of this section of the Coast Line has only one mainline track. If a freight train is longer than the mainline sidings, then the passenger train has to pull into the sidings to allow the freight trains to pass. This can lead to possible RTE delays. In some cases the sidings are too short for either the freight or passenger train, which can slow delay orders while trains wait for other traffic to pass on the mainline. This can lead to possible DSR delays. Also, this section of the coastal route as some long stretches of single track with limited siding such as between Santa Barbara and Ventura.

UPRR has stated that the normal long-haul traffic on the coastal route is about two freight trains per day and that a number of local freight trains operate on various segment of the Coast Line between San Jose and Moorpark. A conservative assumption would be to assume that the addition of the crude oil unit train to this portion of the coast line would double the delay times associated with FTI, RTE, and DSR for the Coast Starlight on this section of the route. Based upon this assumption, the delay minutes would increase from about 0.5% to 1% for the entire Coast Starlight route between Los Angeles and Seattle based upon the delay minutes provided by the FRA in the quarterly Amtrak performance reports.

An analysis of the FRA quarterly Amtrak performance reports from April 2011 through March 2014 for the Coast Starlight shows that increasing delay minutes typically results in a decrease in the OTP at the train endpoint. While the data is not linear, in the vicinity of the average for the period stated above, an increase of 127 delay minutes per 10,000 train miles would decrease the OTP at the end station by about 1%. A 0.5% increase in delay minutes due to the crude oil trains would increase the average delay minutes per 10,000 train miles by about 20 minutes, which is small enough that it would not be expected to effect the end point OTP of the Coast Starlight.

These FRA quarterly reports also show that for the period between April 2011 and March 2014 that about 26% of the delay minutes for the Coast Starlight were on UPRR track. The remaining 74% occurred on BNSF and Southern California Regional Rail Authority (SCRRA) track. (51% was on SCRRA track in Los Angeles, and 23% was on BNSF track between Portland and Seattle). As can be seen in Figure 4.12-4, 83% of the track miles for the Coast Starlight are on UPRR track, 4% are on SCRRA track, and 13% is on BNSF track. This data would tend to indicate that travel on the UPRR mainline track is not the major cause of delay for the Coast Starlight and would support the conclusion that the addition of a crude oil train traveling to the SMR from the south would not impact the end point OTP of the Coast Starlight.

As the data in Table 4.12.5 shows the Pacific Surfliner has had an average OTP over the past 32 months above the OTP target established by FRA (80.1% vs. a target of 80.0%). The average all station OTP over this same period has been above target (85.8% vs. 80.0%).

For the Pacific Surfliner Figure 4.12-5 shows that freight train interference (FTI) represented about 3% of the total delay minutes for the section of the Coast Line between San Luis Obispo and Moorpark. This would represent about 0.2% of the total delay minutes associated with the entire Surfliner route between San Diego and San Luis Obispo based upon the delay minutes provided by the FRA in the quarterly Amtrak performance reports.

The other two host delays that could be attributable to freight trains are routing (RTE) and slow order delays (DSR). These two categories represent about 5% of the total delay minutes for the

section of the Coast Line between San Luis Obispo and Moorpark for the Pacific Surfliner, or about 0.3% of the total delay minutes associated with the entire Pacific Surfliner route between San Diego and San Luis Obispo based upon the delay minutes provided by the FRA in the quarterly Amtrak performance reports.

A conservative assumption would be to assume that the addition of the crude oil unit train to this portion of the coast line would double the delay times associated with FTI, RTE, and DSR for the Coast Starlight on this section of the route. Based upon this assumption, the delay minutes would increase from about 0.5% to 1% for the entire Coast Starlight route between San Diego and San Luis Obispo based upon the delay minutes provided by the FRA in the quarterly Amtrak performance reports.

An analysis of the FRA quarterly Amtrak performance reports from April 2011 through March 2014 for the Pacific Surfliner shows that increasing delay minutes typically results in a decrease in the OTP at the train endpoint. While the data is not linear, in the vicinity of the average for the period stated above, an increase of 102 delay minutes per 10,000 train miles would decrease the OTP at the end station by about 1%. A 0.5% increase in delay minutes due to the crude oil trains would increase the average delay minutes per 10,000 train miles by about 26 minutes, which is small enough that it would not be expected to affect the end point OTP of the Pacific Surfliner.

These FRA quarterly reports also show that for the period between April 2011 and March 2014 that about 20% of the delay minutes for the Pacific Surliner were on UPRR track. The remaining 80% occurred on BNSF, SCRRA, and San Diego Northern Railroad (SDNRR) track. (21% was on SCRRA track in Los Angeles, 29% was on BNSF track in Los Angeles/Orange Counties, and 30% was on SDNRR track in San Diego). As can be seen in Figure 4.12-4, 50% of the track miles for the Pacific Surfliner are on UPRR track, 27% are on SCRRA track, 6% is on BNSF track, and 17% is on SDNRR track. This data would tend to indicate that travel on the UPRR mainline track is not the major cause of delay for the Pacific Surfliner and would support the conclusion that the addition of a crude oil train traveling to the SMR from the south would not impact the end point OTP of the Pacific Surfliner.

SCRRA Lines

From Moorpark to the Colton Rail Yard the crude oil train would operate on mostly SCRRA track. Portions of the track between Moorpark to Van Nuys are a single track with four sidings. Past Van Nuys there are multiple rail lines so it is not clear how the additional crude oil train would affect passenger rail service. From the Van Nuys the multiple rail lines have a practical daily capacity of about 150 trains and they are carrying about 50 to 85 passenger and freight trains per day (LOSSAN 2010), which would indicate that there is available capacity of one additional crude oil train.

The stretch of track from Moorpark to Van Nuys is operating near its practical daily capacity (44 trains vs. practical capacity of 50). This is due to a single track segment between CP Raymer just north of Van Nuys Station and CP Bernson just south of Chatsworth. LOSSAN has noted that an additional track is needed along this stretch to assure adequate capacity in the future, which is estimated to be 54 passenger and freight trains per weekday by 2015 (LOSSAN 2010).

This section of track could be used by the SMR crude oil train and is also used by the Coast Starlight, Pacific Surfliner, and the Metrolink Ventura County line. The Metrolink system has had an on-time performance of about 95% between 2010 and 2013. For the period between November 2010 and November 2011 the Metrolink Ventura County line had OTP between 93% and 99% (Metrolink 2011). This would tend to indicate that at least in 2011 the capacity of the stretch of track between CP Raymer and CP Bernson was not impacting OTP for the Metrolink trains on the Ventura County line.

Another factor that would limit the impact of the crude oil train on passenger OTP is that freight trains are usually not operated according to a particular schedule, and can be slotted-in between scheduled passenger trains where capacity exists so as to not impede passenger train movements (Caltrans 2013). SCRRA has demonstrated the ability to regularly meet passenger train schedules for their Metrolink trains. The Metrolink trains dispatched by SCRRA are on time over 90% of the time. One can assume that SCRRA will have little difficulty scheduling one additional crude oil trains, given their success with the on-time performance for the Metrolink passenger trains that operate on their tacks such that it does not significantly affect the OTP of the passenger trains.

Passenger Train Impacts beyond Roseville and Colton Yards

Beyond the two UPRR Yards, trains could travel any number of routes (refer to Figure 2-8). Also, crude oil delivered to California by UPRR would generally pass through either of these two rail yards in route to the SMR. Depending upon the source of the crude oil, crude oil trains could use any portion of the UPRR network between Roseville/Colton and the source location for the crude oil. The exact route that would be taken would depend upon a number of factors, that could include the source of the crude oil, weather conditions, train traffic conditions, etc.

While the exact route the trains would take to get to these two rail yards is speculative, all of the routes within and outside of California could be on track that is shared with passenger trains. As shown in Figure 4.12-3, four of the rail routes in to California are used by interstate passage trains. These interstate passenger trains come from Chicago, New Orleans, and Seattle, and all make stops along the way in a number of states before they get to California. The passenger trains from Chicago and Seattle run one roundtrip per day. The passenger train from New Orleans runs three times per week.

These interstate passenger trains can experience delays anywhere along their route, and the majority of the routes from Chicago and New Orleans are outside of the state of California. Given the low frequency of the passenger and crude oil trains, it is unlikely that the crude oil train would increase the delay times for the passenger trains on a regular basis.

The crude oil train could share a large portion of the track with the Coast Starlight (Seattle to Los Angeles) since is train uses the UPRR Costal Line. Beyond Roseville the two trains would share the UPRR track to just south of Eugene Oregon. At that point the crude oil train would likely head east to allow it access to Midwest and Canadian border (See Figure 2-8). As discussed above, 74% of the delay for the Coast Starlight occurred on BNSF and Southern California Regional Rail Authority (SCRRA) track (51% was on SCRRA track in Los Angeles, and 23% was on BNSF track between Portland and Seattle). Delays along the portion of the route on UPRR track is small given the total miles on their track. Therefore, it would not be expected that

three crude oil trains per week would significantly impact the ongoing OTP along the stretch of track from Roseville to just south of Eugene Oregon.

Mitigation Measures

No mitigation measures are required since the impact would be less than significant. However, a mitigation measure is recommended that would further reduce potential impacts to passenger train on time performance.

TR-4 *The Applicant shall work with UPRR to schedule unit trains serving the Santa Maria Refinery so that they do not interfere with passenger trains traveling the Coast Rail Route.*

Residual Impacts

Impacts to the performance of public rail transit facilities would be considered *less than significant (Class III).*

The FRA has issued a notice of proposed rulemaking that if implemented could affect the allowable speeds for crude oil unit trains. The options they are looking at include: (1) a 40-mph maximum speed restriction in all areas; (2) a 40-mph speed restriction in high threat urban areas; and (3) a 40-mph speed restriction in areas with 100,000 plus population. These speed restrictions would only apply to unit trains that contain any tank car that would not meet the enhanced tank car specifications proposed by the rule. The Final DOT rule, which was issued in May 2015, limits High Hazardous Flammable Unit Trains to a maximum speed to a speed of 50-mph, and 40-mph in high-threat urban areas if the tank cars do not meet the tank car standards. The high-threat urban areas are Sacramento, the Bay Area, and the Los Angeles Basin. See Section 4.7.5, Hazards and Hazardous Materials Section, for more information on the final DOT rule and tank car designs.

Rail carriers have already agreed to adhere to a speed restriction of 40-mph for any Key Crude Oil Train with at least one 'DOT Specification 111' tank car loaded with crude oil or one non-DOT specification tank car loaded with crude oil while that train travels within the limits of any high-threat urban area as defined by 49 C.F.R. § 1580.3. The speed restriction took effect July 1, 2014. The Pipeline and Hazardous Material Safety Administration (PHMSA), which is part of the USDOT, currently limits the speed of crude oil unit trains to 50-mph (Caltrans 2013).

In the urban areas, freight trains typically do not exceed 40-mph, but speed can be higher in rural areas. The LOSSAN 2010 Strategic Plan used a freight train speed of 30-mph for determining practical daily track capacity of rail lines within the Los Angeles Basin. For the Pacific Surfliner the average speed is 40-mph in the northbound direction and 36-mph in the southbound direction between Los Angeles and Santa Barbara. Between Santa Barbara and San Luis Obispo the average speed is 44 mph in the northbound direction and 51 mph in the southbound direction. For the Capital Corridor the speed between Oakland and San Jose averages 40 mph in the eastbound direction and 34 mph in the westbound direction. The speed between Auburn and Sacramento averages 33 mph in both directions. (Caltrans 2013).

These suggested speed limits would only apply to crude oil unit trains that contain any tank car that would not meet the enhanced tank car specifications proposed by the rule. The rule proposes that all DOT 111 tank cars be phased out by October 1, 2017 for Packing Group I materials,

which is the Packing Group assumed for the Rail Spur Project crude oil. If this date is adopted in the final rule than for crude oil trains carrying Packing Group I material the speed restrictions would not apply and there would likely be no additional impacts on passenger train OTP.

4.12.5 Cumulative Analysis

Vehicle Traffic and Circulation

The proposed developments in the cumulative projects list (see Section 3.0, Cumulative Projects) would result in minimal impacts on the project area roadways associated with cumulative projects (see Table 4.12.4).

The Phillips 66 Co. Refinery Throughput Increase would add approximately 12 daily trucks to the roadway network. This is a nominal increase which would not affect roadway capacity. The Laursen Parcel Map would subdivide an existing parcel into four smaller parcels zoned for residential rural use. This would generate a nominal increase in traffic.

The Sheridan Properties development project would construct 21 industrial units on approximately 13 acres east of the SMR. Impacts of the development project would be a function of the type of industrial development proposed for the site. Traffic generated by the full build-out of the Sheridan project (150,000 ft^2) could generate 500-1,000 vehicles trips per day depending on the type of industrial development. This would increase traffic levels along Willow Road both east and west bound by about 15 to 20%. However, the levels of service are acceptable at the potentially impacted intersections (LOS A at Willow Road/State Route 1 and LOS A at Willow Road/Pomeroy Road) in regards to Rail Spur Project related traffic movements.

The SMR coke area remediation project would generate minimal traffic as the remediated materials would be transported by rail, thereby not impacting traffic on area roadways.

The Guadalupe Trucking would generate peak day traffic on Willow Road of 100 round trips per day with an annual average of 35 round trips per day. This is well within the traffic levels that can be handled by Willow Road as shown in Table 4.12.3.

There are a number of cumulative oil development projects in Northern Santa Barbara County (see Table 3.1, Cumulative Project List) that plan to move oil to the Phillips 66 SMPS and then via pipeline to the SMR. In the short-term, depending upon the volume of crude oil received by rail, some of this oil could be displaced and might have to be trucked to other refinery destinations. Any displaced crude oil would likely be sold to other refineries in the Los Angeles basin. The amount, location, and destination of any displaced oil would be driven by market forces. Given the dynamics of the crude oil market, it is speculative as to what if any local crude oil would be displaced, and what would happen to any oil if it were displaced.

It is possible that the OCS oil delivered to the SMR via the All American and Sisquoc Pipelines could be displaced. In this case the OCS oil would continue to use the All American Pipeline system to refinery markets in Los Angeles. If the OCS crude was displaced, than Phillips 66 could reverse the Sisquoc Pipeline allowing local producers to ship their crude oil via pipeline to Los Angeles. Such reversal of the pipeline flow direction would allow production from area

producers to be transported to refinery destinations via pipeline instead of by truck if the SMR is not available. If the Sisquoc Pipeline is not reversed, and the local Northern Santa Barbara County crude oil cannot be processed at the SMR, then as much as 23,000 barrels of crude might have to be trucked to refineries in the Los Angeles Basin.

This would equate to about 120 truck trips per day (round trips). These truck trips would be spread out over various roads within Santa Barbara County such as Foxen Canyon Road, Highway 135, and Highway 101. Most of the cumulative oil development projects have direct access to Highway 101 from Cat Canyon or Orcutt. The Rail Spur Project would not use any roads within Northern Santa Barbara County with the exception of Highway 101. Therefore, the only place that cumulative traffic impact could occur would be on Highway 101.

Highway 101 between Northern Santa Barbara County and Los Angeles has an annual average daily traffic (AADT) of between 21,200 and 296,000. The addition of 266 one-way trips to Highway 101 (240 from trucked oil and 26 from Rail Spur Project) would not add traffic that is substantial in relation to the existing traffic load, and would not be expected to affect the current level of service due to the small increase in traffic volumes.

Therefore, the addition of cumulative project-related traffic would not be expected to produce significant cumulative traffic impacts. The cumulative traffic impacts would be less than significant.

Rail Traffic

The cumulative project list (see Table 3.1 in Chapter 3) includes the Coast Daylight, which is a proposed passenger train from San Luis Obispo to San Francisco. This proposed passenger train service is included in the 2013 State Rail Plan and the SLOCOG 2010 Transportation Plan. The 2014 Fund Estimate, adopted by the California Transportation Commission for the State Budget, includes $21 million for operating cost from FY 2015/16 to 2018/19, and $25 million in State Bond funds are dedicated for the service.

The Coast Daylight service is a proposed new inter-city rail route to supplement the Coast Starlight, and fill a gap in rail services between the cities of San Francisco, San Jose, Salinas, San Luis Obispo, Santa Barbara, Ventura, and Los Angeles. The proposed Coast Daylight service would originate and terminate in San Francisco and would be scheduled to complement the Coast Starlight schedule with a reliable inter-city service to address the needs of communities between the San Francisco Bay Area and Los Angeles. The Coast Daylight would have more than twice as many stops between the Bay Area and Los Angeles as the Pacific Surfliner, which would provide better access for local markets (Caltrans 2013b).

There has been interest for many years in providing additional coast route service to better link California's two largest metropolitan areas. In 1992, Assembly Resolution (AR) 39 was passed requesting a *Coast Corridor* inter-city rail corridor upgrade study be conducted by the regional transportation planning agencies along the Corridor in cooperation with Caltrans. As a result, concerned local agencies formed the Coast Rail Coordinating Council (CRCC) that was staffed by the San Luis Obispo Council of Governments. This resulted in a Coast Rail Improvement Study. Then in 1996, the Coast Route Infrastructure Assessment Report was completed (Caltrans 2013b).

The initial proposal for the Coast Daylight service would be to provide one round-trip per day by extending the operation of one of the existing Pacific Surfliner trains from the current northern terminus at San Luis Obispo to San Francisco. As a result, no additional rail infrastructure improvements within the Surfliner North territory between San Luis Obispo and Los Angeles would be required (Caltrans 2013a).

Planning for the Coast Daylight has been ongoing for at least 15 years. In 1992, House Resolution 39 requested that regional transportation agencies conduct an inter-city rail corridor upgrade study on the Coast Corridor. As a result, the Coast Rail Coordinating Council (CRCC) was formed to include the counties of San Luis Obispo, Monterey, Santa Barbara, Kings, and Salinas, and Amtrak, including Caltrans as an ex officio member. In June 1999, the CRCC received a State Research and Planning grant to conduct a Coast Daylight Implementation Plan. In 2000, the CCRC issued a Coast Daylight Implementation Plan that envisions daily service from San Francisco to Los Angeles.

Issues arising from interaction between passenger and freight trains are not unique, but have had greater impact in California than in many other states. According to the 2013 State Rail Plan, traffic characteristics affect the usable capacity of a particular rail line. These characteristics include, but are not limited to, the total traffic, the train mix using the line, and peaking characteristics. The importance of each of these characteristics is as follows:

- Total Traffic. For a given number of tracks and signal control type, an increase in the number of trains on a shared-track corridor may constrain train scheduling, leading to increased train delays. Total daily trains are used as a measure of the total traffic.
- Train Mix. Compared to passenger trains, freight trains are typically much longer, accelerate and decelerate more slowly, and run at lower top speeds. Trains of greatly varying speeds and performance characteristics complicate train dispatching, resulting in passenger trains being sidelined or forced to reduce speeds in order to meet or pass a freight train. Passenger train throughput on shared tracks tends to be lower than on passenger-only corridors. Freight trains as a percentage of total daily trains are used as a train mix indicator.
- Peaking Characteristics. Train scheduling is very difficult during time periods when freight and passenger train volumes are at their maximum. Commuter trains generally operate more frequently during morning and evening commute times. Freight and inter-city passenger rail operations tend to be spread more evenly throughout the day. Peak-period commuter trains have great potential to create rail system congestion under shared-track usage. Therefore, the ratio of peak-hour commuter trains to total daily trains is used to indicate rail traffic peaking (Caltrans 2013b).

Therefore, to understand the impacts of adding new passenger train service to an existing rail line it is important to conduct modeling simulations. There have been three Rail Traffic Controller© (RTC) simulation studies performed to evaluate the capital improvements needed on the UPRR right-of-way to mitigate the capacity impacts of the Coast Daylight service.

The first was performed in 2004 by Washington Group International under the auspices of the Northern California Rail Advisory Planning Group. The second was a UPRR study that was conducted in 2010. UPRR undertook this study when CRCC approached UPRR regarding the

costs to operate/implement the Coast Daylight service. Only summary results of these to simulations are available since UPRR considers the simulation data and result to be proprietary (Transportation Analytic Specialists 2010).

The third is the Final Service Development Plan (SDP) for the Coast Corridor that was prepared by Caltrans and issued in May 2013. This Service Development Plan provides simulations of the capacity impacts of the Coast Daylight on the Coast Line. All of the results and modeling for this study are publicly available.

The three studies resulted in different conclusions, most notably pertaining to the capital improvements needed to accommodate the Coast Daylight service and maintain an acceptable level of performance along the Coast Line. Table 4.12.12 summarizes the results of these studies. All three of the simulation studies determined that some level of improvements to the Coast Line would be required to accommodate the Coast Daylight passenger service. However, the type and amount of improvements varies widely.

All three studies also assumed an increase in baseline freight train traffic ranging from two to six additional freight trains per day. In addition, the UPRR modeling added an additional six freight train trips per day to the Coast Line to accommodate those periods in which the Central Valley rail alignment is not available.

The Rail Spur Project is for a maximum of five trains per week, which could result in a peak of two trains per day using the Coast Line (a full train arriving at the SMR and an empty train leaving the SMR). This increase in train traffic is within the estimated freight train increases for all three of the modeling studies

The Rail Spur Project would not directly affect the level of improvements that would be needed to accommodate the Coast Daylight passenger train based upon the freight train increase assumptions used in all three of the modeling studies. Therefore, the contribution of the Rail Spur Project on cumulative passenger train performance would be less than significant, based upon all three of the modeling studies.

The issue for the Coast Daylight is what Coastal Line improvements are needed to begin the service. The two studies conducted by State and local agencies (2004 and 2013) determined that substantially fewer improvements would be needed than those UPRR projected in their 2010 study.

Both the Caltrans and the 2004 CRCC studies did not identify any improvements needed south of San Luis Obispo. This is not surprising since the initial plan for the Coast Daylight would be to extend one of the existing Pacific Surfliner trains to San Francisco. However, the UPRR study identified a number of substantial improvements that would be needed between Burbank Junction and San Luis Obispo. The proposed Coast Daylight service would not add any new train traffic between Los Angeles and San Luis Obispo.

Table 4.12.12 Summary of Coast Daylight Simulations

Variable	2013 Caltrans SDP[1] (prepared by AECOM)	2004 Coast Rail Coordinating Council[2] (prepared by Washington Group International)	2010 UPRR Study[3] (prepared by UPRR)
Rail Lines Covered	San Francisco to San Luis Obispo	• San Jose to Burbank Junction • San Jose to San Luis Obispo • San Luis Obispo to Burbank Junction	• Freight trains: Oakland and Niles Junction to Colton • Passenger trains: Sacramento/Stockton to Los Angeles
Performance Index	On Time Performance for Passenger Trains (OTP)	Delay Ratio	Delay minutes per 100 train-miles
Freight Trains	Estimated 2012 plus 2 growth	2004 traffic plus 4 growth	2007 traffic 2007 traffic plus 6 growth
Length of Growth of Trains	10,000 feet	4,000 – 5,100 feet	Reported to be 9,000 feet
Number of Passenger Trains	2012 plus Coast Daylight (one round trip per day)	2004 traffic plus Coast Daylight (one round trip per day)	2007 traffic plus Coast Daylight (one round trip day)
Identified Improvements	Implementation of Centralized Traffic Control (CTC) beginning at the Santa Margarita siding until the McKay siding.	Improvements between San Luis Obispo and San Jose: 1. 3 new sidings [Spence, Chalone, San Lucas] with spring switches, and Power switch north end Santa Margarita 2. Power switches Salinas and Castroville 3. Power switches instead of spring switches, at Spence, Chalone, and San Lucas No improvements identified between San Luis Obispo and Burbank Junction.	Improvements between Burbank Junction and San Luis Obispo: 1. New siding Ortega 2. Seacliff, Narlon, and Conception sidings lengthened to 10,000 feet. 3. 94.9 miles CTC 4. 22 power switches at the 11 current sidings. 5. 2nd Main track between Raymer and Chatsworth, on Metrolink Improvements between San Luis Obispo and Gonzales 1. King City and Bradley sidings lengthened to 10,000 feet. 2. 134 miles of CTC 3. 20 power switches at 3 double track turnouts and 8.5 current sidings In addition, UP has indicated the need for 375 miles of continuously welded rail (CWR). This improvement was not reflected in their simulations.
Study Sponsor	Caltrans	Northern California Rail Advisory Planning Group	Union Pacific Railroad

1. Summary data compiled from 2013 Caltrans Service Development Plan for the Coast Daylight for 2020 year case (Caltrans 2013a).
2. Summary data from Evaluation of Coast Daylight Service Simulations (Transportation Analytic Specialists and L.J. Patterson & Associates, Inc. 2010).
3. Summary data from UPRR Coast Daylight Service PowerPoint Presentation 2010.

In 2010 Caltrans commissioned an evaluation of the 2004 CRCC and 2010 UPRR simulation studies in an effort to determine the differences in the assumptions, methodology, and results of the studies. This analysis was conducted by Jack Fuller of Transportation Analytic Services, the same modeler that performed the 2004 CRCC study. This evaluation found that the variations in the model inputs and methodology used in the 2004 CRCC and 2010 UPRR reports make it difficult to find a basis for comparison. Part of the problem in conducting the evaluation was that UPRR did not furnish either the RTC case files or output reports for their 2010 study since they are considered proprietary.

One of the key differences is that the 2010 UPRR study extended beyond the corridor where the Coast Daylight would operate, incurring improvement costs not directly related to the increased passenger service. In addition, the 2010 UPRR study did not break out performance on portions of the network where the Coast Daylight trains would operate. The performance statistics include portions of the network on which the Coast Daylight does not operate, or operates on other railroads. Additionally, the large area of measurement analyzed in the 2010 UPRR study makes it impossible to assess the impact of one additional passenger train round trip proposed to operate between San Jose and San Luis Obispo (Transportation Analytic Specialists 2010).

There are significant differences in the level of improvements identified in the 2004 CRCC and 2010 UPRR studies; with substantially more being required by the 2010 UPRR study, particularly south of San Luis Obispo. The improvements required for each of these studies are detailed in Table 4.12.9.

The 2010 UPRR study also indicated that 229 miles of continuously welded rail (CWR) would be needed on the Coastal Line, but the effect of this improvement cannot be measured by RTC (Transportation Analytic Specialists 2011).

The 2010 UPRR study also included the largest increase in freight traffic on the Coastal Line (about 5 to 7 per day above the current baseline), but did not determine the improvements needed to handle this increase in freight traffic without the addition of the Coast Daylight. Instead they attributed all of the improvements needed to handle the increased freight and Coast Daylight to the Coast Daylight. This is reflected in the fact that about one-half of the improvements identified in the 2010 UPRR study are south of San Luis Obispo, where there would be no increase in passenger train service from the Coast Daylight.

This would indicate that the improvements were designed to improve freight traffic, not passenger traffic. The proposed UPRR improvements appear to be designed to reduce freight-on-freight interference that would be associated with adding five to seven additional freight trains per day over the current baseline. The multiple siding extensions appear to be needed to accommodate the UPRR operating plan for longer future freight trains (9,000 feet) that were not part of the 2004 model (Transportation Analytic Specialists 2011).

The 2013 State Rail Plan states, “UPRR has expressed conditional support for increased passenger rail activity on the Coast Line with the provision of supporting infrastructure improvements. While one additional daily train does not appear to warrant major improvement

projects, some infrastructure improvements may enhance the success of the Coast Daylight service by supporting faster, more reliable service" (Caltrans 2013b).

However, the UPRR and State/local agency simulation studies present very different estimates of the improvements needed to accommodate the start of the Coast Daylight passenger train service. Caltrans has stated that the next step is to discuss the operation modeling results with UPRR with the goal of agreement on the necessary capital improvements. Service initiation for the Coast Daylight is contingent upon an operating agreement with UPRR and securing necessary capital and operating funding. Amtrak is committed to provide equipment (locomotive, passenger cars) for the service (Caltrans 2013b). An amount of $25 million in State Proposition 1B funding is secured for Coast Line improvements if agreement can be reached with UPRR.

Based upon the three modeling studies done for the Coast Daylight, the addition of the crude oil train for the Rail Spur Project would not affect the level of improvements needed since it is within the estimated freight train levels used in all three of the modeling simulations.

The Service Development Plan for the Coast Daylight, prepared by Caltrans, showed that with an increase of two additional freight trains per day along with the Coast Daylight that OTP values would not be affected. This study best represents the cumulative analysis for this project since the crude oil unit train would add two additional freight trains per day. Based upon the Caltrans study the cumulative impacts associated with the Coast Daylight would be less than significant.

The Valero Benicia and Kinder Morgan crude by rail projects could use the same UPRR tracks as the Rail Spur Project from the Roseville Yard to the Bay Area if the trains servicing the SMR come from the north. These two projects could have up to three unit trains per day. Combined with the Rail Spur Project, freight traffic along the stretch of track could increase by four unit trains per day.

UPRR owns and maintains the mainline between the Roseville Yard and the Bay Area. UPRR operates freight trains on the line, and allows the Capitol Corridor passenger trains to operate on the line. This line currently has daily traffic of between 51 and 75 passenger and freight trains per day of which 11 to 25 are freight trains (Caltrans 2013b). The passenger trains are scheduled to the minute. UPRR dispatches the passenger trains so as to meet these precise schedules. Freight trains do not typically run on regular schedules. In its normal course of operation, however, UPRR dispatches freight trains so as to avoid congestion that results in delayed deliveries. With the existing traffic, the Capitol Corridor trains dispatched by UPRR are on time over 95% of the time over the past two years (see Table 4.12.7). Moreover, UPRR currently avoids dispatching freight trains during the commute hours in order to ensure that freight trains do not delay the Capitol Corridor passenger trains. With the cumulative crude by rail projects (see Table 3.1) an additional eight one-way crude trains per day would be added to the section of track between the northern Bay Area and Sacramento. An additional 16 one-way crude trains would be added to the mainline track from Sacramento to Roseville and along the mainline track from Roseville to Oregon or Nevada depending upon the route taken.

In addition, the 2013 State Rail Plan identified two areas along the Northern California rail system that could become bottlenecks and checkpoint during the next ten years that could handle

cumulative crude by rail traffic (Oakland to Martinez and BNSF mainline between Stockton and Bakersfield). No bottleneck issues were identified for the mainline tracks between Benicia and Roseville or areas to the west (CalTrans 2013). Two of the cumulative crude by rail projects would use the Oakland to Martinez section of track, which would add a maximum of four additional one-way trips per day.

The addition of these freight trains on this stretch of UPRR track would not be expected to substantially reduce the on time performance of the Capitol Corridor passenger trains given the process used by UPRR to dispatch trains along this corridor. Therefore, the cumulative impact due to crude oil trains on this stretch of UPRR tracks would be less than significant.

The Alon, Targa, and Plains unit trains would use BNSF rail for moving their crude, and therefore, would not be on the same track as the Rail Spur Project between Sacramento and Stockton. There are three rail lines between Sacramento and Stockton (two owned by UPRR and one by BNSF). The San Joaquin passenger train operates on one of the UPRR tracks and passenger trains operate on the other track. Therefore, the cumulative impact due to crude oil trains on this stretch of UPRR tracks would be less than significant.

4.12.6 Mitigation Monitoring Plan

Mitigation Measure	Plan Requirements and Timing	Compliance Verification		
		Method	Timing	Responsible Party
TR-1	Prior to issuance of grading permits, the Applicant shall develop a Construction Traffic Management Plan for review and approval by the County Public Works Department and CalTrans. The plans shall include at least the following items: a. A scheduling plan showing operational schedules to minimize traffic congestion during peak hours. The plan shall limit project related traffic to and from the refinery during the peak AM and PM hours. This plan shall note the schedule for completing various construction activities, and to the extent feasible avoid an overlap of the construction of the rail spur/unloading area and pipeline construction. The plan shall show the hours of operation to minimize traffic congestion during peak hours. b. Willow Road shall be use for truck deliveries to and from the refinery. c. Monitoring program for street surface conditions so that damage or debris resulting from construction of the Project can be identified and corrected by the Applicant. d. A traffic control plan showing proposed temporary traffic control measures, if any. e. A delivery schedule for construction materials, including an evaluation of the feasibility of transporting construction materials to the site by rail.	Review of Construction Traffic Management Plan	Prior to Grading Permits	County Public Works County Building and Planning CalTrans
TR-4	The Applicant shall work with UPRR to schedule unit	Review of	During	County

Mitigation Measure	Plan Requirements and Timing	Compliance Verification		
		Method	Timing	Responsible Party
	trains serving the Santa Maria Refinery so that they do not interfere with passenger trains traveling the Coast Rail Route.	Unit Train departure times and Amtrak departure and delay times	Operations	Building and Planning

4.12.7 References

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4.13 Water Resources

This section addresses issues involving potential impacts to water resources resulting from the proposal to extend the existing rail spur and construct a railcar unloading facility, including an oil pipeline to be extended to the existing refinery. In addition, this section addresses potential water quality impacts resulting from rail transport of oil along the mainline rail routes. The environmental setting provides information on surface water and groundwater in the vicinity of the Project Site and along the proposed mainline routes. The impacts evaluation focuses on the potential effects of the Rail Spur Project, including cumulative impacts on water quality and groundwater supply in the Project Site vicinity, as well as water quality impacts along the proposed mainline routes. Potential mitigation measures have been identified for significant impacts.

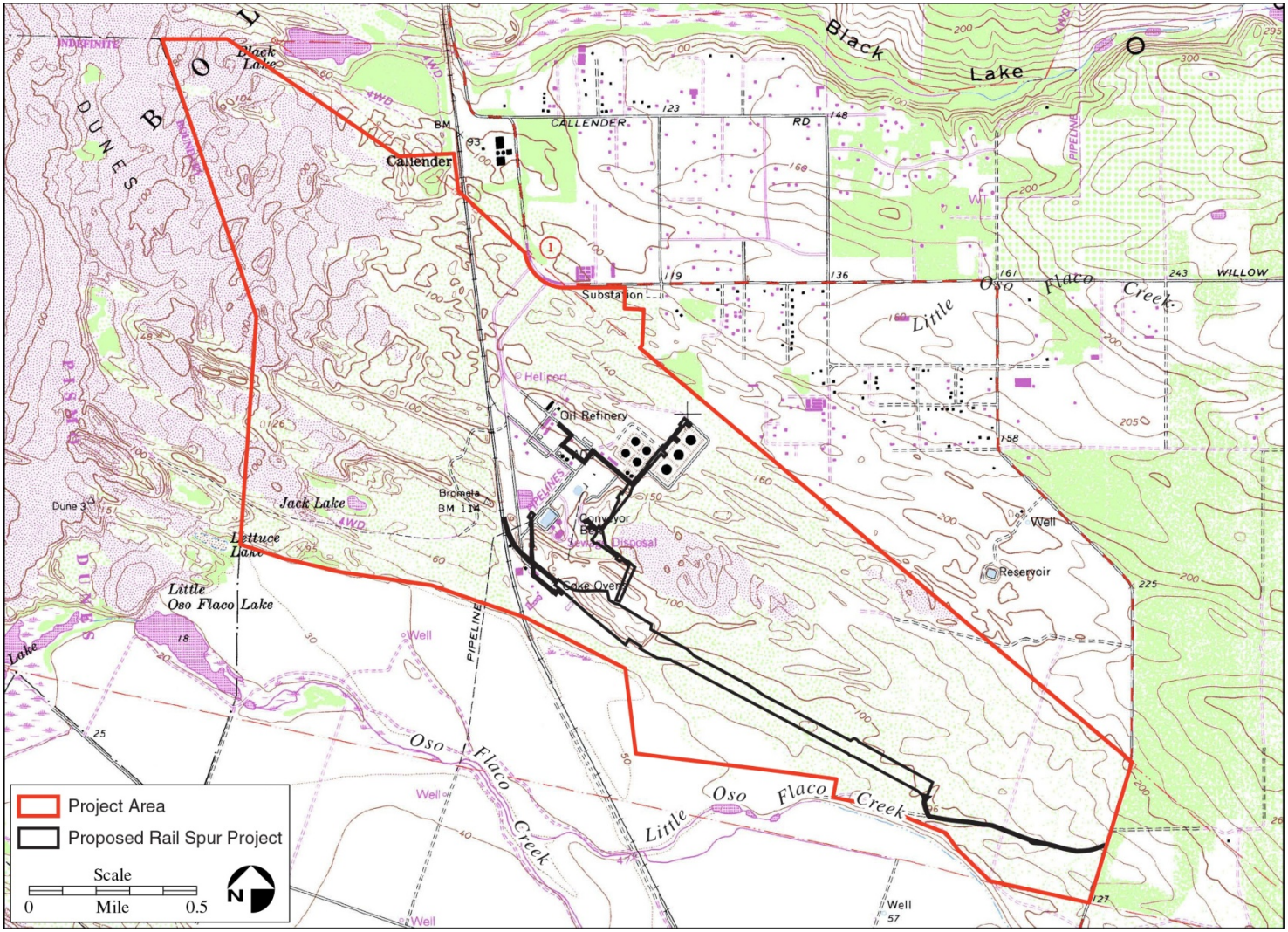
4.13.1 Environmental Setting

4.13.1.1 Topography and Drainage

The Project Site is located on undulating dune topography, with elevations ranging from approximately 50 to 180 feet above mean sea level (Figure 4.13-1). The topography of the proposed rail spur portion of the Project Site ranges in elevation from approximately 80 to 110 feet above sea level. The overall slope gradient is to the southwest, toward Little Oso Flaco Creek, located approximately 500 feet south of the southeastern end of the Rail Spur Project, at the closest point. Slope gradients within the Project Site are predominantly gentle, with localized steep slopes up to 30 feet high where the topography has been modified by grading. The proposed pipeline route traverses two such steep slopes, with intervening areas of gentle topography. The proposed railcar unloading area consists of a relatively flat graded area used by the existing coke facility. Large stockpiles of coke are present in the eastern portion of the coke facility.

The proposed rail spur roughly trends along a broad east-west trending ridge; however, the topography undulates along the alignment. Two broad, southwest-trending drainages emanate from the south side of the proposed rail spur. The western drainage terminates in a depression that has no hydrologic surface connection with Little Oso Flaco Creek. The eastern drainage terminates in a broad flat area, with no obvious hydrologic surface connection, such as gullies or other defined water courses, to Little Oso Flaco Creek. Several other internally draining basins are also present in the Rail Spur Project area, along the pipeline route and the rail spur alignment.

Figure 4.13-1 General Topography and Drainage of Project Area



The soils underlying the Project site are Oceano sands which are derived from old sand dune deposits. The soils are excessively drained, with a high capacity to transmit water (NRCS 2013). Due to the high infiltration rates, most of precipitation on the dune deposits percolates into the soil with minimal runoff, flooding, or ponding. The undulating dune topography has created the localized, internally draining basins, which limit the potential for runoff to flow from the Project Site to Little Oso Flaco Creek.

The Oceano sands are highly erodible. However, in an undisturbed state, most of the precipitation infiltrates with minimal runoff to cause soil erosion. No evidence of erosion, such as rilling or gullying, was noted during a site reconnaissance of the Project Site, including areas that had been previously disturbed and/or graded.

Little Oso Flaco Creek flows into Oso Flaco Creek (Figure 4.13-1), which terminates in Oso Flaco Lake, one quarter mile from the Pacific Ocean. Oso Flaco Creek and its tributary Little Oso Flaco Creek are mostly channelized and generally flow year-round, supported by irrigation tailwater runoff. Although the 100-year Flood Hazard Zone encompasses the southernmost portions of the Phillips 66 property, the Rail Spur Project, loading facility, and oil pipeline are located outside of the 100-year Flood Hazard Zone (Figure 4.13-2).

4.13.1.2 Surface Water Quality

Although located within the Santa Maria Valley, Oso Flaco Creek is not part of the Santa Maria River Watershed. The creek originates in agricultural fields north of the Santa Maria River Estuary. The Oso Flaco Creek Watershed encompasses approximately 10,370 acres. Land use within the watershed is primarily irrigated vegetable row crops. Oso Flaco Creek and its tributary Little Oso Flaco Creek are listed by the Environmental Protection Agency as 303D Impaired Water Bodies, based on high levels of fecal coliform, nitrates, and sediment toxicity from agriculture and contaminated groundwater. The downstream Oso Flaco Lake is the largest of four small freshwater lakes located in the Guadalupe Nipomo Dunes Complex. The freshwater lake occupies a surface area of 82 acres and is classified by the U.S. Fish and Wildlife Service as palustrine (i.e., inland, non-tidal) emergent wetlands, a valuable habitat for wildlife and subsequently a resource for many recreational and educational activities (EPA 2010; Boyle Engineering Corporation 2007).

4.13.1.3 Groundwater Supply

The Santa Maria Refinery extracts groundwater from the Nipomo Mesa Management Area (NMMA) of the Santa Maria Groundwater Basin (Figure 4.13-3). The source of groundwater for the SMR wells is the deep aquifer in the Paso Robles and Careaga formations underlying the Nipomo Mesa. The deep aquifer is also the main source of water for surrounding municipal and agricultural wells. The shallow aquifer in the Nipomo Mesa sand dunes is utilized by lower capacity domestic and agricultural wells. The shallow and deep aquifers underlying the refinery are separated by relatively low hydraulic conductivity layers that act as confining layers in the NMMA (NMMA TG 2013).

Figure 4.13-2 100-year Flood Hazard Zone for Oso Flaco Creek

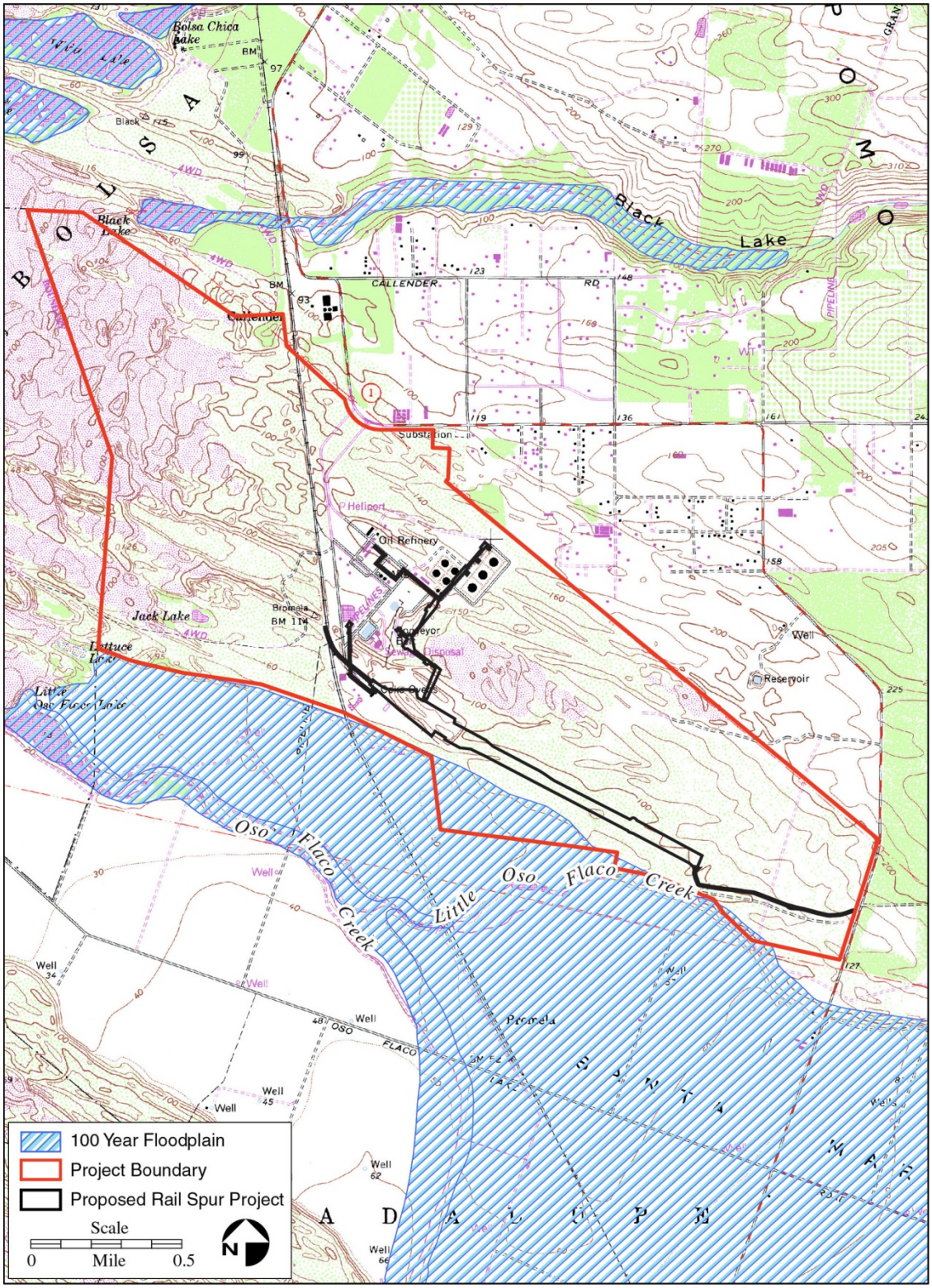
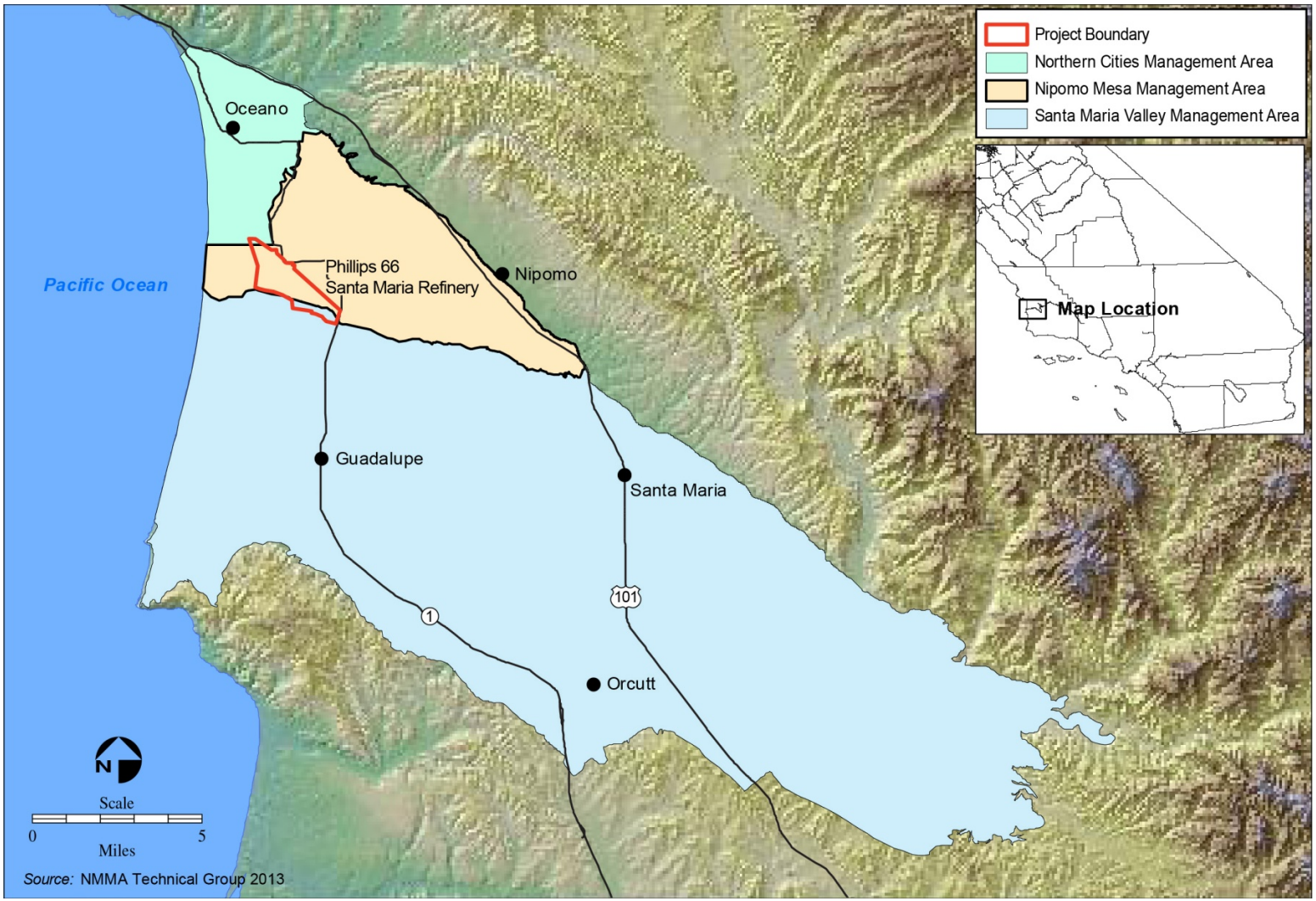


Figure 4.13-3 Santa Maria Groundwater Basin and Management Areas



The Santa Maria Refinery obtains all of its water from onsite groundwater wells. Water is primarily used for cooling, boiler feed for steam production, and process use such as coke drum cutting. The SMR currently uses less water than it has historically because of two changes:

- The installation of a reverse osmosis water treatment unit, which requires less water than the water softener unit it replaced; and
- The March 2007 shutdown of the Carbon Plant (i.e., the calciner) that used water for cooling coke from the calcine process and green coke screening.

Prior to the calciner shutdown, the facility used approximately 459 million gallons of groundwater per year (1,410 acre-feet per year [AFY]). Currently, usage is estimated to be 358 million gallons of groundwater per year (1,100 AFY). With approved increased throughput at the Santa Maria Refinery, water use is projected to increase to 362 million gallons of groundwater per year (1,110 AFY) (MRS 2012).

The Santa Maria Groundwater Basin has been the subject of extensive litigation due to depression in groundwater elevations within the Basin and on the Nipomo Mesa. The County's Water Resources Advisory Committee has determined that overdraft in the Nipomo Mesa either currently exists or is imminent. Based on the Judgment after Trial of the Santa Maria Groundwater Litigation, Phillips 66 has rights to the reasonable and beneficial use of groundwater without limitation, except in the event of a Severe Water Shortage Condition, in which case water rights would be limited to no more than 110 percent of the highest amount it previously used in a single year.

4.13.1.4 Groundwater Quality

One of the main threats to groundwater in the NMMA is the potential for seawater intrusion in the coastal portions of the aquifer. Evaluating seawater intrusion risk depends on knowledge of the groundwater levels, depth of the aquifers, structural geology/stratigraphy, and the location of the seawater-freshwater interface. The potential for seawater intrusion is minimized when there is sufficient subsurface groundwater flow toward the ocean, which can be monitored using groundwater elevations to determine the offshore gradient. If the onshore aquifers are pumped in excess of replenishment, the groundwater flow direction could reverse and seawater intrusion could eventually occur (NMMA TG 2013). However, a substantial lag time may be present between excessive pumping-induced groundwater gradient reversal and seawater intrusion into the freshwater aquifer.

A series of coastal sentry wells are monitored regularly for seawater intrusion and reported publicly. To date, there has been no increase in chloride concentrations (indicative of seawater intrusion) in the coastal sentry wells. The 2012 NMMA report concluded that there is no evidence of seawater intrusion in the NMMA portion of the Santa Maria Groundwater Basin (NMMA TG 2013).

Groundwater quality monitoring has identified localized areas of the NMMA with nitrate concentrations as high as 90 percent of the Maximum Contaminant Level and overall rising nitrate concentrations in groundwater. Nitrate contamination can occur beneath agricultural lands

as a result of leaching of fertilizer-rich soil into underlying groundwater. One of the Phillips 66 wells reported a high (1,000 mg/l) total dissolved solids (TDS) concentration, which exceeds secondary drinking water standards. However, the well is only used for industrial processing (Carollo 2012).

4.13.1.5 Mainline Rail Routes

Trains could enter California at least five different locations (one at the north end of the state from Oregon, two at the northeast from Nevada, one at the southeast from Nevada, and one at the south from Arizona). See Figure 2-8 for the location of the various UPRR rail routes to the SMR.

Depending upon the route taken by the train they could arrive at the SMR from the north or the south. It is unknown what route UPRR would use to deliver the trains to the SMR. Coming from the north the routes merge at the UPRR Roseville Rail Yard. From the south the routes merge at the Colton Rail Yard. Also, crude oil delivered to California by UPRR would generally pass through either of these two rail yards in route to the SMR. Depending upon the source of the crude oil, crude oil trains could use any portion of the UPRR network between Roseville/Colton and the source location for the crude oil. The exact route that would be taken would depend upon a number of factors, that could include the source of the crude oil, weather conditions, train traffic conditions, etc. Since the routes past Roseville and Colton to the California Border are somewhat speculative, the EIR has discussed in a more qualitative nature the potential water resource impacts of train traffic beyond these two rail yards.

As illustrated in Figures 4.13-4 through 4.13-9 and summarized in Tables 4.13-1 and 4.13-2, the northern and southern UPRR mainline track from the SMR to Roseville and Colton, respectively, would traverse numerous creeks, rivers, and sloughs. In addition, the routes are in proximity to numerous lakes and marine waters. The figures and summary tables do not include ephemeral creeks, of which there are many along the railroad routes. Designation of perennial creeks is based on the USGS National Hydrographic Dataset (USGS 2014). Designation of other water bodies is a compilation of data from the National Hydrographic Dataset and Google Maps (Google 2014). Beneficial uses of these water bodies are variable. For example, the eastern route from Fremont to Sacramento traverses two water supply aqueducts, the California Aqueduct and the Delta-Mendota Canal, as well as numerous creeks and rivers that are tributary to Sacramento-San Joaquin River Delta water supplies, which provide drinking water to much of California (Figure 4.13-5). Whereas, the western route from Fremont to Sacramento traverses and/or runs adjacent to biologically sensitive sloughs north of Suisun Bay and southeast San Francisco Bay. This route also runs immediately adjacent to marine resources of San Pablo Bay, Richmond Inner Harbor, and Oakland Inner Harbor. Similarly, the northern mainline route lies adjacent to sensitive biological resources of Elkhorn (and related) sloughs, located east of Monterey Bay (Figure 4.13-7); the Dune Lakes near the Santa Maria Refinery; and the Andree Clark Bird Refuge and Carpinteria Marsh in the Santa Barbara area (Figure 4.13-8).

Figure 4.13-4 Index Map of Figures 4.13-5 through 4.13-9

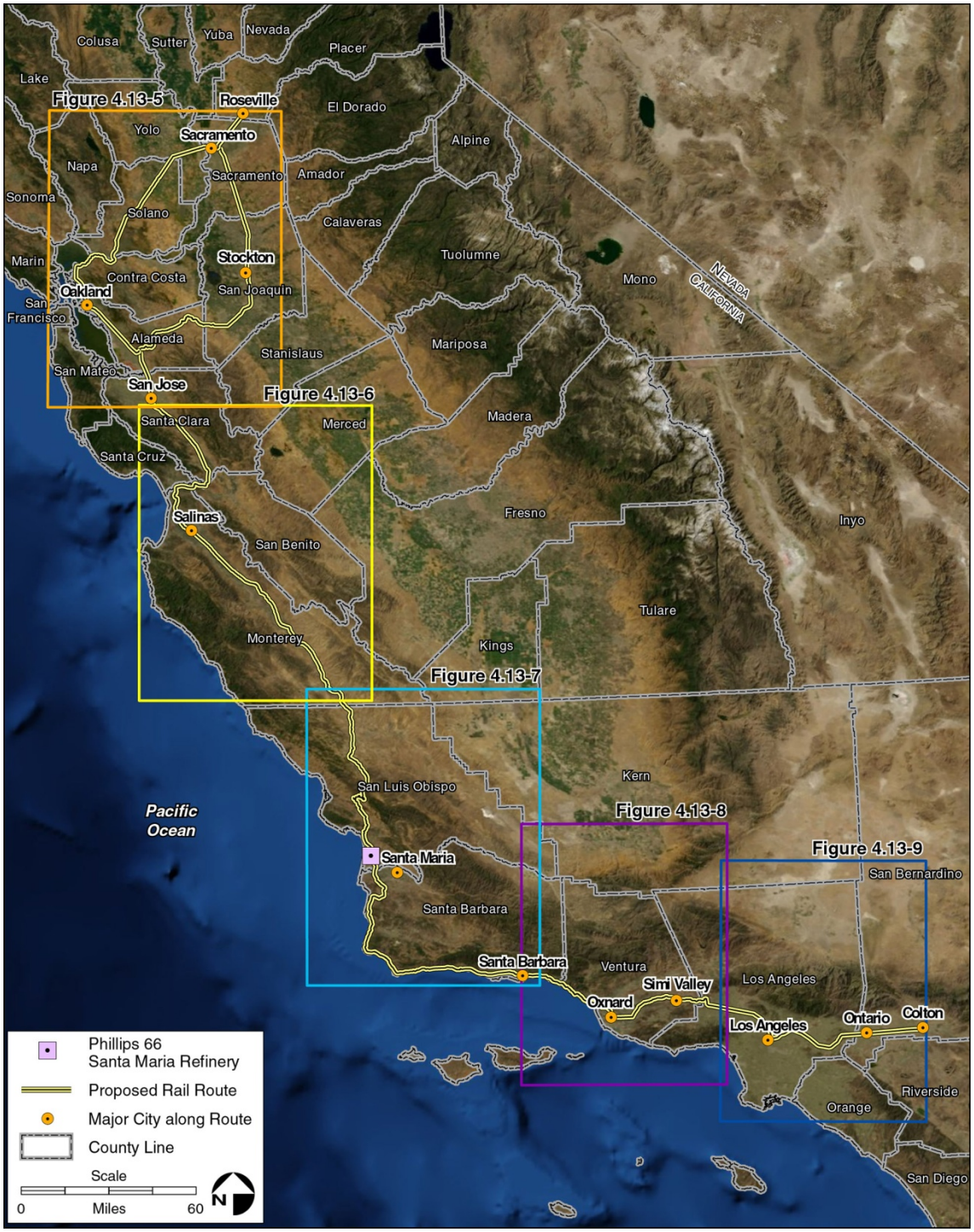


Figure 4.13-5 Mainline Route Water Bodies, Roseville to San Jose

Figure 4.13-6 Mainline Route Water Bodies, San Jose to South Monterey County

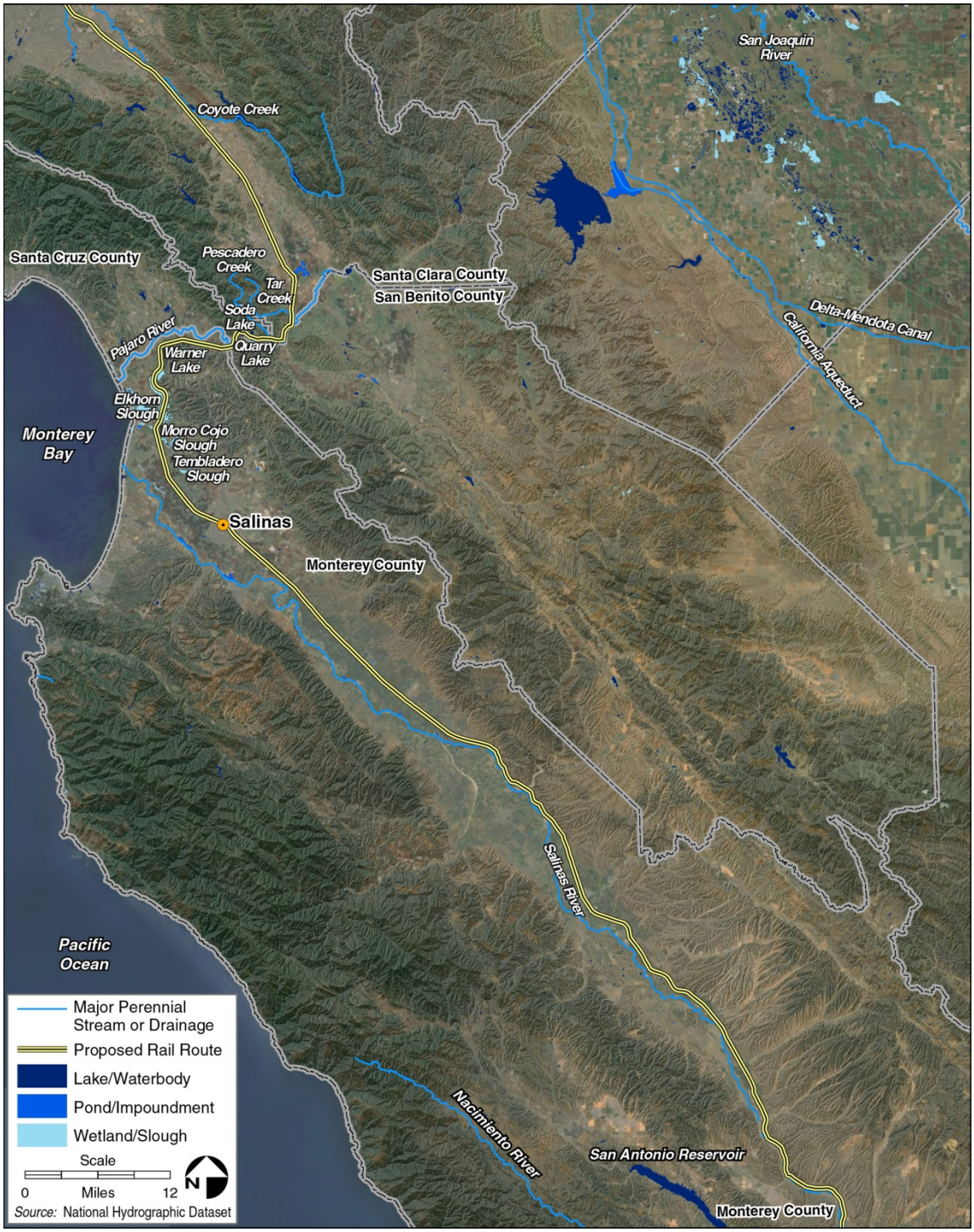


Figure 4.13-7 Mainline Route Water Bodies, South Monterey County to Santa Barbara

Figure 4.13-8 Mainline Route Water Bodies, Santa Barbara to San Fernando Valley

Figure 4.13-9 Mainline Route Water Bodies, San Fernando Valley to Colton

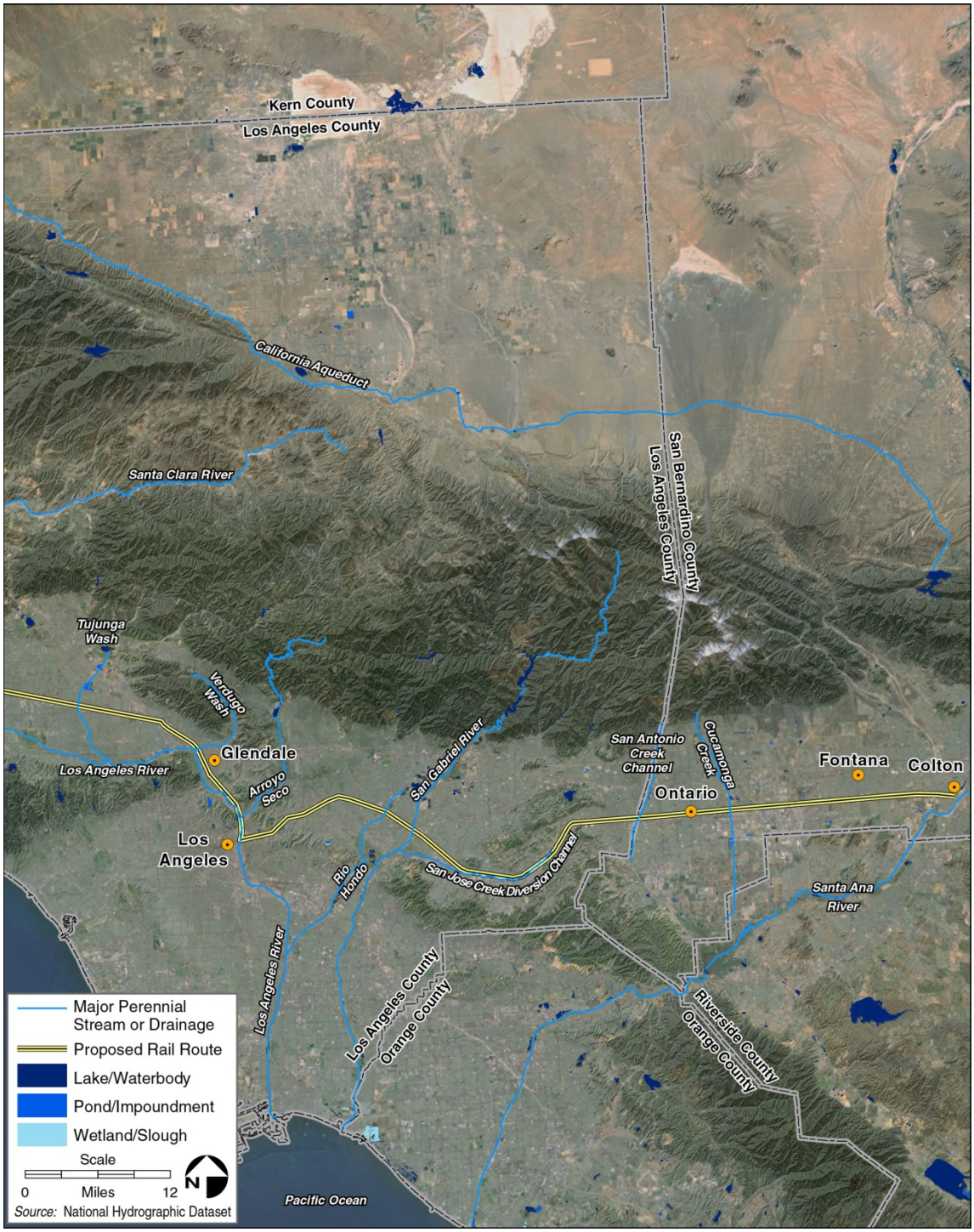


Table 4.13.1 Perennial Streams, Rivers, Lakes, Sloughs, and Major Drainage Features along Proposed Mainline Route from Santa Maria Refinery to Roseville

Location	Water Body	Closest Distance and Direction from Rail Route
Santa Maria Refinery North to Fremont		
North of Santa Maria Refinery	Dune Lakes: (Bolsa Chica, Pipeline, Oso Flaco, Jack, Big Twin, White, Hospital, Small Twin, Little Oso Flaco, Mud, Celery, and Black lakes)	400 feet west
Pismo Beach	Arroyo Grande Creek	Crosses route
Pismo Beach	Pacific Ocean	1,500 feet west
Pismo Beach	Meadow Creek	Crosses and runs parallel to route
Pismo Beach	Pismo Lake	50 feet east
North of Pismo Beach	Pismo Creek	Crosses and runs parallel to route
San Luis Obispo	San Luis Obispo Creek	Crosses route
North of San Luis Obispo	Stenner Creek	Crosses and runs parallel to route
Atascadero to south of Salinas	Salinas River	Crosses and runs parallel to route
North of Paso Robles	Nacimiento River	Crosses route
Salinas to Castroville	Tembladero Slough	Crosses and runs parallel to route
North of Castroville	Morro Cojo Slough	Crosses and runs parallel to route
Moss Landing	Elkhorn Slough	Crosses and runs parallel to route
South of Watsonville	Warner Lake	200 feet east
South and east of Watsonville	Pajaro River	Crosses and runs parallel to route
East of Watsonville	Quarry Lake	100 feet southwest
East of Watsonville	Soda Lake	600 feet northeast
East of Watsonville	Pescadero Creek	Crosses route
South of Gilroy	Tar Creek	Crosses route
San Jose	Guadalupe River	Crosses route
San Jose area	Coyote Creek	Crosses and runs parallel to route
South end of San Francisco Bay	Guadalupe, Mud, and Alviso sloughs	700 feet southwest
Fremont	Lake Elizabeth	100 feet west
West Route – Fremont North to Sacramento		
Fremont	Alameda Creek	Crosses and runs parallel to route
Fremont	Quarry Lakes	100 feet southwest
Hayward	San Lorenzo Creek	Crosses route
San Leandro	San Leandro Creek	Crosses route
Oakland	Oakland Inner Harbor	300 feet southwest
Berkeley	San Francisco Bay	100 feet southwest
Richmond	Richmond Inner Harbor	200 feet west
Richmond	Wildcat Creek	Crosses route
Richmond	San Pablo Creek	Crosses route
North Richmond area	San Pablo Bay	Less than 50 feet north and northwest
North Richmond area	Pinole Creek	Crosses route
Valona to Benicia	Carquinez Strait	Crosses and runs parallel to route
Benicia to Fairfield	Suisun Bay	1,500 feet southeast
Benicia to Fairfield	Cordelia Slough	Crosses and runs parallel to route
East of Vacaville	Alamo Creek	Crosses route
Northeast of Vacaville	Gibson Canyon Creek	Crosses route
Northeast of Vacaville	Sweany Creek	Crosses route
Davis	Putah Creek	Crosses route
West of Sacramento	Tule Canal	Crosses route

Table 4.13.1 Perennial Streams, Rivers, Lakes, Sloughs, and Major Drainage Features along Proposed Mainline Route from Santa Maria Refinery to Roseville

Location	Water Body	Closest Distance and Direction from Rail Route
Sacramento	Sacramento River	Crosses route
Between Davis and Sacramento	Yolo Bypass Wildlife Area	Crosses route
East Route – Fremont North to Sacramento		
East of Fremont	Alameda Creek	Crosses and runs parallel to route
Livermore	Lake Boris/Heron Pond	200 feet south
Southwest of Tracy	California Aqueduct	Crosses route
Southwest of Tracy	Delta-Mendota Canal	Crosses route
East of Tracy	Tom Paine Slough	Crosses and runs parallel to route
East of Tracy	Oakwood Lakes	300 feet southeast and northwest
East of Tracy	San Joaquin River	Crosses and runs parallel to route
South of Stockton	French Camp Slough	Crosses route
Stockton	Calaveras River	Crosses route
North Stockton	Bear Creek	Crosses route
North Lodi	Mokelumne River	Crosses route
South of Elk Grove	Cosumnes River	Crosses route
Southeastern Sacramento	Beacon Creek	Crosses route
Southeastern Sacramento	Morrison Creek	Crosses route
North Sacramento	American River	800 feet northeast
Sacramento North to Roseville		
North Sacramento	American River	Crosses route
North Sacramento	Arcade Creek	Crosses route
Roseville	Dry Creek	Crosses route

Table 4.13.2 Perennial Streams, Rivers, Lakes, Sloughs, and Major Drainage Features along Proposed Mainline Route from Santa Maria Refinery to Colton

Location	Water Body	Closest Distance and Direction from Rail Route
Santa Maria Refinery South to Los Angeles		
Guadalupe	Santa Maria River	Crosses route
North Vandenberg Air Force Base (AFB)	San Antonio Creek	Crosses route
Central Vandenberg AFB	Santa Ynez River	Crosses route
South Vandenberg AFB	Honda Creek	Crosses route
South Vandenberg Air Force Base	Pacific Ocean	200 feet west and southwest
South of Vandenberg AFB	Jalama Creek	Crosses route
Vandenberg AFB to Goleta	Pacific Ocean	100 feet south
Vandenberg AFB to Goleta	Arroyo El Bulito	Crosses route
Vandenberg AFB to Goleta	Tajiguas Creek	Crosses route
East Santa Barbara	Andree Clark Bird Refuge	100 feet south
East Santa Barbara	Pacific Ocean	50 feet south
Carpinteria	Carpinteria Marsh	50 feet south
Carpinteria	Pacific Ocean	200 feet south
Carpinteria to Ventura	Pacific Ocean	100 feet southwest
Ventura	Ventura River	Crosses route
Ventura/Oxnard boundary	Santa Clara River	Crosses route
East of Oxnard	Revolon Slough	Crosses route
Northeast of Camarillo	Calleguas Creek	Less than 50 feet southeast
Moorpark to Simi Valley	Arroyo Las Posas	Crosses and runs parallel to route
Simi Valley	Arroyo Simi	Crosses and runs parallel to route
Chatsworth	Browns Canyon Wash	Crosses and runs parallel to route
Northridge	Aliso Canyon Wash	Crosses Route
Van Nuys	Tujunga Wash	Crosses Route
Glendale	Verdugo Wash	Crosses Route
Glendale to east of downtown Los Angeles	Los Angeles River	Less than 50 feet west
North of downtown Los Angeles	Arroyo Seco	Crosses Route
Los Angeles East to Colton		
El Monte	Rio Hondo	Crosses Route
El Monte	San Gabriel River	Crosses Route
Rowland Heights to Diamond Bar	San Jose Creek Diversion Channel	Crosses and runs parallel to route
West Ontario	San Antonio Creek Channel	Crosses Route
East Ontario	Cucamonga Creek	Crosses Route

Beneficial uses of rivers, perennial creeks, and ephemeral creeks (not included in the tables or figures) traversed by the northern and southern mainline routes include municipal and domestic supply; estuarine habitat; wildlife habitat; preservation of biological habitats of special significance; rare, threatened, or endangered species; migration of aquatic organisms; spawning, reproduction, and/or early development; areas of special biological significance; agricultural supply; groundwater recharge, and recreation. Existing water quality is variable depending on the degree of urbanization and/or agricultural activity within each watershed.

4.13.2 Regulatory Setting

4.13.2.1 Federal Policies and Regulations

Federal Clean Water Act (33 U.S.C. ss/1251 et seq.)
The 1972 Federal Water Pollution Control Act and its 1977 amendments, collectively known as the Clean Water Act (Act), established national water-quality goals and the basic structure for regulating discharges of pollutants into the waters of the United States. The Act also created a National Pollutant Discharge Elimination System (NPDES) of permits that specified minimum standards for the quality of discharged waters. It required states to establish standards specific to water bodies and designated the types of pollutants to be regulated, including total suspended solids and oil. The Act authorized the U.S. Environmental Protection Agency (EPA) to issue the NPDES permits.

Federal Oil Pollution Act
The Oil Pollution Act of 1990 established a single uniform Federal system of liability and compensation for damages caused by oil spills in U.S. navigable waters. The Act requires removal of spilled oil and establishes a national system of planning for and responding to oil spill incidents. It includes provisions to:

- Improve oil-spill prevention, preparedness, and response capability;
- Establish limitations on liabilities for damages resulting from oil pollution;
- Provide funding for natural resource damage assessments;
- Implement a fund for the payment of compensation for such damages; and
- Establish an oil pollution research and development program.

In July of 2014, the USDOT issued an advanced notice of proposed rulemaking covering oil spill response plans for high-hazard flammable trains. The advanced notice of proposed rulemaking would set a lower threshold for when a comprehensive OSRP is required for crude oil trains. Some of the thresholds that are suggested in the notice are 1,000,000 gallons or more per train (approximately 35 car loads), 20 or more car loads, or 42,000 gallons per train. The notice also discusses the possibility of having the OSRP approved by the Federal Rail Road Administration (FRA), conducting training, drills, and equipment testing, and placing oil spill response equipment along rail road tracks.

This advanced notice of proposed rulemaking is currently out for a 90-day comment period. It is expected that the USDOT will eventually issue a notice of proposed rulemaking and adopt some final regulation regarding oil spill response plans for high-hazard flammable trains.

4.13.2.2 State Policies and Regulations

California Porter-Cologne Water Quality Control Act (CWC section 13000 et seq.; CCR Title 23, Chapter 3, Chapter 15)

Since 1973, the California State Water Resources Control Board (SWRCB) and its nine Regional Water Quality Control Boards (RWQCBs) have been delegated the responsibility for administering permitted discharge into the waters of California. The Porter-Cologne Water Quality Act provided a comprehensive water-quality management system for the protection of California waters and regulated the discharge of oil into navigable waters by imposing civil penalties and damages for negligent or intentional oil spills. Under the Act "any person discharging waste, or proposing to discharge waste, within any region that could affect the quality of the waters of the state" must file a report of the discharge with the appropriate Regional Water Quality Control Board. Pursuant to the Act, the regional board may then prescribe "waste discharge requirements" (WDRs) that add conditions related to control of the discharge. Porter-Cologne defines "waste" broadly, and the term has been applied to a diverse array of materials, including non-point source pollution. When regulating discharges that are included in the Federal Clean Water Act, the State essentially treats WDRs and NPDES as a single permitting vehicle. In April 1991, the SWRCB and other State environmental agencies were incorporated into the California Environmental Protection Agency.

This Act is the primary State regulation addressing water quality and waste discharges on land. Permitted discharges must be in compliance with the regional Basin Plan that was developed by the Central Coast Regional Water Quality Control Board for Region 3, which includes San Luis Obispo County and the Phillips 66 Rail project area. Each Regional Board implements the Basin Plan to ensure that projects consider regional beneficial uses, water quality objectives, and water quality problems.

The RWQCB regulates urban runoff discharges under the NPDES permit regulations. NPDES permitting requirements cover runoff discharged from point, e.g., industrial outfall discharges, and nonpoint, e.g., stormwater runoff, sources. The RWQCB implements the NPDES program by issuing construction and industrial discharge permits.

Best Management Practices (BMPs) are required as part of a Storm Water Pollution Prevention Plan (SWPPP). The EPA defines BMPs as "schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of Waters of the United States." BMPs include treatment requirements, operating procedures, and practices to control site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage" (40 CFR 122.2).

California Impaired Waterbodies

If a project has the potential to discharge directly into a water body listed as impaired due to sedimentation/siltation and/or turbidity, pursuant to Section 303(d) of the Clean Water Act, the

SWPPP must include a Sampling and Analysis Plan (SAP) for Sediment. The purpose of a SAP for Sediment is to determine if BMPs implemented on the construction site are effective for preventing sedimentation impacts. Direct discharge is defined as a point source or conveyance that discharges directly to 303(d) water bodies that does not first flow through a tributary river or stream (that itself is not listed as impaired) or combine with stormwater from offsite in a municipal separate storm sewer system (MS4).

Proposed California Toxics Rule

Water quality criteria for priority toxic pollutants for California inland surface waters, enclosed bays, and estuaries were adopted. These federally promulgated criteria, together with State-adopted designated uses, create water quality standards for California inland waters. This rule satisfies Clean Water Act requirements and fills the need for water quality standards for priority toxic pollutants to protect public health and the environment. The State Water Resources Control Board adopted the "Policy for implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California" in 2000.

Safe Drinking Water and Toxic Enforcement Act of 1986

The Safe Drinking Water and Toxic Enforcement Act provides two ways to administratively list chemicals known to the state to cause cancer or reproductive toxicity. A chemical can be listed if a body considered to be authoritative by the state's qualified experts, such as the EPA or Food and Drug Administration, formally identifies the chemical as causing cancer or reproductive toxicity. A chemical can also be listed if a state or federal agency has formally required labeling or identified that chemical as causing cancer or reproductive toxicity. The criteria for listing these chemicals are outlined in 22 CCR Section 12902.

Groundwater Management Act of 1992

The Groundwater Management Act, commonly referred to as Assembly Bill (AB) 3030, is designed to provide local public agencies with increased management authority over groundwater resources. Groundwater is a valuable natural resource within California and AB 3030 ensures safe production and quality by encouraging local agencies to work cooperatively to manage groundwater resources within their jurisdictions (Water Code Section 10750).

Senate Bill 610, Water Supply Assessment

Senate Bill (SB) 610 was passed on January 1, 2002, amending California law to require detailed analysis of water supply availability for large development projects. The primary purpose of SB 610 is to improve the linkage between water and land use planning by ensuring greater communication between water providers and local planning agencies, and ensuring that land use decisions for certain large development projects are fully informed as to whether sufficient water supplies are available to meet project demands. The lead agency for the project is required to identify the public water system that might supply water to the project and then to request a Water Supply Assessment from the water supplier. If there is no public water system and the project meets the definition of "project" as defined in SB 610, then the lead agency must prepare the assessment.

Senate Bill (SB) 861 Oil Spill Prevention and Response
In 2014, Governor Brown expanded California's oil spill prevention and response program to cover all statewide surface waters at risk of oil spills. This expansion provided funding for industry preparedness, spill response, and continued coordination with local, state and federal government along with industry and non-governmental organizations. Senate Bill 861 authorized the Office of Spill Prevention and Response (OSPR) with the statewide expansion and regulatory oversight. The key objectives are:

- Target critical locations to stage spill responders and equipment for the best response to rail and pipeline incidents;
- Develop effective regulations in close collaboration with local government, non-governmental organizations, and industry;
- Implement regulations that will guide industry, local and state government, and the public and build relationships with local governments through workshops and presentations;
- Create inland response plans that have the depth and breadth of the marine Area Contingency Plans; and,
- Work with communities to build a strong response spill team.

The changes would apply to railroads, pipelines, and oil well/production facilities. These facilities will be required to have oil spill contingency plans. The legislation also requires announced and unannounced drills to test response and cleanup operations, equipment, contingency plans, and procedures. All elements of the plan must be excised at least one very three years. Operators of covered facilities must be able to demonstrate financial resources to pay for spill response and damages based upon a reasonable worst case spill volume.

The regulation requires a six and one-half cent per barrel tax on crude oil and petroleum products received at refineries or marine terminals within California to cover the cost of the expanded oil spill response program. The current time line for adopting the final implementation regulations is fall of 2014 (OSPR 2014).

4.13.2.3 Local Policies and Regulations

San Luis Obispo County
The Stormwater Management Program (SWMP) was prepared by the County of San Luis Obispo to comply with mandatory requirements of the U.S. Environmental Protection Agency NPDES Phase II Final Rule and the State Water Resources Control Board Water Quality Order No. 2003-0005-DWQ, NPDES General Permit No. CA CAS000004, "Waste Discharge Requirements for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems" (MS4 General Permit). The NPDES Phase II Final Rule was adopted in December 1999 and requires operators of small municipal separate storm sewer systems (MS4s) located in designated urbanized areas and in areas meeting certain regulatory criteria to develop and implement SWMPs.

The San Luis Obispo County Water Resources Division is the County's management authority to ensure sustainable water uses, reliable water supplies, and better water quality. The Water

Resources Division has incorporated the Integrated Regional Water Management Plan, which promotes coordination with statewide water planning efforts.

4.13.3 Significance Criteria

The following significance criteria for Water Resources have been derived from the CEQA Guidelines (Appendix G, Environmental Checklist Form, Section IX), as well as the San Luis Obispo County Environmental Checklist. Impacts of the proposed Project would be considered significant and would require mitigation if the Project would:

- Violate any water quality standards or waste discharge requirements;
- Discharge into surface waters or otherwise alter surface water quality (e.g., turbidity, sediment, temperature, dissolved oxygen, etc.);
- Change the quality of groundwater (e.g., saltwater intrusion, nitrogen-loading, etc.);
- Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide additional sources of polluted runoff;
- Change rates of soil absorption, or amount or direction of surface runoff;
- Change the drainage patterns where substantial on- or off-site sedimentation/ erosion or flooding may occur;
- Involve activities within the 100-year flood zone;
- Change the quantity or movement of available surface or ground water;
- Adversely affect community water service provider; or,
- Expose people to a risk of loss, injury or death involving flooding (e.g., dam failure, etc.), or inundation by seiche, tsunami or mudflow.
- Impacts due to an accidental crude oil spill would be potentially significant if operations would increase the probability or volume of oil spills into the environment.

4.13.4 Project Impacts and Mitigation Measures

Impact #	Impact Description	Phase	Impact Classification
WR.1	Project grading and construction could degrade surface water and groundwater quality.	Construction	Class II

Project demolition, grading, and construction could result in incidental spills of petroleum products or other contaminants that could adversely affect water quality from demolition equipment, excavation and grading equipment, concrete washout, construction chemicals, cleaning solvents, pesticides, and construction debris. Any of these contaminants would potentially impair local surface water runoff.

Incidental spills within the construction area would generally be confined to the Project Site, as there are limited hydrologic connections between the Project Site and Little Oso Flaco Creek, located south of the Rail Spur Project Site. The undulating dune topography has created localized, internally draining basins. The proposed unloading facility would be located on top of a broad, flat graded area, formerly used for processing coke. Precipitation in this area is primarily transported southward as sheet flow to a steep south-facing slope with enclosed, internally draining topography at the base of slope. Oso Flaco Creek is approximately 3,000 feet southwest of the proposed unloading facility.

Little Oso Flaco Creek trends within 500 feet, at the closet point, to the southeastern end of the proposed rail spur. Two broad, southwest-trending drainages emanate from the south side of the proposed rail spur. The western drainage terminates in a depression that has no hydrologic surface connection with Little Oso Flaco Creek. The eastern drainage trends west, parallel to the creek, and terminates in a broad flat area, with no obvious hydrologic surface connection, such as incised gullies or other defined water courses, to Little Oso Flaco Creek. Surface flow appears to occur primarily as sheet flow. Several other internally draining basins are also present in the Project area, along the rail spur alignment and pipeline route, including a large enclosed drainage area located southeast of the SMR, adjacent to the proposed pipeline alignment.

In addition, onsite soils are excessively drained, with a high capacity to vertically transmit water. Due to the high infiltration rates, most of the precipitation on the dune deposits percolates into the soil with minimal runoff, flooding, or ponding, which limit the potential for runoff to flow from the Project Site to Little Oso Flaco Creek. As a result, impacts are considered potentially significant.

Mitigation Measures

In addition to the implementation of mitigation measure GR-2 (Storm Water Pollution Prevention Plan using Best Management Practices), the following measures would further reduce potential construction spill impacts.

WR-1 *During construction, oil and other chemical spills shall be contained and cleaned according to measures outlined in the California Stormwater Quality Association Best Management Practice Handbook. Best Management Practices would likely include, but not be limited, to the following:*

a. Ensure minor spill containment and clean up equipment is readily available in areas of demolition, construction, and operations.

b. Store petroleum products in covered areas with secondary containment dikes.

c. If vehicle maintenance and fueling occur onsite, use a designated area and/or secondary containment, located away from drainage courses, to prevent the run-on of storm water and the runoff of spills.

d. Regularly inspect onsite vehicles and equipment for leaks, and repair immediately.

e. Always use secondary containment, such as a drain pan or drop cloth, to catch spills or leaks when removing or changing fluids.

f. Use absorbent materials on small spills.

Residual Impacts

Implementing mitigation measures GR-2 and WR-1 would reduce construction impacts to surface and groundwater quality to *less than significant with mitigation (Class II).*

Impact #	Impact Description	Phase	Impact Classification
WR.2	A rupture or leak from the tanker rail cars, unloading facility, or oil pipeline during operation of the Rail Spur Project could substantially degrade surface water and groundwater quality.	Operations	Class II

Rail car unloading and conveyance of oil through a proposed aboveground pipeline could result in spills due to geologic hazards, mechanical failure, structural failure, corrosion, or human error. Such spills could potentially result in onsite surface water quality and/or shallow groundwater quality impacts. Small leaks or spills, which are contained and remediated quickly, may have minor or negligible impacts to water resources. In contrast, large spills such as from unloading facility equipment, rail cars, or the oil pipeline, could potentially spread to local drainages and/or groundwater and could degrade water quality, with potential long-term impacts to beneficial uses and biological resources. Although the potential for oil spills currently exists at the SMR, the Rail Spur Project increases the potential for leaks or spills, and associated water quality impacts, due to operation of the unloading facility and associated pipeline.

Given the low speed the trains would be moving at the site (3 mph) it is unlikely that a tank car could be impacted enough to result in a spill. The estimated shell and head puncture velocity of the tank car design proposed for use by the Applicant are 8.3 and 10.3 miles per hour respectively. This is discussed further in the Hazards Section (Section 4.7). In addition, most of the rail spur would be below the surrounding grade (see grading plans in Appendix A). This would help to contain any oil spilled within the rail spur graded area.

The most likely spill related event would be a release during the unloading process due to a loading line failure. The unloading racks are equipped with oil spill drain boxes which would feed below-grade 16-inch-diameter drain lines routed to three parallel 20,000 gallon rectangular storage tanks located in a vault for containment. The total capacity of the containment system would be about 273,000 gallons (this includes the drain boxes, curbed area, pipelines and storage tanks). The containment system has been designed to move any spilled oil away from the rail cars and into the 60,000 gallon storage tanks. The loss of a loading hose could result in a maximum spill of about 27,300 gallons of crude oil (the capacity of one rail car). This system would effectively control spills that would from the loading operations.

Downstream of the two unloading facility meter assemblies, a new 24-inch above ground pipeline would be routed along an existing internal dirt road on the Phillips 66 property between

the unloading facility and the refinery. This pipeline would connect with the existing refinery crude oil storage tanks. The route for this pipeline is shown in Project Description Figure 2-3, and is approximately 3,525 feet in length. This dirt road accommodates periodic on-site traffic only associated with refinery personnel traveling at low-speeds.

The proposed unloading facility would have a maximum crude oil pumping rate of 8,000 gpm. The unloading facility and 24-inch pipeline would be monitored using multiple Programmable Logic Controllers (PLCs) and controlled using the existing refinery Supervisory Control and Data Acquisition (SCADA) system. The SCADA would detect a catastrophic failure of the 24-inch pipeline within one minute, thus limiting pumping losses. However, the drainage of the pipeline would occur, and potentially result in a worst-case spill of about 90,800 gallons of crude oil. This worst case spill would occur where the pipeline connects with unloading pumps since this is the lowest elevation of the pipeline. As one moves up the pipeline toward the storage tanks, the maximum spill volumes decrease, with the smallest spill volumes being near the storage tanks. In the event of a release from the pipeline the oil would drain into the area around the pipeline and unloading racks (see grading plans in Appendix A).

In the unlikely event that a spill got outside the perimeter of the unloading facility it would be generally be confined to the Project Site, as there are limited hydrologic connections between the Project Site and Little Oso Flaco Creek, located south of the Rail Spur Project Site (see discussion in WR.1).

Although some of the more toxic components of oil, e.g., volatile organic compounds would be lost rapidly due to aeration (i.e., volatilization) oil spills could have significant, long-term impacts to onsite surface waters and shallow groundwater quality if they were not cleaned up quickly as onsite soils are generally unconsolidated and permeable and groundwater locally occurs at relatively shallow depths.

Phillips 66 has a number of existing process safety policies and procedures that would apply to the rail project to help prevent and reduce spill related impacts, including equipment and operating procedures. These programs are designed to prevent releases of hazardous materials, minimize risk, and ensure the refinery's ability to process crude without increasing risk of releases. For example, the Mechanical Integrity Program covers equipment used to process, control, and store hazardous chemicals and assigns responsibility for equipment inspection and testing as well as maintenance. This program meets the requirements of CCR Title 8 Sec 5189, "Process Safety Management of Acutely Hazardous Materials" (f), (j) and 29 CFR 1910.119, "Process Safety Management of Highly Hazardous Chemicals" (j). These programs would be applicable to the operational aspects of this Rail Spur Project.

The refinery uses a Positive Material Identification (PMI) program to ensure the integrity of all mechanical and pressurized systems. This program is overseen by the refinery's Inspection Supervisor. Any new feedstock coming to the refinery undergoes a complete Management of Change (MOC) analysis to ensure that all hazards, as well as the refinery's systems are safe and operable. The MOC program is part of the refinery's Process Safety Management program and tracks equipment modification, addition of new systems and process changes. MOC covers all changes that involve specific chemicals at or above threshold limits as defined in California Code of Regulation, Section 5189, Appendix A or flammable liquids or gasses as defined by

California Code of Regulations, Section 5194(c) including new construction, modifications, changes in chemicals or materials, changes in feedstock, and changes in concentrations, temperatures, pressures, or flow rates outside of established Safe Process Limits.

The refinery is also covered by the California Accidental Release Prevention (CalARP) program, which is designed to prevent accidental releases potentially harming the public and the environment and to satisfy community right-to-know laws. Phillips 66 has prepared the required Risk Management Plan (RMP) to analyze the potential for accidents and development of operating procedures, training and maintenance requirements, compliance audits and incident investigation. The refinery additionally has an approved Spill Prevention, Control and Countermeasure Plan (SPCC). Such actions would contribute in limiting the potential for spills and associated significant impacts.

In the event of a spill, containment facilities and cleanup procedures can reduce the potential impacts of the spill to onsite soils and water resources. Based on the nature of the soils at the SMR, impacts to water quality from a spill could be potentially significant depending on the volume and location of the spill, and the time needed to initiate the response action.

Mitigation Measures

WR-2 *Prior to the County's issuance of a Notice to Proceed, the existing Santa Maria Refinery Spill Prevention Control and Countermeasure Plan (SPCCP) shall be amended to reflect operation of the rail car unloading facility and associated oil pipeline. See mitigation measure BIO-7 for the detailed SPCCP requirements for the rail unloading operations.*

Residual Impacts

Mitigation measures WR-2 would assure that spills are contained within the rail unloading facility and that adequate spill response equipment is at the SMR and that spills are cleaned up quickly, which would reduce impacts to water quality. Implementing mitigation measures WR-2 along with the design features of the rail spur and unloading racks, potential oil spill impacts within the SMR site would reduce spill-related impacts to surface and groundwater quality to *less than significant with mitigation (Class II).*

Impact #	Impact Description	Phase	Impact Classification
WR.3	A rupture or leak from a rail car on the UPRR mainline track could substantially degrade surface water and groundwater quality.	Operations	Class I

The probability of a crude oil train release incident is discussed in the Hazardous and Hazardous Materials Section (Section 4.7). This probability represents the probability of a release incident for the length of the rail routes between the SMR and Roseville or Colton. In order for there to be an impact to surface water, the incident would need to occur in the vicinity of a surface water body. This would lower the probability of an oil train release impacting surface waters.

As illustrated in Figures 4.13-4 through 4.13-9 and summarized in Tables 4.13.1 and 4.13.2, the northern and southern UPRR mainline track from the Santa Maria Refinery to Roseville and Colton, respectively, would traverse numerous creeks, washes, rivers, wetlands, and sloughs. In addition, the routes are located in proximity to numerous lakes and marine waters. Although it is unlikely, derailment of a train could result in the release of crude oil from rail tanker cars, which could cause substantial degradation to surface water and/or groundwater quality depending upon the location of the spill.

As discussed in the Hazards and Hazardous Materials Section (Section 4.7), the worst case spill from a unit train on the mainline tracks was assumed to be 180,000 gallons (about six tanker cars).

In the event of a crude oil spill UPRR would rely first upon local emergency response agencies (police and fire). If needed, UPRR has standing contracts with emergency response firms that are available around the clock to manage any release of crude oil. There are two providers near Phillips 66 Santa Maria Project. One is Patriot Environmental Services, which is located in Santa Ynez, and the other, NRC, is located in Ventura. UPRR maintains spill response contracts with companies throughout their rail network in California. All of the UPRR response firms are rated Oil Spill Response Organization (OSRO) by the State of California and classified Oil Spill Removal Organization by the United States Coast Guard. Depending upon the location, and extent of a spill local response teams, UPRR response personnel and State and Federal response agencies would be involved in the containment and cleanup operations.

The topography or terrain in the area of the oil spill would affect the extent of the potential impacts. Hills, valleys, low areas, and other land features can affect how a release is contained or migrates over the ground surface. A release in an area with a steep slope can accelerate the rate of oil migration and cause the spill to cover a greater area. Releases near low areas or confined valleys could pool and contain the oil and reduce aerial coverage of the release. Spills that flow into a drainage ditch or channel might flow greater distances from the release site due to the funneling of the oil in the channel. Smaller drainage channels generally flow into larger channels, which potentially could empty to a surface water feature, thus increasing the impacts of the spill. A spill released to level, flat ground would generally not migrate as far from the release site. (US State Department 2013).

If released to water, crude oil typically floats on the water's surface. If crude oil is left on the water's surface over an extended period of time, some constituents within the oil will evaporate, other fractions will dissolve, and eventually, some material may descend to the bottom. Oil can sink in the water column as it degrades and mixes with particulates in water. This is particularly true with dilbit[1] crudes. Dilbit crudes will typically submerge in the water column.

In flowing waters, the spreading of the oil in three dimensions creates many challenges for responders to minimize the impacts of the release. Consideration of submerged oil in a flowing water environment would require different response action planning and response equipment to

[1] Dilbit is bitumen mixed with a diluent so it can be transported by pipeline or rail. The diluent is usually a lighter hydrocarbon such as natural gas liquids or naphtha. Dilbit is also known as tar sands oil.

contain and recover the submerged oil. Dilbit intermixed with sediment and trapped in the river and ocean beds and shoreline results in a persistent source of oil and will present new response and recovery challenges. The understanding and adaptation of response and recovery techniques to Dilbit spills in flowing water scenarios continues along the Kalamazoo River in response to the 2010 Enbridge release near Marshall, Michigan. As the response to the Marshall Michigan Dilbit spill continues to mature and evolve, the lessons learned from the response and recovery efforts should be considered to facilitate the implementation of proper response planning and response strategies to improve the overall response to dilbit spills (US State Department 2013)

Spills into water ways and infiltration into groundwater could impact sources of drinking water, threatening water supplies for local populations. Oiling could occur on vegetation and soil along the banks or shore of surface waterbodies.

Wetlands and other natural areas along with their inhabitants (e.g., amphibians, reptiles, fish, and aquatic plants) could be impacted if an oil spill entered these ecological systems. However, compared to flowing surface water systems, an oil plume within a wetlands-like environment typically would migrate slowly, oiling surface vegetation, and wildlife. Additionally, impacts would also occur from the cleanup and response activities.

Depending upon the location of an oil spill along the UPRR mainline tracks, there may be no oil spill containment or cleanup equipment immediately available, and it could take some time for emergency response teams to mobilize adequate spill response equipment. Depending upon the location of the spill this could allow enough time for the spill to impact water resources. Therefore, oil spills along the UPRR mainline tracks could be significant depending upon the location of the spill.

Spill Impacts beyond Roseville and Colton Yards
Beyond the two UPRR Yards, trains could travel any number of routes (refer to Figure 2-8). Also, crude oil delivered to California by UPRR would generally pass through either of these two rail yards in route to the SMR. Depending upon the source of the crude oil, crude oil trains could use any portion of the UPRR network between Roseville/Colton and the source location for the crude oil. The exact route that would be taken would depend upon a number of factors, that could include the source of the crude oil, weather conditions, train traffic conditions, etc.

While the exact route the trains would take to get to these two rail yards is speculative, all of the routes within and outside of California would traverse numerous creeks, washes, rivers, wetlands, and sloughs, which would increase the probability of a spill impacting water resource areas. In the event of a spill impacting sensitive water resources along this portion of the route the impacts could be significant for the same reasons discussed above for the routes between Roseville/Colton and the SMR.

Mitigation Measures
WR-3 Implement mitigation measures BIO-11 and PS-4a through PS-4e.

Residual Impacts
Implementation of mitigation measure BIO-11 and PS-4a through PS-4e would serve to reduce the likelihood of an oil spill and the ability of first response agencies to respond to a crude oil

spill. In particular, PS-4b would require the use of safer tank cars that would reduce the likelihood of a spill in the event of an accident. Even with implementation of these mitigation measures oil spill impacts to water resources along the mainline rail routes would remain significant and unavoidable depending upon the location of the spill.

The County may be preempted by federal law from implementing BIO-11 and PS4a through PS-4e as they require particular contractual provisions that might be determined to improperly impact interstate commerce.

OSPR is currently in the process of implementing the requirements of SB 861, which will require railroads to have detailed oil spill response plans and to conduct oil spill response drills Oil Spill Contingency Plans are due January 1, 2016. However, the timing of when the plans will have to be in place and the drill would start is not yet know. Portions of this legislation as it relates to railroads have been subject to litigation, and it is likely that further litigation by the railroads will occur, since the railroad claim the State is preempted by federal law. If implemented this legislation would improve oil spill response for train derailments that lead to spills.

In addition, the USDOT is evaluating proposed rules that would require rail operators of crude oil trains to have a comprehensive OSRP that addresses may of the same requirements as the plans required by SB 861. If the DOT adopts a final rule covering crude oil trains, it would improve oil spill response for train derailments that lead to spills.

The USDOT has new rules covering enhancements to tank car standards and operational controls for high-hazardous flammable trains, which would include crude oil trains. These new rules would serve to reduce the likelihood of a train derailment and release of crude oil. Section 4.7, Hazards and Hazardous Materials provides additional information on the new USDOT rule.

If and when all these rules are adopted and in place, they would serve to reduce train derailments and improve emergency response in the event of an accident. However, even if all of these regulation are implemented, mainline rail oil spills impacts to water resources along the UPRR mainline tracks could remain s*ignificant and unavoidable (Class I),* depending upon the location of the spill.

Impact #	Impact Description	Phase	Impact Classification
WR.4	Project operations would result in an increase in the amount of stormwater runoff at the site.	Operations	Class III

Construction of the rail car unloading facility would include construction of a 32,860 square foot canopy. In addition, 1.7 acres of roads would be paved during construction. Such features would increase the amount of impermeable surfaces, resulting in increased stormwater runoff. Left unchecked, increased runoff could cause flooding and cause soil erosion. However, a stormwater detention/percolation basin would be constructed to prevent offsite runoff of increased surface flows from proposed unloading facility canopy. This basin would have a working capacity of about 193,000 gallons, which is more than enough to handle the 100-year

24-hour storm event. Runoff would be collected in downspouts constructed around the perimeter of the canopy and then transmitted to the detention/percolation basin, where the runoff would percolate into the permeable sandy soil.

Runoff from paved roads would be dispersed over the Project Site, i.e., not concentrated, and would percolate into the sandy soils. Similarly, the rail spur bed and adjoining slopes would be compacted, thus reducing infiltration and increasing runoff. However, the runoff would also be dispersed along the length of the rail spur, i.e., not concentrated, and would percolate into the sandy soils. Based on a site reconnaissance of the Project Site, erosive gullying and rilling does not occur, even in sloped, disturbed areas, void of vegetation. Therefore, it is unlikely that increased runoff associated with the Project-related paving would cause flooding or increase erosion. Impacts are considered less than significant.

Mitigation Measures
No mitigation measures are required.

Residual Impacts
Residual impacts would be *less than significant (Class III).*

Impact #	Impact Description	Phase	Impact Classification
WR.5	The Project would not involve activities within the 100-year flood plain.	Construction and Operations	Class III

As indicated in Figure 4.13-2, construction would not occur within the 100 year flood plain. The proposed rail spur and unloading facility are located approximately 500 feet north of the flood plain, at the closest point. Similarly, Project operations would not involve activities within the 100-year flood plain. Therefore, impacts are considered less than significant.

Mitigation Measures
No mitigation measures are required.

Residual Impacts
Residual impacts would be *less than significant (Class III).*

Impact #	Impact Description	Phase	Impact Classification
WR.6	The Project would potentially change the quantity or movement of available ground water or adversely affect a community water service provider.	Construction and Operations	Class III

Operational activities would be expected to increase water use by approximately 250 gallons per day. Construction activities would be short-term and limited in nature, but would require use of water trucks for dust control, soil compaction, and other incidental uses.

Under Senate Bill 610, a proposed project meets the definition of "Project" according to Water Code Section 10912 if it is:

- A proposed residential development of more than 500 dwelling units;
- A proposed shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet of floor space;
- A proposed commercial office building employing more than 1,000 persons or having more than 250,000 square feet of floor space;
- A proposed hotel or motel, or both, having more than 500 rooms;
- A proposed industrial, manufacturing, or processing plant, or industrial park planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area;
- A mixed-use project that includes one or more of the projects specified in this subdivision; or
- A project that would demand an amount of water equivalent to, or greater than, the amount of water required by a 500 dwelling unit project (California DWR 2003).

The SMR is an industrial processing plant occupying more than 40 acres of land. The Rail Spur Project involves the construction of a rail spur extension, unloading facility, and oil pipeline connecting the unloading facility to the refinery. Acreage breakdown (temporary + permanent) are summarized below:

- 41.6 acres – Rail Spur and Unloading Facility (25.3 acres permanent),
- 3.8 acres – New Pipeline (1.8 acres permanent), and
- 1.6 acres – Secondary Emergency Vehicle Access (1.6 acres permanent).

Collectively, the entire project, including temporary and permanent impacts, would affect approximately 47 acres. Of this area, a total of 28.7 acres will be permanently disturbed. Because less than 40 acres of permanent development would occur as part of the Project, the Rail Spur Project would not be considered a "Project" under this SB 610 criterion. In addition, the additional water demand associated with operation of the Rail Spur Project would include an increase in water use of up to 250 gallons per day, which is less than the amount of water required by a single family home. An average single-family dwelling on the Nipomo Mesa would use approximately 460 gallons per day (0.51 AFY) (Water Systems Consulting 2011); therefore, 500 dwellings would use approximately 230,000 gallons per day (260 AFY), or nearly

500 times more water than the Rail Spur Project. Therefore, the Rail Spur Project would not be considered a "Project" under this SB 610 criterion and a Water Supply Assessment would not be required for the Project.

Water use during construction would be vary between 1,000 and 2,000 gallons per day during the grading operations. It is estimated that for the entire construction project about 180,000 gallons of water would be used. This water would be used primarily for dust control and revegetation.

A Water Supply Assessment was completed in 2012 in association with increased throughput at the SMR. The Water Supply Assessment concluded that the total water supplies available during normal, single-dry, and multiple-dry water years, within a 20-year projection, will meet the projected water demand for the Increased Throughput project, based on the Phillips 66 groundwater rights in the Nipomo Mesa Management Area (NMMA), as defined in the Stipulation for the Santa Maria Groundwater Litigation (the Stipulation). In the next 20 years, if a Severe Water Shortage Condition occurs, per the Stipulation, Phillips 66 would have rights to 110 percent of the highest amount of prior groundwater use, or 1,550 AFY. The County of San Luis Obispo and other major water purveyors in the NMMA are bound by the Superior Court of the County of Santa Clara, under the Stipulation to uphold the Phillips 66 SMR rights to use water. With the Increased Throughput Project water demand at the SMR would be up to 1,111 AFY. The proposed Rail Spur Project would increase water demand by 250 gallons per day, or 0.3 AFY. With the Rail Spur and Throughput Increase Projects water demand at the SMR would be 1,111.3 AFY, which would be less than the 1,550 AFY of water available for SMR use under the Stipulation.

The estimated water demand in the NMMA in 2013 was about 16,349 AF (NMMA 2014), and the Rail Spur Project would only increase demand by 0.3 AFY. Therefore, water supply related impacts are considered less than significant. This finding is based on the groundwater rights of ConocoPhillips, as defined in the Stipulation. San Luis Obispo County is a signed party to the Stipulation and is bound by the water management agreement to comply with each and every term, which includes upholding ConocoPhillips groundwater rights.

This should not be interpreted that there is sufficient supplies for all purveyors in the NMMA to meet their future demands for the next 20 years. Overall, the NMMA is in a Potentially Severe Water Shortage condition. The Stipulation requires the other water purveyors in the NMMA (i.e., NCSD, GWSC, Woodlands, RWC) to purchase and transmit supplemental water to improve the water conditions in the NMMA.

Mitigation Measures

Because impacts would be less than significant, mitigation measures are not required. However, the following mitigation measures would further reduce the potential for adverse impacts:

WR-6 *If possible, the Applicant shall use recycled water for construction and operational activities to reduce impacts to local groundwater supplies. Recycled water could be generated onsite and/or secured via truck transport or water pipeline from the South San Luis Obispo County Sanitation District.*

Residual Impacts
Residual impacts would be *less than significant (Class III).*

4.13.5 Cumulative Analysis

Water Quality
The region of influence for water quality impacts associated specifically with the Rail Spur Project Site would be limited to those cumulative projects located within the watershed of Oso Flaco Creek, which include grading/construction and/or oil processing/transportation. Although located within the Santa Maria Valley, Oso Flaco Creek is not part of the Santa Maria River Watershed. The creek originates in agricultural fields north of the Santa Maria River Estuary. Land use within the watershed is primarily irrigated vegetable row crops, but does include some of the cumulative projects listed in Table 3.1. Oil processing/transport related projects includes the SMR Increased Throughput Project, SMR Removal of Soil and Debris Mound Project, and the southern end of the Phillips 66 pipeline between Price Canyon Oil Field and the SMR. The Northern Santa Barbara County oil development project would not be in this watershed. Potential spills within the Oso Flaco Creek watershed associated with ongoing operation of the SMR and proposed increased throughput to the SMR as a result of construction of the Phillips 66 Price Canyon pipeline, could result in adverse water quality impacts. Potential oil spills occurring as a result of Project completion could cumulatively contribute to those impacts. However, because of the limited hydrologic connection between the Project Site and Little Oso Flaco Creek, the severity of impacts associated with potential oil spills from the Rail Spur Project, the Project's contribution to the cumulative degradation of Little Oso Flaco Creek would be cumulatively significant but feasibly mitigated (Class II) with implementation of mitigation measures and Project components designed to minimize and remediate such spills.

Cumulative projects involving grading and construction within the Oso Flaco Creek watershed include the Sheridan Properties industrial development. This project would involve concrete/asphalt paving and/or landscaping, which, in the absence of Best Management Practices, could result in runoff of polluted runoff and additional degradation of Oso Flaco Creek. Similarly, contaminated runoff could occur as a result of removal of the soil and debris mound at the SMR. Potential incidental spills of petroleum products and hazardous materials occurring as a result of Project grading and construction could also result in contributions to cumulative water quality impacts to the watershed. Oso Flaco Creek and its tributary Little Oso Flaco Creek are listed by the Environmental Protection Agency as 303D Impaired Water Bodies, based on high levels of fecal coliform, nitrates, and sediment toxicity from agriculture and contaminated groundwater. The pollutant load contribution of the cumulative projects could result in cumulatively significant but feasibly mitigated (Class II) impacts on water quality within the Oso Flaco Creek watershed.

The County of San Luis Obispo Public Works Department maintains a Stormwater Management Program (SWMP), in accordance with the EPA's NPDES Phase II stormwater quality regulations. The County submits an Annual Report to the Central Coast RWQCB summarizing programs that protect the water quality of the creeks and ocean. The SWMP provides an integrated approach for prevention of pollution from stormwater runoff in the County. The program relies heavily on public education and outreach and public participation and

involvement to prevent pollution problems at the source. In addition, in accordance with CEQA, cumulative impact analyses would be completed for all cumulative projects in the watershed. Appropriate mitigation measures would be applied to each cumulative project in an effort to reduce potentially significant water quality impacts within the Oso Flaco Creek watershed to less than significant.

Water Supply

The total water supplies for other planned future uses within the NMMA are not sufficient to meet future demands without the addition of supplemental water. Therefore, buildout of cumulative projects listed in Table 3.1 that are in the NMMA could potentially result in significant cumulative water supply impacts. The Northern Santa Barbara County oil development project are not located within the NMMA.

Pursuant to the Stipulation, potentially Severe Water Shortage Conditions require voluntary conservation measures from the water purveyors in the NMMA (not including Phillips 66). The NMMA Technical Group determined that Potentially Severe Water Shortage Conditions existed in 2008, 2009, 2010, 2011, 2012, and 2013. The continued Potentially Severe Water Shortage Conditions suggest that supplies are not sufficient to meet demands. The projected growth in production by 2030 will likely not be possible without the purchase of supplemental water. The NMMA Technical Group has recommended that the Nipomo Supplemental Water Project be implemented as soon as possible. In addition, the County of San Luis Obispo has restricted future production by Ordinance 3090 (adopted May 2006), whereby new dwelling units must pay a supplemental water charge. The voluntary conservation measures required by the Well Management Plan, the Nipomo Supplemental Water Project, and County Ordinance 3090 have been undertaken to prevent Severe Water Shortage Conditions in NMMA. In the event that Severe Water Conditions develop prior to implementation of the Nipomo Supplemental Water Project, water users other than Phillips 66 in the NMMA would implement mandatory conservation measures, per the Well Management Plan developed as part of the Stipulation. The Well Management Plan provides the conservation steps to be taken by Nipomo Community Services District, Golden State Water Company, Woodlands, and Rural Water Company to improve the water conditions in the NMMA. The management actions required under the Stipulation, including the Well Management Plan and the Nipomo Supplemental Water Project, protect the overall groundwater resources in the NMMA.

According to the Stipulation, the Phillips 66 SMR has no limit to the beneficial and reasonable use of groundwater unless there is a Severe Water Shortage Condition. In the next 20 years, if a Severe Water Shortage Condition occurs, per the Stipulation, Phillips 66 would have rights to 110 percent of the highest amount of prior groundwater use (1,550 AFY). Water demand associated with the Rail Spur Project would not exceed those water rights, therefore, the Project would not contribute to potentially significant cumulative water supply impacts in the NMMA. San Luis Obispo County and all major water purveyors in the NMMA are signed parties to the Stipulation and are bound by the water management agreement to comply with each and every term, which includes upholding Phillips 66 groundwater rights.

In the event of potentially severe to severe climatic drought conditions (as defined in the NMMA Technical Group Water Shortage Condition and Response Plan) other water purveyors in the

NMMA (not including the Applicant), would reduce water use through voluntary and mandatory conservation measures, according to the Well Management Plan. In addition, as required by the Stipulation, other water purveyors in the NMMA, led by the Nipomo Community Services District, are planning to construct a pipeline to deliver supplemental water to the area to reduce or alleviate any future water shortages. Per the Stipulation, the Applicant is not required to participate in the Well Management Plan or Supplemental Water Project. These requirements of the Stipulation were designed to protect the groundwater resources of the NMMA and contribute in reducing cumulative water supply impacts.

Cumulative Rail Projects

There is the potential for cumulative impacts associated with the crude by rail project discussed in Chapter 3. In conducting the cumulative analysis for crude by rail it has been assumed that the cumulative projects listed in Table 3.1 would use the same rail car tank design as the SMR Rail Spur Project, and that the cumulative crude by rail projects, with the exception of the Phillips Rail Spur Project, would transport a Bakken type crude, which is a worst case assumption.[2] It has also been assumed that all of the Rail Spur Project crude oil trains would use routes discussed below.

If all of the crude by rail projects travel via the UPRR Roseville Rail Yard, then up to eight crude oil trains per day could travel on the stretch of track between Sacramento and the California boarder (two for Valero, one for Kinder Morgan, two for Alon, one for Targa, one for Plains All American, and one for the SMR). From Roseville, rail traffic would likely follow two different routes; one following the I-80 corridor to Reno, Nevada, with the other heading north along the I-5 corridor to Oregon. A third route through the Feather River Canyon was not considered for further analysis.

From Sacramento the crude oil trains servicing the Valero Benicia and Kinder Morgan projects could use the same UPRR tracks as the Rail Spur Project from Sacramento to the Bay Area. This portion of track could have up to four crude oil trains per day (two for Valero, one for Kinder Morgan, and one for the SMR).

From Sacramento the crude oil trains servicing the Alon, Targa, and Plains All American projects could use the same tracks as the Rail Spur Project from Sacramento to Stockton a distance of about 46 miles. This portion of track could have up to five crude oil trains per day (two for Alon, one for Plains All American, one for Targa, and one for the SMR).

This level of crude oil train traffic would increase the probability of an oil spill along these mainline routes. Assuming all of the cumulative crude oil trains use the same route from Sacramento to the California border, the cumulative probability of a 100 gallon or greater oil spill would be about once every seven years for the route from the SMR to the Oregon border, and once every six years for the route from the SMR to the Nevada border. These mainline rail routes pass through areas that include various types of water body crossings. In the event of an

[2] Canadian Crude, as specified in the Project Description, was assumed for the Phillips Rail Spur Project as part of the project and cumulative analysis.

oil spill along this stretch of the mainline rail route, surface and groundwater resources could be impacted.

None of the other cumulative crude by rail projects would use the mainline tracks along the southern route thorough the Los Angeles Basin since the crude oil trains going to Bakersfield would use Tehachapi Pass via Barstow and would not travel has far west as Colton. However, up to four unit trains per day could share the route between Nevada and Barstow (two for Alon, one for Plains All American, and one for the SMR). Assuming these cumulative crude oil trains use the same route from Barstow to the California border, the cumulative probability of a 100 gallon or greater oil spill would be about once every 25 years for the southern route from the SMR to the Nevada border. This mainline rail route pass through areas that include various types of water body crossings. In the event of an oil spill along this stretch of the mainline rail route, surface and groundwater resources could be impacted.

In the event of an accident along these stretches of mainline rail routes, a crude oil spill of significant amounts could occur, potentially impact water resources. Depending upon the location of an oil spill along the UPRR mainline tracks, there may be no oil spill containment or cleanup equipment immediately available, and it could take some time for emergency response teams to mobilize adequate spill response equipment, which could allow enough time for the spill to impact various surface water bodies, as well as plants and animal species that may occur within these habitats. Therefore, oil spills along the UPRR mainline tracks could be cumulatively significant depending upon the location of the spill.

Implementation of mitigation measures PS-4a through PS-4e identified for the Rail Spur Project would reduce the likelihood of an oil spill and the ability of first response agencies to respond to a crude oil spill. In particular, PS-4b would require the use of safer tank cars that would reduce the likelihood of a spill in the event of an accident by approximately 74 percent.

There are a number of cumulative oil development projects in Northern Santa Barbara County (see Table 3.1, Cumulative Project List) that plan to move oil to the Phillips 66 SMPS and then via pipeline to the SMR. In the short-term, depending upon the volume of crude oil received by rail, some of this oil could be displaced and might have to be trucked to other refinery destinations. Any displaced crude oil would likely be sold to other refineries in the Los Angeles basin. The amount, location, and destination of any displaced oil would be driven by market forces. Given the dynamics of the crude oil market, it is speculative as to what if any local crude oil would be displaced, and what would happen to any oil if it were displaced.

It is possible that the OCS oil delivered to the SMR via the All American and Sisquoc Pipelines could be displaced. In this case the OCS oil would continue to use the All American Pipeline system to refinery markets in Los Angeles. If the OCS crude was displaced, than Phillips 66 could reverse the Sisquoc Pipeline allowing local producers to ship their crude oil via pipeline to Los Angeles. Such reversal of the pipeline flow direction would allow production from area producers to be transported to refinery destinations via pipeline instead of by truck if the SMR is not available. If the Sisquoc Pipeline is not reversed, and the local Northern Santa Barbara County crude oil cannot be processed at the SMR, then as much as 23,000 barrels of crude might have to be trucked to refineries in the Los Angeles Basin. This would equate to about 120 truck

trips per day (round trips), which would increase the potential for crude oil spills from trucks. However, potential spill volumes from a truck would be substantially smaller than from a crude oil unit train.

Implementation of the requirements specified in SB 861 could also serve to reduce the impacts of a spill by having equipment staged in places near surface water resources, and improving the response activities to an oil spill.

Under Federal and State law, UPRR and the owner of the crude oil would be responsible for cleanup and remediation of any oil spill. SB 861 requires that operators demonstrate they have the financial resources to pay for spill response, cleanup, and damages based upon a reasonable worst case spill volume.

Depending upon the location of the spill, impacts may occur to water resources that cannot be mitigated through oil spill response, remediation and restoration, and the impact of oil spills from rail cars and trucks would be significant and unavoidable.

4.13.6 Mitigation Monitoring Plan

Mitigation Measure	Plan Requirements and Timing	Compliance Verification		
		Method	Timing	Responsible Party
WR-1	During construction, oil and other chemical spills shall be contained and cleaned according to measures outlined in the California Stormwater Quality Association Best Management Practice Handbook. Best Management Practices would likely include, but not be limited, to the following: a. Ensure minor spill containment and clean up equipment is readily available in areas of demolition, construction, and operations. b. Store petroleum products in covered areas with secondary containment dikes. c. If vehicle maintenance and fueling occur onsite, use a designated area and/or secondary containment, located away from drainage courses, to prevent the run-on of storm water and the runoff of spills. d. Regularly inspect onsite vehicles and equipment for leaks, and repair immediately. e. Always use secondary containment, such as a drain pan or drop cloth, to catch spills or leaks when removing or changing fluids. f. Use absorbent materials on small spills.	Review and approve the Storm Water Pollution Prevention Plans	Prior to issuance of grading permit	RWQCB / Department of Planning and Building
WR-2	Prior to the County's issuance of a Notice to Proceed, the existing Santa Maria Refinery Spill Prevention Control and Countermeasure Plan (SPCCP) shall be amended to reflect operation of the rail car unloading facility and associated oil pipeline. See mitigation measure BIO-7 for the detailed SPCCP requirements for the rail unloading operations.	Review and approval of SPCCP	Prior to crude oil delivery	Department of Planning and Building CDFW

Mitigation Measure	Plan Requirements and Timing	Compliance Verification		
		Method	Timing	Responsible Party
WR-6	If possible, the Applicant shall use recycled water for construction and operational activities to reduce impacts to local groundwater supplies. Recycled water could be generated onsite and/or secured via truck transport or water pipeline from the South San Luis Obispo County Sanitation District.	Secure onsite or offsite recycled water source	Prior to or during operations	Department of Planning and Building

4.13.7 References

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5.0 Alternatives Analysis

The California Environmental Quality Act (CEQA), 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 Rail Spur and Crude Unloading Project (Rail Spur Project), including the "No Project Alternative." Criteria used to evaluate the range of alternatives and remove certain alternatives from further consideration are addressed. State CEQA Guidelines Section 15126.6 provides direction for the discussion of alternatives to the proposed Project. This section 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" [15126.6(a)].

A setting forth of alternatives that "...shall be limited to ones that would avoid or substantially lessen any of the significant effects of the project. Of those alternatives, the EIR need examine in detail only the ones that the lead agency determines could feasibly attain most of the basic objectives of the project" [15126.6(f)].

A discussion of the "No Project" alternative, and "...If the environmentally superior alternative is the "No Project" alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives" [15126.6(e)(2)], even if the proposed project is the next environmentally preferable option.

A discussion and analysis of alternative locations "…that would substantially lessen any of the significant effects of the project need to be considered for inclusion in the EIR" [15126.6(f)(2)(B)].

This document has used an alternative screening analysis to select the alternatives evaluated in detail in the EIR. The alternative screening analysis provides the detailed explanation of why some of the alternatives were rejected from further analysis and assures that only the environmentally preferred alternatives are evaluated and compared in the EIR.

This screening methodology also uses the *"rule of reason"* approach to alternatives as discussed in State CEQA Guidelines (Section 15126.6(f)). The rule of reason approach has been defined to require that EIRs address a range of feasible alternatives that have the potential to diminish or avoid adverse environmental impacts. The State CEQA Guidelines state:

The alternatives shall be limited to ones that would avoid or substantially lessen any of the significant effect of the project. Of those alternatives, the EIR need examine in detail only the ones that the lead agency determines could feasibly attain most of the basic objectives of the project. (Section 15126.6(f))

In defining feasibility of alternatives the State CEQA Guidelines state:

Among the factors that may be taken into account when addressing the feasibility of alternatives are 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 (Section 15126.6(f)(1)).

If an alternative was found to be technically infeasible, then it was dropped from further consideration. This was the primary feasibility factor that was used to eliminate an alternative without further screening analysis. In addition, CEQA states that alternatives should "…*attain most of the basic objectives of the project* ..." (Section 15126.6(a)). If an alternative was found to not obtain the basic objective, then it was also eliminated.

The use of a screening analysis for the alternatives ensures that the full spectrum of environmental concerns is adequately represented, and that a reasonable choice of alternatives is selected for evaluation in the EIR. The screening criteria are discussed in the Alternatives Screening Analysis section.

Given the CEQA mandates listed above, the remainder of this chapter covers: (1) a brief description of a range of reasonable alternatives to the Rail Spur Project; (2) a screening analysis that summarizes and compares the environmental effects of each alternative; (3) an environmental analysis of the alternatives that were selected for further consideration in the EIR; and (4) a discussion of the environmentally superior alternative for the Rail Spur Project.

5.1 Description of Alternatives

The screening analysis considered a variety of alternatives to the Rail Spur Project. The alternatives have been divided into five different groups, each containing individual specific alternatives, which are:

- No Project Alternative.
- Crude Transportation Alternatives.
  - Trucking
  - Marine Transport
  - Pipelines
- Alternative Rail Unloading Sites.
- Alternative Rail Unloading Facility Configuration.
- Reduced Rail Deliveries.

The following sections summarize alternatives within each of these groups.

5.1.1 No Project Alternative

CEQA requires an evaluation of the No Project Alternative so that decision makers can compare the impacts of approving the project with the impacts of not approving the project. According to CEQA Guidelines §15126.6(3)(B), for a development project the No Project Alternative is the circumstances under which the project does not proceed. If disapproval of the project under consideration would result in predictable actions by others, such as the proposal of some other project, this "no project" consequence should be discussed.

Under the No Project Alternative, the predictable action would be for crude oil to continue to be delivered to the refinery by pipeline and truck (trucks deliver crude to the Santa Maia Pump Station (SMPS) where it is then sent via pipeline to the Santa Maria Refinery (SMR). Since the delivery of crude to the SMR is primarily from local sources via pipeline, in the long-term, if local supplies were to decline, then the amount of crude processed at the SMR could decline under the No Project Alternative. However, new local sources of crude oil could be developed in the future that would offset any decline.

Under the No Project Alternative, it is possible that crude oil shipments via truck to the Santa Maria Pump Station (SMPS) could increase. Crude oil shipments via truck to the SMPS have averaged about 6,800 barrels per day. This could increase to 26,000 barrels per day, which is the current permitted Santa Barbara County APCD limit. This increase (19,200 barrels per day) could add about 100 truck trips per day of crude travelling to the SMPS for crude unloading.

The SMR is currently receiving Canadian crude that is trucked from the Paloma Rail Unloading Terminal in Bakersfield (see Project Description, Chapter 2.0, Section 2.6). Under the No Project Alternative it is likely that additional out of state crudes would be brought to various rail unloading terminals in California and transferred to trucks for delivery to the SMPS. The crude oil would then be moved via pipeline from the SMPS to the SMR.

The transfer from rail to truck could also occur at a number of locations within the State. There are a number of new rail unloading facilities that have been approved in the Bakersfield area, such as Alon and All American Pipeline Company (see Chapter 3.0, Cumulative Methodology and Project List, for a description of these facilities), as well as the existing Paloma Terminal, and the Kinder Morgan rail to truck facility in the Bay Area (see Chapter 3.0, Cumulative Methodology and Project List, for a description of this facility). While the Alon has been approved by Kern County, the approval has been appealed. Also, an expansion of the All American Terminal rail terminal has also been appealed.

Exactly what terminals might be used would depend upon available capacity and economics, and it is likely that crude would be delivered to multiple terminals and then trucked to the SMPS. Use of the All American Pipeline Company terminal would require the installation of truck loading facilities. The Alon facility is equipped with truck loading facilities, but some might have to be converted to crude service.

For the purposes of the No Project Alternative Analysis it has been assumed that crude oil unit trains would deliver the crude to one of the facilities near Bakersfield, transfer it to trucks, which would deliver it to the SMPS. The delivery of 19,200 barrels per day of crude (seven days per

week) would require 2.5 crude oil unit trains per week to be delivered to one of the rail unloading terminals near Bakersfield. The trucks would leave these terminals and travel to Santa Maria using State Highway 166, to Highway 101 and exit at the East Stowell Road ramp. They would then travel southeast on Stowell Road to Rosemary Road to East Battles Road to reach the SMPS. The travel distance for the trucks would be about 110 miles one-way.

In the long-run, as local crude oil supplies decline, it is possible that the SMR would process less oil then the current baseline, which would reduce some of the current impacts at the refinery. With less crude throughput, the air emissions at the SMR would be reduced and truck traffic for hauling of sulfur and coke would be reduced.

Because CEQA requires that the No Project Alternative be analyzed in the EIR, it has not been addressed in the screening analysis.

5.1.2 Crude Transportation Alternatives

The Rail Spur Project would be used to deliver up to five trains per week, with an annual maximum number of trains of approximately 250. Trains would arrive from different oilfields and/or crude oil loading points depending on market availability. In a unit train configuration, each train would be capable of delivering about 52,000 barrels of crude oil. With the delivery of five unit trains per week the average daily delivery of crude oil would be 37,142 barrels. This crude oil could also be delivered to the SMR via other transportation modes, which are discussed below.

5.1.2.1 Truck Transportation

The SMR currently receives all crude oil via pipeline. The pipeline network used to deliver crude oil to the SMR is shown in Figure 5-1. Crude oil is also currently trucked to the SMPS where it is off loaded into tanks and then moved via pipeline to the SMR. Truck delivery to the SMPS is limited to a permitted maximum of 26,000 barrels per day by the Santa Barbara County Air Pollution Control District.

An alternative to train deliveries would be to deliver crude via truck to one of the pump stations or directly to the SMR. The Rail Spur Project design basis for unit train offloading would be five unit trains per week of 80 railcars with a volume of 27,300 gallons per rail car, resulting in a weekly load up to 10,920,000 gallons of crude. An average tanker truck holds about 8,000 gallons resulting in 1,365 truck deliveries per week (195 truck trips per day assuming seven days per week) to equal the unit train delivery.

The crude oil is expected to be delivered from various North American sources and would place 2,730 trucks on the road per week (390 one-way truck trips per day assuming seven days per week) between the unloading station and the crude source since each truck will need to return to the oilfield for filling up. The trips could take three to five days depending upon the source of the crude oil.

Figure 5-1 Location of Pump Stations Servicing the Pipeline to the SMR

SMR-Santa Maria Refinery
AAPL-All American Pipeline
LOGP-Lompoc Oil and Gas Processing Facility
LFC-Las Flores Canyon
PS-Pump Station

It is also possible that crude could be barged or delivered by rail to other locations in California or other states. In these cases, the oil would be offloaded from barge or rail cars and then reloaded onto trucks for delivery to one of the pump stations or the SMR. This could shorten the number of miles trucks would need to travel, but would add additional miles for barge or rail deliveries.

A truck can be unloaded in approximately 30 minutes, including connecting and disconnecting. Since there are 10,080 minutes per week, a minimum of five truck unloading spots would be required. However, at some of the pump stations operations may be limited to 12 hours per day or unloading could only occur between the hours of 6 a.m. and 10 p.m. For these instances, seven to ten truck unloading spots would be needed.

Each truck unloading spot would require an area to place a concrete pad, a canopy, spill protection equipment, meters, and pumps. The crude oil would be pumped from the trucks into a crude oil storage tank.

Pump Stations

Each of the existing pump stations shown in Figure 5-1, except Sisquoc, contains a crude oil storage tank and pump for delivering crude to the pipeline. However, it is likely that a new 35,000 barrel crude oil storage tank would need to be built at the pump station that would be used for the truck unloading facility. The crude oil tank would be needed to handle the increased volume of oil from the truck deliveries. If the Sisquoc Pump Station was used, a new 1,000 gpm pump would be needed to deliver the crude to the pipeline.

Each truck lane would require a surface area of approximately 110 feet in width by 160 feet in length to accommodate one unloading spot and turnaround area. The width would increase as the number of lanes increase. For four lanes, the approximate area would be 440-feet by 160-feet, six lanes would be 660-feet by 160-feet, and seven (7) lanes would be 770-feet by 160-feet. These lengths would not include the entrance to the pump station as those would be site specific.

Spill protection would consist of either an underground storage tank, with piping, to contain the full contents of one full tanker truck or a berm to contain the contents of one full tanker truck. The underground storage tank would accommodate oily water and would have to be sent to a water treatment facility, which would need to be built at most of the pump stations.

Figure 5-2 provides aerial views of the pump stations and their surroundings. A brief description of each of the pump stations that could be used for a truck unloading facility is provided below.

Santa Maria Pump Station (SMPS)

The SMPS is located to the east of the City of Santa Maria. It is approximately 1.9 miles from the State Route 101 intersections of East Stowell Road from the north and East Betteravia Road from the south. From the north, trucks would travel east on Stowell Road to Rosemary Road to East Battles Road to reach the SMPS. From the south, trucks would travel east on Betteravia Road to Rosemary Road to East Battles Road to reach the SMPS. The site is surrounded by mostly agricultural fields. There is an existing truck unloading rack at this pump station, but there would need to be additional racks built at an alternate location to accommodate the number of trucks.

This site is surrounded by mainly agricultural fields and the old Battles Gas Plant is located just to the south. This is the largest of the pump station sites and has the greatest ability to be expanded to handle the additional truck unloading capacity. In addition, this site is already permitted to receive 26,000 barrels per day of crude oil via truck. Therefore, this pump station site has been evaluated further in the alternative screening analysis.

Figure 5-2 Views of Pump Stations and Their Surroundings

Santa Maria Pump Station

Summit Pump Station

Sisquoc Pump Station

Summit Pump Station
The Summit Pump Station located 0.5 miles off Highway 101, 5.75 miles south of Arroyo Grande and 4.1 miles north of the community of Nipomo. Access to Summit Station would be via the Highway 101 from the north and south and the north Thompson Avenue intersection. Trucks would travel west on Los Barros Road to Dale Avenue. The site is surrounded by residential homes in a wooded area that has some oak trees. The pump station has no existing truck unloading racks. The pump station site is small and would have to be expanded to accommodate truck deliveries of crude oil. Expansion at this site is unlikely due to the residential homes and the wooded areas that surround the site. Also, this pump station has none of the infrastructure needed to accommodate the truck unloading operations. Therefore, this pump station site has been dropped from further analysis as a potential alternative.

Sisquoc Pump Station
The Sisquoc Pump Station is located approximately 11 miles from Highway 101 and East Betteravia Road near the City of Santa Maria. Access to this pump station would be through Santa Maria via Highway 101 from the north and south. Trucks would exit at the Betteravia Road intersection, and then travel west of Foxen Canyon Road to Santa Maria Mesa Road. This pump station has no existing truck unloading racks. The site is surrounded by agricultural operations on three sides and open space hills to the west. This is a very remote site that has poor road access to the pump station. These roads would likely not be able to handle the large volume of truck traffic. The site is also small and has none of the infrastructure needed to accommodate the truck unloading operations. Therefore, this pump station site has been dropped from further consideration as a potential alternative.

Santa Maria Refinery
Use of the SMR for truck deliveries would require the construction of the truck unloading lanes and a spill protection system for the truck unloading area. It has been assumed that the truck unloading area would be located in the same general area as the rail unloading facility. A new pipeline would have to be built from the truck unloading area to the existing crude oil storage tanks. Trucks would exit Highway 101 at the Willow Road intersection and travel west on Willow Road to State Route 1 to the SMR. Given that SMR already has some of the infrastructure needed for truck unloading, and that the site could accommodate the unloading racks within the existing refinery property boundary, this site has been evaluated further in the alternative screening analysis.

5.1.2.2 Marine Transportation

Crude oil could also be delivered to the SMR by marine tanker. This alternative would require the construction of an offshore mooring system, and a pipeline from the mooring system to the SMR crude oil storage tanks. Crude oil would likely be delivered to the SMR via a 35,000 dead weight ton (DWT) marine tankers, which hold about 264,000 barrels (11,088,000 gallons). One marine tanker would arrive at the facility about one per week. In order to accommodate the volume of oil from a marine tanker, new crude oil storage would likely be needed at the SMR. As much as 100,000 to 150,000 barrels of new storage capacity could be needed.

The new offshore mooring system could be built directly off the coast from the SMR in State waters, or offshore Avila Beach in San Luis Obispo Bay, which a more protective site. The SMR use to use a marine terminal near Avila Beach for various loading and unloading operations. This marine terminal was shutdown and removed just prior to the Avila Beach Remediation Project. Tug boat service could also be required to support the marine tanker operations. This alternative has been evaluated further in the screening analysis.

5.1.2.3 Pipeline Transport

One possible alternative would be to construct a pipeline to the source or the oil, such as the Canadian tar sands in Alberta, or to construct a pipeline to connect with the proposed Keystone pipeline. This would involve construction of an approximate 1,500 mile pipeline. This pipeline would cross a number of states and it is speculative if Phillips 66 could obtain the necessary right-of-way. Also, for this type of pipeline to be economical, it would need to carry more oil than just what is required for the proposed Rail Spur Project.

In recent years, two companies tested the appetite for large crude oil pipelines, but both failed to generate enough interest to make the projects profitable. Kinder Morgan proposed the Freedom Pipeline, which would have carried crude oil from West Texas to refiners in Southern California. Last May, the company canceled the $2 billion project because it couldn't attract enough customers. Kinder Morgan first pitched the 277,000 barrel-a-day pipeline in April, hoping to entice West Coast refiners dependent on more expensive oil shipped in from Russia, Ecuador and about a dozen other countries. Refiners in the California market are eager to buy the same cheaper domestic crude that is already benefiting their competitors in the Midwest and Gulf Coast. But Valero Energy Corp., Tesoro Corp. and others operating on the West Coast turned Kinder Morgan's proposal down, saying railcars gave them more flexibility. Bringing crude oil via Freedom and its $5-a-barrel tariff would not be much cheaper than shipping crude oil via rail from the Bakken oil field in North Dakota but would restrict refiners to long-term pipeline contracts. That lack of interest forced Kinder Morgan to cancel plans for Freedom (http://www.rigzone.com/news/oil_gas/a/126837/Kinder_Morgan_Cancels_2B_California_Oil_Pipeline#sthash.QJ6YtUWh.dpuf).

A $1.8 billion pipeline proposal from Oneok Partners called the Bakken Crude Express suffered a similar fate. The pipeline would have carried 200,000 barrels per day of crude over 1,300 miles, from North Dakota to Cushing, Oklahoma. Oneok dropped the proposal in late 2012, saying it couldn’t secure enough long-term deals to cover the cost of the pipeline.

A 500 mile pipeline may cost anywhere from $400 million to $800 million to build depending on where the line would be located, and it may take two to three years from start to finish to construct once all the necessary permits are obtained. If considering rail, where existing track exists, in some cases, a rail loading facility can be built for approximately $30 million to $50 million. The difference is that once construction is complete, the transportation cost on a pipeline may be in the $1 to $3 range per barrel of incremental tariff. Rail is much cheaper to build, but transportation costs may be in the neighborhood of $12 to $15 a barrel.

In building a pipeline, in many cases, the pipeline owners – the people constructing it – will actually look for a 10-year commitment from the producer who wants the pipeline built. For rail,

there is a much smaller initial investment, a three- to five-year commitment is feasible (Southwest Economy 2013).

In addition, construction and operation of long-distance pipeline would require permits from a wide range of Federal, State, and local agencies, which are outside of the control of the County, and it is speculative if such permits could be obtained from these agencies across many states. The Keystone XL Pipeline project is an example of the difficulties that a long-distance pipeline project alternative would face. This alternative has been dropped from further consideration due to the speculative nature of this type of pipeline project, and that it would have to carry considerably more oil than what is required for the proposed Rail Spur Project to be economically feasible. Another possible alternative would be to construct a pipeline from the Sisquoc Pump Station to Kern County where it could connect with one of the rail unloading terminals such as All American Pipeline or Alon. Such a pipeline would likely follow the existing All American Pipeline that runs from Sisquoc to Kern County. This existing pipeline is used to move offshore oil produced in Santa Barbara County to refinery markets in Southern California. Phillips 66 does not own the land along this route and it is speculative if they could obtain the necessary right-of-way to construct such a pipeline. In addition, construction and operation of this pipeline would require permits from a various Federal, State, and local agencies, which are outside of the control of the County, and it is speculative if such permits could be obtained from these agencies. Therefore, this alternative has been dropped from further consideration.

5.1.3 Alternative Rail Unloading Sites

One of the main purposes of the Rail Spur Project is to deliver crude oil to the SMR. Any alternative rail unloading site would have to be able to get the oil to the SMR for processing. All three of the pump stations discussed above in Section 5.1.3 were looked at as possible alternative rail unloading sites. Given the large amount of land needed to accommodate a rail unloading facility (over a mile of straight track) only the SMPS could possibly be expanded to accommodate such a facility. The other two pump stations would not be able to accommodate such an expansion. Therefore, only the SMPS has been evaluated as an alternative site for a rail unloading facility.

Delivery of crude oil by rail to the SMPS could then be moved via the existing pipeline to the SMR for processing. Figure 5-1 shows location of the SMPS in relation to the existing UPRR tracks. There are no UPRR tracks in close proximity to the SMPS. Use of this site would require the installation of about six to seven miles of new rail track. The new track would have to run west from somewhere near the City of Guadalupe to the SMPS, and would have to cross State Route 101.

It has been assumed that if a rail unloading facility was to be built at the SMPS that it would be the same layout as for the Rail Spur Project. New siding tracks would have to be installed at a pump station along with an unloading facility, spill containment, and 55,000 barrels of crude oil storage.

Spill protection would consists of either an underground storage tank, with piping, to contain the full contents of one full tanker car or a berm to contain the contents of one full tanker car. The underground storage tank would accommodate oily water and would have to be sent to a water treatment facility, which would need to be built at this pump station.

The rail spur and unloading area would need to be approximately 7,000 feet long by 270 feet wide, which is an area of about 43 acres. The new storage tanks and other support facilities would require an additional three to four acres of land. The reader is referred to Chapter 2 for more details on the design and layout of the rail spur and unloading facilities. Expansion of the site would require Phillips 66 to acquire about 50 acres of the adjacent agricultural land for construction of a rail unloading facility.

5.1.4 Alternative Rail Unloading Facility Configuration

The Rail Spur Project would use a linear track configuration for the delivery and unloading of the crude oil unit trains. One of the key issues looked at in developing alternative unloading configuration at the SMR was the location of CDFW sensitive habitat area and proximity to sensitive receptors. Figure 5-3 shows the location sensitive habitat in the buffer area west of existing SMR facilities. Moving the rail unloading facility to the north would still impact CDFW sensitive habitat and possibly a large dune structure. This would also move the rail lines closer to the sensitive receptors. There is not enough space on the Phillips 66 property going south to accommodate an 80 tank car unit train. Also moving the tracks south would bring the facility in close proximity to Little Oso Flaco Creek and the associated riparian habitat. Possible alternatives would be to use shorter unit trains, which would reduce the overall length of track needed at the SMR or to use an alternative track layout such as a loop configuration. Each of these alternatives is discussed below.

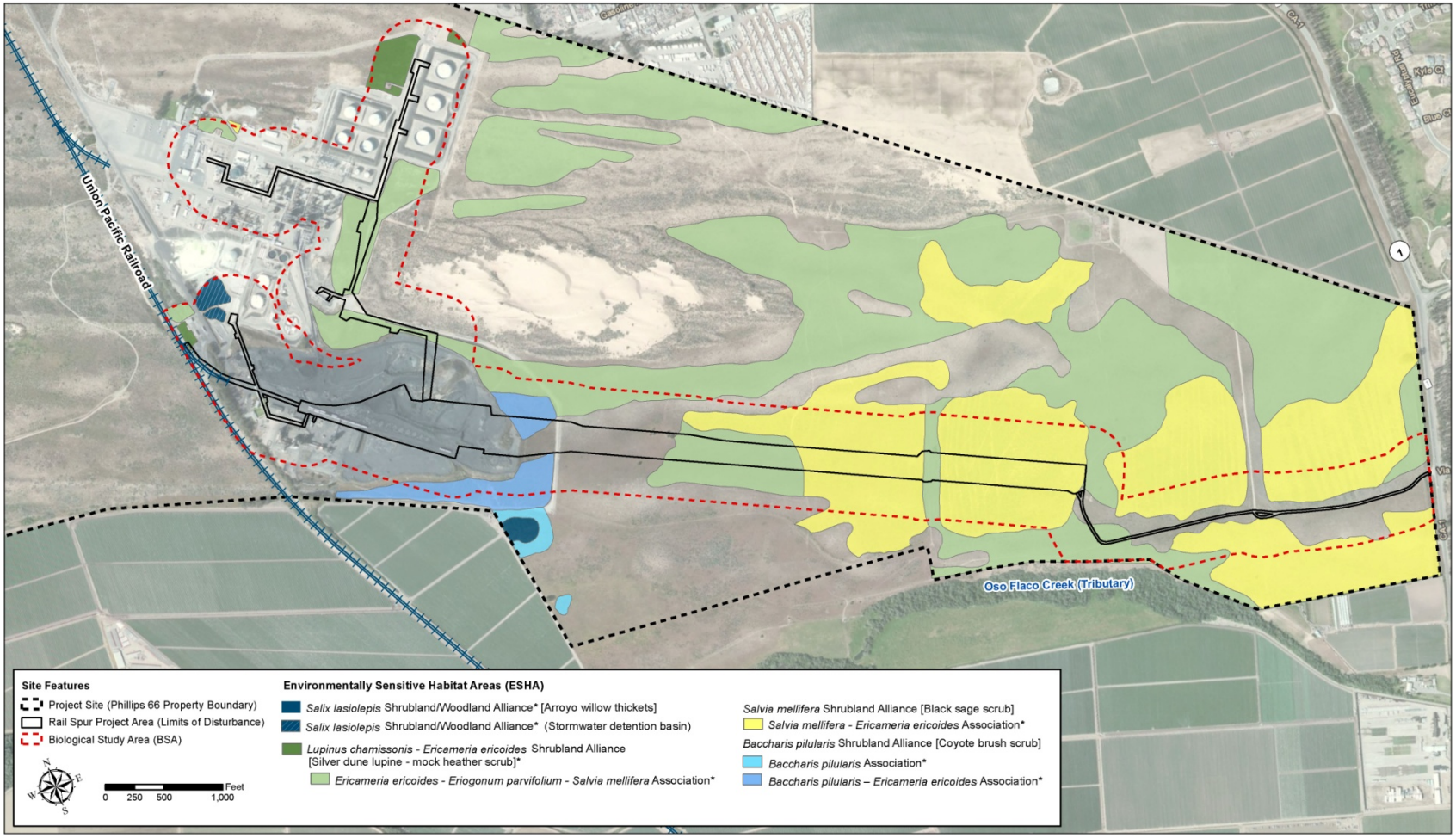
5.1.4.1 Shorter Unit Trains

A facility for handling shorter unit trains (30 to 40 tanker cars per train) would have a similar design as the proposed Rail Spur Project, but the length of track west of the unloading facility would be shorter by about 50 percent. For the purposes of this analysis it has been assumed that each unit train would contain 40 tanker cars and would be designed to handle 10 unit trains per week, with an annual maximum number of train deliveries of approximately 500. The track layout would be the same as the proposed Rail Spur Project and the facility would still use two unloading racks. The time to unload each unit train would be reduced by about 50 percent, but the number of trains unloaded would double over the proposed Rail Spur Project.

Construction of this alternative would reduce the cut and fill requirements by about 10-15 percent compared to the proposed Rail Spur Project and would reduce the overall construction requirements since less track would need to be installed east of the unloading racks.

The unloading facility would include an access platform and a system of pumps and meters, suction lines from the railcars, carbon beds for vapor treatment, and a common pipeline leading to the refinery's existing tank farm. The unloading system would be to the same as the Rail Spur Project (Figure 2-7 shows a simplified block flow diagram of the unloading system).

Figure 5-3 CDFW Sensitive Habitat Area in the Buffer Zone



Source: Adapted from Arcadis. 2015.
See Appendices C.6 and C.7 for more information on the Sensitive Vegetation at the SMR.

The access platform would run parallel to the track, with an individual gangway and safety cage at each rail car unloading station.

A new fire protection and safety system would be installed for the unloading rack, consisting of fire detection equipment, safety showers, eyewash stations, hydrants, controls and piping. The unloading rack would be equipped with a foam sprinkler deluge system and firewater monitors with foam generators at the unloading rack periphery. The foam spray system would require a foam concentrate storage tank. This would be the same fire protection system as the proposed Rail Spur Project.

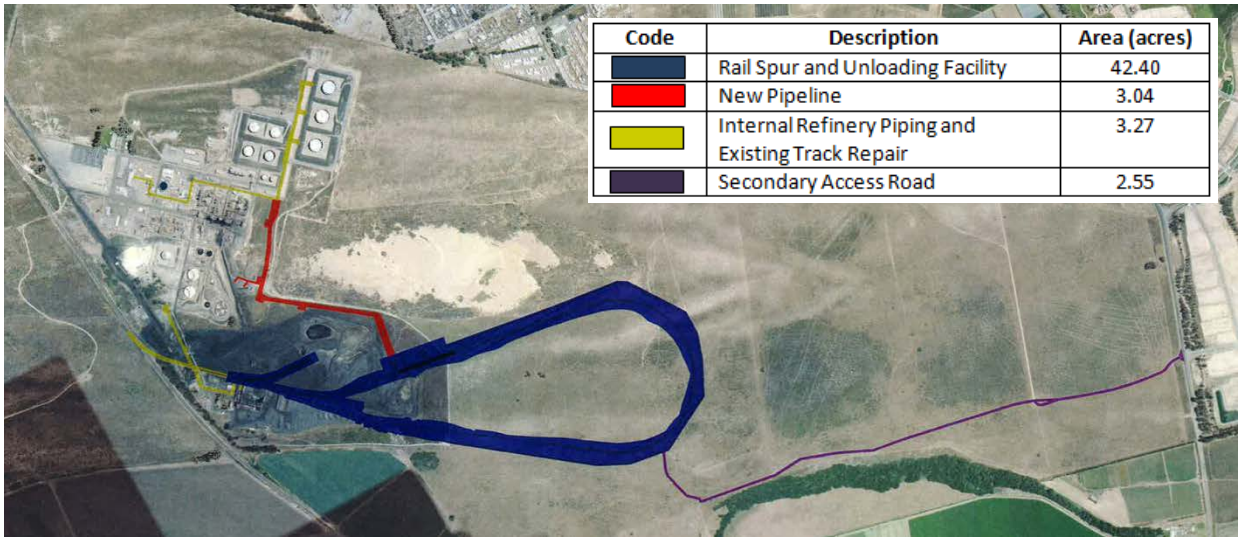
An eastern Emergency Vehicle Access route would be constructed from the eastern end of the tracks to State Route 1. The secondary access road would be covered with crushed miscellaneous base (most likely decomposed granite or comparable surfacing) to support emergency vehicles as prescribed by Cal Fire but would not be paved.

As required by the U.S. Department of Homeland Security, an extension of the existing eight-foot in height chain link fencing topped with barbed wire would be required around the periphery of the track. The security fence would not extend east around the perimeter of the secondary emergency access road. Additional lighting would also be required for the rail unloading facility similar to the proposed Rail Spur Project.

5.1.4.2 Loop Rail Configuration

Figure 5-4 shows a conceptual layout for the loop rail unloading track configuration.

Figure 5-4 Loop Rail Unloading Configuration



Source: Arcadis 2013

The Loop Rail Unloading Configuration would be designed to handle up to five unit trains per week, with an annual maximum number of unit trains of approximately 250. Each unit train

would consist of up to 80 tanker cars, which is the same as the Rail Spur Project. Each unit train would be capable of delivering about 52,000 barrels of oil to the SMR.

Construction of the Loop Rail Configuration Alternative would affect approximately 51.3 acres and would have an area of about 66.3 acres enclosed in the center of the loop. Due to the topography of the site approximately 350,000 cubic yards of cut and 218,000 cubic yards of fill would be required in order to provide level track and the required turn radius for the train. Approximately 80,000 cubic yards of excess cut may have to be trucked from the SMR, and the remainder of the excess cut could be used in other areas of the SMR.

The unloading facility would include an access platform and a system of pumps and meters, suction lines from the railcars, carbon beds for vapor treatment, and a common pipeline leading to the refinery's existing tank farm. The unloading system would be similar to the Rail Spur Project (Figure 2-7 shows a simplified block flow diagram of the unloading system). The access platform would run parallel to the track, with an individual gangway and safety cage at each rail car unloading station. The access platform and tracks would be supported by reinforced concrete construction. This area would provide structural support, spill containment and a clear, solid work surface for the operators.

It has been assumed that there would be two 10 car unloading systems. Each system would be equipped with an air eliminator, two flow meters, and two carbon beds. Upon exiting each of the unloading pumps the crude oil from each unloading systems would be commingled into a common pipeline that would flow to the air eliminator and then to the flow meters. Upon exiting the flow meters the crude oil from the two unloading systems would be comingled and transported via a new pipeline to the existing refinery crude oil storage tanks.

As the tanker cars are unloaded the train would be pulled around the loop until all 80 tanker cars have been unloaded. The total time needed or positioning, unloading, and departure of a unit train would be 10 to 12 hours. With this alternative an emergency access road would be constructed from the rail loop to State Route 1.

A new fire protection and safety system would be installed for the unloading rack, consisting of fire detection equipment, safety showers, eyewash stations, hydrants, controls and piping. The unloading rack would be equipped with a foam sprinkler deluge system and firewater monitors with foam generators at the unloading rack periphery. The foam spray system would require a foam concentrate storage tank. This would be the same fire protection system as the proposed Rail Spur Project.

An eastern Emergency Vehicle Access route would be constructed from the eastern end of the rail loop 3,000 feet to State Route 1. The secondary access road would be covered with crushed miscellaneous base (most likely decomposed granite or comparable surfacing) to support emergency vehicles as prescribed by Cal Fire but would not be paved.

As required by the U.S. Department of Homeland Security, an extension of the existing eight-foot in height chain link fencing topped with barbed wire would be required around the periphery of the new loop. The security fence would not extend east around the perimeter of the secondary

emergency access road. Additional lighting would also be required for the rail unloading facility similar to what is proposed for the Rail Spur Project.

5.1.4.3 Reduced Rail Deliveries

With this alternative the number of train deliveries to the SMR would be limited to a maximum of three per week (the Rail Spur Project is a maximum of five trains per week), with an annual total of 150 trains.

All other aspects of this alternative would be the same as the Rail Spur Project. The reader is referred to Chapter 2, Project Description, for a detailed description of the construction and operations of the rail spur.

5.2 Alternatives Screening Analysis

This section presents a screening analysis of the alternatives that were not dropped from further consideration above. The screening analysis has been used to determine which of the alternatives discussed above could meet the following criteria. Alternatives that meet the three criteria were carried forward for a more detailed analysis in the EIR.

- The alternative is feasible (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 §15364);
- The alternative would lessen the potentially significant impacts of the proposed project or substantially reduce other environmental impacts of the proposed project; and
- The alternative would attain most of the basic objectives of the project.

Tables 5.1 and 5.2, which are at the end of Section 5.2.7, summarize the screening analysis for the alternatives. The Tables provide a rating of each of the alternatives relative to the Rail Spur Project for each issue area. The ratings of the various alternatives were developed based upon a review of the alternative description information provided above, and an assessment of the level of impacts that would occur if these alternatives were implemented. The impacts identified for each of the alternatives were then compared to the Rail Spur Project to determine if the impacts might be greater, the same, or less than the Rail Spur Project. The information in Table 5.1 and Table 5.2 was used as part of the screening analysis to determine which alternatives should be carried forward for a more detailed analysis in the EIR.

5.2.1 Trucking to the Santa Maria Pump Station

The information in Table 5.1 shows that this alternative would reduce the severity of some of the impacts associated with the operation of the Rail Spur Project. For some of the issue areas the operational impact would increase in severity. With this alternative most of the impacts in the vicinity of the SMR would be eliminated, but some of these impacts would be shifted to the area around the City of Santa Maria.

This alternative would reduce some the construction related impacts to biological and cultural resources since the expansion of the SMPS would occur on agricultural land, which has limited biological and cultural resources. However, all of the biological and cultural resource construction impacts for the Rail Spur Project would be less than significant with mitigation.

The visual impacts for this alternative would likely be less than for the Rail Spur Project given the location of the SMPS. However, all of the visual impacts for the Rail Spur Project would be less than significant with mitigation.

This alternative would increase operational air emissions since trucking would generate higher levels of air emissions. Truck transport of crude to the SMPS would generate about 1,089 tons of NO_x+ROG and 39 tons of PM_{10} emissions per year within California assuming a truck route from the Oregon state border to the SMPS. This compares with about 293 tons of NO_x+ROG and 8.6 tons of PM_{10} for the locomotives to deliver the crude to the SMR from the Oregon border. In all cases the air emissions would be substantially higher for this trucking alternative. On average, railroads are about four times more fuel efficient than trucks, which is one of the drivers in the reduction in air emissions (Association of American Railroad 2012).

Trucking to the SMPS would eliminate the cancer health risk impacts associated with the trains unloading at the SMR. However, the truck emission along the roads in the City of Santa Maria would likely result in significant cancer risk to the residences that are in close proximity to the roads. The PM_{10} emissions from trucking would be greater than for rail due to the large number of trucks needed to transport the crude to the Santa Maria Pump Station. Within the City of Santa Maria limits the annual PM_{10} emissions from trucks would be about 0.80 tons per year, which would be greater than the 0.73 tons per year that would occur at the SMR. Annual PM_{10} emissions along the portion of Highway 101 in SLO County (69 miles) from trucks would be 4.24 tons per year compared with 1.14 tons per year for trains along the mainline within SLO County. There are a large number of sensitive receptors along the truck routes that would likely be used for transporting crude via truck through the City of Santa Maria. This increase in PM_{10} emissions, in proximity to sensitive receptors in the City of Santa Maria, would likely result in a significant health risk impact.

This alternative could also have potentially significant impacts to biological and water resources from an oil spill due to a truck accident, depending upon the location of the spill along the truck route. Oil spill impacts from truck accidents would still be potentially significant depending upon the location of the spill. The spill volume would be less since a truck holds less oil than a rail tanker car. However, the probability of a spill would increase since trucks have a higher accident rate then trains. The net effect would be a higher risk of a spill from trucks, but in the event of a spill the area impacted would likely be smaller than for a rail spill.

Trucking would add 390 one-way trips per day to the local roads within the City of Santa Maria, assuming deliveries seven days per week. This would increase traffic impacts over the Rail Spur Project, and could lead to significant impacts to intersections in the City of Santa Maria particularly during peak hours. The intersections that could be impacted include the Highway 101 and Betteravia Road, Highway 101 and Stowell Road, and Stowell Road and Nicholson Ave.

The trucking to the SMPS would involve trucking the oil from the source of the crude oil to the SMPS. The crude oil is expected to be delivered from various North American sources and would place 2,730 trucks on the road per week (390 one-way truck trips per day assuming seven days per week) between the unloading station and the crude source since each truck will need to return to the oilfield for filling up. These trucks would pass through populated areas within California including possibly the Bay Area, Los Angeles Basin, and Sacramento. The exact populated areas that could be impacted by the trucking operations would depend upon the route taken to get to the SMPS. However, trucks would likely use Highway 101 from both the north and the south to get to the SMPS.

Class 3 hazardous material trucks have an estimated accident rate of 0.71 accidents per million miles (Battelle 2001). This is greater than the 0.51 to 0.39 derailment per million miles for the crude oil trains. Also, the probability of a Class 3 truck having a spill given an accident is about 35% (Battelle 2001). Delivery of crude to the SMPS via truck would require about 273 times more miles than delivery by unit train. The net result would be a substantial increase in the overall risk of an accident for truck then compared to rail. However, the volume of oil spilled from a truck accident would be smaller, which could reduce the consequence of a spill. While this would serve to reduce the overall consequences of a spill, the impact from a truck spill would likely be significant, and there would likely be more spills due to the higher accident rate and the substantial increase in overall miles traveled to transport the oil to the SMPS.

Class 3 truck accidents and incidents account for about 56 percent of all of the hazardous material truck accidents and incidents. Class 3 materials travel predominantly in bulk carriers. For the total number of enroute accidents, an estimated 88 percent of listed accidents involved cargo tanks (Battelle 2001).

This alternative would eliminate the noise impacts in the vicinity of the SMR, which was found to be less than significant with mitigation. The increase truck traffic on the local road in the City of Santa Maria would generate increase noise. This would be particularly true if trucks were traveling to the SMPS at night. The truck route through the City of Santa Maria would be mainly through agricultural land, but there are a few residences in close proximity to the roads.

Construction of the truck unloading facility at the SMPS would likely result in the permanent loss of prime agricultural land that is currently being used for row crops since the site would have to be expanded to accommodate the increase in truck unloading.

Construction and operation of an expanded truck unloading facility at the SMPS would require permits from Santa Barbara County and the Santa Barbara County Air Pollution Control District, which are outside of the control of the County, and it is speculative if such permits could be obtained from these agencies.

While trucking to the SMPS would eliminate some of the significant impacts in the vicinity of the SMR, it would shift these impacts to the area around the City of Santa Maria. Given that the trucking to the SMPS alternative would increase the severity of a number of impacts identified for the Rail Spur Project (e.g., agricultural resources, air quality, transportation and circulation, etc.), result in additional significant unavoidable impacts to traffic, and not eliminate any of the significant impacts associated with the Rail Spur Project, it has not undergone a more detailed

analysis in the EIR, and has been dropped from further consideration based upon the screening analysis.

5.2.2 Truck Transport to the SMR

The information in Table 5.1 shows that this alternative would not reduce any of the impacts associated with the operation of the Rail Spur Project. For some of the issue areas the operational impact would increase in severity.

This alternative would likely reduce some the construction related impact to biological, cultural, and agricultural resources since the area that would need to be developed at the SMR would be smaller. However, all of the biological, cultural, and agricultural resource construction impacts for the Rail Spur Project would be less than significant with mitigation.

This alternative would increase operational air emissions since trucking would generate higher levels of air emissions. Truck transport of crude to the SMR would generate about 1,070 tons of NO_x+ROG and 38 tons of PM_{10} emissions per year within California assuming a truck route from the Oregon state border to the SMR. This compares with about 293 tons of NO_x+ROG and 8.6 tons of PM_{10} for the locomotives to deliver the crude to the SMR. In all cases the air emissions would be substantially higher for this trucking alternative. On average, railroads are four times more fuel efficient than trucks, which is one of the drivers in the reduction in air emissions (Association of American Railroad 2012).

Trucking to the SMR would increase the cancer health risk impacts in the area of the SMR due to the increase truck traffic, which is already a major driver of the cancer risk at the SMR. This is due to the fact that the DPM emissions for the trucks would be greater than for the trains, and the fact that the PM_{10} emissions would occur closer to residential areas since most of the PM_{10} emissions would occur on Willow Road and Highway 1. Use of truck to transport crude to the SMR would increase the level of truck traffic in the vicinity of the refinery by a factor of about four. Given that higher diesel particulate matter emission associated with the trucking alternative, the health risk impact of this alternative would be greater than for the Rail Spur Project.

This alternative could also have potentially significant impacts to biological and water resources from an oil spill due to a truck accident, depending upon the location of the spill along the truck route. Oil spill impacts from truck accidents would still be potentially significant depending upon the location of the spill. The spill volume would be less since a truck holds less oil than a rail tanker car. However, the probability of a spill would increase since trucks have a higher accident rate then trains. The net effect would be a much higher risk of a spill from trucks, but in the event of a spill area impacted would likely be smaller than for a rail spill.

The trucking to the SMR would involve trucking the oil from the source of the crude oil to the SMPS. The crude oil is expected to be delivered from various North American sources and would place 2,730 trucks on the road per week (390 one-way truck trips per day assuming seven days per week) between the unloading station and the crude source since each truck would need to return to the oilfield for filling up. These trucks would pass through populated areas within California including possibly the Bay Area, Los Angeles Basin, and Sacramento. The exact populated areas that could be impacted by the trucking operations would depend upon the route

taken to get to the SMR. However, trucks would likely use Highway 101 from both the north and the south to get to the SMR.

Class 3 hazardous material trucks have an estimated accident rate of 0.71 accidents per million miles (Battelle 2001). This is greater than the 0.51 to 0.39 derailment per million miles for the crude oil trains. Also, the probability of a Class 3 truck having a spill given an accident is about 35% (Battelle 2001). Delivery of crude to the SMPS via truck would require about 273 times more miles than delivery by unit train. The net result would be a substantial increase in the overall risk of an accident for truck then compared to rail. However, the volume of oil spilled from a truck accident would be smaller, which could reduce the consequence of a spill. While this would serve to reduce the overall consequences of a spill, the impact from a truck spill would likely be significant, and there would likely be more spills due to the higher accident rate and the substantial increase in overall miles traveled to transport the oil to the SMR.

Class 3 truck accidents and incidents account for about 56 percent of all of the hazardous material truck accidents and incidents. Class 3 materials travel predominantly in bulk carriers. For the total number of enroute accidents, an estimated 88 percent of listed accidents involved cargo tanks (Battelle 2001).

Trucking would add 390 one-way trips per day to Willow Road and State Route 1, assuming deliveries seven days per week. This would increase traffic and hazards impacts over the Rail Spur Project, and could lead to a significant impact at the Willow Road/State Route 1 intersection particularly during peak hours.

Noise impacts would likely increase due to the constant truck traffic that would be traveling to the SMR along Willow Road. This would be particularly true during the nighttime hours. There would also be some noise at the SMR due to the truck unloading operation, but it would likely be less than for the Rail Spur Project.

Given that the trucking to the SMR alternative would increase the severity of a number of impacts identified for the Rail Spur Project (e.g., air quality, noise, transportation and circulation, etc.), would not eliminate any of the significant impacts, and could result in additional significant unavoidable impacts to traffic, it has not undergone a more detailed analysis in the EIR, and has been dropped from further consideration based upon the screening analysis.

5.2.3 Marine Transportation

The information in Table 5.1 shows that this alternative would result in an increase in the severity of the majority of the impacts identified for the Rail Spur Project. While it would reduce or eliminate some of the onshore impacts (risk to the public from rail accidents, impacts to onshore biological/agricultural/water resources), these would be more than offset by the introduction of a large number of marine related impacts that would not exist for the Rail Spur Project. A number of the marine oil spill related impacts would be significant and unavoidable (i.e., marine biology, marine water quality, recreation, etc.). With this alternative a number of the impacts would be shifted from onshore areas to offshore areas.

Recommended ocean conditions for sitting marine terminals suggest a maximum significant wave height of between 1.2 and 2.0 meters and a wind speed of between 11 and 18 meters per second depending upon the activity (i.e., berthing, unloading, disconnect of cargo arms, unberthing, etc.) (Shu 2000). In the area offshore the SMR wave heights exceeding 2.0 meters occurred about 30% of the time, and waves exceeding 1.0 m occurred about 80% of the time. Winds exceeding 10 meter/second occurred about 16% of the time (USACE 2015). This data would indicate that a marine terminal located directly offshore the SMR would likely not be feasible due to the sea state conditions.

While use of San Luis Obispo Bay offshore Avila Beach would be more protective and allow for sea states that could accommodate a marine terminal, Policy 6 of the San Luis Obispo County Coastal Plan Policies states that no new marine terminal facilities shall be constructed along the coast of San Luis Obispo County north of Shell Beach. Therefore, a new marine terminal in San Luis Obispo Bay offshore Avila Beach would not be allowed based upon the County's coastal polices.

This alternative would not meet any of the objectives of the project, and in particular it would not allow access to North American crudes, would not be consistent with San Luis Obispo Local Coastal Program, and would not maximize use of the existing infrastructure and resources. The marine alternative would only be capable of providing foreign or Alaskan crudes to the SMR.

The marine option would increase the severity of a number of impacts identified for the Rail Spur Project (e.g., aesthetics and visual resources, air quality, recreation, etc.), and would introduce marine impacts, some of which would be significant and unavoidable. The peak day hoteling and crude unloading emissions from a 35,000 DWT tanker would be about 372.9 lbs of NO_x, 402,8 of ROG, and 38.2 lbs of PM_{10} (CSLC 2010). These emissions would be greater than the peak day rail unloading emissions at the SMR (243.1 lbs of NO_x, 34.1 lbs ROG, and 10.7 lbs of PM_{10}.

Based upon United State Coast Guard (USCG) spill data for marine vessels (CSLC 2010), marine tankers servicing the SMR would be expected to have a spill of any size once every 2.2 years and a spill of more than 1,000 gallons once every 29 years. These are higher spill probabilities then for the proposed rail project. An oil spill of 12,090 barrel of heavy crude could impact about 26 miles of coastline (CSLC 2010).

A marine terminal would not be consistent with the San Luis Obispo County Local Coastal Program. In addition, construction and operation of a marine terminal would require permits from a wide range of Federal and State agencies, which are outside of the control of the County, and it is speculative if such permits could be obtained from agencies such as the California State Land Commission and the California Coastal Commission.

While a marine terminal alternative would eliminate some of the onshore significant impacts associated with the Rail Spur Project, it would generate a number of new significant impacts particularly associated with the marine environment. In addition, a marine terminal alternative could probably not be "feasibly accomplished in a successful manner" considering the environmental and technological factors discussed above. Therefore, the marine terminal

alternative has not undergone a more detailed analysis in the EIR, and has been dropped from further consideration based upon the screening analysis.

5.2.4 Rail Unloading at the Santa Maria Pump Station

As shown in Table 5.2, this alternative would increase the severity of impacts in all issue areas with the exception of recreation and population and housing. This alternative would require building a new rail line from near the City of Guadalupe west through the City of Santa Maria to the SMPS. This would likely be technically infeasible due to the large number of street crossings that would have to occur. Separated grade crossings would need to be installed at all of the street crossings. It is likely that permitting of this new rail line through the City of Santa Maria would not be feasible, and would likely require permits from the City of Guadalupe, County of Santa Barbara, and the City of Santa Maria, which are outside of the control of the County, and it is speculative if such permits could be obtained from these agencies.

Given that this alternative would not reduce the severity of any of the significant impacts of the Rail Spur Project, would generate a number of new potentially significant impacts, and is likely to be infeasible, it has not undergone a more detailed analysis in the EIR, and has been dropped from further consideration based upon the screening analysis.

5.2.5 Shorter Unit Trains

This alternative would reduce the length of the unit trains delivered to the SMR refinery, but more trains would be needed to deliver the same amount of crude. If the unit trains were reduced to 40 tank cars, twice as many trains would need to be delivered to the SMR to maintain the same crude delivery rate. The information in Table 5.1 shows that this alternative would reduce a number of the construction related impacts compared to the proposed project since less track would need to be installed east of the unloading area. Construction of a shorter track would reduce, but not eliminate the impacts to CDFW sensitive habitat. For a 40 tanker unit train the impacts to CDFW sensitive habitat would be reduced by about 10 acres.

This alternative would increase the severity of a number of operational impacts such as air emissions, risk of spills for the unloading facility and mainline tracks, and health risk along the mainline tracks and at the SMR. A 40 car unit train would almost double the air and GHG emissions since twice as many trains would be needed to deliver the same amount of crude oil to the SMR. This would substantially increase the severity of the air quality significant Class I impacts.

Also it is likely that the overall accident rate associated with running a higher number of shorter trains would increase as compared to running fewer longer trains (Schafer. 2008). The estimated spill volumes would remain about the same as for the Rail Spur Project. This would increase the risk of oil spill impacting biological, water, cultural, and agricultural resources, which was found to be a significant (Class I) impact. The risk of injuries and fatalities would also increase with shorter unit trains due to the overall higher accident rate associated with running an increased number of shorter trains. This would increase the severity of the significant (Class I) hazard impact.

Given that this alternative would not reduce the severity of any of the significant impacts of the Rail Spur Project, and would increase the severity of a number of significant operational impacts, it has not undergone a more detailed analysis in the EIR, and has been dropped from further consideration based upon the screening analysis

5.2.6 Loop Rail Unloading Configuration

This alternative would use a different track layout at the SMR for unloading of crude oil. As discussed in Table 5.2, all of the operational impacts for this alternative would likely be the same as for the Rail Spur Project with the exception of air quality, noise, and visual resources. This alternative could reduce the air emissions associated with the switching operations at the SMR since fewer movements of the tanker cars may be needed. Visual impacts would likely increase since the trains would be more visible from State Route 1 and other sensitive view areas.

Construction impacts would increase for most of the issue areas (i.e., biology, cultural, agricultural, geology, water, etc.) since a larger area would need to be disturbed. In addition, a larger amount of cut and fill would be needed to implement this alternative. There would also be excess cut material that would need to be hauled off site via truck. This alternative would increase traffic and air emissions associated with construction and could impact additional biological and cultural resources.

Given that this alternative has the potential to reduce air emissions associated with the rail unloading operations at the SMR, and would meet all of the objectives of the project, it has been selected for further evaluation in the EIR.

5.2.7 Reduced Rail Deliveries

This alternative would be identical to the Rail Spur Project except that it would only have three trains per week delivered to the SMR versus five. For all the issue areas other than air quality and hazards the impacts would be essentially the same as the proposed project. This alternative would reduce the annual criteria pollutant air emissions from the project, but the peak day criteria pollutant emissions would remain the same. Annual toxic air emissions would be reduced since fewer trains would serve the facility. Reducing the train deliveries to three per week would reduce the annual emissions.

The peak day emissions would still remain the same and would be significant and unavoidable (Class I). It is likely that toxic air emissions at the SMR could be reduced to less than significant with mitigation with the reduction in the number of annual train deliveries reduced from 250 to 150.

The hazard impacts associated with train accidents would be reduce since fewer trains would be delivered to the SMR. However, the impact would remain significant and unavoidable. The oil spill risk associated with biology and water resources would be reduced compared with the Proposed Project. With the reduction in rail deliveries to the SMR the probability of an oil spill would be reduce. However, the impact to water and biological resources would remain the same in the event of an oil spill since the spill volumes from a rail tanker car would remain the same.

If the County is preempted from applying mitigation to the UPRR mainline air emissions, then this alternative would serve to reduce the severity of the significant and unavoidable air quality impact associated with criteria pollutants and GHG emissions. It also could reduce the severity of the health risk impacts at the SMR from significant and unavoidable to less than significant with mitigation. This alternative would also reduce the risk of an oil spill since fewer trains would be traveling to the SMR. This would reduce the severity of the significant hazard impact. Therefore, this alternative has been selected for further evaluation in the EIR.

5.3 Environmental Analysis of Selected Alternatives

Based on the screening analysis presented above, three alternatives were selected for further evaluation in the EIR. State CEQA Guidelines Section 15126.6(d) states:

The EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the Rail Spur 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 Rail Spur Project, the significant effects of the alternative shall be discussed, but in less detail than the significant effects of the proposed Project.

In accordance with State CEQA Guidelines Section 15126.6(d) as presented above, this EIR provides sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the Rail Spur Project and the other alternatives. It should be noted that assumptions made regarding the alternatives' descriptions could differ from actual proposals and the analyses are not presented to a project-level of detail. Different alternative Project configurations and a project-level environmental analysis could result in different conclusions from those presented herein.

The remainder of this section further analyzes the environmental impacts of the selected alternatives. The alternatives selected in Section 5.2 for more detailed analysis include:

- The No Project Alternative;
- Loop Rail Unloading Configuration; and
- Reduced Rail Deliveries.

Table 5.1 Comparison of Transportation Alternatives with Proposed Project

Issue Area	Impact Comparison to Rail Spur Project			Comments
	Trucking to SMPS	Trucking to SMR	Marine Terminal	
	Alternative Lessens or Avoids Impacts (–), Result in Increased or Additional Impacts (+) or Remain About the Same (0) when compared to the Proposed Project.			
Aesthetics and Visual	-	0	+	***Trucking to SMPS –*** The SMPS would have to be expanded and new unloading racks and tanks would need to be installed. This would result in an expansion of an industrial facility that would affect the visual character of the surrounding area. However, the SMPS is surrounded by agricultural operations and is not near any scenic roads. There would also be an increase in the nighttime glare from the facility, which could impact surrounding areas, but most of the surrounding areas are agricultural. ***Trucking to SMR –*** A truck unloading facility at the SMR would be smaller in scale than the rail unloading facility, but it would still be visible from some of the surrounding areas. It would also have similar nighttime lighting as the rail facility. ***Marine –*** The presence of a marine tanker offshore from the SMR would significantly affect the visual quality of the coast and the view from the ODSRVA.
Agricultural Resources	+/0	-/0	-	***Trucking to SMPS –*** The SMPS would have to be expanded and new unloading racks and tanks would need to be installed. The expansion would likely occur on agricultural land that is currently being used for row crop production. This agricultural land would be lost to production. ***Trucking to SMR –*** A truck unloading facility at the SMR would be smaller in scale than the rail unloading facility, and would therefore impact less agricultural land. ***Marine –*** The only onshore impacts associated with this alternative would be the construction of the pipeline from the mooring system to the SMR. This could temporarily impact agricultural land, but would not result in any permanent loss.
Air Quality and GHG	-/+	-/+	+	***Trucking to SMPS –*** The SMPS would have to be expanded and new unloading racks and tanks would need to be installed. This would result in construction air emissions that would likely be similar to the Rail Spur Project. The operational emissions associated with the trucks would be greater than for the Rail Spur Project due to the large number of trucks need to deliver the crude. There would also be increased air emissions associated moving the crude from the SMPS to the SMR via pipeline. ***Trucking to SMR –*** The construction emissions would likely be similar to that for the Rail Spur Project. The operational emissions associated with the trucks would be greater than for the Rail Spur Project due to the large number of trucks need to deliver the crude. ***Marine –*** Construction of an offshore marine terminal would generate significant air emissions due to marine barges and support tugs and the installation of an offshore pipeline. The operational emissions

Table 5.1 Comparison of Transportation Alternatives with Proposed Project

Issue Area	Impact Comparison to Rail Spur Project			Comments
	Trucking to SMPS	Trucking to SMR	Marine Terminal	
	Alternative Lessens or Avoids Impacts (–), Result in Increased or Additional Impacts (+) or Remain About the Same (0) when compared to the Proposed Project.			
				would be substantially greater due to the crude oil tanker and tug boat emissions.
Biological Resources	-/0	-/0	+	***Trucking to SMPS –*** The SMPS would have to be expanded and new unloading racks and tanks would need to be installed. However, the expansion would likely occur on agricultural land that has minimal biological resources so the construction related impacts would be less. Oil spill impacts from truck accidents would still be potentially significant depending upon the location of the spill. The spill volume would be less since a truck holds less oil than a rail tanker car. However, the probability of a spill would increase since trucks have a higher accident rate then trains. The net effect would be a much higher risk of a spill from trucks, but in the event of a spill area impacted would likely be smaller than for a rail spill. ***Trucking to SMR –*** A truck unloading facility at the SMR would be smaller in scale than the rail unloading facility, so it would likely have less biological impacts due to construction. Oil spill impacts from truck accidents would still be potentially significant depending upon the location of the spill. The spill volume would be less since a truck holds less oil than a rail tanker car. However, the probability of a spill would increase since trucks have a higher accident rate then trains. The net effect would be a much higher risk of a spill from trucks, but in the event of a spill area impacted would likely be smaller than for a rail spill. ***Marine –*** Construction of an offshore marine terminal could have significant impacts to marine biological resources. An oil spill from a marine tanker would also have significant impacts to marine resources. The terminal would be located in known habitat area for the California Sea Otter, a Federally threatened species. Construction of the pipeline from the offshore mooring to the SMR would pass though areas of sensitive biological resource, which could be significantly impacted.
Cultural Resources	-/0	-/0	-	***Trucking to SMPS –*** The SMPS would have to be expanded and new unloading racks and tanks would need to be installed. However, the expansion would likely occur on agricultural that would likely have limited cultural resources since the land has been so heavily disturbed. ***Trucking to SMR –*** A truck unloading facility at the SMR would be smaller in scale than the rail unloading facility, do it would likely have less cultural impacts. ***Marine –*** Construction of an offshore marine terminal could have significant impacts to offshore cultural resources, depending upon the location of the mooring facility. Construction of the pipeline

Table 5.1 Comparison of Transportation Alternatives with Proposed Project

Issue Area	Impact Comparison to Rail Spur Project			Comments
	Trucking to SMPS	Trucking to SMR	Marine Terminal	
	Alternative Lessens or Avoids Impacts (–), Result in Increased or Additional Impacts (+) or Remain About the Same (0) when compared to the Proposed Project.			
				from the offshore mooring to the SMR would pass though areas of sensitive cultural resource, which could be significantly impacted.
Geological Resources	0	0	+	***Trucking to SMPS –*** The SMPS would have to be expanded to accommodate the additional truck unloading capacity. This expansion would occur on flat agricultural land. As such, the geological resource impacts associated with construction would be similar to the Rail Spur Project. ***Trucking to SMR –*** A truck unloading facility at the SMR would include a number of truck unloading racks. These would be subject to the same types of geological impacts as the Rail Spur Project. As such, the geological resource impacts associated with construction would be similar to the Rail Spur Project. ***Marine –*** Installation of an offshore mooring system and pipeline would raise offshore geological issues associated with design of the pipeline and mooring system to handle seismic events.
Hazards and Hazardous Materials	0	0	+	***Trucking to SMPS –*** The risk of an oil spill and accident would increase with the use of trucks. Trucks have a higher accident rate per mile than trains. However, the volume of oil spilled from a truck accident would be smaller, which could reduce the consequence of a spill. Even with the reduction in spill volume, the impacts of an accident and spill from truck transportation would likely be significant. The combination of increase frequency of accident but a lower level of consequence would likely result in a similar level of risk between truck and rail. The risk of one or more fatalities or injuries would be greater with truck transportation, but the risk of multiple fatalities or injuries would likely be lower. ***Trucking to SMR –*** The risk of an oil spill and accident would increase with the use of trucks. Trucks have a higher accident rate per mile than trains. However, the volume of oil spilled from a truck accident would be smaller, which could reduce the consequence of a spill. Even with the reduction in spill volume, the impacts of an accident and spill from truck transportation would likely be significant. The combination of increase frequency of accident but a lower level of consequence would likely result in a similar level of risk between truck and rail. The risk of one or more fatalities or injuries would be greater with truck transportation, but the risk of multiple fatalities or injuries would likely be lower. ***Marine –*** The risk associated with a marine tanker accident and associated large spill of oil to the marine environment would likely be significant. The spill volumes with marine transportation could

Table 5.1 Comparison of Transportation Alternatives with Proposed Project

Issue Area	Impact Comparison to Rail Spur Project			Comments
	Trucking to SMPS	Trucking to SMR	Marine Terminal	
	Alternative Lessens or Avoids Impacts (–), Result in Increased or Additional Impacts (+) or Remain About the Same (0) when compared to the Proposed Project.			
				be substantially larger than with rail transportation.
Noise and Vibration	0	+	+	***Trucking to SMPS –*** The increase truck traffic on the local road in the City of Santa Maria would generate increase noise. This would be particularly true if trucks were traveling to the SMPS at night. The truck route through the City of Santa Maria would be mainly through agricultural land, but there are a few residences in close proximity to the roads. The noise impacts at the SMPS would be less than the noise impacts at the SMR from the Rail Spur Project since the site in not located near any sensitive receptors. This alternative would eliminate any noise impact in the vicinity of the SMR. ***Trucking to SMR –*** The increase truck traffic on the local road around the SMR would generate increase noise. This would be particularly true if trucks were traveling to the SMR at night. The noise impacts of the unloading operations would likely be similar to the Rail Spur Project due to the constant flow of trucks moving through the unloading racks. ***Marine –*** The presence of a marine tanker offshore from the SMR could generate noise that would be heard at the ODSRVA, particularly at night. There is also the potential for noise impacts to marine mammals from the tanker engines.
Population and Housing	0	0	0	None of the alternative would be expected to generate large numbers of employees that would impact housing and population.
Public Services and Utilities	+	0	+	***Trucking to SMPS –*** The SMPS site is further away from emergency response and fire stations. This would increase the overall response time to the facility. Also, the SMPS does not have a dedicated fire brigade, which would serve to increase the demand on fire services. The addition of new infrastructure would increase demand on emergency response and fire services. Demand for emergency response along the highways would increase due to the likely increase in truck accident associated with transporting the crude oil. The risk of an accident for truck transportation would be higher than for rail, but the spill size in the event of an accident would be smaller. Spills of crude oil from trucks would require similar emergency response capabilities as for rail, but the extent of the response would likely be smaller due to the reduced spill size. However, with truck transportation the higher accident rate would result the need for more response to accidents. Therefore, the overall demand on emergency services would be similar between truck and rail, and would likely remain significant. ***Trucking to SMR –*** This alternative would have the same public services impacts as the Rail Spur Project since the operation of the facility would be essentially the same with trucks replacing trains.

Table 5.1 Comparison of Transportation Alternatives with Proposed Project

Issue Area	Impact Comparison to Rail Spur Project			Comments
	Trucking to SMPS	Trucking to SMR	Marine Terminal	
	Alternative Lessens or Avoids Impacts (–), Result in Increased or Additional Impacts (+) or Remain About the Same (0) when compared to the Proposed Project.			
				Demand for emergency response along the highways would increase due to the likely increase in truck accidents associated with transporting the crude oil. The risk of an accident for truck transportation would be higher than for rail, but the spill size in the event of an accident would be smaller. Spills of crude oil from trucks would require similar emergency response capabilities as for rail, but the extent of the response would likely be smaller due to the reduced spill size. However, with truck transportation the higher accident rate would result the need for more response to accidents. Therefore, the overall demand on emergency services would be similar between truck and rail, and would likely remain significant. ***Marine –*** The presence of a marine tanker offshore from the SMR would increase the demand on the Coast Guard to provide emergency services in the event of an incident. Also demand on other emergency resource agencies would increase in the event of an offshore oil spill. Use of marine tankers would increase the demand for offshore oil spill cleanup equipment and resources.
Recreation	0	0	+	***Trucking to SMPS –*** This would have similar recreational impacts as the Rail Spur Project. ***Trucking to SMR –*** This would have the similar recreational impacts as the Rail Spur Project. ***Marine –*** The presence of a marine tanker offshore from the SMR would be visible from the ODSRVA, which could affect the experience of people using the park. In the event of an offshore oil spill the ODSRVA could be closed to public for cleanup operations. This would be a significant recreational impact. Offshore San Luis Obispo Bay the terminal would be visible from Avila Beach recreational area, and in the event of a spill could close this areas to the public.
Transportation and Circulation	+	+	0	***Trucking to SMPS –*** This alternative would add a 390 one-way truck trips per day (assuming seven days per week) to the local roads in the City of Santa Maria. This would likely have a significant impact to a few of intersections particularly during peak hours. ***Trucking to SMR –*** This alternative would add a 390 one-way truck trips per day (assuming seven days per week) to Willow Road and State Route 1. This would likely have a significant impact to the intersection of Willow Road and State Route 1 during the peak afternoon hours. ***Marine –*** This alternative would be expected to have similar traffic impacts as the Rail Spur Project.
Water Resources	-/0	-/0	+	***Trucking to SMPS –*** This alternative would have similar construction related water resource impacts as the Rail Spur Project since construction and operation of the facility would be essentially the same with trucks replacing trains. Oil spill impacts from truck accidents would still be potentially

Table 5.1 Comparison of Transportation Alternatives with Proposed Project

Issue Area	Impact Comparison to Rail Spur Project			Comments
	Trucking to SMPS	Trucking to SMR	Marine Terminal	
	Alternative Lessens or Avoids Impacts (–), Result in Increased or Additional Impacts (+) or Remain About the Same (0) when compared to the Proposed Project.			
				significant depending upon the location of the spill. The spill volume would be less since a truck holds less oil than a rail tanker car. However, the probability of a spill would increase since trucks have a higher accident rate then trains. The net effect would be a much higher risk of a spill from trucks, but in the event of a spill area impacted would likely be smaller than for a rail spill. ***Trucking to SMR –*** This alternative would have similar water resource impacts as the Rail Spur Project since the construction and operation of the facility would be essentially the same with trucks replacing trains. Oil spill impacts from truck accidents would still be potentially significant depending upon the location of the spill. The spill volume would be less since a truck holds less oil than a rail tanker car. However, the probability of a spill would increase since trucks have a higher accident rate then trains. The net effect would be a much higher risk of a spill from trucks, but in the event of a spill area impacted would likely be smaller than for a rail spill. ***Marine –*** Construction of the offshore mooring and pipeline would have marine water quality impacts due to the anchoring of barges and other offshore construction activities. In the event of an offshore oil spill there would be significant marine water quality impacts.

For issue areas marked with two scores, the first one represents changes from the proposed project for construction and the second one represents changes from the proposed project for operations.

Table 5.2 Comparison of Rail Related Alternatives with Proposed Project

Issue Area	Impact Comparison to Rail Spur Project				Comments
	Rail Unloading at SMPS	Loop Rail Unloading Configuration	Reduced Rail Deliveries	Reduced Unit Train Size	
	Alternative Lessens or Avoids Impacts (–), Result in Increased or Additional Impacts (+) or Remain About the Same (0) when compared to the Proposed Project.				
Aesthetics and Visual	+	+	-	-	***Rail Unloading at SMPS –*** New rail tracks would have to be installed through the City of Santa Maria, which would affect the visual character of the surrounding areas. The SMPS would have to be expanded and new rail and unloading facilities and tanks would need to be installed. This would result in a major expansion of an industrial facility that would affect the visual character of the surrounding area. There would also be an increase in the nighttime glare from the facility, which could impact surrounding areas. ***Loop Rail –*** The loop rail configuration would be substantially larger than the proposed linear design. Due to the topography of the site, the southern end of the loop would have to be raised to maintain a level grade. This would increase the visual impacts of the project over the proposed linear design, since the track and trains would be more visible for residential areas, and State Route 1. ***Reduced Deliveries –*** This would have the same visual impacts as the Rail Spur Project since the design and track layout of the alternative would be the same. Trains would be at the SMR less often, which would reduce to some level the visual impacts of the trains, but would not affect the visual impacts of the rail facilities. ***Reduced Unit Train Size –*** The length of the rail spur track east of the refinery would be reduced, which would serve to reduce the visual impacts of the onsite railroad tracks. The visual impact of the unloading area would remain the same as the proposed project.
Agricultural Resources	+	+	0/-	-/+	***Rail Unloading at SMPS –*** Installation of the new rail line to the SMPS would likely pass through agricultural lands, which would be permanently removed from agricultural production. In addition, increased train traffic in close proximity of agricultural lands could impact crop productivity. The SMPS would have to be expanded and new rail and unloading facilities and tanks would need to be installed. The expansion would likely occur on agricultural land that is currently being used for row crop production. This agricultural land would be lost to production. ***Loop Rail –*** The loop rail configuration would be substantially larger than the proposed linear design and would impact a larger area of agricultural land. Plus

Table 5.2 Comparison of Rail Related Alternatives with Proposed Project

Issue Area	Impact Comparison to Rail Spur Project				Comments
	Rail Unloading at SMPS	Loop Rail Unloading Configuration	Reduced Rail Deliveries	Reduced Unit Train Size	
	Alternative Lessens or Avoids Impacts (–), Result in Increased or Additional Impacts (+) or Remain About the Same (0) when compared to the Proposed Project.				
					the loop design would preclude grazing on a large portion of the site. ***Reduced Deliveries –*** This would have the same agricultural impacts as the Rail Spur Project for construction since the design and layout of the facilities at the refinery would be the same. This alternative would have a lower spill probability due to the reduction in the number of trains that would be needed to service the refinery. Impacts of a spill would remain the same as the proposed project in the event of an oil spill, but the risk of a spill impacting agricultural resources would decrease. ***Reduced Unit Train Size –*** The length of the rail spur tracks east of the loading area would be reduced by about 50 percent. This would reduce the level of construction impacts to agricultural resources since less area would be removed from grazing operations. This alternative would have higher spill probabilities due to the increase number of trains that would be needed to be delivered to the refinery. While the impacts of an oil spill would remain the same as the proposed project in the event of a spill, the risk of a spill impacting agricultural resources would increase.
Air Quality and GHG	+	+/-	0/-	0/+	***Rail Unloading at SMPS –*** Substantial air emissions would occur due to the construction of the new rail line to the SMPS. The SMPS would have to be expanded to accommodate the rail lines and unloading facilities. These construction emissions would be greater than for the Rail Spur Project since more new infrastructure would need to be built. The operational emissions associated with the trains would be greater than for the Rail Spur Project due to the longer travel distance particularly if the trains came from the north. There would also be increased air emissions associated moving the crude from the SMPS to the SMR via pipeline. ***Loop Rail –*** Air emissions due to construction would be greater than for the Rail Spur Project since more area would need to be graded and more cut and fill would be needed. There would also be a need to export soil from the construction site, which would increase offsite truck emissions. The operational emissions at the SMR could be slightly lower since the loop design would likely require less switching time for the locomotives since fewer sections of the train would need to

Table 5.2 Comparison of Rail Related Alternatives with Proposed Project

Issue Area	Impact Comparison to Rail Spur Project				Comments
	Rail Unloading at SMPS	Loop Rail Unloading Configuration	Reduced Rail Deliveries	Reduced Unit Train Size	
	Alternative Lessens or Avoids Impacts (–), Result in Increased or Additional Impacts (+) or Remain About the Same (0) when compared to the Proposed Project.				
					be moved to different sections of the track. However, the rail track would be located closer to the sensitive receptors located north of the SMR and this could increase the health risk impacts from air toxic emissions. ***Reduced Deliveries –*** The construction emissions would be the same as the Rail Spur Project. The annual operational emissions would be lower since fewer trains would be delivered to the SMR. The peak day emissions would be the same as for the Rail Spur Project. Toxic emission impacts would likely be lower since the annual emissions would be less. ***Reduced Unit Train Size –*** Since less track would need to be installed at the refinery construction air emissions would be lower than the proposed project. This alternative would require more trains to deliver the same amount of crude to the refinery. A train length of 40 tanker cars would result in almost a two-fold increase in operational emissions along the mainline track. The emissions at the refinery would increase slightly due to more arrival and departure emissions. The unloading emissions would be essentially the same as for the proposed project. The unloading emissions for each train would be cut in about half for a 40 car unit train, but there would be twice as many train unloaded.
Biological Resources	+	+	0/-	-/+	***Rail Unloading at SMPS –*** Installation of the new rail line to the SMPS would likely pass through area with sensitive biological resources. The new rail line may have to cross a number of wetland areas that would result in increased biological impacts. The SMPS would have to be expanded and new rail and unloading facilities and tanks would need to be installed. However, the expansion would likely occur on agricultural land that has minimal biological resources. ***Loop Rail –*** The loop rail configuration would be substantially larger than the proposed linear design. Due to the topography of the site, the southern end of the loop would have to be raised to maintain a level grade. This would increase the biological impacts associated with construction. The sensitive open dune habitat directly east of the refinery would also be impacted with the construction of this alternative. ***Reduced Deliveries –*** This would have the same biological impacts as the Rail Spur Project for construction since the design and layout of the facilities at the

Table 5.2 Comparison of Rail Related Alternatives with Proposed Project

Issue Area	Impact Comparison to Rail Spur Project				Comments
	Rail Unloading at SMPS	Loop Rail Unloading Configuration	Reduced Rail Deliveries	Reduced Unit Train Size	
	Alternative Lessens or Avoids Impacts (–), Result in Increased or Additional Impacts (+) or Remain About the Same (0) when compared to the Proposed Project.				
					refinery would be the same. With the reduction in rail deliveries to the SMR the probability of an oil spill would be reduce. While the impact to biological resources would remain the same as the proposed project in the event of an oil spill, the overall risk on an oil spill impacting biological resources would be reduced. ***Reduced Unit Train Size –*** The length of the rail spur tracks east of the loading area would be reduced by about 50 percent. This would reduce the level of construction impacts to biological resources since less area would be impacted. This alternative would eliminate about eight acres of impact to CDFW sensitive biological habitat that occurs near the end of the proposed project rail lines. This alternative would have higher spill probabilities due to the increase number of trains that would be needed to be delivered to the refinery. While the impacts of an oil spill would remain the same as the proposed project in the event of a spill, the risk of a spill impacting biological resources would increase.
Cultural Resources	+	+	0/-	-/+	***Rail Unloading at SMPS –*** Installation of the new rail line to the SMPS would likely pass through culturally sensitive areas given the length of the line required. The SMPS would have to be expanded and new rail and unloading facilities and tanks would need to be installed. However, the expansion would likely occur on agricultural that would likely have limited cultural resources since the land has been so heavily disturbed. ***Loop Rail –*** The loop rail configuration would be substantially larger than the proposed linear design. Due to the topography of the site, the southern end of the loop would have to be raised to maintain a level grade. This would increase the potential for cultural impacts associated with construction. ***Reduced Deliveries –*** This would have the same cultural impacts as the Rail Spur Project construction since the design and layout of the facilities at the refinery would be the same. This alternative would have a lower spill probability due to the reduction in the number of trains that would be needed to service the refinery. Impacts of a spill would remain the same as the proposed project in the event of an oil spill, but the risk of a spill impacting cultural resources would decrease. ***Reduced Unit Train Size –*** This alternative would have less cultural resources

Table 5.2 Comparison of Rail Related Alternatives with Proposed Project

Issue Area	Impact Comparison to Rail Spur Project				Comments
	Rail Unloading at SMPS	Loop Rail Unloading Configuration	Reduced Rail Deliveries	Reduced Unit Train Size	
	Alternative Lessens or Avoids Impacts (–), Result in Increased or Additional Impacts (+) or Remain About the Same (0) when compared to the Proposed Project.				
					impacts than the proposed project since less cut and fill would be needed due to the reduction in the overall track length east of the loading area. This would reduce the potential for impacting cultural resources. This alternative would have higher spill probabilities due to the increase number of trains that would be needed to be delivered to the refinery. While the impacts of an oil spill would remain the same as the proposed project in the event of a spill, the risk of a spill impacting cultural resources would increase.
Geological Resources	+	+	0	-	***Rail Unloading at SMPS –*** Installation of the new rail line to the SMPS would increase the potential for erosion impacts along the route. The SMPS would have to be expanded and new rail and unloading facilities and tanks would need to be installed. This expansion would occur on flat agricultural land. As such, the geological impacts associated with construction at the SMPS would be similar to the Rail Spur Project. ***Loop Rail –*** Construction of the Loop Rail would be subject to the same types of geological impacts as the Rail Spur Project. However, the increase level of cut and fill would increase the potential for erosion over the proposed Rail Spur Project. ***Reduced Deliveries –*** This would have the same geological impacts as the Rail Spur Project since the design and layout of the alternative would be the same. ***Reduced Unit Train Size –***This alternative would have less geological impacts than the proposed project since less cut and fill would be needed due to the reduction in the overall track length east of the loading area.
Hazards and Hazardous Materials	+	0	-	+	***Rail Unloading at SMPS –*** New rail tracks would have to be installed through the city of Santa Maria, which would increase the risk of train accidents within this populated area. The hazards associated with a spill of oil at the SMPS would be similar to that for the Rail Spur Project. ***Loop Rail –*** This would have the same hazard impacts as the Rail Spur Project since the number of trains delivered to the SMR would remain the same. ***Reduced Deliveries –*** The overall risk associated with the trains servicing the SMR would decrease with this alternative since fewer trains would be delivered to the SMR.

Table 5.2 Comparison of Rail Related Alternatives with Proposed Project

Issue Area	Impact Comparison to Rail Spur Project				Comments
	Rail Unloading at SMPS	Loop Rail Unloading Configuration	Reduced Rail Deliveries	Reduced Unit Train Size	
	Alternative Lessens or Avoids Impacts (–), Result in Increased or Additional Impacts (+) or Remain About the Same (0) when compared to the Proposed Project.				
					Reduced Unit Train Size –The risk of an oil spill would increase over the proposed project both for mainline operations as well as for the unloading operations. The overall accident rate along the main line associated with running a higher number of shorter trains would increase as compared to running fewer longer trains. The number of unloading operations that would have to occur at the refinery would increase, which would increase the probability of an accident.
Noise and Vibration	+	+	-	0	***Rail Unloading at SMPS –*** New rail tracks would have to be installed through the city of Santa Maria, which could substantially increase noise level near a number of sensitive receptors. This would be particularly true for trains moving to the SMPS at night. The SMPS would have to be expanded and new rail and unloading facilities and tanks would need to be installed. The noise impacts at the SMPS would be less than the Rail Spur Project since the site in not located near any sensitive receptors. ***Loop Rail –*** The loop rail configuration would generate noise levels similar to the Rail Spur Project since trains would still be needed to move the tanker cars during the unloading process. However, the rail track would be located closer to the sensitive receptors to the north and this could result in increased noise impacts in this area. ***Reduced Deliveries –*** This would have the same noise impacts as the proposed Rail Spur Project for each unloading operation since the trains would operate in the same manor. However, the frequency of the unloading operations would be reduced. ***Reduced Unit Train Size –*** With a reduced unit train size the hours of noise associated with each train unloading operations would be less since each unlading operation would take less time. However, the hourly noise levels would remain the same. In additions, there would be more trains delivered to the refinery so the noise from unloading would occur more frequently, but for less duration for each unloading operation. The net effect would be similar noise to the proposed project.
Population and Housing	0	0	0	0	None of the alternative would be expected to generate large numbers of employees that would impact housing and population. Construction labor for the

Table 5.2 Comparison of Rail Related Alternatives with Proposed Project

Issue Area	Impact Comparison to Rail Spur Project				Comments
	Rail Unloading at SMPS	Loop Rail Unloading Configuration	Reduced Rail Deliveries	Reduced Unit Train Size	
	Alternative Lessens or Avoids Impacts (–), Result in Increased or Additional Impacts (+) or Remain About the Same (0) when compared to the Proposed Project.				
					Rail Unloading at SMPS alternative would be greater due to the need to construct the new rail line. However, this would be a temporary increase in employment that would not be expected to impact population and housing. Therefore, impacts would be similar to the Rail Spur Project.
Public Services and Utilities	+	0	0/-	0/+	***Rail Unloading at SMPS –*** The SMPS site is further away from emergency response and fire stations. This would increase the overall response time to the facility. Also, the SMPS does not have a dedicated fire brigade, which would serve to increase the demand on fire services. ***Loop Rail –*** This would have the same public services impacts as the Rail Spur Project since the operation of the alternative would be essentially the same as the Rail Spur Project. ***Reduced Deliveries –*** This would have the same public services impacts except for Fire Protection and Emergency Responses as the Rail Spur Project since the operation of the alternative would be essentially the same as the Rail Spur Project. Fire Protection and Emergency Response requirements would remain the same in the event of an oil spill, but the probability of a spill would be reduced since few trains would be needed to move crude oil to the SMR, which would reduce the likelihood that emergency response would be required. ***Reduced Unit Train Size –*** This would have the same public services impacts except for Fire Protection and Emergency Responses as the Rail Spur Project since the operation of the alternative would be essentially the same as the Rail Spur Project. Fire Protection and Emergency Response requirements would remain the same in the event of an oil spill, but the probability of a spill would be increased. The overall accident rate along the main line associated with running a higher number of shorter trains would increase as compared to running fewer longer trains. The number of unloading operations that would have to occur at the refinery would increase, which would increase the probability of an accident.
Recreation	0	0	0	0	***Rail Unloading at SMPS –*** This would have the same recreational impacts as the Rail Spur Project. ***Loop Rail –*** This would have the same recreational impacts as the Rail Spur Project.

Table 5.2 Comparison of Rail Related Alternatives with Proposed Project

Issue Area	Impact Comparison to Rail Spur Project				Comments
	Rail Unloading at SMPS	Loop Rail Unloading Configuration	Reduced Rail Deliveries	Reduced Unit Train Size	
	Alternative Lessens or Avoids Impacts (–), Result in Increased or Additional Impacts (+) or Remain About the Same (0) when compared to the Proposed Project.				
					Reduced Deliveries – This would have the same recreational impacts as the Rail Spur Project. ***Reduced Unit Train Size –*** This would have the same recreational impacts as the Rail Spur Project.
Transportation and Circulation	+	+	0/-	-/+	***Rail Unloading at SMPS –*** Construction impacts would be greater with this alternative due to the increase traffic associated with the construction of the new rail line to the SMPS. This alternative would have the same operational traffic impacts as the Rail Spur Project. ***Loop Rail –*** Construction traffic would be greater with this alternative since more trucks would be need to export the excess cut material from the SMR. This alternative would have the same operational traffic impacts as the Rail Spur Project. ***Reduced Deliveries –*** This alternative would have the same traffic impacts as the Rail Spur Project since the construction and operation would be the same. With reduced rail deliveries the potential impacts of train traffic impacting at grade crossing would be reduced. ***Reduced Unit Train Size –*** This alternative would have reduced traffic impacts associated with construction since less track would need to be installed west of the loading area. Operational trucking requirements would remain about eh same as the proposed project. With shorter unit trains there would be more train deliveries to the refinery, which would increase the potential impacts of train traffic impacting at grade crossings.
Water Resources	+	+	0/-	-/+	***Rail Unloading at SMPS*** – Use of water during construction would be greater as a result of construction of the new rail line to the SMPS. The increase in water use would be primarily for control of fugitive dust. The rail line may also have to pass through a number of wetlands which could impact water quality in these areas. The operational water use would be similar to the Rail Spur Project. ***Loop Rail –*** Use of water during construction would be greater since a larger area would need to be graded. The increase in water use would be primarily for control of fugitive dust. The operational water use would be the same as the Rail Spur Project.

Table 5.2 Comparison of Rail Related Alternatives with Proposed Project

Issue Area	Impact Comparison to Rail Spur Project				Comments
	Rail Unloading at SMPS	Loop Rail Unloading Configuration	Reduced Rail Deliveries	Reduced Unit Train Size	
	Alternative Lessens or Avoids Impacts (–), Result in Increased or Additional Impacts (+) or Remain About the Same (0) when compared to the Proposed Project.				
					Reduced Deliveries – This alternative would have the same water resource construction impacts as the Rail Spur Project since the same facilities would be built. With the reduction in rail deliveries to the SMR the probability of an oil spill would be reduce. While the impact to water resources would remain the same in the event of an oil spill, the overall risk of an oil spill impacting water resources would be reduced. ***Reduced Unit Train Size –*** The length of the rail spur tracks east of the loading area would be reduced by about 50 percent. This would reduce the level of construction impacts to water resources since less area would be impacted. This alternative would have higher spill probabilities due to the increase number of trains that would be needed to be delivered to the refinery. While the impacts of an oil spill would remain the same as the proposed project in the event of a spill, the risk of a spill impacting water resources would increase.

For issue areas marked with two scores, the first one represents changes from the proposed project for construction and the second one represents changes from the proposed project for operations.

5.3.1 No Project Alternative

The Rail Spur Project would involve the construction and operation of crude oil rail unloading facility at the SMR. With the No Project Alternative, the rail unloading facility would not be constructed or operated. The SMR would continue to receive crude oil from the existing pipeline network and via truck from the SMPS.

Under the No Project Alternative, it is possible that crude oil shipments via truck to the SMPS could increase. Crude oil shipments via truck to the SMPS could increase by about 19,200 barrels per day without exceeding the permitted truck unloading limit specified in the Santa Barbara APCD permit.

The SMR is currently receiving Canadian crude that is trucked from a rail unloading facility in Bakersfield (see Project Description, Chapter 2.0). Under the No Project Alternative it is likely that additional out of state crudes would be brought to one of the rail unloading facilities near Bakersfield or in the Bay Area and transferred to trucks for delivery to the SMPS. The crude oil would then be moved via pipeline from the SMPS to the SMR.

Since the SMR is currently receiving out of state crude from trucks via a rail facility near Bakersfield, it has been assumed that for the No Project Alternative, that crude oil unit trains would deliver the crude to an unloading facility near Bakersfield, transfer it to trucks, which would deliver it to the SMPS. The delivery of 19,200 barrels per day of crude (seven days per week) would require 2.5 crude oil unit trains per week to be delivered a rail unloading facility near Bakersfield and 100 truck trips per day from Bakersfield to the SMPS.

No new permits would be required from San Luis Obispo County for the No Project Alternative so it would not be possible for the County to apply mitigation to the impacts identified below.

Under the No Project Alternative all of the construction impacts and most of the operational impacts at the SMR that are associated with the Rail Spur Project would not occur. This is because no new facilities would be built at the refinery, and crude would continue to only be delivered via pipeline.

Issue areas where there would be modified impacts or the impact location would change with the No Project Alternative are discussed below. If an operational impact is not listed then it would remain the same as the Rail Spur Project. None of the construction impacts at the SMR would occur with the No Project Alternative so none of the construction impacts are discussed below.

Agricultural Resources

Impact AR.3 (Dust, Spill Impacts to Agricultural Resources at the SMR) would be relocated from the SMR to the rail unloading facility and the SMPS. This impact would be eliminated from the SMR. The rail unloading facility and SMPS are surrounded by agricultural operations. The increase in rail traffic to the rail unloading facility and truck traffic to the pump station (an additional 100 trucks per day), would generate dust and other air emissions that could affect the adjacent agricultural operations at both sites. Spills of oil from trucks or rail cars during unloading operations could also impact the adjacent agricultural operations. Existing spill

containment at the facilities would serve to reduce the potential for this impact. Existing dust control measures and the facilities Spill Prevention, Control and Countermeasure Plans (SPCCP) would serve to likely reduce this impact to less than significant (Class III).

Impact AR.5 (UPRR Mainline Spills) would be similar to the proposed project and would remain significant and unavoidable (Class I). With the No Project Alternative this risk would be shifted away from the Coastal Route and into the San Joaquin Valley (if one of the rail unloading facilities was used near Bakersfield) where the mainline rail route traverse more agricultural areas, particularly if the train is coming from the north. While the probability of a spill would be reduced due to few train trips per week, in the event of a spill the impacts on agricultural operations could be more severe than the Rail Spur Project given the high density of agricultural areas in the San Joaquin Valley. There would also be an increased potential for oil spills along the truck route from Bakersfield to the SMPS, which runs through some agricultural areas. Most of the truck route would be along State Highway 166 through San Luis Obispo County. While the spill volumes from trucks would be smaller than from a train, the accident rate for trucks is higher than for rail. For the portion of the rail route past Roseville to the California Border and beyond, the impacts to agricultural resources from mainline rail spills would remain significant. However, the probability of a spill would be reduced due to fewer train trips per week.

Air Quality and Greenhouse Gases

Impact AQ.2 (Operational Emissions in SLO County) would remain a significant Class I impact. Table 5.3 provides an estimate of the peak day and annual emissions for the onsite operational activities at the rail and truck facilities for the No Project Alternative. Peak day emissions would be higher than for the Rail Spur Project due to more train movements for the unloading operations and the addition of the truck loading and unloading operations. Annual emissions would be lower due to less annual train traffic, but a portion of this reduction is offset by the annual truck emissions. The severity of the impact could be less since the overall annual emissions would be less than that for the Rail Spur Project.

Table 5.3 No Project Alternative Onsite Operational Emissions, Peak Day and Annual

Source	Peak Day Emissions, lbs/day					
	ROG	**CO**	**NO_x**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Crude Oil Truck Loading and Unloading	1.0	0.3	1.3	0.0	0.7	0.1
Rail Unloading	34.1	24.2	243.0	3.0	10.0	9.2
Total	***35.1***	***24.5***	***244.3***	***3.0***	***10.7***	***9.3***
Source	**Annual Emissions, tons/year**					
	ROG	**CO**	**NO_x**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Crude Oil Truck Loading and Unloading	0.2	0.0	0.2	0.0	0.1	0.0
Rail Unloading	1.6	1.5	11.4	0.2	0.4	0.3
Total	***1.8***	***1.6***	***11.6***	***0.2***	***0.5***	***0.3***

Notes: Assumes 2.5 trains per week are unloaded at a rail terminal near Bakersfield.
Assumes 100 trucks per day are loaded at a terminal near Bakersfield and unloaded at the SMPS.

Impact AQ.3 (Mainline Rail Emissions) would remain the same as the Rail Spur Project (Class I). Table 5.4 provides the estimated peak day and annual emissions for the offsite mainline rail and truck transportation. The mainline rail emissions would exceed the SLOCAPCD thresholds for ROG, NO_x and DPM. Peak day emissions would be higher than for the Rail Spur Project due

to the addition of the truck emissions. Annual emissions would be lower due to less annual train traffic, but a portion of this reduction is offset by the annual truck emissions. The majority of the truck emissions would occur in SLOC since most of truck route along State Highway 166 is in SLOC. The severity of the impact could be less since the overall annual emissions would be less that for the Rail Spur Project.

Impacts AQ.4 (Toxic Air Emissions at the SMR) would be substantially reduced at the SMR since no trains would come to the facility for unloading. The only increase in toxic air emissions would be due to the change in crude slate. However, air toxic emissions would increase at the rail unloading facilities near Bakersfield and at the SMPS.

Table 5.4 No Project Alternative Offsite Operational Emissions, Peak Day and Annual

	Peak Day Emissions, lbs/day					
Source	**ROG**	**CO**	**NO_x**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Trains	129.5	157.8	1,603.1	7.4	74.0	71.8
Trucks	21.5	114.1	556.9	0.0	20.6	19.0
Total	***150.9***	***271.9***	***2,160.0***	***7.4***	***94.6***	***90.8***
	Annual Emissions, tons/year					
Source	**ROG**	**CO**	**NO_x**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Trains	3.0	9.9	65.4	0.5	2.0	1.9
Trucks	3.9	20.8	101.6	0.0	3.8	3.5
Total	***6.9***	***30.7***	***167.0***	***0.5***	***5.8***	***5.4***

Notes: Assumes 2.5 trains per week between a rail terminal near Bakersfield and Roseville.
Assumes 100 trucks per day between a rail terminal near Bakersfield and SMPS.

The rail unloading facility would have similar cancer risk contours as discussed below for the three trains per day alternative, but since the terminals near Bakersfield not located near any sensitive receptors, the health risk impacts of the train unloading operations would likely be less than significant (Class III).

The addition of 100 trucks per day using the SMPS would increase DPM at the faculty and along the roads between Bakersfield and the City of Santa Maria. The trucks would all have to travel through the portions of the City of Santa Maria, and this increase in truck traffic could result in a significant (Class I) health impact to sensitive receptors in close proximity to the route. This is based upon the health risk analysis done for the trucks along the road near the SMR, which indicate that at less than 100 trucks per day the 10.0 in a million cancer threshold is exceeded at sensitive receptors in close proximity to the road.

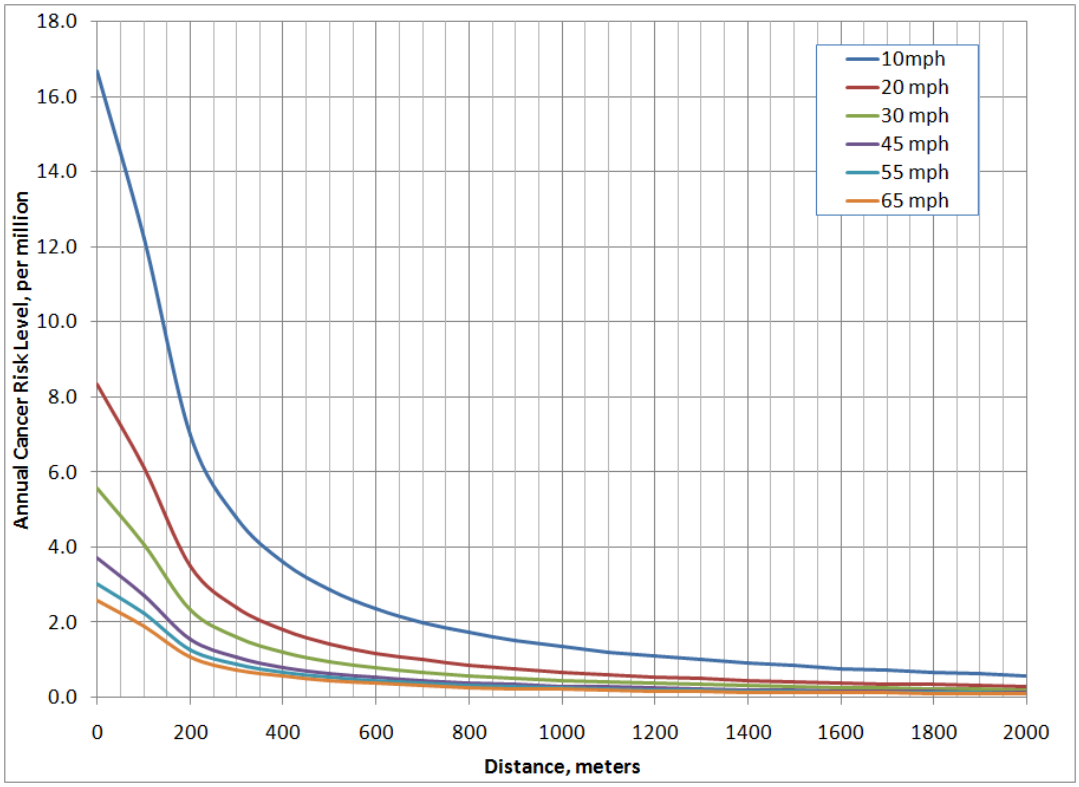
Impact AQ.5 (Mainline Rail Toxic Emissions) would remain the same as the Rail Spur Project (Class I), but the severity of the impact would be reduced. Figure 5-5 shows the cancer health risk curves as a function of train speed. This figure shows that for areas where the train is moving faster than 10 miles per hour, the cancer health risk impacts would be less than significant. However, there are areas along the mainline rail route that have speed restriction of 10 miles per hour or less, such as in the City of Davis.

These areas could experience cancer risks that are above the 10.0 in a million threshold. Given that the speed at which a train could cause excess cancer risk above the threshold is lower for the

No Project Alternative, the severity of the impact would be less since fewer areas would be affected.

Impact AQ.6 (GHG Emissions) would remain a significant (Class I) impact but would increase in severity. The estimated GHG emissions for the No Project Alternative would be about 18,250 metric tons per year of CO_2e emissions per year. This is greater than the Rail Spur Project. The increase in GHG emissions is driven by the truck trips from Bakersfield to the SMPS, which would produce about 14,083 metric tons of CO_2e emissions per year. The mainline rail emissions would be reduced by more than half from the Rail Spur Project due to fewer annual train trips and the shorter distance from Roseville to the Santa Maria Refinery.

Figure 5-5 Mainline Locomotive Cancer Risk, by speed and distance from Mainline (2.5 trains per week



Notes: Based on 3 locomotives per train, 250 round train trips per year, Nipomo meteorological dataset (1994-1996) and 70 year average locomotive emission factor (as per EPA). Includes OEHHA adjustment factors.

Impact AQ.7 (Odors) would be shifted from the SMR to the rail unloading facilities near Bakersfield and the SMPS. The impact at the SMR would not occur. Given that the rail unloading facilities and the SMPS are not located near any sensitive receptors, the odor impact would be less than significant (Class III).

Impact AQ.8 (Cumulative Air Emissions at SMR) would remain Class II, but would be reduced in severity since less new crude would be delivered to the refinery. This would result in a smaller change in the overall refinery crude slate.

Biological Resources

Impact BIO.7 (Onsite Oil Spills) would be shifted from the SMR to the truck unloading facility at the SMPS and at the rail unloading terminals. This impact would be eliminated from the SMR. The SMPS are surrounded by agricultural operations, and do not have habitat that would likely support sensitive plant and animal species. There are also no wetlands in close proximity to the pump station. The substantial increase in truck traffic to the pump station (an additional 100 trucks per day), would increase the potential for oil spills during unloading. Existing spill containment at these facilities and their Spill Prevention, Control and Countermeasure Plans (SPCCP) would serve to likely reduce this impact to less than significant (Class III).

Impact BIO.11 (UPRR Mainline Oil Spills) would be similar to the proposed project and would remain significant and unavoidable (Class I). With the No Project Alternative this risk would be shifted away from the Coastal Route and into the San Joaquin Valley where the mainline rail route traverse other biologically sensitive areas. While the probability of a spill would be reduced due to fewer train trips per week, in the event of a spill the impacts on biological resources could be significant and the spill volumes would remain the same. There would also be an increased potential for oil spills along the truck route from Bakersfield to the SMPS, which runs through some sensitive biological areas. Most of the truck route would be along State Highway 166 through San Luis Obispo County. While the spill volumes from trucks would be smaller than from a train, the accident rate for trucks is higher than for rail. For the portion of the rail route past Roseville to the California Border and beyond, the impacts to biological resources from mainline rail spills would remain significant. However, the probability of a spill would be reduced due to few train trips were week.

Impact BIO.12 (Mainline Rail Impacts to Wildlife) would remain Class III but would be reduced in severity since there would be less train trips per year for this alternative, which would reduce the probability of trains impacting wildlife on the mainline.

Cultural Resources

Impact CR.6 (UPRR Mainline Oil Spills) would be similar to the proposed project and would remain significant and unavoidable (Class I). With the No Project Alternative this risk would be shifted away from the Coastal Route and into the San Joaquin Valley. While the probability of a spill would be reduced due to fewer train trips per week, in the event of a spill the impacts on cultural resources associated with the cleanup efforts could be significant. There would also be an increased potential for oil spills along the truck route from Bakersfield to the SMPS. A spill along the truck route could also impact cultural resources as part of the cleanup effort. Most of the truck route would be along State Highway 166 through San Luis Obispo County. While the spill volumes from trucks would be smaller than from a train, the accident rate for trucks is higher than for rail.

Hazards and Hazardous Materials

Impact HM.1 (Risk of Accidents at Unloading Facility) would be similar to the Rail Spur Project, and would remain less than significant (Class III). This risk would shift from the SMR to the rail unloading facilities near Bakersfield and the SMPS. This impact would be eliminated from the SMR. The hazard zones for the rail unloading facility would be similar to the Rail Spur Project, and would not extend to areas that have sensitive receptors. There is a possibility of a truck spill during the unloading process, which could result in a spill of 8,000 gallons of oil. This

could result in a potential fire at the SMPS. The maximum flammable hazard zones would be about 250 feet, which would not extend off of the pump station site.

Impact HM.2 (UPRR Mainline Accidents) would likely remain the same as the Rail Spur Project, significant (Class I). The risk of injury and fatality would be shifted from the Bay Area and the Coastal Route to the San Joaquin Valley. While the probability of a spill would be reduced due to fewer annual train trips and the shorter distance between Roseville and Bakersfield, the route would still pass through heavily populated areas such as Sacramento, Davis, Stockton, Fresno, Bakersfield, etc. It is these heavy populated areas that drive the risk for injuries and fatalities. These changes would likely not be sufficient to reduce the risk of injury and fatality, and therefore, the impact would remain significant. For the portion of the rail route past Roseville to the California Border and beyond, the impacts associated with public safety risk from mainline rail incidents would remain significant. However, the probability of an incident would be reduced due to fewer train trips per week.

The No Project Alternative would increase the risk of one or more fatalities and injuries due to the increased trucking operations. Class 3 hazardous material trucks have an estimated accident rate of 0.71 accidents per million miles (Battelle 2001). This is greater than the 0.51 to 0.39 derailment per million miles for the crude oil trains. Also, the probability of a Class 3 truck having a spill given an accident is about 35% (Battelle 2001). This would result in an increase in the overall risk of an accident for truck then compared to rail. However, the volume of oil spilled from a truck accident would be smaller, which could reduce the consequence of a spill.

Impact HM.3 (Crude Slate Changes at SMR) would remain Class III, but would be reduced in severity since less new crude would be delivered to the refinery. This would result in a smaller change in the overall refinery crude slate.

Recreation

Impact REC.2 (Oil Spills Affecting Access) would likely remain the same as the Rail Spur Project, less than significant (Class III), but would be reduced in severity. The risk of an oil spill impacting access to recreational areas would be shifted from the Bay Area and the Coastal Route to the San Joaquin Valley. The probability of a spill would be less due to fewer annual train trips and the shorter distance between Roseville and Bakersfield. There would also be the added risk of an oil spill along the truck route from Bakersfield to the SMPS. An oil spill along this route could also affect access to recreational areas during the clean-up process. However, the maximum spill volume would be limited to 8,000 gallons, which is smaller than for the mainline rail, and would take less time to clean up.

Noise and Vibration

Impact N.2 (Operational Unloading) would shift from the SMR to the SMPS. There would be no operational noise impact at the SMR. The operational noise at the SMPS would be associated with trucks entering and exiting the facility. With the No Project Alternative an additional 100 trucks per day would be entering and exiting the facility, which would increase operational noise. There would be operational noise associated with the train unloading operations in Bakersfield. However, these terminals do not have any sensitive receptors located in close proximity to the sites so the operational noise impacts would be less than significant (Class III).

Impact N.3 (UPRR Mainline Noise) would likely remain the same as the Rail Spur Project, less than significant (Class III) since the 24-hour CNEL would not change. However, the noise impact would be shifted from the Bay Area and the Coastal Route to the San Joaquin Valley. With fewer trains the overall exposure to the noise would be less, but the 24 CNEL would remain the same as for the Rail Spur Project.

Public Services and Utilities

Impact PS.2 (Electrical Use) would shift from the SMR to the rail unloading facilities near Bakersfield and to the SMPS. There would be no increase in electrical use at the SMR. Electrical use at the rail unloading facilities near Bakersfield would be similar to the Rail Spur Project on a per train basis, but the annual electrical use would decrease since fewer trains would be unloaded. There would be an increase in electrical use at the SMPS for unloading the trucks and pumping the additional crude via pipeline to the SMR. It would be expected that these levels of electrical use could be supplied by the local utilities so impacts would be less than significant (Class III).

Impact PS.3 (Increase Demand for Fire Protection and Emergency Response at the SMR) would shift demand for these services from the SMR to the rail unloading facilities near Bakersfield and the SMPS. This impact would be eliminated from the SMR. There is a probability of a rail car spill during unloading similar to that for the Rail Spur Project. There is also a possibility of a truck spill during the unloading process, which could result in a spill of 8,000 gallons of oil. These spills could result in a potential fire at either one of these facilities. The Fire Protection Plans and SPCCP plans at each of these facilities would serve to reduce this impact to less than significant (Class III).

Impact PS.4 (Increase Demand for Fire Protection and Emergency Response along Mainline Rail) would likely remain the same as the Rail Spur Project, significant (Class I). The risk of an oil spill would be shifted from the Bay Area and the Coastal Route to the San Joaquin Valley. While the probability of a spill would be reduced due to fewer annual train trips and the shorter distance between Roseville and Bakersfield, a spill of oil and resultant fire and explosion would place an increased demand on fire protection and emergency responders. There would also be an increased demand for these services along the truck route from the rail unloading facility to the SMPS in the event of a spill or fire. Most of the truck route is along State Highway 166, which is in a remote area. In the event of a fire, it is possible that a wildland fire could result due to the distance from emergency response locations. This would be considered a significant (Class I) impact.

Impact PS.5 (Police Services) would likely remain the same as the Rail Spur Project (Class III). The demand for these services would be shifted from the SMR to the rail unloading facilities near Bakersfield and the SMPS.

Transportation and Circulation

Impact TR.2 (Operational Traffic) would be shifted from the SMR to areas along the truck route between Bakersfield and the SMPS, which would add 100 round trips per day (200 one-way trips per day) along the truck route. These additional truck trips could impact a number of intersections including State Highway 166/Highway 101 and Stowell Road/Highway 101. The Stowell Road/Highway 101, is controlled by a stop sign and has a P.M. peak hour level of

service rating of D. The control delay at this intersection is 31.4 seconds during the Peak P.M. hours, which is just below the maximum 35.0 for an LOS D rating (City of Santa Maria 2011). If one assumes that the trucks are spaced out evenly during a 24 hour period, a total of about four truck per would use the Stowell Road/Highway 101 interchange, which would likely keep the control delay time to just under 35 seconds. Therefore, the impact would be less than significant (Class III).

Impact TR.3 (At Grade Crossings) would remain the same as the Rail Spur Project, less than significant (Class III). The potential impacts to at grade crossings would be shifted from the Bay Area and Coastal Route to the San Joaquin Valley. Impacts to traffic flow in the vicinity of at grade crossings would be limited to about six times per week, and the extent of the delay would be based upon the speed of the train. Given the limited number of trains per week, the impact to traffic flow would be less than significant.

Impact TR.4 (Rail Traffic) would remain the same as the Rail Spur Project (Class III). However, use of this route would avoid any impact to trains traveling along the Coast Route and for some of the passenger trains in the Bay Area. With fewer trains per week the potential for interference with passenger trains would be reduced.

Water Resources

Impact WR.2 (Onsite Oil Spills) would be shifted from the SMR to the truck unloading facility at the SMPS and at the rail unloading facilities near Bakersfield. This impact would be eliminated from the SMR. The SMPS is surrounded by agricultural operations and drainage ditches supporting the agricultural operations. There are also no wetlands in close proximity to the pump station or terminals near Bakersfield. The substantial increase in truck traffic to the pump station (an additional 100 trucks per day), would increase the potential for oil spills during unloading. Existing spill containment at these facilities and their Spill Prevention, Control and Countermeasure Plans (SPCCP) would serve to likely reduce this impact to less than significant (Class III).

Impact WR.3 (UPRR Mainline Oil Spills) would be similar to the proposed project and would remain significant and unavoidable (Class I). With the No Project Alternative this risk would be shifted away from the Coastal Route and into the San Joaquin Valley where the mainline rail route traverse other surface water bodies. While the probability of a spill would be reduced due to fewer train trips per week, in the event of a spill the impacts on water resources could be significant, and spill volumes would remain the same. There would also be an increased potential for oil spills along the truck route from Bakersfield to the SMPS, which crosses a number of water bodies including Twitchell Reservoir. Most of the truck route would be along State Highway 166 through San Luis Obispo County. While the spill volumes from trucks would be smaller than from a train, the accident rate for trucks is higher than for rail. For the portion of the rail route past Roseville to the California Border and beyond, the impacts to water resources from mainline rail spills would remain significant. However, the probability of a spill would be reduced due to fewer train trips per week.

5.3.2 Loop Rail Unloading Configuration

This alternative would have the rail track at the SMR in a loop configuration as opposed to the linear configuration for the Rail Spur Project. The same number of trains would be delivered to the SMR as the Rail Spur Project (five trains per week).

Under this alternative, impacts in the following issue areas would remain the same as the Rail Spur Project.

- Hazards and Hazardous Materials,
- Population and Housing,
- Public Services and Utilities, and
- Recreation.

All of the impacts and mitigation measures identified for the Rail Spur Project in these issue areas would also apply to this alternative. The reader is referred to Chapter 4 of the EIR for a description of the impacts and mitigation measures for each of the issue areas listed above.

Issue areas where the impacts would be different than the Rail Spur Project are discussed below. If an impact is not listed then it would remain the same as the Rail Spur Project and any mitigation measures identified for the impacts would apply to this alternative.

Aesthetics and Visual Resources
With the rail track in a loop configuration the track would be closer to State Route 1 and other sensitive view areas. Due to the topography of the site, the southern end of the loop would have to be raised to maintain a level grade which would make the trains more visible when they were at the SMR. Both of these facts would increase the visual impacts of the loop design over the proposed linear track design.

Impact AV.2 (Visual Character) would remain a Class II impact, but would increase in severity. Mitigation measures associated with impact AV.2 for the Rail Spur Project would apply to this alternative, with the exception of AV-1a, which requires construction of a berm. Given the circular nature of the loop track design, the berm would not be feasible. The landscape and Revegetation Plan would be considerably more involved for this alternative given the size of the rail loop.

Impact AV.3 (Night Lighting and Glare) would be the same as for the Rail Spur Project (Class II). The security fence for the facility would remain in about the same location and the number and size of the security lights would remain the same. The lighting for the unloading area would be the same as the Rail Spur Project. Mitigation measures associated with impact AV.3 for the Rail Spur Project would apply to this alternative.

Impact AV.4 (Train Lights) would remain a Class II impact, but could increase in severity since the trains would be in closer proximity to sensitive view areas on portions of the loop. Mitigation measures associated with impact AV.4 for the Rail Spur Project would apply to this alternative.

All other impacts identified for the Rail Spur Project would remain the same, and their associated mitigation measures would apply to this alternative.

Agricultural Resources

Construction of the loop track configuration would increase the amount of land that would be disturbed by about four acres. In addition about 66 acres of land within the loop would be unavailable for cattle grazing. This increase disturbance would increase impacts to agricultural resources.

Impacts AR.2 (Conversion of Prime Agricultural Land) would remain Class III, but would increase in severity since more agricultural land would be needed for the loop configuration.

All other impacts identified for the Rail Spur Project would remain the same, and their associated mitigation measures would apply to this alternative.

Air Quality and Greenhouse Gases

Construction of the loop track configuration would increase the amount of land that would be disturbed by about four acres, but would increase the amount of cut and fill needed to construct the loop track. The loop alternative would require trucking of excess cut and fill offsite. These additional construction activities would increase the construction related air emission by about 10-20 percent. Operation of the loop configuration would reduce the amount of switching the locomotive would need to do while at the SMR since less movement of tanker cars would be needed as part of the unloading operations. This alternative would have about one-hour less of locomotive engine switching time (20% reduction in switching time from the Rail Spur Project).

This would serve to reduce the total onsite locomotive emissions by about four tons per year of NO_x and 0.3 tons per year of ROG. This represents about an 18 percent reduction in NO_x and ROG emissions at the SMR. DPM emissions from the locomotive at the SMR would be reduced by about 0.1 tons per year. The air emissions associated with locomotives traveling on the UPRR mainline would remain the same as the Rail Spur Project.

Impact AQ.1 (Construction Criteria Pollutants) would remain the same as the Rail Spur Project (Class II), but would increase in severity due to the increased construction activities. Mitigation measures associated with impact AQ.1 for the Rail Spur Project would apply to this alternative.

Impact AQ.2 (Operational Emissions in SLO County) would remain a significant (Class I) impact but would decrease in overall severity due to the reduction in NO_x, ROG, and DPM emissions at the SMR site. Mitigation measures associated with impact AQ.2 for the Rail Spur Project would apply to this alternative. The NO_x and ROG, emissions from the Rail Spur Project in SLO County were found to be less than significant with mitigation. However, the County may be preempted by Federal law from applying mitigation to the UPRR mainline emissions, so it was considered a significant and unavoidable (Class I) impact. DPM emissions would remain significant and unavoidable (Class I).

Impacts AQ.4 (Toxic Air Emissions at the SMR) would remain a significant (Class I) impact but would decrease in overall severity due to the reduction in DPM emissions at the SMR site associated less locomotive switching time. Mitigation measures associated with impact AQ.4 for the Rail Spur Project would apply to this alternative.

AQ.6 (GHG Emissions) would remain the same as the Rail Spur Project (Class I) but there would be a decrease in GHG emissions at the SMR due to less switching time for the locomotives, which would be about 154 metric tons of CO_2E per year. Mitigation measures associated with impact AQ.6 for the Rail Spur Project would apply to this alternative. The GHG emissions from the Rail Spur Project were found to be less than significant with mitigation. However, the County may be preempted by Federal law from applying mitigation to the UPRR mainline GHG emissions, so it was considered a significant and unavoidable (Class I) impact.

All other impacts identified for the Rail Spur Project would remain the same, and their associated mitigation measures would apply to this alternative.

Biological Resources

Construction of the loop track configuration would increase the amount of land that would be disturbed by about four acres, which would increase the biological impacts associated with construction. Construction of the loop configuration would bring the rail tracks in closer proximity to little Oso Flaco Creek. It would also impact about 23.72 acres of CDFW sensitive habitat as shown in Figure 5-6. Portions of the emergency access road would also pass through CDFW sensitive habitat. This alternative would increase impacts to CDFW sensitive habitat by about 2.84 acres compared to the Rail Spur Project. In addition, the sensitive open dune habitat directly east of the refinery would also be impacted with the construction of this alternative.

Impacts BIO.1 (Listed Plant Species), BIO.2 (Sensitive Plant Species), BIO.3 (Sensitive Wildlife Species), BIO.4 (American Badger), BIO.5 (Central Dune Scrub), BIO.6 (Coast Live Oak), BIO.8 (Bird Species), and BIO.9 (Invasive Plants) would all remain Class II impacts, but could increase in severity due to the larger area of disturbance. Mitigation measures associated with these impacts for the Rail Spur Project would apply to this alternative.

All other impacts identified for the Rail Spur Project would remain the same, and their associated mitigation measures would apply to this alternative.

Cultural Resources

Construction of the loop track configuration would increase the amount of land that would be disturbed by about four acres, which could increase the cultural impacts associated with construction.

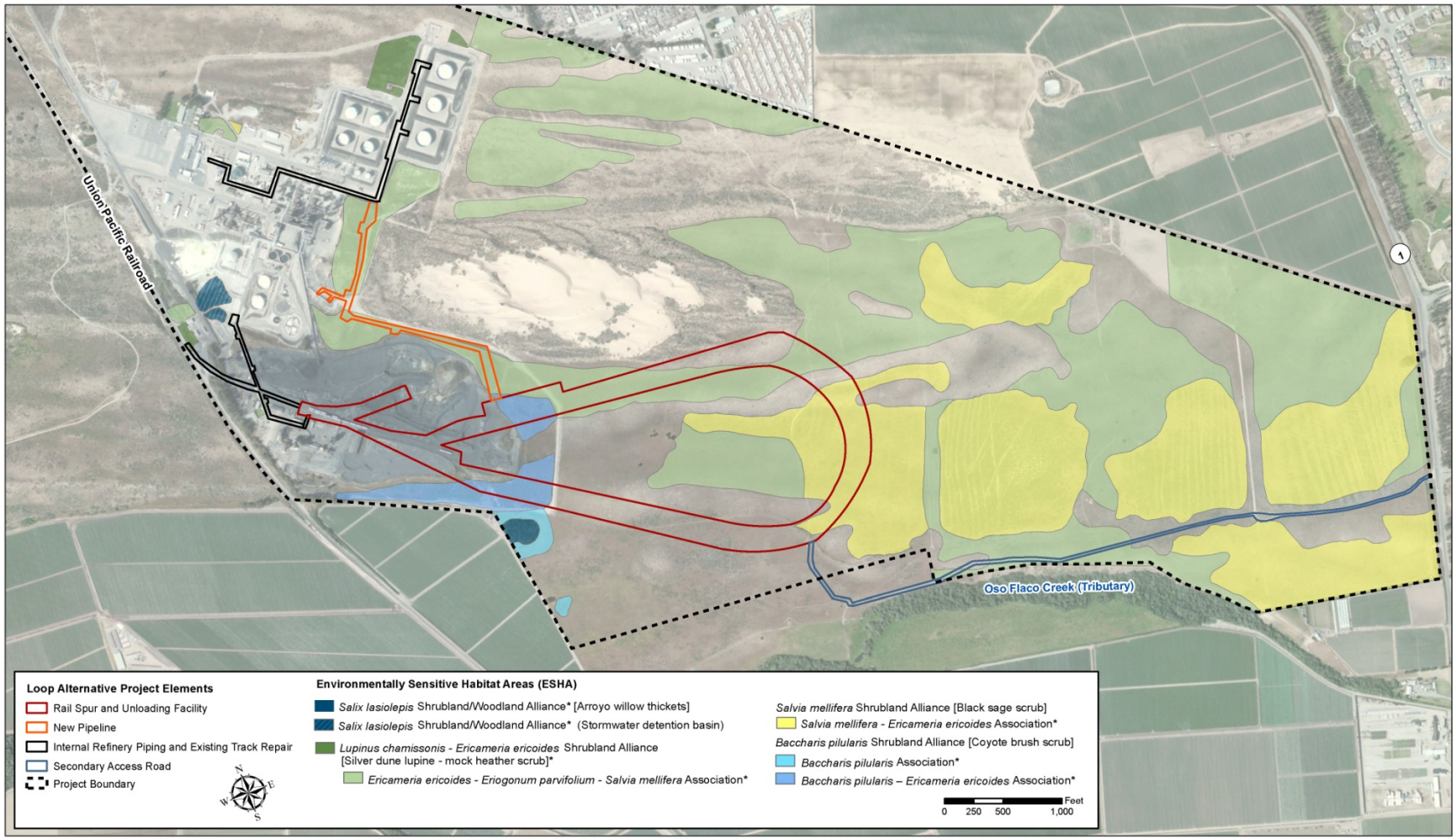
Impacts CR.2 (Unknown Archeological Resources), CR.3 (Human Remains), and CR.5 (Paleontological Resources) would all remain Class II impacts, but could increase in severity due to the larger area of disturbance. Mitigation measures associated with these impacts for the Rail Spur Project would apply to this alternative.

All other impacts identified for the Rail Spur Project would remain the same, and their associated mitigation measures would apply to this alternative.

Geological Resources

The increase in grading and cut and fill for this alternative would change the topography of the site. Due to the topography of the site, the southern end of the loop would have to be raised to maintain a level grade for the trains. This would serve to increase the geological impacts associated with construction.

Figure 5-6 CDFW Sensitive Habitat Areas Impacted by Loop Rail Alternative



CDFW sensitive habitat areas adapted from Arcadis 2015.
See Appendices C.6 and C.7 for more information on the Sensitive Vegetation at the SMR

Impacts GR.2 (Unstable Slopes) and GR.3 (Expansive Soils) would remain a Class II impacts, but could increase in severity due to the larger area of disturbance, increased cut and fill and change in topography of the site. Mitigation measures associated with these impacts for the Rail Spur Project would apply to this alternative.

All other impacts identified for the Rail Spur Project would remain the same, and their associated mitigation measures would apply to this alternative.

Noise and Vibration
Impact N.2 (Operational Activities at the SMR) would remain the same as the Rail Spur Project (Class II) but the noise contours shown in Figure 4.9-3 would shift to the north by about 300 feet increasing the noise levels in this area, which would slightly increase the severity of the impact. Even with this shift, the noise levels would remain Class II. Mitigation measures identified for this impact would apply to this alternative.

All other impacts identified for the Rail Spur Project would remain the same, and their associated mitigation measures would apply to this alternative.

Transportation and Circulation
Construction of the Loop track would require additional cut and fill to raise the southern end of the loop in order to maintain a level grade for the trains. This additional grading work would generate about 80,000 cubic yards of excess cut that would need to be trucked from the SMR. This would require about 4,500 truck trips, which would increase the level of traffic during construction.

Impact TR.1 (Construction Traffic) would remain a Class II impacts, but could increase in severity due to increased volume of trucks needed to haul excess soil. Mitigation measures associated with TR.1 for the Rail Spur Project would apply to this alternative.

All other impacts identified for the Rail Spur Project would remain the same, and their associated mitigation measures would apply to this alternative.

Water Resources
This alternative would involve more grading and cut and fill work on the site, which as the potential to degrade surface and groundwater quality. Impact WR.1 (Construction Surface and Groundwater) would remain a Class II impacts, but could increase in severity due to increased grading activities. Mitigation measures associated with WR.1 for the Rail Spur Project would apply to this alternative. All other impacts identified for the Rail Spur Project would remain the same, and their associated mitigation measures would apply to this alternative.

5.3.3 Reduced Rail Deliveries

This alternative would be exactly the same as the Rail Spur Project in terms of construction and operation with the exception that only three trains per week (150 trains per year) would be delivered to the SMR instead of the proposed five per week (250 trains per year).

Under this alternative, impacts in the following issue areas would remain the same as the Rail Spur Project.

- Visual and Aesthetic Resources,
- Geological Resources, and
- Population and Housing

All of the impacts and mitigation measures identified for the Rail Spur Project in these issue areas would also apply to this alternative. The reader is referred to Chapter 4 of the EIR for a description of the impacts and mitigation measures for each of the issue areas listed above.

Issue areas where the impacts would be different than the Rail Spur Project are discussed below. If an impact is not listed then it would remain the same as the Rail Spur Project and any mitigation measures identified for the impacts would apply to this alternative.

Agricultural Resources

Impact AR.3 (Dust, Spill Impacts to Agricultural Resources at the SMR) would remain Class II, but the probability of an oil spill would decrease since fewer trains would be delivering crude to the SMR. However, in the event of an oil spill the potential impacts would remain the same as for the Rail Spur Project. Mitigation measures associated with AG.3 for the Rail Spur Project would apply to this alternative.

Impact AG.5 (UPRR Mainline Spills) would remain Class I, but the probability of an oil spill would decrease along the entire rail route since fewer trains would be delivering crude to the SMR. However, in the event of an oil spill that impacted agricultural resources the potential impacts would remain the same as for the Rail Spur Project. Mitigation measures associated with AG.5 for the Rail Spur Project would apply to this alternative.

All other impacts identified for the Rail Spur Project would remain the same, and their associated mitigation measures would apply to this alternative.

Air Quality and Greenhouse Gas

By reducing the number of train deliveries to the SMR the annual air emissions would be reduced since fewer trains would be delivering crude to the SMR. However, the peak day emissions would remain the same. Construction emissions would remain the same since the same facilities would need to be built.

Impact AQ.2 (Operational Emissions in SLOC) would remain a (Class I) impact but would decrease in overall severity due to the reduction in annual NO_x and ROG emissions within SLOC. Table 5.5 provides the operational air emissions within SLOC for this alternative. Table 2.6 shows the emissions in SLOC compared with the SLOCAPCD thresholds. The reduction in emissions is due to fewer trains that would deliver crude to the SMR (3 vs. 5 per week). Mitigation measures associated with impact AQ.2 for the Rail Spur Project would apply to this alternative. The NO_x and ROG emissions from the Rail Spur Project were found to be less than significant with mitigation, which would also apply to this alternative. The mitigation measure would require emission reduction credits though the SLOCAPCD for the ROG and NO_x emissions within SLOC.

Table 5.5 Reduced Rail Delivery Alternative Operational Emissions within SLOC, Peak Day and Annual (unmitigated)

Source	Peak Day Emissions, lbs/day					
	ROG	**CO**	**NO_x**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Fugitive Dust	-	-	-	-	1.32	0.20
Fugitives	4.00	-	-	-	-	-
Canister	2.24	-	-	-	-	-
Locomotives Onsite	24.18	21.18	214.05	2.92	8.15	9.07
Locomotives Offsite within SLOC	36.79	44.85	455.55	2.10	21.03	20.39
Vehicles (autos and trucks and additional sulfur trucks)	0.12	1.65	2.11	0.00	0.07	0.07
Total Emissions at the SMR	*30.43*	*21.18*	*214.05*	*2.92*	*9.47*	*8.10*
Total Emissions within SLOC	***67.34***	***67.69***	***671.71***	***5.02***	***30.57***	***28.56***
Source	**Annual Emissions, tons/year**					
	ROG	**CO**	**NO_x**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Fugitive Dust	-	-	-	-	0.17	0.03
Fugitives	0.73	-	-	-	-	-
Canister	0.17					
Locomotives Onsite	0.78	1.59	12.15	0.22	0.33	0.32
Locomotives Offsite within SLOC	1.02	3.36	22.29	0.16	0.68	0.66
Vehicles (autos and trucks and additional sulfur trucks)	0.01	0.19	0.15	0.00	0.01	0.00
Total Emissions at the SMR	*1.68*	*1.59*	*12.15*	*0.22*	*0.51*	*0.35*
Total Emissions within SLOC	***2.72***	***5.14***	***34.59***	***0.38***	***1.19***	***1.02***

Table 5.6 Reduced Rail Delivery Alternative Operational Emissions within SLOC (unmitigated) and Thresholds

Pollutant	SLOCAPCD Thresholds		Project Daily (lbs)	Project Annual (tons)
	Daily	Annual		
ROG + NO_x	25 pounds	25 tons	739.05	37.30
Diesel Particulate Matter	1.25 pounds	-	30.45	-
Fugitive Dust (PM_{10})	25 pounds	25 tons	1.32	0.17
CO	550 pounds	-	67.69	-

However, the County may be preempted by Federal law from applying mitigation to the UPRR mainline emissions and therefore these emissions were considered significant (Class I). The County could apply the mitigation to all of the ROG and NO_x emissions within the SMR site. DPM emissions would remain significant (Class I) since the SLOCAPCD does not have an emissions reduction program for DPM, and there is in sufficient DPM reductions that could occur at the existing SMR operations to offset the Rail Spur DPM emissions. The daily average DPM emission reduction that could occur for the existing SMR operations would be about 0.2 pound per day. This assume that the 13 existing diesel engines would be converted to natural gas.

Impact AQ.3 (Mainline UPRR Emissions) would remain a Class I impact since the mainline emissions would exceed the SLOCAPCD thresholds. The mainline emissions are shown in Table 5.7 outside of SLO County to the Roseville and Colton rail yards. Table 5.8 shows the mainline air emissions beyond the Roseville and Colton rail yards.

Table 5.7 Reduced Rail Delivery Alternative Mainline Rail Emissions, Peak Day and Annual (unmitigated)

Route/Air District	Peak Day Emissions, lbs/day					
	ROG	**CO**	**NO_x**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Northern Route Via Oakland						
Placer	0.38	0.46	4.65	0.02	0.21	0.21
Sacramento Metro	6.44	7.85	79.69	0.37	3.68	3.57
Yolo Solano	13.41	16.35	166.05	0.77	7.66	7.43
Bay Area	57.82	70.49	715.87	3.30	33.04	32.05
Monterrey Bay	47.37	57.74	586.43	2.71	27.07	26.25
Total	***125.41***	***152.88***	***1,552.70***	***7.17***	***71.66***	***69.51***
Northern Route Via Stockton						
Placer	0.38	0.46	4.65	0.02	0.21	0.21
Sacramento Metro	15.83	19.29	195.94	0.90	9.04	8.77
San Joaquin Valley	20.95	25.54	259.34	1.20	11.97	11.61
Bay Area	37.50	45.72	464.34	2.14	21.43	20.79
Monterrey Bay	47.37	57.74	586.43	2.71	27.07	26.25
Total	***122.02***	***148.75***	***1,510.71***	***6.97***	***69.73***	***67.63***
Southern Route						
Santa Barbara	45.19	55.09	559.54	2.58	25.83	25.05
Ventura	24.13	29.42	298.80	1.38	13.79	13.38
South Coast	36.79	44.85	455.55	2.10	21.03	20.39
Total	***106.12***	***129.37***	***1,313.89***	***6.06***	***60.64***	***58.82***
Route/Air District	**Annual Emissions, tons/year**					
	ROG	**CO**	**NO_x**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Northern Route Via Oakland						
Placer	0.01	0.03	0.23	0.00	0.01	0.01
Sacramento Metro	0.18	0.59	3.90	0.03	0.12	0.12
Yolo Solano	0.37	1.23	8.12	0.06	0.25	0.24
Bay Area	1.61	5.29	35.02	0.25	1.07	1.04
Monterrey Bay	1.32	4.33	28.69	0.20	0.88	0.85
Total	***3.49***	***11.47***	***75.96***	***0.54***	***2.33***	***2.26***
Northern Route Via Stockton						
Placer	0.01	0.03	0.23	0.00	0.01	0.01
Sacramento Metro	0.44	1.45	9.59	0.07	0.29	0.29
San Joaquin Valley	0.58	1.92	12.69	0.09	0.39	0.38
Bay Area	1.04	3.43	22.72	0.16	0.70	0.68
Monterrey Bay	1.32	4.33	28.69	0.20	0.88	0.85
Total	***3.40***	***11.16***	***73.91***	***0.52***	***2.27***	***2.20***
Southern Route						
Santa Barbara	1.26	4.13	27.37	0.19	0.84	0.81
Ventura	0.67	2.21	14.62	0.10	0.45	0.43
South Coast	1.02	3.36	22.29	0.16	0.68	0.66
Total	***2.96***	***9.70***	***64.28***	***0.45***	***1.97***	***1.91***

Annual emissions within each route assume all 150 trains per year use that route.

Table 5.8 Reduced Rail Delivery Alternative Mainline Rail Emissions Past the Roseville and Colton Rail Yards, Peak Day and Annual (unmitigated)

Route/Air District	Peak Day Emissions, lbs/day					
	ROG	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$
Roseville to Nevada						
Placer	36.9	45.0	456.6	2.1	21.1	20.4
Nevada	12.3	15.0	152.6	0.7	7.0	6.8
Total	***49.2***	***60.0***	***609.2***	***2.8***	***28.1***	***27.3***
Roseville to Oregon						
Placer	9.3	11.4	115.4	0.5	5.3	5.2
Feather River	11.0	13.4	136.2	0.6	6.3	6.1
Butte	19.1	23.3	236.2	1.1	10.9	10.6
Tehama	16.9	20.7	209.8	1.0	9.7	9.4
Shasta	30.0	36.6	371.9	1.7	17.2	16.7
Siskiyou	37.3	45.5	462.1	2.1	21.3	20.7
Total	***123.7***	***150.8***	***1,531.7***	***7.1***	***70.7***	***68.6***
Colton to Nevada						
South Coast	8.9	10.8	109.8	0.5	5.1	4.9
Mojave	83.9	102.2	1,038.4	4.8	47.9	46.5
Total	***92.7***	***113.1***	***1,148.3***	***5.3***	***53.0***	***51.4***
California Border to Canadian Border	***200.5***	***244.4***	***2,482.3***	***11.5***	***114.6***	***111.1***
Route/Air District	**Annual Emissions, tons/year**					
	ROG	**CO**	**NO_x**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Roseville to Nevada						
Placer	1.0	3.4	22.3	0.2	0.7	0.7
Nevada	0.3	1.1	7.5	0.1	0.2	0.2
Total	***1.4***	***4.5***	***29.8***	***0.2***	***0.9***	***0.9***
Roseville to Oregon						
Placer	0.3	0.9	5.6	0.0	0.2	0.2
Feather River	0.3	1.0	6.7	0.0	0.2	0.2
Butte	0.5	1.7	11.6	0.1	0.4	0.3
Tehama	0.5	1.5	10.3	0.1	0.3	0.3
Shasta	0.8	2.7	18.2	0.1	0.6	0.5
Siskiyou	1.0	3.4	22.6	0.2	0.7	0.7
Total	***3.4***	***11.3***	***74.9***	***0.5***	***2.3***	***2.2***
Colton to Nevada						
South Coast	0.2	0.8	5.4	0.0	0.2	0.2
Mojave	2.3	7.7	50.8	0.4	1.6	1.5
Total	***2.6***	***8.5***	***56.2***	***0.4***	***1.7***	***1.7***
California Border to Canadian Border	***24.43***	***80.20***	***531.30***	***3.76***	***16.29***	***15.80***

Annual emissions within each route assume all 150 trains per year use that route.
California border to Canadian Border assumes a hypothetical route via the Midwest.

The reduction in emissions would be due to fewer trains delivering crude to the SMR (3 vs. 5 per week). Mitigation measures associated with impact AQ.3 for the Rail Spur Project would apply to this alternative. However, the County may be preempted by Federal law from applying mitigation to the UPRR mainline emissions and therefore the emissions were considered significant (Class I).

Impacts AQ.4 (Toxic Air Emissions at the SMR) would be reduced to less than significant with mitigation (Class II). Figure 5-7 shows the cancer health risk contours or the reduced rail delivery alternative with partial mitigation (no Tier 4 locomotives). The cancer risk would be below the threshold established by the SLOCAPCD. Table 5.9 provides a summary of the cancer risk for this alternative for various receptor locations. Mitigation measures associated with impact AQ.4 for the Rail Spur Project would apply to this alternative.

As shown in Table 5.9, the cancer risk at the maximally exposed individual resident would be less than 10 in a million for both the mitigation and partial mitigation cases. The partial mitigation case does not include Tier 4 locomotives since the County may be preempted by Federal law from implementing this measure. However, even without the use of Tier 4 engines, the cancer risk with partial mitigation would be less than significant with mitigation. Mitigation measures associated with impact AQ.4 for the Rail Spur Project would apply to this alternative.

Impact AQ.5 (Mainline Rail Toxic Emissions) would remain the same as the Rail Spur Project (Class I), but the severity of the impact would be reduced. Figure 5-8 shows the cancer health risk curves as a function of train speed.

Figure 5-8 shows that for areas where the train is moving faster than 20 miles per hour, the cancer health risk impacts would be less than significant. However, there are areas along the mainline rail route that have speed restriction of 10 miles per hour or less, such as in the City of Davis. These areas could experience cancer risks that are above the 10.0 in a million threshold. Given that the speed at which a train could cause excess cancer risk above the threshold is lower for the Rail Spur Project, the severity of the impact would be less since fewer areas would be affected.

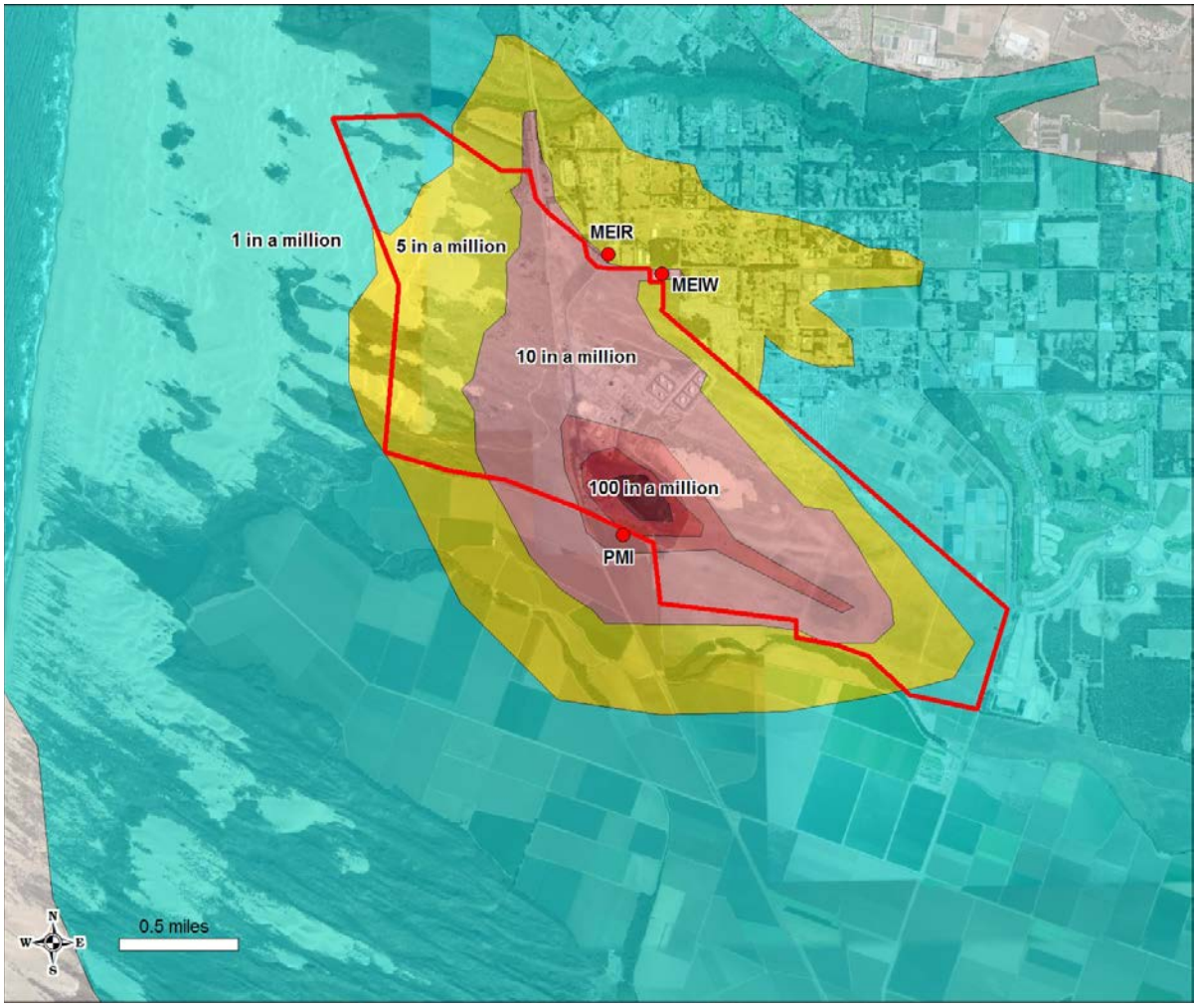
Impact AQ.6 (GHG Emissions) would remain a significant Class I impact but would decrease in severity since fewer trains would deliver crude to the SMR. Table 5.10 shows the estimated GHG emissions for this alternative. The reduction in emissions would be due to fewer trains delivering crude to the SMR (3 vs. 5 per week). Mitigation measures associated with impact AQ.6 for the Rail Spur Project would apply to this alternative. However, the County may be preempted by Federal law from applying mitigation to the UPRR mainline GHG emissions and therefore the emissions were considered significant (Class I).

Impact AQ.7 (Odors) would remain Class II, but would be reduced in severity. While any given odor event would likely be the same as the Rail Spur Project, there would be a reduction in the potential frequency of these events since fewer trains would unload at the SMR.

Impact AQ.8 (Cumulative Air Emissions at SMR) would remain Class II, but would be reduced in severity since less new crude would be delivered to the refinery. This would result in a smaller change in the overall refinery crude slate.

All other impacts identified for the Rail Spur Project would remain the same, and their associated mitigation measures would apply to this alternative.

Figure 5-7 Partially Mitigated Reduced Rail Delivery Alternative Health Risk Contours - Cancer (150 Trains per Year)



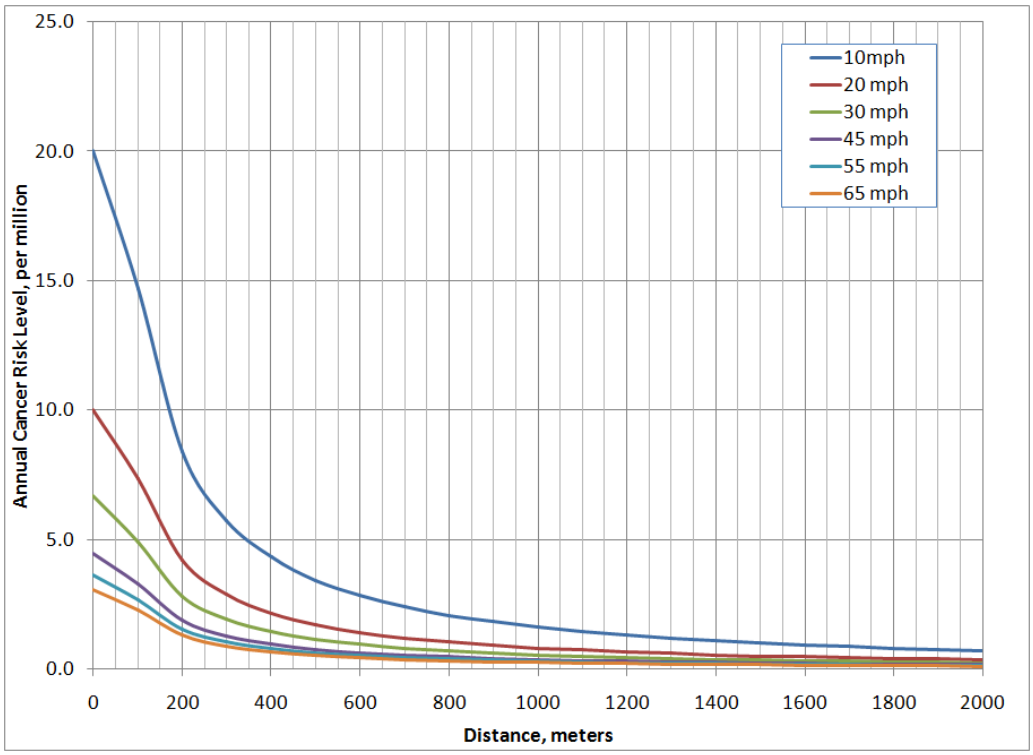
PMI-Point of Maximum Impact
MEIR- Maximally Exposed Individual Resident
MEIW- Maximally Exposed Individual Worker
Based upon HARP2 model version 15197.

Table 5.9 Reduced Rail Delivery Alternative Health Risk HARP Modeling Results: Cancer Risk (150 Trains per Year)

Scenario	PMI	MEIR	Worker	Louise Ln	Trilogy Prkwy	Monadella Street	Olivera Ave	Sig?
No Mitigation								
Scenario 1 - Rail Spur + SMR + trucks	85.8	26.5	1.16	3.7	3.0	22.0	17.8	Y
Scenario 2 - Rail Spur + SMR + trucks+ Mainline	88.5	27.3	1.26	3.8	3.1	25.1	18.8	Y
Mitigation: Tier 4 Locomotives, idling restrictions, clean trucks (AQ-2a, 2b and 4b)								
Scenario 1 - Rail Spur + SMR + trucks	18.1	5.5	0.23	1.0	0.9	4.4	2.8	N
Scenario 2 - Rail Spur + SMR + trucks+ Mainline	18.8	5.7	0.25	1.0	0.9	5.2	3.1	N
Partial Mitigation: idling restrictions, daytime unloading only and clean trucks (AQ-2b, 4b, 4c)								
Scenario 1 - Rail Spur + SMR + trucks	37.0	7.8	0.42	1.8	1.4	7.1	6.4	N
Scenario 2 - Rail Spur + SMR + trucks+ Mainline	39.0	9.5	0.46	1.9	1.5	9.5	7.1	N

See Appendix B for detailed emission calculations.
SMR emissions include the increased fraction of BTEX to 1.25% from 0.81%
Use of HARP2 model version 15197
PMI -Point of Maximum Impact, the highest value along the facility fenceline.
MEIR-Maximally Exposed Individual Resident

Figure 5-8 Reduced Rail Delivery Alternative Mainline Locomotive Cancer Risk, by speed and distance from Mainline (3 trains per week, 150 trains per year)



Notes: Based on 3 locomotives per train, 150 round train trips per year, Nipomo meteorological dataset (1994-1996) and 30 year average locomotive emission factor (as per EPA). Includes OEHHA adjustment factors.

Table 5.10 Reduced Rail Delivery Alternative Operational GHG Emissions, metric tonnes

Source	CO_2	CH_4	N_2O	$MTCO_2E$
Construction Amortized	38.4	0.01	0.00	38.6
Fugitives	0.0	0.01	0.00	0.3
Locomotives onsite	480.0	0.04	0.01	484.6
Locomotives along mainline within SLOC	1,160.7	0.09	0.03	1,171.7
Electricity	676.2	0.03	0.01	678.9
Vehicles (autos and trucks and sulfur trucks)	34.2	0.00	0.00	34.5
Project Total within SLOC	***2,389.5***	***0.18***	***0.05***	***2,408.7***
Route Totals (including SLOC emissions)				
Northern Route via Oakland	6,331.6	0.5	0.1	6,388.4
Northern Route via Altamont Pass	6,224.6	0.5	0.1	6,280.4
Southern Route	4,902.8	0.4	0.1	4,945.9
Within California[1]	10,234.6	0.8	0.2	10,328.6
Within United States[2]	39,749.1	3.1	1.0	40,128.4

1. Assumes northern route via Oakland to Washington State Boarder, which is the longest route.
2. Assumes a hypothetical route to the Canadian border via the Midwest, which would be the longest route.

$MTCO_2E$-metric tons CO_2 equivalent.

Biological Resources

Impact BIO.7 (Onsite Oil Spills) would remain Class II, and BIO.11 (UPRR Mainline Spills) would remain Class I. In both cases the probability of an oil spill would decrease at the SMR and along the entire rail route since fewer trains would be delivering crude to the SMR. However, in the event of an oil spill that affected biological resources the potential impacts would remain the same as for the Rail Spur Project. Mitigation measures associated with BIO.7 and BIO.11 for the Rail Spur Project would apply to this alternative.

Impact BIO.10 (Monarch Butterflies) would remain Class III but would be reduced in severity since there would be less annual emissions associated with the unloading operations due to fewer trains arriving at the SMR.

Impact BIO.12 (Mainline Rail Impacts to Wildlife) would remain Class III but would be reduced in severity since there would be less train trips per year for this alternative, which would reduce the probability of trains impacting wildlife on the mainline.

All other impacts identified for the Rail Spur Project would remain the same, and their associated mitigation measures would apply to this alternative.

Cultural Resources

Impact CR.6 (UPRR Mainline Spills) would remain Class I, but the probability of an oil spill would decrease along the entire rail route since fewer trains would be delivering crude to the SMR. However, in the event of an oil spill that affected cultural resources the potential impacts would remain the same as for the Rail Spur Project. Mitigation measures associated with CR.6 for the Rail Spur Project would apply to this alternative. All other impacts identified for the Rail Spur Project would remain the same, and their associated mitigation measures would apply to this alternative.

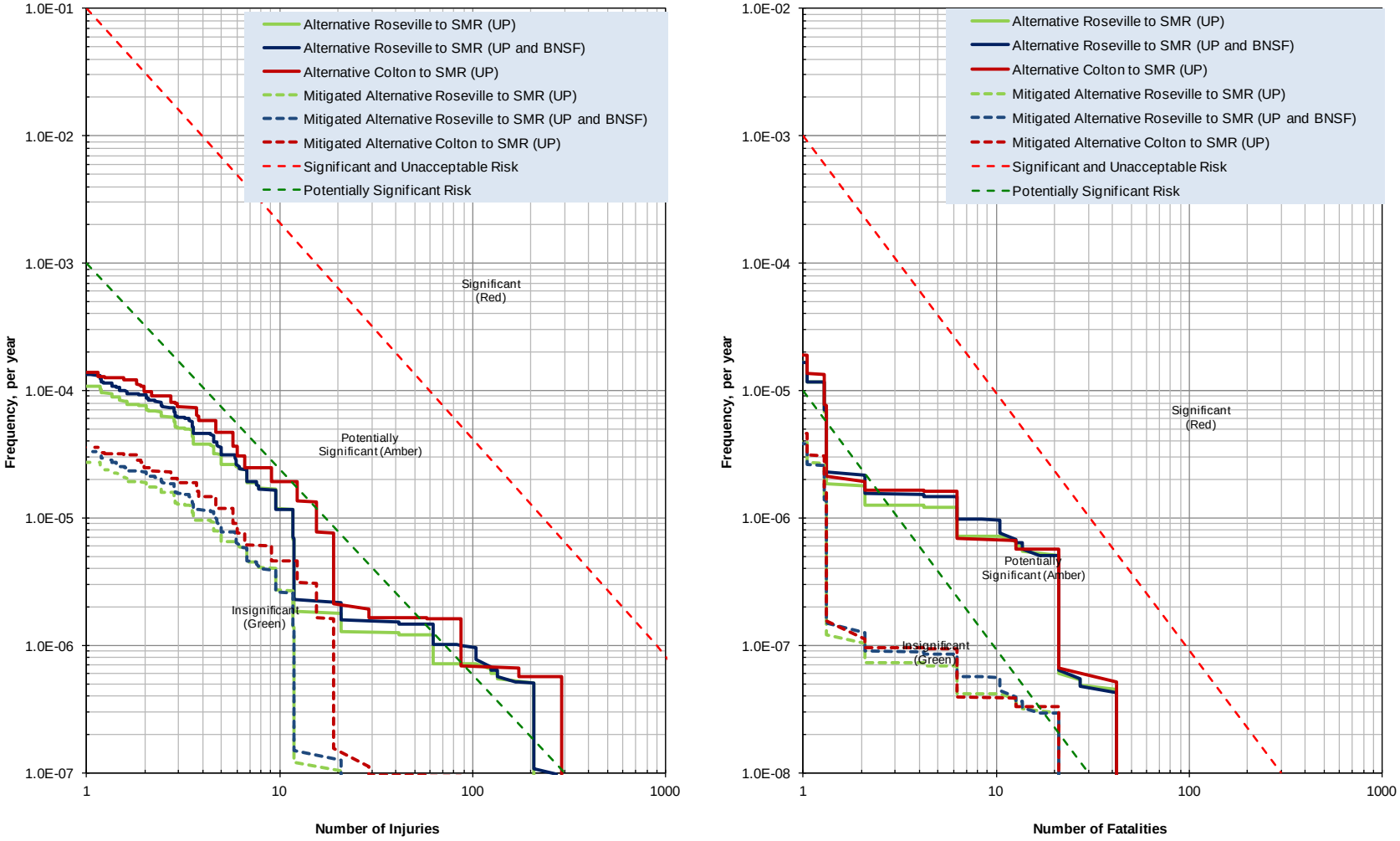
Hazards and Hazardous Materials

By reducing the number of train deliveries to the SMR, the probability of a train accident and resultant oil spill along the entire mainline route and at the SMR would be reduced by about 40 percent. This would serve to reduce the level of risk associated with a rail accident particularly along the entire mainline rail route.

Impact HM.1 (Risk of Spill/Fire at Unloading Facility) would remain Class III impacts since the maximum hazards zones would remain the same as for the Rail Spur Project, and would be within the boundaries of the SMR. The worst case spill volume is associated with a pipeline rupture between the rail unloading facility and the existing crude oil storage tanks. This spill volume would not change with this alternative.

Impact HM.2 (Risk of Spill/Fire on UPRR Mainline) would remain Class I, but the level of risk along the entire rail line would decrease since the probability of an oil spill incident would be reduced. Figure 5-9 shows the risk profiles for this alternative for the various routes between the SMR and the Roseville and Colton rail yards. The figure shows that the impacts would be significant (Class I).

Figure 5-9 Reduced Rail Delivery Alternative Risk Associated with Mainline Rail Crude Oil Unit Train Transportation



Even with the reduce annual train trips the potential consequences remain high since the route passes through a number of HTUA (Los Angeles Basin, Bay Area, Sacramento). With the mitigation identified for HM.2 for the Rail Spur Project, the impact would be reduced.

The County may be preempted by Federal law from applying mitigation to the UPRR mainline operations so the unmitigated risk is what is used to determine the significance of the impact. However, even with mitigation the risk would remain significant. Unmitigated, even one train per week would be a significant impact.

For the portion of the rail route past Roseville and Colton to the California Border and beyond, the impacts the public safety risk from mainline rail incidents would remain significant. However, the probability of an incident would be reduced due to few train trips per week.

Impact HM.3 (Crude Slate Changes at SMR) would remain Class III, but would be reduced in severity since less crude would be delivered to the refinery. This would result in a smaller change in the overall refinery crude slate.

Noise and Vibration

Impact N.2 (Operational Unloading) would remain the same as the Rail Spur Project (Class II), but fewer trains would be delivered to the SMR site, which would reduce the amount of time sensitive populations around the SMR are exposed to the noise from the unloading operations. However, this alternative would not reduce the peak hour noise levels associated with the train unloading operations, which is what is used to determine the significance of this noise impact. Mitigation measures identified for the Rail Spur Project would apply to this alternative.

Impact N.3 (UPRR Mainline) would remain the same as the Rail Spur Project (Class III), but fewer trains associated with the Rail Spur Project would use the mainline track, which would reduce the amount of time sensitive populations near the mainline tracks are exposed to train noise. However, this would not reduce the 24 hour CNEL noise level associated with trains on the mainline track, which is what is used to determine the significance of this noise impact.

All other impacts identified for the Rail Spur Project would remain the same, and their associated mitigation measures would apply to this alternative.

Public Services and Utilities

Impact PS.2 (Electrical Use) would remain the same as the Rail Spur Project, less than significant (Class III). The amount of electrical use for the unloading operations would be reduced by about 40 percent due to fewer trains being unloaded at the SMR.

Impact PS.3 (Increase Demand for Fire Protection and Emergency Response at the SMR) would remain the same as the Rail Spur Project, less than significant with mitigation (Class II). The probability of a release at the loading terminal would be reduced since fewer trains would be unloaded per year. However, the spill volumes and types of incident would remain the same. In the event of an incident the demand for fire protection and emergency response services would be the same as for the Rail Spur Project. With lower probability of an incident, the probability of needing these services could be potentially reduced. Mitigation measures identified for the Rail Spur Project would apply to this alternative.

Impact PS.4 (Increase Demand for Fire Protection and Emergency Response along Mainline Rail) would remain the same as the Rail Spur Project, significant (Class I). The probability of a release along all portions of the mainline rail would be reduced since fewer trains would be traveling to the SMR. However, the spill volumes and types of incident would remain the same. In the event of an incident the demand for fire protection and emergency response services would be the same as for the Rail Spur Project. With lower probability of an incident, the probability of needing these services would be reduced. Mitigation measures identified for the Rail Spur Project would apply to this alternative.

All other impacts identified for the Rail Spur Project would remain the same, and their associated mitigation measures would apply to this alternative.

Recreation
Impact REC.2 (Oil Spills Effecting Access) would likely remain the same as the Rail Spur Project, less than significant (Class III), but would be reduced in severity. The probability of a spill would be less due to fewer annual train trips to the SMR. All other impacts identified for the Rail Spur Project would remain the same, and their associated mitigation measures would apply to this alternative.

Transportation and Circulation
Impact TR.3 (At Grade Crossings) would remain the same as the Rail Spur Project, less than significant (Class III). With fewer trains traveling to the SMR, the potential for traffic interference in the area of at grade crossings would be less, so the severity of the impact would be reduced.

Impact TR.4 (Rail Traffic) would remain the same as the Rail Spur Project (Class III). With fewer trains traveling to the SMR, the potential for interference with passenger train service would be less likely to occur, so the severity of the impact would be reduced.

All other impacts identified for the Rail Spur Project would remain the same, and their associated mitigation measures would apply to this alternative.

Water Resources
Impact WR.2 (Onsite Oil Spills) would remain Class II, and WR.3 (UPRR Mainline Spills) would remain Class I, but the probability of an oil spill would decrease at the SMR and along the entire rail route since fewer trains would be delivering crude to the SMR. However, in the event of an oil spill that effected water resources the potential impacts would remain the same as for the Rail Spur Project. Mitigation measures associated with WR.2 and WR.3 for the Rail Spur Project would apply to this alternative. All other impacts identified for the Rail Spur Project would remain the same, and their associated mitigation measures would apply to this alternative.

5.4 Environmentally Superior Alternative

This section summarizes the environmental advantages and disadvantages associated with the Rail Spur Project and the three alternatives evaluated above. Based upon this discussion, the environmentally superior alternative is selected as required by CEQA. The State CEQA Guidelines, Section 15126 (d) (2), state that if the environmentally superior alternative is the No

Project Alternative, then the next most environmentally preferred alternative must also be identified.

CEQA does not provide specific direction regarding the methodology of comparing alternatives and the proposed 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 long-term impacts are generally given more weight in comparing alternatives. Impacts that are short-term (e.g., construction-related impacts) or those that are mitigable to less than significant levels are generally considered to be less important.

Table 5.11 (which is at the end of this section) provides a comparison between the Rail Spur Project and each of the alternatives for the impacts identified in each issue area. For impacts with the same classification, an increase or decrease in severity is denoted with an up or down arrow, respectively. The impacts in the table were identified as a result of the analysis provided in Chapter 4.0, Environmental Analysis, for the Rail Spur Project and Chapter 5.0 for the alternatives.

5.4.1 Rail Spur Project and the No Project Alternative

With the No Project Alternative, construction and operation of the Rail Spur Project would not occur. None of the construction impacts associated with the Rail Spur Project would occur at the SMR. With the No Project Alternative Phillips 66 could expand the use of trucking crude oil to the SMPS. Crude could be delivered to one of rail unloading facilities near Bakersfield and then loaded onto trucks and moved to the SMPS, where it would be unloaded and moved via pipeline to the SMR. Phillips 66 is currently using this method for delivering crude to the SMR.

The alternative could eliminate the Class I impact associated with air toxic emissions due to operations at the SMR (AQ.4). This impact would be shifted to the rail facilities near Bakersfield and the SMPS. However, there are no sensitive receptor sites in close proximity to these facilities so the impact of operational air toxic emission would be less than significant (Class III).

The No Project Alternative could also reduce the severity of three Class I air quality impacts identified as part of the Rail Spur Project (AQ.2 – Operational Emissions in SLOC, AQ.3 – Mainline Rail Emissions, and AQ.5 – Toxic Emission on Mainline Rail). All of these reductions in severity are a result of fewer train trips used to delivery crude (2.5 vs. 5 per week). However, some of the emission reduction associated with the fewer trains would be offset by the additional truck emissions from moving the oil from Bakersfield to the SMPS. Greenhouse gas emissions would remain Class I, but would increase in severity over the Rail Spur Project due to the additional trucking operations. This alternative would reduce the annual NOx, ROG, and DPM, emissions, but would increase the annual GHG emissions. Also, the peak day emissions of all pollutants would be higher for this alternative due to the trucking emissions.

As discussed in the Air Quality Section (Section 4.3) most of these Class I impacts could be mitigated to less than significant levels if the County is not preempted by Federal law from requiring mitigation on the UPRR mainline tracks and UPRR locomotives. Since the County may be preempted, the impacts have been classified as significant (Class I). If the County is not preempted then the NO_x, ROG, DPM, and GHG emissions can be mitigated and the impacts

would be Class II. Only in the case where the County is preempted, would the No Project Alternative reduce the severity of the NO_x, ROG, and DPM impacts associated with the Rail Spur Project.

This alternative would reduce the severity of HM.2-UPRR Mainline Accidents but would likely remain a significant Class I impact. The reduction in risk associated with train accidents for the No Project Alternative would be due to fewer trains per year traveling to Bakersfield, and the fact that the trains would not have to travel through the HTUAs of the Bay Area or Los Angeles. The risk from a train accident would be shifted from the Coastal Area, Bay Area, and Los Angeles area to the San Joaquin Valley. The trains would still pass through some heavily populated areas such as Sacramento, Davis, Bakersfield, Fresno, Stockton, etc., so the risk would likely remain significant (Class I). This alternative would add the risk of an oil spill due to a truck accident, but the truck route (State Highway 166) is not heavily populated. While the probability of a truck accident would be higher than for rail, the spill volume and associated hazards would be less.

The majority of the rail risk can be mitigated via use of safer rail tanker cars as discussed in Section 4.7 (Hazards and Hazardous Materials). However, the County may be preempted by Federal law from requiring mitigation on the UPRR mainline tracks, and may not be able to require the use of the safer tank car design. If the County is not preempted then the risk of a rail accident can be substantially reduced. Only in the case where the County is preempted, would the No Project Alternative likely reduce the severity of the UPRR mainline accident impacts associated with the Rail Spur Project.

The No Project Alternative would also reduce the probability of an oil spill from a train accident since fewer trains would be used to deliver crude to Bakersfield. This would reduce the probability that spill would impact biological, water, agricultural, and cultural resources. However, the spill volumes would remain the same. In the event of a spill that occurred in the vicinity of any of these resources, impacts BIO.11 (UPRR Mainline Oil Spills), WR.3 (UPRR Mainline Oil Spills), CR.6 (UPRR Mainline Oil Spills), and AR.5 (UPRR Mainline Oil Spills) could be significant and would remain significant (Class I). For agricultural resources more of the rail route through the San Joaquin Valley would be in close proximity to agricultural lands, this would increase the probability of a spill impacting these resources.

With the No Project Alternative there would be the added risk of an oil spill along the truck route between Bakersfield and the SMPS. While the spill volumes would be less for a truck than a train the probability of a spill would be higher since trucks have higher accident rates than trains. In the event of a spill impacts to any of these resources along the truck route impacts could be significant (Class I).

The No Project Alternative would meet most of the basic objectives of the Rail Spur Project. However, it may not allow the SMR to operate at its permitted throughput capacity since less crude oil could be available to the refinery. The determination of the environmentally superior alternative is somewhat complicated by the preemption issue. If the County is preempted from requiring mitigation of the impacts on the UPRR mainline track and locomotives, then the No Project Alternative would be environmentally superior since it would eliminate a Class I air

impact (AQ.4-Toxic Air Emissions at the SMR) and reduce the severity of five other Class I impacts as discussed above.

If the County is not preempted, the No Project Alternative would offer no advantage over the Rail Spur Project in terms of NO_x and ROG, emissions since these emissions could be mitigated for the proposed project. DPM emissions could be reduced for the Rail Spur Project with the use Tier 4 engines if the County is not preempted. Mainline rail hazard risks associated with the train operations would likely be greater for the No Project Alternative if the County is not preempted for implementing mitigation measures on the mainline rail operations. This is because the same mitigation could not be applied to the No Project Alternative since no permits would need to be issued by the County to implement the alternative. If mitigation could be applied by the County then overall probability of an oil spill would be less for proposed Rail Spur Project than for the No Project Alternative.

If the County is not preempted, then the Rail Spur Project would be environmentally preferred to the No Project Alternative since mitigation could be applied to the project to reduce the severity or eliminate most of the significant impacts. With the No Project Alternative, none of this mitigation could be applied since no permits would need to be issued by the County to implement the No Project Alternative. If the County is preempted, than the No Project Alternative would be considered environmentally preferred to the Rail Spur Project.

The No Project Alternative would meet most of the basic objectives of the Rail Spur Project. However, it may not allow the SMR to operate at its permitted throughput capacity since less crude oil could be available to the refinery.

5.4.2 Rail Spur Project and Loop Rail Unloading Configuration Alternative

This alternative would have the rail track at the SMR in a loop configuration as opposed to the linear configuration for the Rail Spur Project. The same number of trains would be delivered to the SMR as the Rail Spur Project (five trains per week). The operation of the unloading facility would essentially remain the same as the Rail Spur Project, with the exception of the way the tanker cars would be moved around the track during the unloading process.

This alternative would not reduce the impact classification of any of the impacts for the Rail Spur Project, and would not result in any new impacts that were not identified for the proposed project.

The alternative would reduce the severity of three air quality impact identified as part of the Rail Spur Project (AQ.2 – Operational Emissions in SLOC, AQ.4 – Toxic Air Emissions at the SMR, and AQ.6 – GHG Emissions) since emissions would be slightly reduced when the trains were at the SMR. However, the impact would remain Class I assuming the County is preempted from imposing mitigation on the UPRR mainline and locomotives. This alternative would not affect the level of NOx, ROG, or DPM emissions on the UPRR mainline track when compared to the Rail Spur Project.

This alternative would increase the severity of 20 impacts identified for the Rail Spur Project, but would not change the classification of any of these impacts (These are all Class II or Class III

impacts). Most of these impacts would be related to construction activities. The loop track configuration would require a larger area of disturbance and more cut and fill, which increases the severity of some of the construction impacts. The loop track configuration would require a change in topography of the site that would increase the severity of the visual impacts, but they would remain Class II.

The loop track configuration alternative would meet all of the objectives of the Rail Spur Project.

From an environmental standpoint, the slight reduction in air emission at the SMR would be offset by the increase in severity of a large number of construction related impacts, and increased visual impacts. Therefore, the Rail Spur Project, which uses a linear track configuration, would be environmentally preferred to the loop track configuration alternative.

5.4.3 Rail Spur Project and Reduced Rail Delivery Alternative

This alternative would be exactly the same as the Rail Spur Project in terms of construction and operation with the exception that only three trains per week (150 trains per year) would be delivered to the SMR instead of the proposed five per week (250 per year). All of the construction impacts would be the same as the Rail Spur Project. A reduction in crude oil deliveries to the SMR would affect some of the operational impacts associated with air quality, hazards and hazardous material, and to some degree noise. Operational impacts in all the other issue areas would remain the same as the Rail Spur Project.

The alternative would reduce the severity of four Class I air quality impacts identified as part of the Rail Spur Project (AQ.2 – Operational Emissions in SLOC, AQ.3 – Mainline Rail Emissions, and AQ.5 – Toxic Emission on Mainline Rail, and AQ.6-GHG Emissions) since fewer trains would be delivered to the SMR. This alternative would reduce the annual NOx, ROG, DPM, and GHG emissions of these pollutants, but would not affect the peak day emissions.

As discussed in the Air Quality Section (Section 4.3) most of these Class I impacts could be mitigated to less than significant levels if the County is not preempted by Federal law from requiring mitigation on the UPRR mainline tracks and UPRR locomotives. Since the County may be preempted, the impacts have been classified as significant (Class I). If the County is not preempted then the NO_x, ROG, and GHG emissions can be mitigated and the impacts would be Class II. Only in the case where the County is preempted, would the Reduced Delivery Alternative reduce the severity of the NO_x, ROG, and GHG impacts associated with the Rail Spur Project. In all cases the DPM emissions would remain significant (Class I) since offset SLOCAPCD does not have an emission reduction program for DPM, and there is insufficient DPM reductions that could occur at the existing SMR operations to mitigate the DPM emissions associated with the Rail Spur Project or the reduced delivery alternative.

Impact AQ.4, Toxic Air Emissions at the SMR, could be reduced to less than significant with mitigation (Class II) with the reduced rail delivery alternative. Implementation of the mitigation measures that restricting idling time on site (AQ.2b), use of trucks for moving coke and sulfur that meet EPA 2010 model year NO_x and PM emissions requirements (AQ-4b), and limiting unloading times to between 7 A.M. and 7 P.M. (AQ-4c) would reduce the cancer risk to below the SLOCAPCD threshold.

As shown in Table 5.9, the highest residential cancer risk (also known as the maximally exposed individual resident) would be less than 10 in a million for the partial mitigation cases. The partial mitigation case does not include Tier 4 locomotives since the County may be preempted by Federal law from implementing this measure. However, even without the use of Tier 4 engines, the cancer risk with partial mitigation would be less than significant with mitigation.

Impact AQ.5 (Mainline Rail Toxic Emissions) would remain the same as the Rail Spur Project (Class I), but the severity of the impact would be reduced since fewer trains would travel to the SMR. Figure 5-8 shows that for areas where the train is moving faster than 20 miles per hour, the cancer health risk impacts would be less than significant. However, there are areas along the mainline rail route that have speed restriction of 10 miles per hour or less, such as in the City of Davis. These areas could experience cancer risks that are above the 10.0 in a million threshold. Given that the speed at which a train could cause excess cancer risk above the threshold is lower for the Rail Spur Project, the severity of the impact would be less since fewer areas would be affected.

This alternative would reduce the severity of two hazard impacts identified as part of the Rail Spur Project (HM.1-Risk of Spill/Fire at Unloading Facility and HM.2-UPRR Mainline Accidents) since fewer trains would be delivered to the SMR.

This alternative would reduce the severity of HM.2-UPRR Mainline Accidents but would remain a Class I impact. The reduction in risk associated with train accidents for this alternative would be due to fewer trains per year servicing the SMR, so the probability of an accident and resulting spill would be less. Figure 5-9 shows the results of the QRA for the reduced rail delivery alternatives.

The majority of the rail risk can be mitigated via use of safer rail tanker cars as discussed in Section 4.7 (Hazards and Hazardous Materials). However, the County may be preempted by Federal law from requiring mitigation on the UPRR mainline tracks, and may not be able to require the use of the safer tank car design. If the County is not preempted then the risk of a rail accident can be substantially reduced for both the Rail Spur Project as well as this alternative. In all cases the reduced delivery alternative would have a lower risk of accidents along the mainline rail.

The Reduced Rail Delivery Alternative would also reduce the probability of an oil spill from a train accident since fewer trains would be used to deliver crude to the SMR. This would reduce the probability that spill would impact biological, water, agricultural, and cultural resources. However, the spill volumes would remain the same. In the event of a spill that occurred in the vicinity of any of these resources, impacts BIO.11 (UPRR Mainline Oil Spills), WR.3 (UPRR Mainline Oil Spills), CR.6 (UPRR Mainline Oil Spills), and AR.5 (UPRR Mainline Oil Spills) could be significant and would remain Class I, but would be reduced in severity due to the lower probability of a spill impacting these resources.

This alternative would reduce the duration of train unloading noise that sensitive receptors would be exposed to since fewer trains would be unloaded at the SMR. However, the peak hour noise exposure (the criteria used to determine the significance of the unloading noise) would remain the same as the Rail Spur Project.

The reduced rail delivery alternative would meet most of the objectives of the Rail Spur Project. However, it may not allow the SMR to operate at its permitted throughput capacity since less crude oil could be available to the refinery.

The determination of the environmentally superior alternative is somewhat complicated by the preemption issue. If the County is preempted from requiring mitigation of the impacts on the UPRR mainline track and locomotives, then the Reduced Rail Delivery Alternative would be the environmentally preferred since it would reduce the severity of number of Class I impacts, and eliminate one Class I impact in air quality (AQ.4- Toxic Air Emissions at the SMR).

If the County is not preempted, the reduced rail delivery alternative would offer no advantage over the Rail Spur Project in terms of NO_x and ROG emissions since these emissions could be fully mitigated. However, the reduced rail delivery alternative would offer some very real advantages over the Rail Spur Project in terms of hazards, noise, GHG emissions, health risk, and DPM emissions.

The reduced rail delivery alternative would reduce the probability of a train accident, reduce the exposure of sensitive receptors to train unloading noise, reduce GHG emissions, reduce DPM emissions and the associated air toxic emissions. All of these reductions would result since fewer trains would be delivered to the SMR. Therefore, the Reduced Rail Delivery Alternative would be environmentally preferred over the Rail Spur Project regardless whether the County is preempted from applying mitigation to the mainline and locomotives.

Table 5.11 Comparison of Rail Spur Project and Alternative Impacts

Impact #	Impact Description	Impact Classification ↓ - Decrease in Severity but the same Classification ↑ - Increase in Severity but the same Classification			
		Proposed Project	**No Project**	**Loop Rail Unloading Configuration**	**Reduced Rail Delivery**
AV.1	The eastern extension of the proposed rail spur and its associated trains would reduce quality views of the open space as seen from portions of State Route 1, the California Coastal Trail, the De Anza Trail, and other public areas east of State Route 1, resulting in a potentially significant impact.	Class II	NA	Class II(↑)	Class II
AV.2	The expanded industrial use and visibility of the rail spur and associated trains on the existing open space would cause the project to be more noticeable as seen from public viewpoints on State Route 1, the California Coastal Trail, the De Anza Trail, and other public areas east of State Route 1. This effect on the existing visual character would be inconsistent with the County of San Luis Obispo visual policy goals, resulting in a potentially significant impact.	Class II	NA	Class II(↑)	Class II
AV.3	The project would create a new source of substantial light and glare which would adversely affect nighttime views in the area.	Class II	NA	Class II	Class II
AV.4	Visibility of headlights and other operational and safety lights from trains on the rail spur would create a new source of light and glare which would adversely affect nighttime views in the area.	Class II	NA	Class II(↑)	Class II(↓)
AR.1	The Rail Spur Project would result in conversion of prime agricultural land per NRCS soil classification to non-agricultural use.	None	NA	None	None
AR.2	The Rail Spur Project would result in the permanent conversion of approximately 22.3 acres of Farmland of Statewide Importance, based on soil classifications in the COSE, to non-agricultural use.	Class III	NA	Class III(↑)	Class III
AR.3	The project could result in effects that impair adjacent agricultural uses, including the generation of dust and contaminated air emissions, soil and water contamination, use of water within the Santa Maria Groundwater Basin, the spread of noxious weeds, and increased risk of fire or oil spills, which have the potential to adversely affect adjacent agricultural areas.	Class II	Class III[1]	Class II	Class II(↓)
AR.4	The project proposes disturbance and use of lands within the Agriculture designation to support industrial development.	None	NA	None	None
AR.5	The project could result in effects that impair adjacent agricultural uses along the UPRR mainline in the event of a derailment and/or spill, including the	Class I	Class I(↑)[2]	Class I	Class I(↓)

Table 5.11 Comparison of Rail Spur Project and Alternative Impacts

Impact #	Impact Description	Impact Classification ↓ - Decrease in Severity but the same Classification ↑ - Increase in Severity but the same Classification			
		Proposed Project	**No Project**	**Loop Rail Unloading Configuration**	**Reduced Rail Delivery**
	generation of contaminated air emissions, soil and water contamination, and increased risk of fire, which have the potential to adversely affect adjacent agricultural areas.				
AQ.1	Construction activities associated with the Rail Spur project would generate criteria pollutant emissions that exceed SLOCAPCD thresholds.	Class II	NA	Class II(↑)	Class II
AQ.2	Operational activities associated with the Rail Spur Project within SLOC (i.e., on the project site (SMR) and on the mainline within SLOC) would generate criteria pollutant emissions that exceed SLOCAPCD thresholds.	Class I	Class I(↓)[1]	Class I(↓)	Class I(↓)
AQ.3	Operational activities of trains along the mainline rail route outside of SLOC associated with the Rail Spur Project would generate criteria pollutant emissions that exceed thresholds.	Class I	Class I(↓)[2]	Class I	Class I(↓)
AQ.4	Operational activities at the Refinery associated with the Rail Spur Project would generate toxic emissions that exceed SLOCAPCD thresholds.	Class I	Class III[1]	Class I(↓)	Class II
AQ.5	Operational activities of trains along the mainline rail route associated with the Rail Spur Project would generate toxic emissions that exceed SLOCAPCD thresholds.	Class I	Class I(↓)[2]	Class I	Class I(↓)
AQ.6	Operational activities associated with the Rail Spur Project would generate GHG emissions that exceed SLOCAPCD thresholds.	Class I	Class I(↑)[1,2]	Class I(↓)	Class I(↓)
AQ-7	Operational activities associated with the Rail Spur Project could generate odors.	Class II	Class III[1]	Class II	Class II(↓)
AQ-8	Cumulative criteria pollutant and GHG emissions at the refinery could exceed SLOCAPCD thresholds.	Class II	Class II(↓)	Class II	Class II(↓)
BIO.1	Proposed construction of the Rail Spur Project has the potential to impact Nipomo Mesa lupine, a state and federally endangered plant species.	Class II	NA	Class II(↑)	Class II
BIO.2	Proposed construction of the Rail Spur and associated Emergency Vehicle Access route would result in the removal of plant species considered to be rare by the California Native Plant Society.	Class II	NA	Class II(↑)	Class II
BIO.3	Proposed construction and operational activities could result in disturbance and mortality to common ground-dwelling wildlife and sensitive ground-	Class II	NA	Class II(↑)	Class II

Table 5.11 Comparison of Rail Spur Project and Alternative Impacts

Impact #	Impact Description	Impact Classification ↓ - Decrease in Severity but the same Classification ↑ - Increase in Severity but the same Classification			
		Proposed Project	**No Project**	**Loop Rail Unloading Configuration**	**Reduced Rail Delivery**
	dwelling animal species.				
BIO.4	Proposed construction activities could result in disturbance of American badger, potentially including mortality.	Class II	NA	Class II(↑)	Class II
BIO.5	Proposed construction of the Rail Spur Project could result in a permanent impact to approximately 20.88 acres of vegetation types that are considered sensitive communities by the California Department of Fish and Wildlife following the National Vegetation Classification.	Class II	NA	Class II(↑)	Class II
BIO.6	Proposed construction of the Rail Spur Project has the potential to impact individual specimens of coast live oak of 5-inch DBH or greater.	Class II	NA	Class II(↑)	Class II
BIO.7	A rupture or leak from, pipelines, rails cars, or other facility related infrastructure during operation of the Rail Spur Project has potential to impact surrounding onsite sensitive habitats.	Class II	Class III[1]	Class II	Class II(↓)
BIO.8	Proposed construction and operational activities could result in disturbance and mortality to nesting migratory bird species and overwintering burrowing owl.	Class II	NA	Class II(↑)	Class II
BIO.9	Proposed construction activities could result in disturbance and the introduction or spread of invasive plant species.	Class II	NA	Class II(↑)	Class II
BIO-10	Long term air quality impacts could result in impacts to known overwintering monarch butterfly habitat located approximately one-mile east of the Rail Spur Project.	Class III	NA	Class III	Class III(↓)
BIO.11	Crude oil transportation along the UPRR mainline could result in a crude oil spill that impacts sensitive plant and wildlife species and wetlands.	Class I	Class I[2]	Class I	Class I(↓)
BIO.12	Crude oil transportation along the UPRR mainline could result impacts to wildlife in the vicinity of the mainline.	Class III	Class III(↓)	Class III	Class III(↓)
CR.1	Grading and excavation associated with the construction of the emergency vehicle access road (EVA) could result in the disturbance and destruction of a portion of CA-SLO-1190.	Class II	NA	Class II	Class II
CR.2	Grading and excavation associated with the project could result in the disturbance and destruction of unknown subsurface archeological resources.	Class II	NA	Class II(↑)	Class II

Table 5.11 Comparison of Rail Spur Project and Alternative Impacts

Impact #	Impact Description	Impact Classification ↓ - Decrease in Severity but the same Classification ↑ - Increase in Severity but the same Classification			
		Proposed Project	**No Project**	**Loop Rail Unloading Configuration**	**Reduced Rail Delivery**
CR.3	Unanticipated disturbance to human remains due to construction.	Class II	NA	Class II(↑)	Class II
CR.4	Construction of the Rail Spur Project would result in impacts to historical resources.	None	NA	None	None
CR.5	Unanticipated disturbance to paleontological resources.	Class II	NA	Class II(↑)	Class II
CR.6	Train traffic associated with the importation of crude oil to the project site could result in a derailment or a material spill, which could result in the disturbance and destruction of cultural resources along the mainline routes.	Class I	Class I[2]	Class I	Class I(↓)
GR.1	Seismically induced ground shaking could damage proposed structures and infrastructure, potentially resulting in loss of property, risk to human health and safety, and oil spills.	Class II	NA	Class II	Class II
GR.2	Project grading would result in changes in topography, potentially unstable slopes, and potential increased erosion.	Class II	NA	Class II(↑)	Class II
GR.3	Expansive soils, if present, could damage proposed foundations.	Class II	NA	Class II(↑)	Class II
GR.4	The Project could potentially preclude the future extraction of valuable mineral resources.	Class III	NA	Class III	Class III
HM.1	The proposed rail spur unloading facility would increase the risk of an oil spill, fires and explosions at the refinery that could impact the public.	Class III	Class III[1]	Class III	Class III(↓)
HM.2	The potential for a crude oil unit train derailment would increase the risk to the public in the vicinity of the UPRR right-of-way.	Class I	Class I(↓)[2]	Class I	Class I(↓)
HM.3	A change in crude slate from rail deliveries could increase hazards at the refinery that would impact the public.	Class III	Class III(↓)	Class III	Class III(↓)
REC.1	The Rail Spur Project would increase use or demand for parks and recreational opportunities.	Class III	NA	Class III	Class III
REC.2	The Rail Spur Project would affect access to existing trails, parks or recreational opportunities.	Class III	Class III(↓)[2]	Class III	Class III(↓)
N.1	Construction activities would generate noise that could exceed San Luis Obispo thresholds.	Class II	NA	Class II	Class II
N.2	Operational activities would generate noise levels that exceed San Luis	Class II	Class III[1]	Class II(↑)	Class II(↓)

Table 5.11 Comparison of Rail Spur Project and Alternative Impacts

Impact #	Impact Description	Impact Classification ↓ - Decrease in Severity but the same Classification ↑ - Increase in Severity but the same Classification			
		Proposed Project	**No Project**	**Loop Rail Unloading Configuration**	**Reduced Rail Delivery**
	Obispo thresholds.				
N.3	Operational activities along the UPRR mainline tracks would generate transportation related noise levels that exceed San Luis Obispo thresholds.	Class III	Class III(↓)[2]	Class III	Class III(↓)
N.4	Operational activities would produce vibration levels that exceed San Luis Obispo thresholds.	Class III	Class III[1]	Class III	Class III
P/H.1	The Project would induce substantial population growth in the area.	Class III	NA	Class III	Class III
P/H.2	The project would increase the transfer of hazardous substances through residential areas, potentially resulting in the indirect displacement of people.	Class III	NA	Class III	Class III
P/H.3	The project would generate temporary and permanent employment needs, which could result in the need for new housing in the project vicinity.	Class III	NA	Class III	Class III
PS.1	The Rail Spur Project would generate solid waste requiring disposal at landfills.	Class III	NA	Class III	Class III
PS.2	The Rail Spur Project would potentially impact electricity supplies.	Class III	Class III[1]	Class III	Class III(↓)
PS.3	The Rail Spur Project would increase demand for fire protection and emergency response services at the SMR.	Class II	Class III[1]	Class II	Class II(↓)
PS.4	Operations of the crude oil train on the mainline UPRR tracks would increase demand for fire protection and emergency response services along the rail routes.	Class I	Class I[2]	Class I	Class I(↓)
PS.5	The Rail Spur Project would increase demand for police services at the SMR.	Class III	Class III[1]	Class III	Class III
TR.1	Traffic associated with the construction phase of the Rail Spur Project could impact traffic on roadways in the Project vicinity due to construction traffic.	Class II	NA	Class II(↑)	Class II
TR.2	Traffic associated with operation of the Rail Spur Project could impact traffic on roadways in the Project vicinity due to increased traffic.	Class III	Class III[1]	Class III	Class III
TR.3	Crude oil trains servicing the SMR could cause traffic delays in the vicinity of at-grade crossing.	Class III	Class III(↓)[2]	Class III	Class III(↓)
TR.4	Increased rail traffic on Union Pacific main rail lines could impact the performance of the public rail transit facilities.	Class III	Class III(↓)[2]	Class III	Class III(↓)

Table 5.11 Comparison of Rail Spur Project and Alternative Impacts

Impact #	Impact Description	Impact Classification ↓ - Decrease in Severity but the same Classification ↑ - Increase in Severity but the same Classification			
		Proposed Project	**No Project**	**Loop Rail Unloading Configuration**	**Reduced Rail Delivery**
WR.1	Project grading and construction, could degrade surface water and groundwater quality.	Class II	NA	Class II(↑)	Class II
WR.2	A rupture or leak from the tanker rail cars, unloading facility, or oil pipeline during operation of the Rail Spur Project could substantially degrade surface water and groundwater quality.	Class II	Class III[1]	Class II	Class II(↓)
WR.3	A rupture or leak from a rail car on the UPRR mainline track could substantially degrade surface water and groundwater quality.	Class I	Class I[2]	Class I	Class I(↓)
WR.4	Project operations would result in an increase in the amount of stormwater runoff at the site.	Class III	NA	Class III	Class III
WR.5	The Project would not involve activities within the 100-year flood plain.	Class III	NA	Class III	Class III
WR.6	The Project would potentially change the quantity or movement of available ground water or adversely affect a community water service provider.	Class III	NA	Class III	Class III

NA – The impact would not occur.

1. Location of impact would shift from the SMR to other rail loading facilities near Bakersfield and/or the SMPS.
2. Location of mainline rail impacts would shift from Coastal Route to the San Joaquin Valley and State Highway 166 for the truck transportation.

5.5 References

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6.0 Other CEQA-Mandated Sections

The California Environmental Quality Act (CEQA) requires evaluations of project related growth-inducing effects and energy conservation. The following sections evaluate the proposed Project in light of these requirements. Chapter 4.0 discusses potentially significant environmental impacts, as described in the State CEQA Guidelines section 15126.2(a) and (b).

6.1 Growth-Inducing Impacts

Section 15126.2(d) of the California Environmental Quality Act Guidelines requires that Environmental Impact Reports provide a discussion of the growth-inducing impacts of the proposed 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 Rail Spur and Crude Unloading Project (Rail Spur Project) are evaluated below with regard to these four growth-inducing criteria.

6.1.1 Removal of an Impediment to Growth

Future development at the Rail Spur Project site would involve the unloading of crude oil from a unit or manifest train. The Rail Spur Project would not result in the establishment of an essential public service nor would it provide new access to a previously inaccessible area. The Rail Spur Project would not be responsible for, nor contribute to, the expansion of utility services into a previously unserved area or an under-served area. Water for construction and operation of the Rail Spur Project would be provided by groundwater wells that are used by the SMR, and an

existing Pacific Gas and Electric Company (PG&E) electrical lines would be used to provide power to the Rail Spur Project. As a result, The Rail Spur Project would not cause significant growth inducement under this criterion.

6.1.2 Economic 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 Rail Spur Project. Employment due to construction would be limited to mostly short-term temporary labor. The construction is expected to last about four months, which could produce some short-term economic growth. It is expected that most of the construction workers would come from the local contractor pool within 20 to 30 miles of the project site. Therefore, no growth in hotel services would be expected to occur.

Minimal new operational employment would be associated with the Rail Spur Project. Only twelve employees would be needed during the time train are being unloaded at the SMR, and some of the staff would be existing SMR employees. Given the limited increase in local expenditures associated with the Rail Spur Project, the economic growth associated with future development at the proposed project site would not be significant from an environmental standpoint.

6.1.3 Precedent-Setting Action

The purpose of the Rail Spur Project is to provide a source for crude for SMR. The San Luis Obispo County Zoning Ordinance allows refining at the project site with a Coastal Development Permit. The Rail Spur Project would be within the property boundaries of the SMR and, therefore, would not be a precedent-setting action that would create significant growth inducing impacts.

6.1.4 Development of Open Space

Development of open space is considered growth inducing when it encroaches upon urban-rural interfaces or in isolated localities. The Rail Spur Project site is located on lands that are zoned specifically for refining operations, which by its nature requires the delivery of crude oil for refining. Therefore, the project would not cause new encroachment upon current open spaces.

6.2 Energy Conservation

In order to assure that energy implications are considered in project decisions, CEQA requires that EIRs include a discussion of the potential energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful and unnecessary consumption of energy (see Public Resources Code section 21100(b)(3)). According to Appendix F of the State CEQA Guidelines, the goal of conserving energy implies the wise and efficient use of

energy including: (1) decreasing overall per capita energy consumption; (2) decreasing reliance on natural gas and oil; and (3) increasing reliance on renewable energy sources.

The proposed project's goal is to provide crude oil to the SMR, which would help meet the energy needs of the State of California. As such, the goals stated above are not generally applicable to an oil development project. As stated in Appendix F of the State CEQA Guidelines, *"Potentially significant energy implications of a project shall be considered in an EIR to the extent relevant and applicable to the project."* Since the purpose of the project is to help supply energy for use in California, it by default would not have significant energy implications.

The supply of crude oil is driven by the demand for refined products (gasoline, diesel and jet fuel). Currently, the demand for refined products is met through supply to California refineries of crude oil from California domestic production, foreign imports of crude oil, imports of crude oil from Alaska, crude oil brought to California by truck or rail, and imports of refined products. There are currently no crude oil pipelines which bring crude oil into California. This means that the only sources of crude oil to meet refinery crude oil demand are from California production, Alaska production, other North American Production that is delivered by truck or rail, or from foreign sources brought into ports by tanker ships.

California production of crude oil per year has been in decline since 1986, when production peaked at slightly over 400 million barrels. The decline has averaged about 1.7% per year since 1995. More recently, the decline has averaged over 3% annually since the year 2000. The combination of declining California and Alaska North Slope production along with a relatively constant, flat demand for crude oil in California has resulted in an increase in foreign crude oil imports. Foreign crude oil imports since 1995 have increased by an average of almost 38%. Delivery of other North American crudes to California could help to offset the need for foreign imports as local production declines.

The SMR currently generates most of the electricity and all of the gas necessary to operate the refinery. The electrical requirements for the Rail Spur Project would be provided for the most part by the cogeneration facility at the refinery. Some small amount of purchased power may be needed at for the unloading operations, the effect of the project on peak and base demand would be essentially neutral.

The Project would change the transportation method used to deliver most of the crude oil to the Refinery. The Rail Spur Project is not expected to increase the total electrical and fuel usage demand at the SMR. Since the Rail Spur Project is not expected to increase the total electrical and fuel usage at the SMR, it would not be expected to result in any adverse effects on existing energy resources available to the local area or region.

The construction and implementation of the Project would be required to comply with current energy standards and policies including local building codes and energy related standards for industrial structures. Phillips 66 proposes to incorporate energy conservation measures into the Rail Spur Project that include installing: 1) energy efficient lighting; 2) high efficiency electric motors; and 3) high efficiency pumps. Thus, the Project would not conflict with energy efficiencies or standards.

The Project would not increase the volume of crude oil delivered to the SMR. Oil delivered by train would be offset by oil that is currently delivered by pipeline and/or truck. The operational energy usage for the unloading operations is not expected to represent a substantive increase in energy consumption, or a wasteful or unnecessary consumption of energy, and would not have a significant impact to energy resources.

In summary, under operation of the Project, the SMR would not increase the importation or exportation of product, and would continue to be a net exporter of energy. and would not have a significant effect on local and regional energy supplies, and construction related impacts would be short term and temporary in nature; therefore, the Project would have no impact on issues outlined in the four significance criteria items above.

The exact amount of energy that would be used by the Rail Spur Project is not known. The major source of fuel use would be for operating the trains on the UPRR mainline tracks. The amount of fuel used to transport the crude oil to the SMR would depend upon the source location of the crude and the route taken to get to the SMR. In 2011 rail fuel efficiency was about one gallon of fuel to move a ton of freight an average of 469 miles (AAR 2012). However, the majority of the crude oil currently being processed at the SMR comes from local sources and is shipped to the refinery by pipeline. Given the shorter distance the current crude must travel to get to the refinery, the Rail Spur Project would be a less energy efficient mode of transportation. However, the SMR would continue to be a net exporter of energy to the marketplace and would to help meet the energy needs of the State of California.

In addition, the County's Conservation and Open Space Element (COSE) incorporates new material to address conservation issues, including energy resources. As an adopted Element of the County's General Plan, under State law the County's decision makers must consider the project's consistency with the COSE.

Applicable goals and policies of the COSE and other applicable plans, ordinances, regulations, and standards are addressed in Appendix G and of this EIR. Compliance with all applicable building codes, County policies, Applicant proposed measures, and mitigation measures identified in this EIR, would ensure that energy use by the project is minimized.

7.0 Summary of Mitigation Measures

Mitigation measures have been developed for a number of the impacts identified for the Rail Spur Project. This section provides a listing of mitigation measures that were identified for the Rail Spur Project. The mitigation measures are provided for each issue area below.

Aesthetics and Visual Resources, Section 4.1

AV-1a Prior to issuance of grading and construction permits, the applicant shall submit a revised site-grading plan to the Department of Planning and Building for review and approval showing the following:

a. An earthen berm shall be constructed around the eastern perimeter of the rail spur. The berm shall be a minimum of 10 feet tall and a maximum of 20 feet tall above the existing grade and as shown on the Berm Location Concept Map shown below (Figure 4.1-11) for the purpose of reducing views of the rail spur and trains from State Route 1 and the California Coastal Trail / De Anza Trail.

b. The berm shall be designed and constructed to appear as a natural dune landform and shall have gradually undulated horizontal and vertical dimensions (consistent with Policy 5: Landform Alterations).

c. No other existing landforms which would provide visual screening of the facility shall be used as source of borrow material for the required berm.

d. The berm shall be revegetated with native grasses and shrubs to match the surrounding natural landcover and plant community.

No disturbance shall occur outside of the identified area of disturbance shown on the site-grading plan.

AV-1b Prior to issuance of grading and construction permits, the applicant shall submit a revised site-grading plan to the Department of Planning and Building for review and approval showing the following:

a. All new cut and fill slopes shall include slope-rounding and landform grading techniques to avoid an engineered appearance (consistent with Policy 5: Landform Alterations).

AV-1c Prior to issuance of grading and construction permits, the applicant shall submit a Habitat / Landscape Revegetation Plan to the Department of Planning and Building for review and approval showing the following:

a. All new slopes shall be revegetated with native grasses and shrubs to match the surrounding natural landcover and plant community.

AV-2 *Implementation of mitigation measures AV-1a through AV-1c required for Impact AV.1 would also reduce potential impacts to existing visual character and quality of the site and its surroundings.*

AV-3a *Prior to issuance of grading and construction permits, the applicant shall submit a comprehensive lighting plan to the Department of Planning and Building for review and approval showing the following:*

a. The Lighting Plan shall be based on a photometric study prepared by a qualified engineer who is an active member of the Illuminating Engineering Society of North America (IESNA).

b. The Lighting Plan shall be prepared by a qualified engineer who is an active member of the IESNA using guidance and best practices endorsed by the International Dark Sky Association.

c. The applicant shall provide the specific technical data and performance criteria required by the applicable safety policy used as the basis for the Lighting Plan.

d. As part of the Lighting Plan, illumination levels shall be the minimum required by the specifically defined public safety policy and ordinances.

e. As part of the Lighting Plan, direct views of all lighting sources shall be directed downward and shielded from view from public roads.

f. As part of the Lighting Plan, lights shall be designed and constructed to reduce illumination of the adjacent slopes and dunes where applicable.

g. As part of the Lighting Plan, no lights shall be placed east of any portion of the screening berm required in mitigation measure AV-1a.

h. As part of the Lighting Plan, lighting for all rail spur perimeter fencing shall be equipped with motion sensors for activation rather than left on continuously.

AV-3b *Within six months following completion of construction, a Lighting Evaluation Report shall be submitted to the Department of Planning and Building for review and approval. The purpose of the Lighting Evaluation Report shall be to assess and correct any unexpected or residual lighting impacts following project completion. The report shall be prepared by a by a qualified engineer who is an active member of the IESNA who was not associated with the preparation of the Lighting Plan described in mitigation measure AV-3a. Preparation of the Lighting Evaluation Report shall be by a qualified engineer retained by the County of San Luis Obispo and funded by the project applicant. The Lighting Evaluation Report shall include the following at a minimum:*

a. A comprehensive assessment of the lighting resulting from the rail spur project and project operations as seen from State Route 1, Oso Flaco Road, the California Coastal Trail, De Anza Trail and public viewing areas to the east.

The Lighting Evaluation Report shall assess the completed project during a variety of operational conditions including all typical procedures such as unloading, moving of trains, multiple trains present, etc. The Report shall evaluate and identify where, if any unexpected light impacts occur, such as but not limited to reflection off trains, adjacent landforms, buildings, unexpected sources, etc.

b. The Lighting Evaluation Report shall make specific recommendations to reduce the effects of any unexpected or excessive residual lighting impacts identified in the report. Recommendations may include but not be limited to: repositioning lights, lowering heights, increasing sizes of cut-off shields, reducing types of luminaires, reducing wattage, and modifying operational procedures.

AV-3c ***Existing Facility and Operations Lighting Evaluation****. Prior to issuance of grading and construction permits, the applicant shall submit a comprehensive evaluation of the existing refinery facility and operations lighting to the Department of Planning and Building for review and approval showing the following:*

a. The Existing Facility and Operations Lighting Evaluation shall be prepared by a qualified engineer who is an active member of the Illuminating Engineering Society of North America (IESNA).

b. The Existing Facility and Operations Lighting Evaluation shall assess the sources and levels of all existing lighting associated with the refinery operations, and shall determine if any lighting levels exceeds the minimum required by applicable County of San Luis Obispo, state and federal safety regulations.

c. If lighting levels exceed the applicable regulations, the Existing Facility and Operations Lighting Evaluation shall make specific recommendations to reduce the lighting levels to the minimum required.

The Existing Facility and Operations Lighting Evaluation shall also identify and make recommendations to eliminate visibility of all point source lighting as seen from public roadways. The project applicant shall implement all recommendations made by the Lighting Evaluation Report and required by the Department of Planning and Building.

AV-4 Implementation of mitigation measures AV-1a through AV-1c required for Impact AV.1 and mitigation measure AV-3b required for Impact AV.3 would also reduce potential impacts caused by trains operating on the rail spur.

Agricultural Resources, Section 4.2

AR-3 Implement WR-1, WR-2; AQ-1f, and BIO-9.

Air Quality and Greenhouse Gases, Section 4.3

AQ-1a Prior to issuance of grading and construction permits, and throughout project construction, as applicable, the Applicant shall implement the following construction emission reduction measures:

a. Properly maintain all construction equipment according to manufacturer's specifications;

b. Fuel all off-road and portable diesel powered equipment with CARB-certified motor vehicle diesel fuel (non-taxed version suitable for use off-road);

c. Applicant shall include the following, in addition to complying with state Off-Road Regulations, in order to reduce peak daily/quarter ROG+NOx emissions: 1) Use CARB Tier 4 certified diesel construction equipment off-road heavy-duty diesel engines and 2) Stagger the construction schedule to prevent peak day/quarter emissions from exceeding the threshold (for example, no site preparation during grading and soil transport);

d. Use CARB 2010 or cleaner certified on-road heavy-duty diesel trucks to the extent feasible and comply with state On-Road Regulations;

e. If construction or trucking companies that are awarded the bid or are subcontractors for the project do not have equipment to meet the above two measures, the impacts from the dirtier equipment shall be addressed through SLOCAPCD approved off-site or other mitigation measures;

f. All on- and off-road diesel equipment shall not idle for more than 5 minutes. Signs shall be posted in the designated queuing areas and job sites to remind drivers and operators of the 5 minute idling limit;

g. Diesel idling within 1,000 feet of sensitive receptors is not permitted (Sensitive receptors are defined in the SLOCAPCD Handbook as people that have an increased sensitivity to air pollution or environmental contaminants. Sensitive receptor locations include schools, parks and playgrounds, day care centers, nursing homes, hospitals, and residential dwelling units);

h. Staging and queuing areas shall not be located within 1,000 feet of sensitive receptors;

i. Equipment shall be electrified when feasible;

j. Substitute gasoline-powered or diesel hybrids in place of diesel-powered equipment, where feasible; and

k. Use alternatively fueled construction equipment on-site where feasible, such as compressed natural gas (CNG), liquefied natural gas (LNG), propane, or biodiesel.

AQ-1b Prior to issuance of grading and construction permit, the Applicant shall ensure SLOCAPCD regulations that prohibit developmental burning of vegetative material within San Luis Obispo County are followed for the life of the project.

AQ-1c *Prior to issuance of grading and construction permit, the Applicant shall ensure that portable equipment and engines 50 horsepower or greater, used during grading and construction activities must have a California portable equipment registration (issued by the ARB) or a SLOCAPCD permit. Proof of registration must be provided to the SLOCAPCD prior to the start of grading or construction or a permit secured from the SLOCAPCD prior to the start of grading or construction. The following list is as a guide to equipment and operations that may have permitting requirements, but it is not exclusive:*

a. Power screens, conveyors, diesel engines, and/or crushers;

b. Portable generators and equipment with 50-horsepower or greater engines;

c. Internal combustion engines;

d. Unconfined abrasive blasting operations;

e. Concrete batch plants;

f. Rock and pavement crushing;

g. Tub grinders; and

h. Trommel screens.

AQ-1d *Prior to issuance of grading and construction permit, the Applicant shall ensure that all grading and construction equipment greater than 100 bhp be equipped with CARB Level 3 diesel particulate filters (DPF), or equivalent, to achieve an 85 percent reduction in diesel particulate emissions from an uncontrolled engine. If CARB verified Level 3 DPFs cannot be secured for all of the equipment greater than 100 hp then the applicant will offset the added DPM with measures including but not limited to schedule modifications, implementation of no idling requirement, or other applicable measures providing a total reduction equivalent to an 85 percent reduction from uncontrolled engines as approved by the SLOCAPCD.*

AQ-1e *Prior to issuance of grading and construction permits, or during construction, if emissions of ROG+NO_x with the above mitigations still exceed the thresholds, the Applicant shall secure SLOCAPCD-approved onsite or off-site reductions in ROG + NO_x emissions to ensure that ROG + NO_x emissions do not exceed the SLOCAPCD quarterly thresholds. Coordination with the SLOCAPCD should begin at least six (6) months prior to issuance of grading and/or construction permits for the Project to allow time for refining calculations and for the SLOCAPCD to review and approve the Construction Activity Management Plan (CAMP) and on-site or off-site mitigation approach.*

AQ-1f *Prior to issuance of applicable grading permit, the Applicant shall prepare a Dust Control Plan to be approved by the APCD and County Health and include requirements in the SLOCAPCD CEQA Handbook identified as fugitive dust mitigation measures and shall include a combination of the following, as approved by the SLOCAPCD and County Health:*

a. Reduce the amount of the disturbed area where possible.

b. Use of water trucks or sprinkler systems in sufficient quantities to prevent airborne dust from leaving the site. An adequate water supply source must be identified. Increased watering frequency would be required whenever wind speeds exceed 15 mph. Reclaimed (non-potable) water should be used whenever possible.

c. All dirt stockpile areas should be sprayed daily as needed, covered, or a SLOCAPCD-approved alternative method will be used. (90 percent reduction from no dust control).

d. Permanent dust control measures identified in the approved Project revegetation and landscape plans should be implemented as soon as possible following completion of any soil disturbing activities and shall use native species that have been shown to reduce particulate emissions to the extent feasible.

e. Exposed ground areas that will be reworked at dates greater than one month after initial grading should be sown with a fast-germinating non-invasive grass seed and watered until vegetation is established.

f. All disturbed soil areas not subject to revegetation should be stabilized using approved chemical soil binders, jute netting, or other methods approved in advance by the SLOCAPCD.

g. All roadways, driveways, etc. to be paved should be completed as soon as possible. In addition, equipment pads should be laid as soon as possible after grading unless seeding or soil binders are used.

h. Vehicle speed for all construction vehicles shall not exceed 15 mph on any unpaved surface at the construction site.

i. All trucks hauling dirt, sand, soil, or other loose materials are to be covered or should maintain at least 2 feet of freeboard (minimum vertical distance between top of load and top of trailer) in accordance with CVC Section 23114.

j. Install wheel washers where vehicles enter and exit unpaved roads onto streets, or wash off trucks and equipment leaving the site.

k. Sweep streets at the end of each day if visible soil material is carried onto adjacent paved roads. Water sweepers with reclaimed water should be used where feasible

l. Apply water every 3 hours to disturbed areas within the construction site in order to achieve a 61 percent reduction in particulate emissions. In addition, when drought conditions are present, fugitive dust control measures need to be modified by utilizing soil binders or other equivalent measures, to conserve water resources while still providing the necessary emission reductions.

m. In support of APCD standard fugitive dust mitigation measures, the applicant shall designate a Visible Emission Evaluation certified person or persons to

monitor the fugitive dust emissions and enhance the implementation of the measures as necessary to minimize nuisance violations from dust complaints (Rule 402) and to reduce visible emissions below the APCD's Rule 401 requirement that opacity not exceed 20% for greater than 3 minutes in any 60 minute period. Their duties shall include holidays and weekend periods when work may not be in progress. The name and telephone number of the designated monitor shall be provided to the SLOCAPCD Compliance Division and the Department of Planning and Building prior to the start of any grading, earthwork, or demolition.

n. *All PM_{10} mitigation measures required shall be shown on grading and building plans.*

o. *Between June 1 and November 30, when Valley Fever rates of infection are the highest, additional dust suppression measures (such as additional water or the application of additional soil stabilizer) will be implemented prior to and immediately following ground disturbing activities if wind speeds exceed 15 miles per hour (mph) or temperatures exceed 95 degrees Fahrenheit for three consecutive days. The additional dust suppression will continue until winds are 10 mph or lower and outdoor air temperatures are below 90 degrees for at least two consecutive days. The additional dust suppression measures will be incorporated into the Final Dust Control Plan. The Plan will be submitted to the County for review and approval.*

p. *The primary project construction contractor will prepare and implement a worker training program that describes potential health hazards associated with Valley Fever, common symptoms, proper safety procedures to minimize health hazards, and notification procedures if suspected work-related symptoms are identified during construction. The worker training program will identify safety measures to be implemented by construction contractors during construction. Safety measures will include: 1) Providing HEPA-filtered air-conditioned enclosed cabs on heavy equipment. 2) Train workers on proper use of cabs, such as turning on air conditioning prior to using the equipment. 3) Providing communication methods, such as two-way radios, for use by workers in enclosed cabs. 4) Providing personal protective equipment (PPE), such as half-mask and/or full-mask respirators equipped with particulate filtration, to workers active in dusty work areas. 5) Providing separate, clean eating areas with hand-washing facilities for construction workers. 6) Cleaning equipment, vehicles, and other items before they are moved offsite to other work locations. 7) Providing training for construction workers so they can recognize the symptoms of Valley Fever and promptly report suspected symptoms of work-related Valley Fever to a supervisor. 8) Directing workers that exhibit Valley Fever symptoms to immediately seek a medical evaluation.*

q. *Construction activities that will generate dust shall be limited to periods when good air quality is forecasted to the maximum extent feasible. The 6 day forecast for the CDF forecast zone shall be utilized as available from the APCD website,*

slocleanair.org. This information should be used by all on-site workers to plan construction activities for days when the air quality is forecast to be good.

AQ-1g *Prior to issuance of applicable grading permit, the Applicant shall submit a geologic evaluation under the CARB ATCM for Construction, Grading, Quarrying, and Surface Mining Operations, to determine if Naturally Occurring Asbestos (NOA) is present within the area that will be disturbed. NOA has been identified as a toxic air contaminant by the CARB. If NOA is not present, an exemption request must be filed with the SLOCAPCD. If NOA is found at the site, the Applicant must 1) comply with all requirements outlined in the Asbestos ATCM. This may include development of an Asbestos Dust Mitigation Plan and an Asbestos Health and Safety Program for approval by the SLOCAPCD; and 2) conduct a geological evaluation prior to any grading. Technical Appendix 4.4 of the SLOCAPCD CEQA Handbook includes a map of zones throughout the County where NOA has been found. More information on NOA is available at http://www.slocleanair.org/business/asbestos.php.*

AQ-1h *Prior to issuance of demolition permits, if required, the Applicant shall comply with asbestos containing material (ACM) requirements. Demolition activities can have potential negative air quality impacts, including issues surrounding proper handling, demolition, and disposal of ACM. ACM could be encountered during demolition or remodeling of existing buildings. Asbestos can also be found in utility pipes and pipelines (transite pipes or insulation on pipes). If utility pipelines are scheduled for removal or relocation or a building(s) is proposed to be removed or renovated, various regulatory requirements may apply, including the requirements stipulated in the National Emission Standard for Hazardous Air Pollutants (40CFR61, Subpart M - asbestos NESHAP). These requirements include but are not limited to: (1) notification to the SLOCAPCD; (2) an asbestos survey conducted by a Certified Asbestos Inspector; and (3) applicable removal and disposal requirements of identified ACM. More information on asbestos is available at http://www.slocleanair.org/business/asbestos.php.*

AQ-1i *Should hydrocarbon contaminated soil be encountered during construction activities, the SLOCAPCD must be notified as soon as possible and no later than 48 hours after affected material is discovered to determine if an SLOCAPCD Permit will be required. In addition, the following measures shall be implemented immediately after contaminated soil is discovered: 1) Covers on storage piles shall be maintained in place at all times in areas not actively involved in soil addition or removal; 2) Contaminated soil shall be covered with at least six inches of packed uncontaminated soil or other TPH –non-permeable barrier such as plastic tarp. No headspace shall be allowed where vapors could accumulate; 3) Covered piles shall be designed in such a way to eliminate erosion due to wind or water. No openings in the covers are permitted; 4) During soil excavation, odors shall not be evident to such a degree as to cause a public nuisance; and, 5) Clean soil must be segregated from contaminated soil. The notification and permitting determination requirements shall be directed to the SLOCAPCD Enforcement Division*

AQ-2a *Prior to issuance of Notice to Proceed, the Applicant shall provide a mitigation, monitoring and reporting plan updated annually. The plan shall investigate methods*

for reducing the onsite and offsite emissions, both from fugitive components and from locomotives or from other SMR activities (such as the diesel pumps, trucks, and compressors to reduce DPM). In addition, locomotive emissions shall be mitigated to the extent feasible through contracting arrangements that require the use of Tier 4 locomotives or equivalent emission levels. The plan shall indicate that, on an annual basis, if emissions of ROG+NO_x and DPM with the above mitigations still exceed the thresholds, as measured and confirmed by the SLOCAPCD, the Applicant shall secure SLOCAPCD-approved onsite and/or offsite emission reductions in ROG + NO_x emissions or contribute to new or existing programs to ensure that project-related ROG + NO_x emissions within SLO County do not exceed the SLOCAPCD thresholds. Coordination with the SLOCAPCD should begin at least six (6) months prior to issuance of the Notice to Proceed for the Project to allow time for refining calculations and for the SLOCAPCD to review and approve any required ROG+NO_x emission reductions.

AQ-2b *Prior to issuance of Notice to Proceed, the Applicant shall implement a program, including training and procedures, to limit all locomotive onsite idling to no more than 15 consecutive minutes except when idling is required for safety purposes. Locomotive idling records shall be maintained and provided to the SLOCAPCD on an annual basis, along with training materials and training records.*

AQ-3 *Prior to issuance of the Notice to Proceed, the Applicant shall provide a mitigation, monitoring and reporting plan. The plan shall investigate methods for reducing the locomotive emissions through contracting arrangements that require the use of Tier 4 locomotives or equivalent emission levels. The plan shall indicate that, on an annual basis, if the mainline rail emissions of ROG+NO_x with the above mitigations still exceed the applicable Air District thresholds, the Applicant shall secure emission reductions in ROG + NO_x emissions or contribute to new or existing programs within each applicable Air District, similar to the emission reduction program utilized by the SLOCAPCD, to ensure that the main line rail ROG + NO_x emissions do not exceed the Air District thresholds for the life of the project. The Applicant shall provide documentation from each Air District to the San Luis Obispo County Planning and Building Department that emissions reductions have been secured for the life of the project prior to issuance of the Notice to Proceed.*

AQ-4a *Implement measures AQ-2a and AQ-2b.*

AQ-4b *All trucks under contract to the SMR for moving coke and sulfur shall meet EPA 2010 model year NOx and PM emission requirements and a preference for the use of rail over trucks for the transportation of coke shall be implemented to the extent feasible in order to reduce offsite emissions. Annual truck trips associated with refinery operations and their associated model year and emissions shall be submitted to the SLOCAPCD annually.*

AQ-4c *If mitigation measure AQ-2a (the use of Tier 4 locomotives only) is not implemented, then crude oil train unloading and switching activities at the SMR shall be limited to the period of 7 a.m. to 7 p.m. to reduce the emissions during periods of calm meteorological conditions. Reports shall be submitted to the County and APCD indicating the time of arrival, the start and end time of train switching break-apart*

and unloading and departure time. These time limits do not apply to pull-in of the unit trains from the mainline. When a unit train is pulled in between 7 p.m. and 7 a.m., the locomotives shall shut down until the allowed unloading time starting at 7 a.m. No switching or breaking apart of trains or any other locomotive activity is allowed between 7 p.m. and 7 a.m. except for the minimum activity needed to move the unit train onto the SMR property.

AQ-5 *Implement measure AQ-3.*

AQ-6 *Prior to issuance of the Notice to Proceed, the Applicant shall provide a GHG mitigation, monitoring and reporting plan. The plan shall indicate that, on an annual basis, if GHG emissions exceed the thresholds, the Applicant shall provide GHG emission reduction credits for all of the project GHG emissions. Coordination with the San Luis Obispo Planning and Building Department should begin at least six (6) months prior to issuance of operational permits for the Project to allow time for refining calculations and for the San Luis Obispo Planning and Building to review and approve the emission reduction credits.*

AQ-7 *Prior to issuance of Notice to Proceed, the Applicant shall ensure that any new odor sources be added to the existing Refinery Odor Control Plan and submitted to the SLOCAPCD for review and approval before the start of construction. Mitigation shall include carbon canisters on all vacuum trucks, arrival and pre-departure inspection of all rail cars for fugitive leaks, monitoring of rail car top vents during unloading, and methods to reduce and eliminate odors associated with maintenance activities. Monitoring of odors from the rail facility and the other portions of the SMR potentially affected by a change in crude oil slate, shall be included in the Plan and shall be conducted by an independent third party monitor, retained by the County of San Luis Obispo Department of Planning, for the first three months of operation during each unit train visit. The APCD shall be notified of monitoring and unit train activity. Monitoring activities can be reduced, in coordination and agreement with the APCD, after the facility startup if odors are not determined to affect areas offsite. In addition to monitoring, the amended Odor Control Plan shall also detail control measures and/or operating procedures that will be implemented to reduce odor impacts if odors are a concern. The Plan shall also include an implementation schedule for incorporating additional measures if needed. The Plan measures shall include leak detection (if not already implemented), lower leak detection and repair threshold limits (to 100 ppm), increased component monitoring frequency (monthly), component replacement with lower leak levels and improved vapor control systems and these measures shall be discussed in the Odor Control Plan.*

AQ-8 *Prior to issuance of the Notice to Proceed, the Applicant shall provide a GHG mitigation, monitoring and reporting plan. The plan shall investigate methods to bring the Rail Spur Project GHG emissions at the refinery to zero for the entire project each year. The plan shall indicate that, on an annual basis, if after all onsite mitigations are implemented, the GHG emissions from the Rail Spur Project still exceed zero, then SLOCAPCD-approved off-site mitigation will be required. Methods could include the contracting arrangement that increases the use of more*

efficient locomotives, or through other, onsite measures. Coordination with the SLOCAPCD should begin at least six (6) months prior to issuance of operational permits for the Project to allow time for refining calculations and for the SLOCAPCD to review and approve the mitigation approach.

Biological Resources, Section 4.4

BIO-1 *Prior to initiation of project activities, a floristic survey shall be conducted within the Rail Spur Project area in accordance with the California Department of Fish and Wildlife (CDFW) Protocol for surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities (2009) and the Guidelines for Conducting and Reporting Botanical Inventories for Federally listed, Proposed, and Candidate Species (USFWS 2000). The survey shall specifically focus on the presence/absence of Nipomo Mesa lupine and, if normal rainfall conditions are present during the survey, the findings would be only valid for a period of two years.*

The floristic survey shall be conducted during a blooming period with normal rainfall. A 'normal' rainfall period is equivalent to the monthly or annual average of precipitation over a 30 year time period for the area. The results of this survey shall be submitted to the County, United States Fish and Wildlife Service, and California Department of Fish and Wildlife within 30 days of completing the survey.

If 'normal' rainfall conditions have occurred prior to the initiation of the survey, and the results of this survey effort determine that Nipomo Mesa lupine is absent from the Rail Spur Project area, no further mitigation for this species shall be required at this time. Because it is well documented that Nipomo Mesa lupine may occur as a result of site disturbance, floristic surveys shall be conducted on an annual basis until there is no further disturbance to the native soil as a result of construction activities. Should Nipomo Mesa lupine be identified during construction, or if Nipomo Mesa lupine is identified prior to the initiation of activities during 'normal' rainfall conditions, the project shall avoid the individual or population to the extent feasible. If avoidance is not feasible then the applicant would be required by law to coordinate with California Department of Fish and Wildlife to acquire a 2081 Incidental Take Permit for this species and comply with any conditions imposed by that permit. At a minimum, the applicant shall implement BIO-5a (Dune Habitat Restoration Plan) and include Conservation Measures to establish and monitor Nipomo Mesa lupine population(s) within the identified on-site mitigation area at a ratio of 3:1 for individuals. The mitigation area for Nipomo Mesa lupine may overlap with the mitigation area for sensitive community impacts, which shall be protected from any grazing activities in perpetuity.

BIO-2 *Prior to project activities, the total number of California spineflower (Mucronea californica), sand almond (Prunus fasciculata var. punctata), Blochman's groundsel (Senecio blochmaniae), Blochman's leafy daisy (Erigeron blochmaniae), and dune larkspur (Delphinium parryi ssp. blochmaniae) shall be accurately estimated during the implementation of BIO-1. These population estimates shall be utilized as the basis for the in-kind replacement of these species described in Mitigation Measure*

BIO-5e. Should any additional populations of sensitive plant species that are considered rare by the California Native Plant Society (and not formally listed under the Endangered Species Act) be identified during the implementation of BIO-1 that were not previously observed in 2013, these species will also be replaced in-kind as part of the Dune Habitat Restoration Program and replacement success would be held to the same performance standards.

BIO-3 Prior to issuance of grading and construction permits, a qualified wildlife biologist shall prepare a Sensitive Species Management Plan, which outlines the procedures and protocols for capturing and relocating sensitive animal species including coast horned lizard and silvery legless lizard during all phases of grading. This plan shall be approved by the County and California Department of Fish and Wildlife. Implementation of the Plan is required where impacts to sensitive animal species and their habitats are unavoidable and located within a minimum of 100 feet of the Disturbance Area (or greater as determined by the California Department of Fish and Wildlife). Within 30 days prior to mobilization, grading or construction, a qualified wildlife biologist shall conduct a pre-construction survey of the area of impact to determine the presence of sensitive wildlife species. Individuals will be searched and captured using techniques appropriate to the species of concern and approved by the appropriate resource agencies. All captured individuals will be released as soon as possible into nearby suitable habitat that has been previously identified by the qualified wildlife biologist in consultation with the County and California Department of Fish and Wildlife. The size or age-class, location of capture, and the relocation site shall be recorded for each individual relocated from the site.

BIO-4 At a minimum, the following measures shall be incorporated in the Sensitive Species Management Plan:

1. *Prior to grading activities, a County-approved biologist shall conduct a survey to identify whether badgers are using any portion of the site near the area in which disturbance is proposed. The survey shall be conducted no less than 14 days and no more than 30 days prior to construction. The survey shall cover the boundaries of proposed disturbance and 100 feet beyond, including all access roads, and shall examine both old and new dens. If potential badgers dens are found, they shall be inspected to determine whether they are occupied by badgers. Occupation of the den shall be determined by one or more of the following methods:*

    a. *Use of a fiber-optic scope to examine the den to the end:*

    b. *Partially obstruct the den entrance with sticks, grass, and leaves for three consecutive nights and examine for signs that animals are entering or leaving the den;*

    c. *Dust the den entrance with a fine layer of dust or tracking medium for three consecutive nights and examine the following mornings for tracks.*

2. *Inactive dens within construction areas shall be excavated by hand with a shovel to prevent re-use of dens during construction.*

3. *If badgers are found in dens between August and January, a qualified biologist shall establish a 50 foot diameter exclusion zone around the entrance. To avoid disturbance and the possibility of direct take of badgers, no construction, grading, or staging of equipment shall be conducted within the buffer area until the biologist has determined that the badger(s) have vacated the den.*

4. *If badgers are found in dens between February and July, nursing young may be present. Therefore, a County-approved biologist shall establish a 200-foot diameter buffer around the den. No construction, grading, or staging of equipment shall be conducted within the buffer area until the biologist has determined that the badgers have vacated the den.*

BIO-5a Prior to issuance of any grading permits, the applicant shall retain a qualified biologist and/or botanist acceptable to the County to prepare a Dune Habitat Restoration Plan (DHRP) for review and approval by the County in consultation with the California Department of Fish and Wildlife (CDFW) and the United States Fish and Wildlife Service (USFWS). The DHRP shall be signed by the retained qualified biologist and/or botanist and shall detail the methods for restoring or enhancing a minimum of 41.76 acres (2:1 for permanent impacts) of vegetation types considered to be sensitive communities by CDFW, with an emphasis on restoring known rare plant associations found within the BSA and those associations considered locally rare to the Guadalupe-Nipomo Dunes. The restoration area(s) shall be located within the Phillips 66 property boundary and protected from any grazing activity. The DHRP shall focus on restoring and enhancing sensitive communities, known rare plant associations, and species of locally rare plant associations, by removing invasive species (iceplant, veldt grass, and other invasive species) and planting appropriate native species, including but not limited to: mock heather, purple nightshade, Blochman's ragwort, Blochman's leafy daisy, California spineflower, sand almond and suffrutescent wallflower.

Should Nipomo Mesa lupine be identified within the Rail Spur Project area as a result of BIO-1, and avoidance of this species is not feasible, the DHRP shall also include methods of restoring and enhancing Nipomo Mesa lupine at a ratio of 3:1 for permanent impacts to individuals. Regardless of whether Nipomo Mesa lupine is identified on-site as part of BIO-1, the DHRP shall also focus on restoring and enhancing sensitive communities and rare plant associations immediately adjacent to known Nipomo Mesa lupine populations in order to promote expansion of the existing population.

At a minimum, the DHRP shall include the following elements:

a. *Identification of locations, amounts, size and types of plants to be replanted, as well as any other necessary components (e.g., temporary irrigation, amendments, etc.) to ensure successful reestablishment.*

b. Provide for a native seed collection effort prior to ground disturbing activities. Collection of native seed shall be propagated by a County-approved contractor. Plants shall include but not be limited to California Native Plant Society (CNPS) listed plant species that may be affected.

c. Quantification of impact based on "as-built plans" and quantification of mitigation areas such that the replacement criteria are met (2:1 acreage ratio, or 3:1 for Nipomo Mesa lupine individuals).

d. A program schedule and success criteria for a minimum five year monitoring and reporting program that is structured to ensure the success of the DHRP.

e. Provide for the in-kind replacement of the following sensitive species that occur within the Rail Spur Project area, which may include: California spineflower (Mucronea californica), sand almond (Prunus fasciculata var. punctata), Blochman's groundsel (Senecio blochmaniae), Blochman's leafy daisy (Erigeron blochmaniae) and dune larkspur (Delphinium parryi ssp. blochmaniae). Should Nipomo Mesa lupine be identified onsite, in-kind replacement of this species shall also be included. Individuals that are removed or damaged shall be replaced in-kind at a 3:1 ratio (based on square feet cover) within the designated restoration area with 100% success in 5 years.

f. Identification of access and methods of materials transport to the restoration area, including personnel, vehicles, tools, plants, irrigation equipment, water, and all other similar supplies. Access shall not result in new or additional impacts to habitat and special-status species.

g. The required Dune Habitat Restoration Program shall incorporate an invasive species control program and be implemented by qualified personnel to ensure that the invasive species control program does not result in any additional impacts to Nipomo Mesa lupine, or other rare species.

h. The restoration area shall be protected in perpetuity by an easement. The easement shall either be an open space easement, or a conservation easement if required by the California Department of Fish and Wildlife and United States Fish and Wildlife Service, or if chosen by the Applicant. The easement shall be in a form approved by County Counsel and CDFW and/or USFWS if required by those agencies.

i. Upon successful completion of the Dune Habitat Restoration Program and subsequent approval by the permitting resource agencies, the applicant shall consider providing non-profit organizations such as California Native Plant Society and The Land Conservancy with long term access to the restoration site for the purposes of education, and long-term maintenance of the restoration site. Long-term maintenance activities would only occur if permitted by the applicant, and would require coordination with California Department of Fish and Wildlife and United States Fish and Wildlife Service. Access to the site is not guaranteed as a result of this measure. Funding for any future long-term maintenance activities shall be facilitated by the non-profit organization.

BIO-5b Prior to initiation of construction, the applicant shall retain a qualified biologist or botanist acceptable to the County to supervise the implementation of the DHRP. The qualified biologist or botanist shall supervise plant salvage and/or seed collection (prior to construction), plant propagation, site preparation, implementation timing, species selected for planting, planting installation, maintenance, monitoring, and reporting of the restoration efforts. The qualified biologist or botanist shall prepare and submit four annual reports and one final monitoring report to the County for review and approval in consultation with California Department of Fish and Wildlife and United States Fish and Wildlife Service.. The annual and final monitoring reports shall include discussions of the restoration activities, project photographs, an assessment of success criteria attainment, and any remediation actions that may have been required in order to achieve the success criteria.

BIO-5c Prior to issuance of grading and construction permits, the applicant shall define and clearly mark construction zone boundaries adjacent to known sensitive species occurrences with high visibility construction fencing, and shall mark groups of individual plants located within potential disturbance areas with highly visible flagging or fencing.

BIO-5d Prior to construction (within 48 hours), the applicant's retained biologist or botanist shall provide instruction to construction personnel regarding avoidance of sensitive habitats and special-status plants located in the vicinities of areas experiencing ground disturbance. The training shall include presentation of photos of sensitive plant species and habitat, summary of regulations and conditions applicable to protection of the species, identification of areas where removal of the species is permitted pursuant to the final conditions of approval and DHRP, and any ramifications for non-compliance.

BIO-5e During construction, where disturbance to sensitive habitat and sensitive plant species is unavoidable (and permitted by the County upon approval of the project), the top four inches of surface material shall be salvaged and stockpiled for restoration use in consultation with the County, California Department of Fish and Wildlife and United States Fish and Wildlife Service. Existing native vegetation shall also be removed and included as mulch in order to capture any existing native seed material. The salvaged material shall be used as the finish layer on fill slopes and other disturbed areas that will not require regular vegetation maintenance.

BIO-5f During construction, the use of heavy equipment shall be restricted to within the identified work areas throughout the duration of construction activities and all construction personnel shall be advised of the importance of limiting ground disturbance and construction activities to within the identified work areas. A full-time biological monitor shall monitor shall map any populations or individual sensitive species that may bloom within, or directly adjacent to, areas of ground disturbance. Should Nipomo Mesa lupine be identified at any time during construction, the species shall be completely avoided and the County shall be contacted immediately. If avoidance is not feasible, or the species was inadvertently impacted during construction before identification by the biological monitor, the

County and the applicant shall coordinate directly with the California Department of Fish and Wildlife and United States Fish and Wildlife Service. At a minimum, the impacts to any sensitive plant species shall be mitigated though implementation of BIO-5a.

BIO-6a At the time of application for grading and/or construction permits, the applicant shall prepare an Oak Tree Inventory, Avoidance, and Protection Plan as outlined herein. The plan shall be reviewed by a County-approved arborist prior to approval of grading and/or construction permits, and shall include the following items:

a. Construction plans shall clearly delineate all trees within 50 feet of areas where soil disturbance would occur, and shall show which trees are to be impacted, and which trees are to remain unharmed. All inventoried trees shall be shown on maps. The species, diameter at breast height, location, and condition of these trees shall be documented in data tables.

b. Prior to any grading or grubbing, all trees that are within fifty feet of construction or grading activities shall be marked for protection and their root zone shall be fenced. The outer edge of the tree root zone to be fenced shall be outside of the canopy 1/2 again the distance as measured between the tree trunk and outer edge of the canopy (i.e., 1-1/2 times the distance from the trunk to the drip line of the tree), unless otherwise shown on the approved construction plans.

c. Prior to any grading or grubbing, a certified arborist shall be retained by the applicant to identify at risk limbs and perform all necessary trimming of oak tree limbs that could be damaged by project activities. Pruning shall be conducted as needed along all access roads and construction areas, including paved portions of County roads used for project equipment access. All pruning shall be conducted prior to construction equipment passage to minimize the potential for inadvertent damage to oak tree limbs. Removal of larger lower branches should be minimized to 1) avoid making tree top heavy and more susceptible to "blow-overs", 2) reduce having larger limb cuts that take longer to heal and are much more susceptible to disease and infestation, 3) retain wildlife habitat values associated with the lower branches, 4) retain shade to keep summer temperatures cooler and 5) retain the natural shape of the tree. The certified arborist shall document all pruning impacts in a report submitted to the County San Luis Obispo.

d. A certified arborist shall be retained by the applicant to supervise all construction activities in areas containing oak trees in order to minimize disturbance to identified trees and their root zones wherever possible. The certified arborist will document all construction-related impacts to oak trees in an "as-built" report submitted to the County San Luis Obispo.

e. Immediately following submittal of the oak tree impact "as-built" report to the County San Luis Obispo, the applicant shall implement mitigation for all identified pruning and construction-related oak impacts per current County San Luis Obispo ratios and methods for oak tree mitigation and replacement. County oak tree replacement standards require a project proponent to prepare and implement an oak tree replacement plan. The plan shall provide for the in-kind

replacement, at a 4:1 ratio, of all oak trees removed as a result of the project. In addition, the plan must provide for the in-kind planting, at a 2:1 ratio, of all oak trees impacted but not removed. The replacement trees must be monitored for seven years after planting.

BIO-6b Upon application for grading and construction permits, the applicant shall submit an Oak Tree Replacement, Monitoring, and Conservation Plan to the County Department of Planning and Building. The Plan shall include the following:

a. The County-approved arborist shall provide or submit approval of an oak tree replacement plan at a minimum 4:1 ratio for oak trees removed and a minimum replacement ration of 2:1 ratio for oak trees impacted (i.e., disturbance within the root zone area).

b. Replacement oak trees shall be from regionally or locally collected seed stock grown in vertical tubes or deep one-gallon tree pots. Four-foot diameter shelters shall be placed over each oak tree to protect it from deer and other herbivores, and shall consist of 54-inch tall welded wire cattle panels (or equivalent material) and be staked using T-posts. Wire mesh baskets, at least two feet in diameter and two feet deep, shall be use below ground. Planting during the warmest, driest months (June through September) shall be avoided. The plan shall provide a species-specific planting schedule. If planting occurs outside this time period, an irrigation plan shall be submitted prior to permit issuance and implemented upon approval by the county.

c. Replacement oak trees shall be planted no closer than 20 feet on center and shall average no more than four planted per 2,000 square feet. Trees shall be planted in random and clustered patterns to create a natural appearance. As feasible, replacement trees shall be planted in a natural setting on the north side of and at the canopy/dripline edge of existing mature native oak trees (if present); on north-facing slopes; within drainage swales (except when riparian habitat present); where topsoil is present; and away from continuously wet areas (e.g., lawns, irrigated areas, etc). Replanting areas shall be either in native topsoil or areas where native topsoil has been reapplied. A seasonally timed maintenance program, which includes regular weeding (hand removal at a minimum of once early fall and once early spring within at least a three-foot radius from the tree or installation of a staked "weed mat" or weed-free mulch) and a temporary watering program, shall be developed for all oak tree planting areas. A qualified arborist/botanist shall be retained to monitor the acquisition, installation, and maintenance of all oak trees to be replaced. Replacement trees shall be monitored and maintained by a qualified arborist/botanist for at least seven years or until the trees have successfully established as determined by the County Environmental Coordinator. Annual monitoring reports will be prepared by a qualified arborist/botanist and submitted to the County by October 15 each year.

d. The restored area shall be at a minimum equal in size to the area of oak habitat lost or disturbed.

BIO-7 Prior to issuance of grading and construction permits, the existing Santa Maria Refinery Spill Prevention, Control and Countermeasure Plan (SPCCP) shall be amended and submitted for review and approval to the County Planning and Building Department and the California Department of Fish and Wildlife, Office of Spill Prevention and Response . The Plan shall address protection of sensitive biological resources and revegetation of any areas disturbed during an oil spill or cleanup activities. The Plan shall incorporate, at a minimum, the following:

a. An estimate of the worst case spill volume associated with the rail unloading operations.

b. A description of the spill containment equipment for the facility that clearly demonstrates that the worst case spill can be contained within the rail facility boundaries.

c. A description of the operating procedures for the rail unloading facilities that sever to prevent an oil spill.

d. Measures taken to assure that the crude oil pipeline shall be designed such that any spill from the pipeline shall drain back to rail unloading area or shall otherwise be contained within the access roadway.

e. Provide a list of onsite oil spill response equipment that is adequate to handle the worst case spill volume.

f. Identify training requirement for oil spill response personnel, which includes annual spill drills.

g. Identification and communication protocols and agreements for responsible parties tasked with emergency response, cleanup, and rehabilitation efforts of any wildlife species and habitat that may be impacted.

h. Identification of known sensitive resources within any area that may be impacted by a potential oil spill or cleanup activities, and identification of staging areas and predetermined access and egress routes that pose little or no threat to sensitive biological resources.

i. Identification of oil spill cost recovery procedures for state and local government agencies.

j. Specific measures to avoid impacts to native vegetation and wildlife habitats, plant and animal species, and environmentally sensitive habitat areas during oil spill response and cleanup operations. For Rail Spur construction and operation, the Plan shall specifically address measures to 1) prevent oil spills from entering the adjacent property which includes a tributary to Oso Flaco Creek, and 2) in case a spill does enter any of these water features, shall include measures to prevent a spill from reaching the waters of Oso Flaco Lake. The plan shall describe the worst case scenario for maximum oil spill volume.

k. When habitat disturbance cannot be avoided, the Plan shall provide protocol and methodologies for removing contaminated vegetation from sensitive areas. Low-impact site-specific techniques such as hand-cutting contaminated

vegetation, hand raking, and shoveling of contaminated soils shall be specified to remove spilled material from particularly sensitive wildlife habitats.

l. When habitat disturbance cannot be avoided, the Plan shall provide stipulations for development and implementation of site-specific habitat restoration plans and to restore native plant communities to pre-spill conditions. Procedures for timely re-establishment of vegetation that replicates the habitats disturbed (or, in the case of disturbed habitats dominated by non-native species, replaces them with suitable native species) shall also be included.

BIO-8a Prior to and during construction, the applicant shall avoid disturbance of bird breeding and nesting activities if construction activities are scheduled to occur during the typical bird nesting season (February 15 and September 1). A qualified biologist shall also be retained to conduct a pre-construction survey on a weekly basis throughout the breeding season only during construction for the purpose of identifying potential bird nesting activity. Should construction continue to occur beyond September 1, a qualified biologist shall conduct a bi-weekly survey during the wintering season for overwintering use by burrowing owl. If no nesting activities or overwintering burrowing owl are detected within the proposed work area, noise-producing construction activities may proceed and no further mitigation is required. If nesting activity or overwintering burrowing owl are detected during pre-construction nesting surveys or at any time during the monitoring of construction activities, the following shall occur:

a. Work activities within 300 feet (500 feet if raptors) shall be delayed. CDFW and/or USFWS shall be contacted to determine the appropriate biological buffer distance around active nest sites.

b. Construction activities will be prohibited within the buffer zone until a biologist determines that the young birds have fledged and left the nest, or overwintering burrowing owl is no longer utilizing the burrow. The results of the surveys shall be immediately submitted to the CDFW and the County, demonstrating compliance with the Migratory Bird Treaty Act of 1918.

c. If destruction of occupied burrows is unavoidable during the non-breeding season, or if burrowing owls must be translocated during the non-breeding season, a Burrowing Owl Exclusion Plan shall be developed by a qualified biologist following the guidance of the CDFW Staff Report on Burrowing Owl Mitigation (2012).

BIO-8b To mitigate for the loss of burrowing owl habitat, a minimum of 26.5 acres of suitable burrowing owl foraging and nesting habitat shall be provided in perpetuity through an easement prior to any project construction activities. If feasible, the protected lands shall occur within the boundaries of the Phillips 66 property or lands immediately adjacent to any known burrow site. At a minimum, the mitigation lands shall include similar vegetative attributes as the impact area, be of sufficiently large acreage and include the presence of fossorial mammals. Mitigation lands for burrowing owl may overlap with lands which are designated for restoration under

the Dune Habitat Restoration Plan. Should there be any overlap, neither mitigation effort should negatively affect the goals and success criteria of the other. The location of the protected lands shall be determined in coordination with CDFW.

BIO-9 Prior to issuance of grading and construction permits, the following measures shall be included on applicable plan sheets and the Dune Habitat Restoration Plan:

a. During construction, the applicant will make all reasonable efforts to limit the use of imported soils for fill. Soils currently existing on-site should be used for fill material. If the use of imported fill material is necessary, the imported material must be obtained from a source that is known to be free is invasive plant species; or the material must consist of purchased clean material such as crushed aggregate, sorted rock, or similar.

b. During construction, the contractor shall stockpile topsoil and redeposit the stockpiled soil within disturbed areas onsite after construction of the Rail Spur is complete, or transport the topsoil to a certified landfill or other allowable location for disposal if soil cannot be used within disturbed areas onsite.

c. All erosion control materials including straw bales, straw wattles, or mulch used on-site must be free of invasive species seed.

d. The required Dune Habitat Restoration Program shall incorporate an invasive species control program.

BIO-11 The Applicant's contract with UPRR, shall include a provision to provide that UPRR has an Oil Spill Contingency Plan in place for all mainline rail routes in California that could be used for transporting crude oil to the SMR. The Oil Spill Contingency Plan shall at a minimum include the following:

1. A set of notification procedures that includes a list of immediate contacts to call in the event of a threatened or actual spill. This shall include a rated oil spill response organization, the California Office of Emergency Services, California Department of Fish and Wildlife, Oil Spill Prevention and Response, and appropriate local emergency responders.

2. Identification of the resources that could be at risk from an oil spill equal to 20% of the train volume. The resources that shall be identified in the plan, and shown on route maps, include but are not limited to the following:

a. Habitat types, shoreline types, and associated wildlife resources in those locations;

b. The presence of state or federally-listed rare, threatened or endangered species;

c. The presence of aquatic resources including state fish, invertebrates, and plants including important spawning, migratory, nursery and foraging areas;

d. The presence of terrestrial animal and plant resources;

e. The presence of migratory and resident state bird and mammal migration routes, and breeding, nursery, stopover, haul-out, and population concentration areas by season;

f. The presence of commercial and recreational fisheries including aquaculture sites, kelp leases and other harvest areas.

g. Public beaches, parks, marinas, boat ramps and diving areas;

h. Industrial and drinking water intakes, power plants, salt pond intakes, and important underwater structures;

i. Areas of known historical and archaeological sites (but not their specific description or location);

j. Areas of cultural or economic significance to Native Americans (but not their specific description or location).

k. A description of the response strategies to protect the identified site and resources at risk.

l. A list of available oil spill response equipment and staging locations along the mainline tracks and shall include.

m. A program for oil spill training of response staff and a requirement for annual oil spill drillings.

3. The oil spill contingency plan must be able to demonstrate that response resources are adequate for containment and recovery of 20% of the train's volume within 24 hours. In addition, within six hours of the spill the response resources shall be adequate for containment and recovery of 50% of the spill, and 75% of the spill within 12 hours.

The Applicant's contract with UPRR, shall include provision that UPRR's Oil Spill Contingency Plan shall be reviewed and approved by California Department of Fish and Wildlife, Office of Spill Prevention and Response prior to delivery of crude oil by rail to the Santa Maria Refinery.

In addition, the Applicant's contract with UPRR, shall include provisions to provide a copy of UPRR's Oil Spill Contingency Plan to all first response agencies along the mainline rail routes in California that could be used by trains carrying crude oil to the Santa Maria Refinery for the life of the project. Only first response agencies that are able to receive security sensitive information as identified pursuant to Section 15.5 of Part 15 of Title 49 of the Code of Federal Regulations, shall be provided this information.

Cultural Resources, Section 4.5

CR-1a Prior to issuance of grading and construction permits, the Applicant shall submit plans showing a modified road alignment for the Emergency Vehicle Access (EVA) road to the Department of Planning and Building for review and approval. Grading and construction of the EVA shall avoid all ground disturbing activities within the

previously identified boundary of CA-SLO-1190. The plans shall note the boundaries of the site as an Environmentally Sensitive Area (ESA) and shall include a 50-foot buffer around the ESA. No grading, storage of materials or equipment, or use of equipment shall occur within the ESA.

CR-1b Prior to issuance of grading and construction permits, the Applicant shall submit an Archaeological Monitoring Plan to the Department of Planning and Building for review and approval. The plan shall include, at minimum:

- *a. List of personnel involved in the monitoring activities including a Native American monitor;*
- *b. Clear identification of what portions of the project area in relation to CA-SLO-1190 shall be monitored;*
- *c. Description of how the monitoring shall occur;*
- *d. Description of monitoring frequency;*
- *e. Description of resources expected to be encountered;*
- *f. Description of circumstances that would result in the "work diversion," in the case of discovery, at the project site;*
- *g. Description of procedures for diverting work on the site and notification procedures; and*
- *h. Description of monitoring reporting procedures.*

CR-1c A County approved archaeological monitor shall be present during all ground disturbing construction activities within intact native soil (i.e., undisturbed soils) within 300 feet of the previously identified boundary of CA-SLO-1190, and as noted in the approved Archaeological Monitoring Plan.

CR-1d Upon completion of all monitoring and mitigation activities required by CR-1 through CR-5, and prior to final inspection or occupancy, whichever occurs first, the Applicant shall submit to the Department of Planning and Building a report summarizing all monitoring and mitigation activities and confirming that all recommended mitigation measures have been met.

CR-2a Prior to any grading or construction, contractors involved in grading and grubbing activities shall receive training from a County-qualified archeologist. The training shall address the following issues:

- *a. Review the types of archaeological artifacts that may be uncovered;*
- *b. Provide examples of common archaeological artifacts to examine;*
- *c. Review what makes an archaeological resource significant to archaeologists and local native Americans;*
- *d. Describe procedures for notifying involved or interested parties in case of a new discovery;*

e. Describe reporting requirements and responsibilities of construction personnel;

f. Review procedures that shall be used to record, evaluate, and mitigate new discoveries;

g. Describe procedures that would be followed in the case of discovery of disturbed as well as intact human burials and burial-associated artifacts; and

h. Employees completing this training shall be given a special helmet sticker or card to show they have completed the training, where the sticker/card shall be kept with them at all times while at the work site.

CR-2b Prior to issuance of grading and construction permits, the Applicant shall submit an Archaeological Monitoring Plan to the Department of Planning and Building for review and approval. The plan shall include, at minimum:

a. List of personnel involved in the monitoring activities including a Native American monitor;

b. Description of how the monitoring shall occur;

c. Description of monitoring frequency;

d. Description of circumstances that would result in the "work diversion," in the case of discovery, at the project site;

e. Description of procedures for diverting work on the site and notification procedures; and

f. Description of monitoring reporting procedures.

CR-2c A County approved archaeological monitor shall be present during all ground disturbing construction activities within intact native soil (i.e., undisturbed soils) as noted in the approved Archaeological Monitoring Plan.

CR-3 If human remains are exposed during construction, the Applicant shall notify the County Environmental Coordinator immediately and comply with State Health and Safety Code Section 7050.5, which states that no further disturbance shall occur until the County Coroner has been notified and can make the necessary findings as to origin and disposition of the remains pursuant to Public Resources Code 5097.98. Construction shall halt in the area of the discovery of human remains, the area shall be protected, and consultation and treatment shall occur as prescribed by law.

CR-5 If any paleontological resources are encountered during ground-disturbing activities, activities in the immediate area of the find shall be halted and the discovery assessed. A qualified paleontologist shall be retained to evaluate the discovery and recommend appropriate treatment options pursuant to guidelines developed by the Society of Vertebrate Paleontology. A paleontological resource impact mitigation program for treatment of the resources shall be developed and implemented if paleontological resources are encountered.

CR-6 *As part of the Applicant's contract with UPRR, it shall require that a qualified archaeologist, architectural historian, and paleontologist who meet the Secretary of the Interior's Professional Qualification Standards prepare an Emergency Contingency and Treatment Plan for Cultural and Historic Resources along the rail routes in California that could be used to transport crude oil to the SMR. The treatment plan shall include, but not be limited to, the following components:*

a. Protocols for determining the cultural resources regulatory setting of the incident site;

b. Provide various methodologies for identifying cultural resources, as needed, within the incident site (e.g., California Historical Resources Information System records search, agency contact, field survey); and

c. If cultural resources are present, identify measures for their avoidance, protection, and treatment.

The Treatment Plan shall be in place prior to delivery of crude by rail to the Santa Maria Refinery.

Geological Resources, Section 4.6

GR-1a *At the time of application for grading and construction permits, the proposed rail spur, unloading facility, and oil pipeline infrastructure shall be designed and constructed to withstand anticipated horizontal and vertical ground acceleration in the Project area, based on the California Building Code. The calculated design base ground motion for project components shall consider the soil type, potential for liquefaction, and the most current and applicable seismic attenuation methods that are available.*

GR-1b *At the time of application for construction permits, all surface facilities and equipment shall have suitable foundations and anchoring design, surface restraints, and moment-limiting supports to withstand seismically induced groundshaking.*

GR-1c *A Registered Civil Engineer and Certified Engineering Geologist shall complete an updated geotechnical investigation specific to the proposed rail spur and oil pipeline site, as previous on-site geotechnical investigations were completed in other areas of the refinery. All geotechnical recommendations provided in the report shall be followed during grading and construction at the Project Site. The updated geotechnical evaluation shall include, but not be limited to, an estimation of both vertical and horizontal anticipated peak ground accelerations, as well as an updated liquefaction analysis.*

GR-1d *The geotechnical report shall be completed prior to completion of the final Project design and shall be submitted to the County of San Luis Obispo Building Division for review and approval. The Project design must conform to the recommendations within the updated geotechnical evaluation. The geotechnical recommendations would likely include, but not be limited, to the following:*

a. Proposed structures shall be designed and constructed to withstand anticipated horizontal and vertical ground acceleration in the Project area, based on the California Building Code.

b. Proposed structures shall be designed and constructed to withstand the effects of liquefaction, as applicable, based on the California Building Code.

c. The Project Site shall be cleared of unsuitable materials and graded to provide a firm base for compacted fill, as applicable. Ground surfaces to receive compacted fill shall be prepared by removing organics, rubble, debris, existing disturbed fill, artificial fill, unconsolidated materials, and soft or disturbed soils. Removal of unconsolidated materials would likely include several feet of overexcavation.

d. All fill material shall be placed in uniform lifts not exceeding 8 inches in its loose state and compacted to a minimum of 90 percent relative compaction, as determined by the latest ASTM Test Designation D-1557.

e. Due to the low cohesion of the onsite soils (i.e., dune sands), the potential need for mechanical stabilization of fill slopes shall be evaluated and implemented, as applicable, to attain the acceptable factors of safety for stability. Mechanical stabilization may include Mechanically Stabilized Earth (MSE), which includes use of engineered geogrids placed at 2-foot vertical spacing within fill slopes. Cut slopes may similarly require construction of overlying stability fills, using MSE.

f. Surface runoff shall be directed away from slopes and foundations and collected in lined ditches or drainage swales, via non-erodible engineered drainage devices. Fill slopes and stability fills, as applicable, shall be provided with subsurface drainage for stability.

GR-1e At the time of application for grading and construction permits, all proposed slope, building pad, and rail track bed construction shall be properly engineered, with fill placed in accordance with requirements of the current County of San Luis Obispo Building and Construction Ordinance (Title 19 of the San Luis Obispo County Code), and California Building Code.

GR-1f During construction, the proposed aboveground oil pipeline shall be anchored to prevent pipeline movement, as determined by a California Registered Civil Engineer, in accordance with California Building Code, San Luis Obispo County requirements, and the American Public Works Association Greenbook.

GR-1g At the time of application for construction permits, the facilities and equipment, including spill containment vaults and Project-related pipelines, shall be designed for predicted, site-specific seismic loading in accordance with applicable codes, including the California Building Code.

GR-1h The Applicant shall cease rail car unloading and pipeline oil conveyance following any perceptible (i.e., felt by humans) seismic event and inspect all project-related facilities, equipment, and pipelines for damage prior to restarting operations.

GR-1i *Consistent with California Building Code Section 3401.2, all project-related facilities, equipment, and pipelines shall be maintained in conformance with the California Building Code edition under which it was installed. Annual inspections shall be completed by a California Registered Civil Engineer to verify that project components have not been damaged or compromised by seismic induced ground shaking, corrosion, soil erosion, soil settlement, or other geologic hazards.*

GR-2 *During construction and operations, the Applicant shall implement a Storm Water Pollution Prevention Plan using Best Management Practices and monitor and maintain stormwater pollution control facilities identified in the Storm Water Pollution Prevention Plan, in a manner consistent with the provisions of the Federal Water Pollution Control Act (National Pollutant Discharge Elimination System Program). Stormwater management protection measures and wet weather measures shall be designed by a California registered, Qualified Storm Water Pollution Prevention Plan Developer. In addition, a California registered, Qualified Storm Water Pollution Prevention Plan Practitioner shall oversee and monitor construction and operational Best Management Practices and stormwater management, in accordance with the State General Construction Permit and the Central Coast Regional Water Quality Control Board. Conventional measures typically recommended by the State Water Resource Board and the California Department of Transportation include the following:*

a. Implement permanent erosion and sediment control measures:

- *Minimize grading, clearing, and grubbing to preserve existing vegetation;*
- *Use mulches and hydroseed, free of invasive plants, to protect exposed soils;*
- *Use geotextiles and mats to stabilize soils;*
- *Use drainage swales and dissipation devices; and*
- *Use erosion control measures outlined in the California Stormwater Quality Association Best Management Practice Handbook.*

b. Implement temporary Best Management Practice mitigation measures:

- *Use silt fences, sandbags, and straw wattles;*
- *Use temporary sediment basins and check dams; and*
- *Use temporary Best Management Practices outlined in the California Stormwater Quality Association Best Management Practice Handbook.*

c. Implement tracking control Best Management Practices to reduce tracking sediment offsite.

- *Use stabilized construction entrance and exit with steel shakers;*

- *Use tire wash areas; and*

- *Use tracking control Best Management Practices outlined in the California Stormwater Quality Association Best Management Practice Handbook.*

Personnel at the site shall be trained in equipment use and containment and cleanup of an oil spill. Dry cleanup methods, such as absorbents, shall be used on paved and impermeable surfaces. Spills in dirt areas shall be immediately contained with an earthen dike and the contaminated soil shall be dug up and discarded in accordance with local and state regulations.

GR-3 *Implement Mitigation Measure GR-1c to confirm the absence of expansive soil.*

Hazards and Hazardous Materials, Section 4.7

HM-2a *Only rail cars designed to FRA, July 23, 2014 Proposed Rulemaking Option 1: PHMSA and FRA Designed Tank Car as listed in Table 4.7.6, shall be allowed to unload crude oil at the Santa Maria Refinery.*

HM-2b *For crude oil shipments via rail to the SMR a rail transportation route analysis shall be conducted annually. The rail transportation route analysis shall be prepared following the requirements in 49 CFR 172.820. The route with the lowest level of safety and security risk shall be used to transport the crude oil to the Santa Maria Refinery.*

HM-2c *The Applicant's contract with UPRR, shall include a provision to require that Positive Train Control (PTC) be in place for all mainline rail routes in California that could be used for transporting crude oil to the SMR.*

HM-2d *The refinery shall not accept or unload at the rail unloading facility any crude oil or petroleum product with an API Gravity of 30^{o} or greater.*

Implement mitigation measures PS-4a through PS4e.

Land Use and Recreation, Section 4.8

None were required

Noise and Vibration, Section 4.9

N-1 *The Applicant shall ensure that all construction activity at the Project Site is limited to the hours of 7:00 A.M. to 9:00 P.M., Monday through Friday, and 8:00 A.M. to 5:00 P.M. on Saturdays and Sundays. This restriction shall be a note placed on all construction plans.*

N-2a *Prior to issuance of the Notice to Proceed, the Applicant shall develop for review and approved by the County Department of Building and Planning a Rail Unloading and Management Plan that addresses procedures to minimize noise levels at the rail*

spur, including but not limited to the following: 1) All locomotives operating to the east of the unloading rack area between the hours of 10 P.M. and 7 A.M. shall be limited to a combined total of 100 locomotive-minutes (e.g. 2 locomotives for 50 minutes each or 1 locomotive for 100 minutes, etc. including switching and idling); 2) Arriving trains that enter the refinery between the hours of 10 P.M. and 7 A.M. and are not being immediately unloaded shall shutdown all locomotives once the train is on the refinery property; 3) No horns, annunciators or other signaling devices are allowed unless it is an emergency. If horns and annunciators are needed for worker safety, then warning devices shall be developed, to CPUC standards, to alert the safety of plant personnel when trains are in motion without an audible warning device; 4) No horns are to be used on the mainline siding track adjacent to the refinery unless it is an emergency; 5) Any trains repairs shall be conducted only between the hours of 7 A.M. and 7 P.M.; and (6) The Plan shall include a copy of the agreement between the Applicant and UPRR demonstrating the two parties have entered into a legally binding contractual arrangement ensuring implementation of the above requirements.

N-2b *Prior to issuance of the Notice to Proceed, the Applicant shall provide to the County Department of Planning and Building evidence that each unloading pump and associated electric motor can achieve a noise level no greater than 71 dBA at 50 feet, including the installation of pump enclosures, or similar devices if necessary.*

N-2c *Prior to issuance of the Notice to Proceed, the Applicant shall submit to the County Department of Planning and Building for review and approval a Noise Monitoring Plan that outlines procedures for regular noise monitoring of the operational aspect of the Rail Spur facility. The Plan shall specify at a minimum the duration and location of monitoring activities with and without trains present at the SMR site. The monitoring locations shall include at least one location within 100 to 200 feet of the unloading activities and a monitoring location located at the property line of the nearest noise-sensitive receptor. The noise monitoring shall be conducted within one month of rail spur operations commencing. The results of the monitoring shall be reported to the County 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 Rail Unloading and Management Plan with additional mitigation measures that would reduce noise levels below County thresholds. Additional mitigation could include, but not be limited to, additional limits on the times of unloading activities.*

Population and Housing, Section 4.10

None were required

Public Services and Utilities, Section 4.11

PS-1 *Prior to issuance of grading permits, the Applicant shall submit a Solid Waste Management Plan (SWMP) for approval by San Luis Obispo County to maintain a*

diversion rate of at least 50 percent of construction waste from reaching the landfill. The SWMP shall consist of information regarding, but not limited to:

a. The name and contact information of who will be responsible for implementing the recycling plan;

b. A brief description of the Project wastes to be generated, including types and estimated quantities of each material to be salvaged, reused, or recycled during the construction phase of this Project;

c. Waste sorting/recycling and/or collection areas shall be clearly indicated on the Site Map;

d. A description of the means of transportation and destination of recyclable materials and waste, and a description of where recyclable materials and waste will be sorted (whether materials will be site-separated and hauled to designated recycling or landfill facilities, or whether mixed materials will be removed from the site to be processed at a mixed waste sorting facility);

e. The name of the landfill(s) where trash will be disposed of and a projected amount of material that will be landfilled;

f. A description of meetings to be held between Applicant and contractor to ensure compliance with the recycling plan;

g. A contingency plan shall identify an alternate location to recycle and/or stockpile construction debris in the event of local recycling facilities becoming unable to accept material (for example: all local recycling facilities reaching the maximum tons per day due to a time period of unusually large volume);

h. Disposal information including quantity of material landfilled, which landfill was used, total landfill tipping fees paid, and copies of weight tickets, manifests, receipts, and invoices;

i. Recycling information including quantity of material recycled, receiving party, and copies of weight tickets, manifests, receipts, and invoices; and

j. Reuse and salvage information including quantities of salvage materials, storage locations if they are to be used on-site, or receiving party if resold/used off-site.

PS-3a Prior to issuance of construction permits, the Applicant shall submit to Cal Fire/County Fire for review and approval a final Fire Protection Plan for the Rail Spur Project that meets all the applicable requirements of API, NFPA, UFC, and Cal Fire/County Fire.

PS-3b Prior to notice to proceed for the rail unloading facility, the Applicant shall update the SMR Emergency Response Plan to include the rail unloading facilities and operations.

PS-3c Prior to notice to proceed for the rail unloading facility, the Applicant shall update the existing SMR Spill Prevention Control and Countermeasure Plan to include the rail unloading facilities and operations.

PS-3d *Prior to notice to proceed for the rail unloading facilities, the Applicant shall assure that the existing SMR fire brigade meets all the requirements outlined in Occupational Safety and Health Administration 29 CFR 1910.156, and NFPA 600 & 1081.*

PS-3e *Prior to issuance of grading permits, the Applicant shall have an executed operational Memorandum of Understanding (MOU) (now called the Operating Plan) with Cal Fire/County Fire that includes fire brigade staffing/training requirements and Cal Fire/County Fire funding requirements. This MOU shall be reviewed and updated annually by Cal Fire and the Applicant.*

PS-3f *Prior to issuance of grading permits, the Applicant shall have an agreement to reimburse Cal Fire/County Fire for time spent by a qualified fire inspector to conduct the annual fire inspections at the SMR including all structures, and support facilities consistent with Cal Fire/County Fire's authority and jurisdiction. The Applicant shall reimburse all costs associated with travel time, inspections, inspection training, and documentation completion. The reimbursement rate shall be according to the most recent fee schedule adopted by the San Luis County Board of Supervisors.*

PS-3g *Prior to issuance of grading permits, the Applicant shall have an agreement to reimburse Cal Fire/County Fire for offsite training for emergency responders to railcar emergencies, such as the 40 hour course offered by Security and Emergency Response Training Center Railroad Incident Coordination and Safety (RICS) meeting Department of Homeland security, NIIMS, OSHA 29CFR 1910.120 compliance. Initial training shall be two members of the Interagency Hazardous materials Response Team, two members of the interagency Urban Search and Rescue Team, and two members annually from Cal Fire/County Fire or fire districts in San Luis Obispo that have automatic aid agreements with Cal Fire/County Fire for a total of six slots per year for the life of the project.*

PS-3h *Prior to issuance of grading permits, the Applicant shall have an agreement to reimburse Cal Fire/County Fire for Fire Chief Officer attendance such as the 40 hour course offered by Security and Emergency Response Training Center; Leadership & Management of Surface Transportation Incidents. Funding shall be for two Fire Chief Officers annually for the life of the project.*

PS-3i *Prior to issuance of grading permits, the Applicant shall have an agreement with Cal Fire/County Fire to conduct annual emergency response scenario/field based training including Emergency Operations Center Training activations with the Applicant, Cal Fire/County Fire, UPRR, and other San Luis Obispo County First response agencies that have mutual aid agreements with Cal Fire/County Fire. These annual emergency response drills shall occur for the life of the project.*

PS-4a *The Applicant shall provide advanced notice of all crude oil shipments to the Santa Maria Refinery, and quarterly hazardous commodity flow information documents to all first response agencies along the mainline rail routes within California that could be used by trains carrying crude oil to the Santa Maria Refinery for the life of the project. Only first response agencies that are able to receive security sensitive*

information as identified pursuant to Section 15.5 of Part 15 of Title 49 of the Code of Federal Regulations, shall be provided this information. The plan for providing notice to first response agencies shall be in place and verified by the County Department of Planning and Building prior to delivery of crude by rail to the Santa Maria Refinery.

PS-4b *Only rail cars designed to FRA, July 23, 2014 Proposed Rulemaking Option 1: PHMSA and FRA Designed Tank Car shall be allowed to unload crude oil at the Santa Maria Refinery.*

PS-4c *The Applicant shall provide annual funding for first response agencies along the mainline rail routes within California that could be used by the trains carrying crude oil to the Santa Maria Refinery to attend certified offsite training for emergency responders to railcar emergencies, such as the 40 hour course offered by Security and Emergency Response Training Center Railroad Incident Coordination and Safety (RICS) meeting Department of Homeland security, NIIMS, OSHA 29CFR 1910.120 compliance. The Applicant shall fund a minimum of 20 annual slots per year for the life of the project. The plan for funding the emergency response training shall be in place and verified by the Cal Fire/County Fire prior to delivery of crude by rail to the Santa Maria Refinery.*

PS-4d *As part of the Applicant's contract with UPRR, it shall require annual emergency responses scenario/field based training including Emergency Operations Center Training activations with local emergency response agencies along the mainline rail routes within California that could be used by the crude oil trains traveling to the Santa Maria Refinery for the life of the project. A total of four training sessions shall be conducted per year at various locations along the rail routes. This contract provision shall be in place and verified by the Cal Fire/County Fire prior to delivery of crude by rail to the Santa Maria Refinery.*

PS-4e *As part of the Applicant's contract with UPRR, it shall require that all first response agencies along the mainline rail routes within California that could be used by trains carrying crude oil traveling to the Santa Maria Refinery be provided with a contact number that can provide real-time information in the event of an oil train derailment or accident. The information that would need to be provided would include, but not be limited to crude oil shipping papers that detail the type of crude oil, and information that can assist in the safe containment and removal of any crude oil spill. This contract provision shall be in place and verified by the Cal Fire/County Fire prior to delivery of crude by rail to the Santa Maria Refinery.*

PS-5 *Prior to notice to proceed for the rail unloading facility, the Applicant shall update their existing Security Plan to include the Rail Spur Project.*

Transportation and Circulation, Section 4.12

TR-1 *Prior to issuance of grading permits, the Applicant shall develop a Construction Traffic Management Plan for review and approval by the County Public Works Department and CalTrans. The plans shall include at least the following items:*

a. *A scheduling plan showing operational schedules to minimize traffic congestion during peak hours. The plan shall limit project related traffic to and from the refinery during the peak AM and PM hours. This plan shall note the schedule for completing various construction activities, and to the extent feasible avoid an overlap of the construction of the rail spur/unloading area and pipeline construction. The plan shall show the hours of operation to minimize traffic congestion during peak hours.*

b. *Willow Road shall be use for truck deliveries to and from the refinery.*

c. *Monitoring program for street surface conditions so that damage or debris resulting from construction of the Project can be identified and corrected by the Applicant.*

d. *A traffic control plan showing proposed temporary traffic control measures, if any.*

e. *A delivery schedule for construction materials, including an evaluation of the feasibility of transporting construction materials to the site by rail.*

TR-4 *The Applicant shall work with UPRR to schedule unit trains serving the Santa Maria Refinery so that they do not interfere with passenger trains traveling the Coast Rail Route.*

Water Resources, Section 4.13

WR-1 *During construction, oil and other chemical spills shall be contained and cleaned according to measures outlined in the California Stormwater Quality Association Best Management Practice Handbook. Best Management Practices would likely include, but not be limited, to the following:*

a. *Ensure minor spill containment and clean up equipment is readily available in areas of demolition, construction, and operations.*

b. *Store petroleum products in covered areas with secondary containment dikes.*

c. *If vehicle maintenance and fueling occur onsite, use a designated area and/or secondary containment, located away from drainage courses, to prevent the run-on of storm water and the runoff of spills.*

d. *Regularly inspect onsite vehicles and equipment for leaks, and repair immediately.*

e. *Always use secondary containment, such as a drain pan or drop cloth, to catch spills or leaks when removing or changing fluids.*

f. *Use absorbent materials on small spills.*

WR-2 *Prior to the County's issuance of a Notice to Proceed, the existing Santa Maria Refinery Spill Prevention Control and Countermeasure Plan (SPCCP) shall be amended to reflect operation of the rail car unloading facility and associated oil*

pipeline. See mitigation measure BIO-7 for the detailed SPCCP requirements for the rail unloading operations.

WR-3 *Implement mitigation measures BIO-11 and PS-4a through PS-4e.*

WR-6 *If possible, the Applicant shall use recycled water for construction and operational activities to reduce impacts to local groundwater supplies. Recycled water could be generated onsite and/or secured via truck transport or water pipeline from the South San Luis Obispo County Sanitation District.*

8.0 Mitigation Monitoring Plan

The Chapter provides the mitigation monitoring plan for the Rail Spur Project. The first few sections provide some general information on the requirements for a mitigation monitoring plan and the authority and enforcement responsibility. The last part of the Chapter provides the detailed mitigation monitoring plan for the Rail Spur Project.

8.1 Mitigation Monitoring Program

As the Lead Agency under the California Environmental Quality Act (CEQA), the County of San Luis Obispo is required to adopt a program for reporting or monitoring regarding the implementation of mitigation measures for this project, if it is approved, to ensure that the adopted mitigation measures are implemented as defined in this Environmental Impact Report (EIR). 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).

8.2 Monitoring Authority and Enforcement Responsibility

The purpose of a Mitigation Monitoring, Compliance, and Reporting Program (MMCRP) is to ensure that measures adopted to mitigate or avoid significant impacts are implemented. A MMCRP can be a working guide to facilitate not only the implementation of mitigation measures by the project proponent, but also the monitoring, compliance, and reporting activities of the County and any monitors it may designate.

The County may delegate duties and responsibilities for monitoring to other environmental monitors or consultants as deemed necessary, and some monitoring responsibilities may be assumed by responsible agencies, such as affected jurisdictions and cities, and the California Department of Fish and Game. The number of monitors assigned to the project will depend on the number of concurrent activities and their locations. The County or its designee(s), however, will ensure that each person delegated any duties or responsibilities are qualified to monitor compliance.

Any mitigation measure study or plan that requires the approval of the County must allow at least 60 days for adequate review time. When a mitigation measure requires that a mitigation program be developed during the design phase of the project, the applicant must submit the final program to County for review and approval for at least 60 days before any activity begins. Other agencies and jurisdictions may require additional review time. It is the responsibility of the environmental monitor assigned to the project to ensure that appropriate agency reviews and approvals are obtained.

The County or its designee will also ensure that any deviation from the procedures identified under the monitoring program is approved by the County. Any deviation and its correction shall

be reported immediately to the County or its designee by the environmental monitor assigned to the project.

The County is responsible for enforcing the procedures adopted for monitoring through the environmental monitor assigned to the project. Any assigned environmental monitor shall note problems with monitoring, notify appropriate agencies or individuals about any problems, and report the problems to the County or its designee.

8.3 Mitigation Compliance Responsibility

The applicant is responsible for successfully implementing all the mitigation measures in the MMCRP, and is responsible for assuring that these requirements are met by all of its contractors and field personnel. Standards for successful mitigation also are implicit in many mitigation measures that include such requirements as obtaining permits or avoiding a specific impact entirely. Other mitigation measures include detailed success criteria. Additional mitigation success thresholds will be established by applicable agencies with jurisdiction through the permit process and through the review and approval of specific plans for the implementation of mitigation measures.

8.4 General Monitoring Procedures

Environmental Monitors. Many of the monitoring procedures will be conducted during the operational phase of the project and during construction if applicable. The County and the environmental monitor(s) are responsible for integrating the mitigation monitoring procedures into the operation or construction process in coordination with the applicant. To oversee the monitoring procedures and to ensure success, the environmental monitor assigned to the project must be on site during that portion of the operation or potential construction that has the potential to create a significant environmental impact or other impact for which mitigation is required. The environmental monitor is responsible for ensuring that all procedures specified in the monitoring program are followed.

Operations and Construction Personnel. A key feature contributing to the success of mitigation monitoring will be obtaining the full cooperation of operations and construction personnel and supervisors. Many of the mitigation measures require action on the part of the supervisors or crews for successful implementation. To ensure success, the following actions, detailed in specific mitigation measures, will be taken:

Procedures to be followed by operations or construction companies hired to do the work will be written into contracts between the Applicant and any contractors. Procedures to be followed by operations and construction crews will be written into a separate document that all personnel will be asked to sign, denoting agreement.

One or more meetings will be held to inform all and train personnel about the requirements of the monitoring program.

A written summary of mitigation monitoring procedures will be provided to supervisors for all mitigation measures requiring their attention.

General Reporting Procedures. Site visits and specified monitoring procedures performed by other individuals will be reported to the environmental monitor. A monitoring record form will be submitted to the environmental monitor by the individual conducting the visit or procedure so that details of the visit can be recorded and progress tracked by the environmental monitor. A checklist will be developed and maintained by the environmental monitor to track all procedures required for each mitigation measure and to ensure that the timing specified for the procedures is adhered to. The environmental monitor will note any problems that may occur and take appropriate action to rectify the problems.

Public Access to Records. 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 County or its designee on request.

8.5 Mitigation Monitoring Table

Table 8.1 present the monitoring and reporting plan requirements for the mitigation measures identified in Chapter 4 of the EIR for the Rail Spur Project. The table provides the following information, by column:

- ***Mitigation Measure*** (the number of the mitigation measures identified in Chapter 4);
- ***Requirements*** (description of the mitigation measure requirements identified in Chapter 4);
- ***Method of Verification*** (how the responsible agency determines whether the mitigation measure has been implemented);
- ***Timing*** (identifies when action needs to be taken on mitigation measure); and
- ***Responsible Party*** (the party responsible for assuring compliance with the mitigation measure).

This information is also provided by issue area in each of the section of Chapter 4.

Table 8.1 Rail Spur Project Mitigation Monitoring and Reporting Requirements

Mitigation Measure	Requirements	Compliance Verification		
		Method	Timing	Responsible Party
AV-1a	Prior to issuance of grading and construction permits, the applicant shall submit a revised site-grading plan to the Department of Planning and Building for review and approval showing the following: a. An earthen berm shall be constructed around the eastern perimeter of the rail spur. The berm shall be a minimum of 10 feet tall and a maximum of 20 feet tall above the existing grade and as shown on the Berm Location Concept Map shown below (Figure 4.1-11) for the purpose of reducing views of the rail spur and trains from State Route 1 and the California Coastal Trail / De Anza Trail. b. The berm shall be designed and constructed to appear as a natural dune landform and shall have gradually undulated horizontal and vertical dimensions (consistent with Policy 5: Landform Alterations). c. No other existing landforms which would provide visual screening of the facility shall be used as source of borrow material for the required berm. d. The berm shall be revegetated with native grasses and shrubs to match the surrounding natural landcover and plant community. No disturbance shall occur outside of the identified area of disturbance shown on the site-grading plan.	Review of Site Plans	Prior to Issuance of Grading and Construction Permits	County Department of Planning and Building
AV-1b	Prior to issuance of grading and construction permits, the applicant shall submit a revised site-grading plan to the Department of Planning and Building for review and approval showing the following: a. All new cut and fill slopes shall include slope-rounding and landform grading techniques to avoid an engineered appearance (consistent with Policy 5: Landform Alterations).	Review of Site Plans	Prior to Issuance of Grading and Construction Permits	County Department of Planning and Building
AV-1c	Prior to issuance of grading and construction permits, the applicant shall submit a Habitat / Landscape Revegetation Plan to the Department of Planning and Building for review and approval showing the following: a. All new slopes shall be revegetated with native grasses and shrubs to match the surrounding natural landcover and plant community.	Review of Site Plans	Prior to Issuance of Grading and Construction Permits	County Department of Planning and Building
AV-3a	Prior to issuance of grading and construction permits, the applicant shall submit a comprehensive lighting plan to the Department of Planning and Building for review and approval showing the following: a. The Lighting Plan shall be based on a photometric study prepared by a qualified engineer who is an active member of the Illuminating Engineering Society of North America (IESNA). b. The Lighting Plan shall be prepared by a qualified engineer who is an active member of the IESNA using guidance and best practices endorsed by the International Dark Sky Association.	Review of Lighting Plan	Prior to Issuance of Grading and Construction Permits	County Department of Planning and Building

Table 8.1 Rail Spur Project Mitigation Monitoring and Reporting Requirements

Mitigation Measure	Requirements	Compliance Verification		
		Method	Timing	Responsible Party
	c. The applicant shall provide the specific technical data and performance criteria required by the applicable safety policy used as the basis for the Lighting Plan. d. As part of the Lighting Plan, illumination levels shall be the minimum required by the specifically defined public safety policy and ordinances. e. As part of the Lighting Plan, direct views of all lighting sources shall be directed downward and shielded from view from public roads. f. As part of the Lighting Plan, lights shall be designed and constructed to reduce illumination of the adjacent slopes and dunes where applicable. g. As part of the Lighting Plan, no lights shall be placed east of any portion of the screening berm required in mitigation measure AV-1a. h. As part of the Lighting Plan, lighting for all rail spur perimeter fencing shall be equipped with motion sensors for activation rather than left on continuously.			
AV-3b	Within six months following completion of construction, a Lighting Evaluation Report shall be submitted to the Department of Planning and Building for review and approval. The purpose of the Lighting Evaluation Report shall be to assess and correct any unexpected or residual lighting impacts following project completion. The report shall be prepared by a by a qualified engineer who is an active member of the IESNA who was not associated with the preparation of the Lighting Plan described in mitigation measure AV-3a. Preparation of the Lighting Evaluation Report shall be by a qualified engineer retained by the County of San Luis Obispo and funded by the project applicant. The Lighting Evaluation Report shall include the following at a minimum: a. A comprehensive assessment of the lighting resulting from the rail spur project and project operations as seen from State Route 1, Oso Flaco Road, the California Coastal Trail, De Anza Trail and public viewing areas to the east. The Lighting Evaluation Report shall assess the completed project during a variety of operational conditions including all typical procedures such as unloading, moving of trains, multiple trains present, etc. The Report shall evaluate and identify where, if any unexpected light impacts occur, such as but not limited to reflection off trains, adjacent landforms, buildings, unexpected sources, etc. b. The Lighting Evaluation Report shall make specific recommendations to reduce the effects of any unexpected or excessive residual lighting impacts identified in the report. Recommendations may include but not be limited to: repositioning lights, lowering heights, increasing sizes of cut-off shields, reducing types of luminaires, reducing wattage, and modifying operational procedures.	Review of project post-construction and review of Lighting Plan.	Within six months following completion of construction	County Department of Planning and Building
AV-3c	**Existing Facility and Operations Lighting Evaluation.** Prior to issuance of grading and construction permits, the applicant shall submit a comprehensive evaluation of the existing refinery	Review of existing	Prior to Issuance of	County Department of

Table 8.1 Rail Spur Project Mitigation Monitoring and Reporting Requirements

Mitigation Measure	Requirements	Compliance Verification		
		Method	Timing	Responsible Party
	facility and operations lighting to the Department of Planning and Building for review and approval showing the following: a. The Existing Facility and Operations Lighting Evaluation shall be prepared by a qualified engineer who is an active member of the Illuminating Engineering Society of North America (IESNA). b. The Existing Facility and Operations Lighting Evaluation shall assess the sources and levels of all existing lighting associated with the refinery operations, and shall determine if any lighting levels exceeds the minimum required by applicable County of San Luis Obispo, state and federal safety regulations. c. If lighting levels exceed the applicable regulations, the Existing Facility and Operations Lighting Evaluation shall make specific recommendations to reduce the lighting levels to the minimum required. The Existing Facility and Operations Lighting Evaluation shall also identify and make recommendations to eliminate visibility of all point source lighting as seen from public roadways. The project applicant shall implement all recommendations made by the Lighting Evaluation Report and required by the Department of Planning and Building.	lighting evaluation report.	Grading and Construction Permits	Planning and Building
AQ-1a	Prior to issuance of grading and construction permits, and throughout project construction, as applicable, the Applicant shall implement the following construction emission reduction measures: a. Properly maintain all construction equipment according to manufacturer's specifications; b. Fuel all off-road and portable diesel powered equipment with CARB-certified motor vehicle diesel fuel (non-taxed version suitable for use off-road); c. Applicant shall include the following, in addition to complying with state Off-Road Regulations, in order to reduce peak daily/quarter ROG+NOx emissions: 1) Use CARB Tier 4 certified diesel construction equipment off-road heavy-duty diesel engines and 2) Stagger the construction schedule to prevent peak day/quarter emissions from exceeding the threshold (for example, no site preparation during grading and soil transport); d. Use CARB 2010 or cleaner certified on-road heavy-duty diesel trucks to the extent feasible and comply with state On-Road Regulations; e. If construction or trucking companies that are awarded the bid or are subcontractors for the project do not have equipment to meet the above two measures, the impacts from the dirtier equipment shall be addressed through SLOCAPCD approved off-site or other mitigation measures; f. All on- and off-road diesel equipment shall not idle for more than 5 minutes. Signs shall be posted in the designated queuing areas and job sites to remind drivers and operators of the 5	Review of construction plan documents Site Inspection	Prior to grading permits	SLO County Planning and Building SLOCAPCD

Table 8.1 Rail Spur Project Mitigation Monitoring and Reporting Requirements

Mitigation Measure	Requirements	Compliance Verification		
		Method	Timing	Responsible Party
	minute idling limit; g. Diesel idling within 1,000 feet of sensitive receptors is not permitted (Sensitive receptors are defined in the SLOCAPCD Handbook as people that have an increased sensitivity to air pollution or environmental contaminants. Sensitive receptor locations include schools, parks and playgrounds, day care centers, nursing homes, hospitals, and residential dwelling units); h. Staging and queuing areas shall not be located within 1,000 feet of sensitive receptors; i. Equipment shall be electrified when feasible; j. Substitute gasoline-powered or diesel hybrids in place of diesel-powered equipment, where feasible; and k. Use alternatively fueled construction equipment on-site where feasible, such as compressed natural gas (CNG), liquefied natural gas (LNG), propane, or biodiesel.			
AQ-1b	Prior to issuance of grading and construction permit, the Applicant shall ensure SLOCAPCD regulations that prohibit developmental burning of vegetative material within San Luis Obispo County are followed for the life of the project.	Review of design documents and plans Site Inspection	Prior to grading permits	SLO County Planning and Building SLOCAPCD
AQ-1c	Prior to issuance of grading and construction permit, the Applicant shall ensure that portable equipment and engines 50 horsepower or greater, used during grading and construction activities must have a California portable equipment registration (issued by the ARB) or a SLOCAPCD permit. Proof of registration must be provided to the SLOCAPCD prior to the start of grading or construction or a permit secured from the SLOCAPCD prior to the start of grading or construction. The following list is as a guide to equipment and operations that may have permitting requirements, but it is not exclusive: a. Power screens, conveyors, diesel engines, and/or crushers; b. Portable generators and equipment with 50-horsepower or greater engines; c. Internal combustion engines; d. Unconfined abrasive blasting operations; e. Concrete batch plants; f. Rock and pavement crushing; g. Tub grinders; and h. Trommel screens.	Review of construction plan documents Site Inspection	Prior to grading permits	SLO County Planning and Building SLOCAPCD
AQ-1d	Prior to issuance of grading and construction permit, the Applicant shall ensure that all grading and	Review of	Prior to	SLO County

Table 8.1 Rail Spur Project Mitigation Monitoring and Reporting Requirements

Mitigation Measure	Requirements	Compliance Verification		
		Method	Timing	Responsible Party
	construction equipment greater than 100 bhp be equipped with CARB Level 3 diesel particulate filters (DPF), or equivalent, to achieve an 85 percent reduction in diesel particulate emissions from an uncontrolled engine. If CARB verified Level 3 DPFs cannot be secured for all of the equipment greater than 100 hp then the applicant will offset the added DPM with measures including but not limited to schedule modifications, implementation of no idling requirement, or other applicable measures providing a total reduction equivalent to an 85 percent reduction from uncontrolled engines as approved by the SLOCAPCD.	construction plan documents Site Inspection	grading permits	Planning and Building SLOCAPCD
AQ-1e	Prior to issuance of grading and construction permits, or during construction, if emissions of ROG+NOx with the above mitigations still exceed the thresholds, the Applicant shall secure SLOCAPCD-approved onsite or off-site reductions in ROG + NOx emissions to ensure that ROG + NOx emissions do not exceed the SLOCAPCD quarterly thresholds. Coordination with the SLOCAPCD should begin at least six (6) months prior to issuance of grading and/or construction permits for the Project to allow time for refining calculations and for the SLOCAPCD to review and approve the Construction Activity Management Plan (CAMP) and on-site or off-site mitigation approach.	Review of construction plan documents Site Inspection	Prior to grading permits During construction	SLO County Planning and Building SLOCAPCD
AQ-1f	Prior to issuance of applicable grading permit, the Applicant shall prepare a Dust Control Plan to be approved by the APCD and County Health and include requirements in the SLOCAPCD CEQA Handbook identified as fugitive dust mitigation measures and shall include a combination of the following, as approved by the SLOCAPCD and County Health: a. Reduce the amount of the disturbed area where possible. b. Use of water trucks or sprinkler systems in sufficient quantities to prevent airborne dust from leaving the site. An adequate water supply source must be identified. Increased watering frequency would be required whenever wind speeds exceed 15 mph. Reclaimed (non-potable) water should be used whenever possible. c. All dirt stockpile areas should be sprayed daily as needed, covered, or a SLOCAPCD-approved alternative method will be used. (90 percent reduction from no dust control). d. Permanent dust control measures identified in the approved Project revegetation and landscape plans should be implemented as soon as possible following completion of any soil disturbing activities and shall use native species that have been shown to reduce particulate emissions to the extent feasible. e. Exposed ground areas that will be reworked at dates greater than one month after initial grading should be sown with a fast-germinating non-invasive grass seed and watered until vegetation is established. f. All disturbed soil areas not subject to revegetation should be stabilized using approved chemical	Review of construction plan documents Site Inspection	Prior to grading permits	SLO County Planning and Building County Health SLOCAPCD

Table 8.1 Rail Spur Project Mitigation Monitoring and Reporting Requirements

Mitigation Measure	Requirements	Compliance Verification		
		Method	Timing	Responsible Party
	soil binders, jute netting, or other methods approved in advance by the SLOCAPCD. g. All roadways, driveways, etc. to be paved should be completed as soon as possible. In addition, equipment pads should be laid as soon as possible after grading unless seeding or soil binders are used. h. Vehicle speed for all construction vehicles shall not exceed 15 mph on any unpaved surface at the construction site. i. All trucks hauling dirt, sand, soil, or other loose materials are to be covered or should maintain at least 2 feet of freeboard (minimum vertical distance between top of load and top of trailer) in accordance with CVC Section 23114. j. Install wheel washers where vehicles enter and exit unpaved roads onto streets, or wash off trucks and equipment leaving the site. k. Sweep streets at the end of each day if visible soil material is carried onto adjacent paved roads. Water sweepers with reclaimed water should be used where feasible l. Apply water every 3 hours to disturbed areas within the construction site in order to achieve a 61 percent reduction in particulate emissions. In addition, when drought conditions are present, fugitive dust control measures need to be modified by utilizing soil binders or other equivalent measures, to conserve water resources while still providing the necessary emission reductions. m. In support of APCD standard fugitive dust mitigation measures, the applicant shall designate a Visible Emission Evaluation certified person or persons to monitor the fugitive dust emissions and enhance the implementation of the measures as necessary to minimize nuisance violations from dust complaints (Rule 402) and to reduce visible emissions below the APCD's Rule 401 requirement that opacity not exceed 20% for greater than 3 minutes in any 60 minute period. Their duties shall include holidays and weekend periods when work may not be in progress. The name and telephone number of the designated monitor shall be provided to the SLOCAPCD Compliance Division and the Department of Planning and Building prior to the start of any grading, earthwork, or demolition. n. All PM10 mitigation measures required shall be shown on grading and building plans. o. Between June 1 and November 30, when Valley Fever rates of infection are the highest, additional dust suppression measures (such as additional water or the application of additional soil stabilizer) will be implemented prior to and immediately following ground disturbing activities if wind speeds exceed 15 miles per hour (mph) or temperatures exceed 95 degrees Fahrenheit for three consecutive days. The additional dust suppression will continue until winds are 10 mph or lower and outdoor air temperatures are below 90 degrees for at least two consecutive days. The additional dust suppression measures will be incorporated into the Final			

Table 8.1 Rail Spur Project Mitigation Monitoring and Reporting Requirements

Mitigation Measure	Requirements	Compliance Verification		
		Method	Timing	Responsible Party
	Dust Control Plan. The Plan will be submitted to the County for review and approval. p. The primary project construction contractor will prepare and implement a worker training program that describes potential health hazards associated with Valley Fever, common symptoms, proper safety procedures to minimize health hazards, and notification procedures if suspected work-related symptoms are identified during construction. The worker training program will identify safety measures to be implemented by construction contractors during construction. Safety measures will include: 1) Providing HEPA-filtered air-conditioned enclosed cabs on heavy equipment. 2) Train workers on proper use of cabs, such as turning on air conditioning prior to using the equipment. 3) Providing communication methods, such as two-way radios, for use by workers in enclosed cabs. 4) Providing personal protective equipment (PPE), such as half-mask and/or full-mask respirators equipped with particulate filtration, to workers active in dusty work areas. 5) Providing separate, clean eating areas with hand washing facilities for construction workers. 6) Cleaning equipment, vehicles, and other items before they are moved offsite to other work locations. 7) Providing training for construction workers so they can recognize the symptoms of Valley Fever and promptly report suspected symptoms of work related Valley Fever to a supervisor. 8) Directing workers that exhibit Valley Fever symptoms to immediately seek a medical evaluation. q. Construction activities that will generate dust shall be limited to periods when good air quality is forecasted to the maximum extent feasible. The 6 day forecast for the CDF forecast zone shall be utilized as available from the APCD website, slocleanair.org. This information should be used by all on-site workers to plan construction activities for days when the air quality is forecast to be good.			
AQ-1g	Prior to issuance of applicable grading permit, the Applicant shall submit a geologic evaluation under the CARB ATCM for Construction, Grading, Quarrying, and Surface Mining Operations, to determine if Naturally Occurring Asbestos (NOA) is present within the area that will be disturbed. NOA has been identified as a toxic air contaminant by the CARB. If NOA is not present, an exemption request must be filed with the SLOCAPCD. If NOA is found at the site, the Applicant must 1) comply with all requirements outlined in the Asbestos ATCM. This may include development of an Asbestos Dust Mitigation Plan and an Asbestos Health and Safety Program for approval by the SLOCAPCD; and 2) conduct a geological evaluation prior to any grading. Technical Appendix 4.4 of the SLOCAPCD CEQA Handbook includes a map of zones throughout the County where NOA has been found. More information on NOA is available at http://www.slocleanair.org/business/asbestos.php.	Review of geological evaluation Review of Plan and Program Site Inspection	Prior to grading permits	SLO County Planning and Building SLOCAPCD
AQ-1h	Prior to issuance of demolition permits, if required, the Applicant shall comply with asbestos	Review of	Prior to	SLO County

Table 8.1 Rail Spur Project Mitigation Monitoring and Reporting Requirements

Mitigation Measure	Requirements	Compliance Verification		
		Method	Timing	Responsible Party
	containing material (ACM) requirements. Demolition activities can have potential negative air quality impacts, including issues surrounding proper handling, demolition, and disposal of ACM. ACM could be encountered during demolition or remodeling of existing buildings. Asbestos can also be found in utility pipes and pipelines (transite pipes or insulation on pipes). If utility pipelines are scheduled for removal or relocation or a building(s) is proposed to be removed or renovated, various regulatory requirements may apply, including the requirements stipulated in the National Emission Standard for Hazardous Air Pollutants (40CFR61, Subpart M - asbestos NESHAP). These requirements include but are not limited to: (1) notification to the SLOCAPCD; (2) an asbestos survey conducted by a Certified Asbestos Inspector; and (3) applicable removal and disposal requirements of identified ACM. More information on asbestos is available at http://www.slocleanair.org/business/asbestos.php.	asbestos survey Site Inspection	demolition permits	Planning and Building SLOCAPCD
AQ-1i	Should hydrocarbon contaminated soil be encountered during construction activities, the SLOCAPCD must be notified as soon as possible and no later than 48 hours after affected material is discovered to determine if an SLOCAPCD Permit will be required. In addition, the following measures shall be implemented immediately after contaminated soil is discovered: 1) Covers on storage piles shall be maintained in place at all times in areas not actively involved in soil addition or removal; 2) Contaminated soil shall be covered with at least six inches of packed uncontaminated soil or other TPH –non-permeable barrier such as plastic tarp. No headspace shall be allowed where vapors could accumulate; 3) Covered piles shall be designed in such a way to eliminate erosion due to wind or water. No openings in the covers are permitted; 4) During soil excavation, odors shall not be evident to such a degree as to cause a public nuisance; and, 5) Clean soil must be segregated from contaminated soil. The notification and permitting determination requirements shall be directed to the SLOCAPCD Enforcement Division.	Site Inspection	During construction	SLO County Planning and Building SLOCAPCD
AQ-2a	Prior to issuance of Notice to Proceed, the Applicant shall provide a mitigation, monitoring and reporting plan updated annually. The plan shall investigate methods for reducing the onsite and offsite emissions, both from fugitive components and from locomotives or from other SMR activities (such as the diesel pumps, trucks, and compressors to reduce DPM). In addition, locomotive emissions shall be mitigated to the extent feasible through contracting arrangements that require the use of Tier 4 locomotives or equivalent emission levels. The plan shall indicate that, on an annual basis, if emissions of ROG+NOx and DPM with the above mitigations still exceed the thresholds, as measured and confirmed by the SLOCAPCD, the Applicant shall secure SLOCAPCD-approved onsite and/or offsite emission reductions in ROG + NOx emissions or contribute to new or existing programs to ensure that project-related ROG + NOx emissions within SLO County do not exceed the SLOCAPCD thresholds. Coordination with the SLOCAPCD should	Review of operational plan documents Signing of agreement with the Applicant that covers emission	Prior to notice to proceed	SLOCAPCD

Table 8.1 Rail Spur Project Mitigation Monitoring and Reporting Requirements

Mitigation Measure	Requirements	Compliance Verification		
		Method	Timing	Responsible Party
	begin at least six (6) months prior to issuance of the Notice to Proceed for the Project to allow time for refining calculations and for the SLOCAPCD to review and approve any required ROG+NOx emission reductions.	reduction credits		
AQ-2b	Prior to issuance of Notice to Proceed, the Applicant shall implement a program, including training and procedures, to limit all locomotive onsite idling to no more than 15 consecutive minutes except when idling is required for safety purposes. Locomotive idling records shall be maintained and provided to the SLOCAPCD on an annual basis, along with training materials and training records.	Review of operational plan documents Site Inspections	Prior to notice to proceed	SLOCAPCD
AQ-3	Prior to issuance of the Notice to Proceed, the Applicant shall provide a mitigation, monitoring and reporting plan. The plan shall investigate methods for reducing the locomotive emissions through contracting arrangements that require the use of Tier 4 locomotives or equivalent emission levels. The plan shall indicate that, on an annual basis, if the mainline rail emissions of ROG+NOx with the above mitigations still exceed the applicable Air District thresholds, the Applicant shall secure emission reductions in ROG + NOx emissions or contribute to new or existing programs within each applicable Air District, similar to the emission reduction program utilized by the SLOCAPCD, to ensure that the main line rail ROG + NOx emissions do not exceed the Air District thresholds for the life of the project. The Applicant shall provide documentation from each Air District to the San Luis Obispo County Planning and Building Department that emissions reductions have been secured for the life of the project prior to issuance of the Notice to Proceed.	Review of operational plan documents Signing of agreement with the Applicant that covers emission reduction credits. Letter from other Air Districts covering emission reduction credits	Prior to notice to proceed	County Planning and Building
AQ-4a	Implement measures AQ-2a and AQ-2b.	Review of operational plan documents	Prior to notice to proceed	SLOCAPCD

Table 8.1 Rail Spur Project Mitigation Monitoring and Reporting Requirements

Mitigation Measure	Requirements	Compliance Verification		
		Method	Timing	Responsible Party
		Site Inspections		
AQ-4b	All trucks under contract to the SMR for moving coke and sulfur shall meet EPA 2010 model year NOx and PM emission requirements and a preference for the use of rail over trucks for the transportation of coke shall be implemented to the extent feasible in order to reduce offsite emissions. Annual truck trips associated with refinery operations and their associated model year and emissions shall be submitted to the SLOCAPCD annually.	Review of annual truck emission data	Prior to notice to proceed Annually during operations	SLOCAPCD County Planning and Building
AQ-4c	If mitigation measure AQ-2a (the use of Tier 4 locomotives only) is not implemented, then crude oil train unloading and switching activities at the SMR shall be limited to the period of 7 a.m. to 7 p.m. to reduce the emissions during periods of calm meteorological conditions. Reports shall be submitted to the County and APCD indicating the time of arrival, the start and end time of train switching break-apart and unloading and departure time. These time limits do not apply to pull-in of the unit trains from the mainline. When a unit train is pulled in between 7 p.m. and 7 a.m., the locomotives shall shut down until the allowed unloading time starting at 7 a.m. No switching or breaking apart of trains or any other locomotive activity is allowed between 7 p.m. and 7 a.m. except for the minimum activity needed to move the unit train onto the SMR property.	Review of operational plan documents Review of train unloading logs	Prior to Operation Ongoing during operations	County Planning and Building
AQ-6	Prior to issuance of the Notice to Proceed, the Applicant shall provide a GHG mitigation, monitoring and reporting plan. The plan shall indicate that, on an annual basis, if GHG emissions exceed the thresholds, the Applicant shall provide GHG emission reduction credits for all of the project GHG emissions. Coordination with the San Luis Obispo Planning and Building Department should begin at least six (6) months prior to issuance of operational permits for the Project to allow time for refining calculations and for the San Luis Obispo Planning and Building to review and approve the emission reduction credits.	Review of operational plan documents Site Inspections	Prior to notice to proceed	County Planning and Building
AQ-7	Prior to issuance of Notice to Proceed, the Applicant shall ensure that any new odor sources be added to the existing Refinery Odor Control Plan and submitted to the SLOCAPCD for review and approval before the start of construction. Mitigation shall include carbon canisters on all vacuum trucks, arrival and pre-departure inspection of all rail cars for fugitive leaks, monitoring of rail car top vents during unloading, and methods to reduce and eliminate odors associated with maintenance activities. Monitoring of odors from the rail facility and the other portions of the SMR potentially affected by a change in crude oil slate, shall be included in the Plan and shall be conducted by an independent third party monitor, retained by the County of San Luis Obispo Department of	Review of Odor Control Plan Site Inspection	Prior to construction	SLOCAPCD

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Mitigation Measure	Requirements	Compliance Verification		
		Method	Timing	Responsible Party
	Planning, for the first three months of operation during each unit train visit. The APCD shall be notified of monitoring and unit train activity. Monitoring activities can be reduced, in coordination and agreement with the APCD, after the facility startup if odors are not determined to affect areas offsite. In addition to monitoring, the amended Odor Control Plan shall also detail control measures and/or operating procedures that will be implemented to reduce odor impacts if odors are a concern. The Plan shall also include an implementation schedule for incorporating additional measures if needed. The Plan measures shall include leak detection (if not already implemented), lower leak detection and repair threshold limits (to 100 ppm), increased component monitoring frequency (monthly), component replacement with lower leak levels and improved vapor control systems and these measures shall be discussed in the Odor Control Plan.			
AQ-8	Prior to issuance of the Notice to Proceed, the Applicant shall provide a GHG mitigation, monitoring and reporting plan. The plan shall investigate methods to bring the Rail Spur Project GHG emissions at the refinery to zero for the entire project each year. The plan shall indicate that, on an annual basis, if after all onsite mitigations are implemented, the GHG emissions from the Rail Spur Project still exceed zero, then SLOCAPCD-approved off-site mitigation will be required. Methods could include the contracting arrangement that increases the use of more efficient locomotives, or through other, onsite measures. Coordination with the SLOCAPCD should begin at least six (6) months prior to issuance of operational permits for the Project to allow time for refining calculations and for the SLOCAPCD to review and approve the mitigation approach.	Review of operational plan documents Signing of agreement with the Applicant that covers emission reduction credits.	Prior to notice to proceed	County Planning and Building
BIO-1	Prior to initiation of project activities, a floristic survey shall be conducted within the Rail Spur Project area in accordance with the California Department of Fish and Wildlife (CDFW) Protocol for surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities (2009) and the Guidelines for Conducting and Reporting Botanical Inventories for Federally listed, Proposed, and Candidate Species (USFWS 2000). The survey shall specifically focus on the presence/absence of Nipomo Mesa lupine and, if normal rainfall conditions are present during the survey, the findings would be only valid for a period of two years. The floristic survey shall be conducted during a blooming period with normal rainfall. A 'normal' rainfall period is equivalent to the monthly or annual average of precipitation over a 30 year time period for the area. The results of this survey shall be submitted to the County, United States Fish	Conduct focused survey during non-drought year	Prior to ground disturbance	County approved biologist, County Planning and Building

Table 8.1 Rail Spur Project Mitigation Monitoring and Reporting Requirements

Mitigation Measure	Requirements	Compliance Verification		
		Method	Timing	Responsible Party
	and Wildlife Service, and California Department of Fish and Wildlife within 30 days of completing the survey. If 'normal' rainfall conditions have occurred prior to the initiation of the survey, and the results of this survey effort determine that Nipomo Mesa lupine is absent from the Rail Spur Project area, no further mitigation for this species shall be required at this time. Because it is well documented that Nipomo Mesa lupine may occur as a result of site disturbance, floristic surveys shall be conducted on an annual basis until there is no further disturbance to the native soil as a result of construction activities. Should Nipomo Mesa lupine be identified during construction, or if Nipomo Mesa lupine is identified prior to the initiation of activities during 'normal' rainfall conditions, the project shall avoid the individual or population to the extent feasible. If avoidance is not feasible then the applicant would be required by law to coordinate with California Department of Fish and Wildlife to acquire a 2081 Incidental Take Permit for this species and comply with any conditions imposed by that permit. At a minimum, the applicant shall implement BIO-5a (Dune Habitat Restoration Plan) and include Conservation Measures to establish and monitor Nipomo Mesa lupine population(s) within the identified on-site mitigation area at a ratio of 3:1 for individuals. The mitigation area for Nipomo Mesa lupine may overlap with the mitigation area for sensitive community impacts, which shall be protected from any grazing activities in perpetuity.			
BIO-2	Prior to project activities, the total number of California spineflower (Mucronea californica), sand almond (Prunus fasciculata var. punctata), Blochman's groundsel (Senecio blochmaniae), Blochman's leafy daisy (Erigeron blochmaniae), and dune larkspur (Delphinium parryi ssp. blochmaniae) shall be accurately estimated during the implementation of BIO-1. These population estimates shall be utilized as the basis for the in-kind replacement of these species described in Mitigation Measure BIO-5e. Should any additional populations of sensitive plant species that are considered rare by the California Native Plant Society (and not formally listed under the Endangered Species Act) be identified during the implementation of BIO-1 that were not previously observed in 2013, these species will also be replaced in-kind as part of the Dune Habitat Restoration Program and replacement success would be held to the same performance standards.	Conduct focused survey during non-drought year	Prior to ground disturbance	County approved biologist, County Planning and Building
BIO-3	Prior to issuance of grading and construction permits, a qualified wildlife biologist shall prepare a Sensitive Species Management Plan, which outlines the procedures and protocols for capturing and relocating sensitive animal species including coast horned lizard and silvery legless lizard during all phases of grading. This plan shall be approved by the County and California Department of Fish and Wildlife. Implementation of the Plan is required where impacts to sensitive animal species and their habitats are unavoidable and located within a minimum of 100 feet of the Disturbance Area (or greater as determined by the California Department of Fish and Wildlife). Within 30 days prior to	Review and approval of Sensitive Species Management Plan	Prior to issuance of grading and construction permits	California Department of Fish and Wildlife, County Planning and Building

Table 8.1 Rail Spur Project Mitigation Monitoring and Reporting Requirements

Mitigation Measure	Requirements	Compliance Verification		
		Method	Timing	Responsible Party
	mobilization, grading or construction, a qualified wildlife biologist shall conduct a pre-construction survey of the area of impact to determine the presence of sensitive wildlife species. Individuals will be searched and captured using techniques appropriate to the species of concern and approved by the appropriate resource agencies. All captured individuals will be released as soon as possible into nearby suitable habitat that has been previously identified by the qualified wildlife biologist in consultation with the County and California Department of Fish and Wildlife. The size or age-class, location of capture, and the relocation site shall be recorded for each individual relocated from the site.			
BIO-4	At a minimum, the following measures shall be incorporated in the Sensitive Species Management Plan: 1. Prior to grading activities, a County-approved biologist shall conduct a survey to identify whether badgers are using any portion of the site near the area in which disturbance is proposed. The survey shall be conducted no less than 14 days and no more than 30 days prior to construction. The survey shall cover the boundaries of proposed disturbance and 100 feet beyond, including all access roads, and shall examine both old and new dens. If potential badgers dens are found, they shall be inspected to determine whether they are occupied by badgers. Occupation of the den shall be determined by one or more of the following methods: a. Use of a fiber-optic scope to examine the den to the end: b. Partially obstruct the den entrance with sticks, grass, and leaves for three consecutive nights and examine for signs that animals are entering or leaving the den; c. Dust the den entrance with a fine layer of dust or tracking medium for three consecutive nights and examine the following mornings for tracks. 2. Inactive dens within construction areas shall be excavated by hand with a shovel to prevent re-use of dens during construction. 3. If badgers are found in dens between August and January, a qualified biologist shall establish a 50 foot diameter exclusion zone around the entrance. To avoid disturbance and the possibility of direct take of badgers, no construction, grading, or staging of equipment shall be conducted within the buffer area until the biologist has determined that the badger(s) have vacated the den. If badgers are found in dens between February and July, nursing young may be present. Therefore, a County-approved biologist shall establish a 200-foot diameter buffer around the den. No construction, grading, or staging of equipment shall be conducted within the buffer area until the biologist has determined that the badgers have vacated the den.	Review and approval of Sensitive Species Management Plan	Prior to issuance of grading and construction permits	County approved biologist, County Planning and Building
BIO-5a	Prior to issuance of any grading permits, the applicant shall retain a qualified biologist and/or botanist acceptable to the County to prepare a Dune Habitat Restoration Plan (DHRP) for review	Review and Approval of	Prior to issuance of	County approved

Table 8.1 Rail Spur Project Mitigation Monitoring and Reporting Requirements

Mitigation Measure	Requirements	Compliance Verification		
		Method	Timing	Responsible Party
	and approval by the County in consultation with the California Department of Fish and Wildlife (CDFW) and the United States Fish and Wildlife Service (USFWS). The DHRP shall be signed by the retained qualified biologist and/or botanist and shall detail the methods for restoring or enhancing a minimum of 41.76 acres (2:1 for permanent impacts) of vegetation types considered to be sensitive communities by CDFW, with an emphasis on restoring known rare plant associations found within the BSA and those associations considered locally rare to the Guadalupe-Nipomo Dunes. The restoration area(s) shall be located within the Phillips 66 property boundary and protected from any grazing activity. The DHRP shall focus on restoring and enhancing sensitive communities, known rare plant associations, and species of locally rare plant associations, by removing invasive species (iceplant, veldt grass, and other invasive species) and planting appropriate native species, including but not limited to: mock heather, purple nightshade, Blochman's ragwort, Blochman's leafy daisy, California spineflower, sand almond and suffrutescent wallflower. Should Nipomo Mesa lupine be identified within the Rail Spur Project area as a result of BIO-1, and avoidance of this species is not feasible, the DHRP shall also include methods of restoring and enhancing Nipomo Mesa lupine at a ratio of 3:1 for permanent impacts to individuals. Regardless of whether Nipomo Mesa lupine is identified on-site as part of BIO-1, the DHRP shall also focus on restoring and enhancing sensitive communities and rare plant associations immediately adjacent to known Nipomo Mesa lupine populations in order to promote expansion of the existing population. At a minimum, the DHRP shall include the following elements: a. Identification of locations, amounts, size and types of plants to be replanted, as well as any other necessary components (e.g., temporary irrigation, amendments, etc.) to ensure successful reestablishment. b. Provide for a native seed collection effort prior to ground disturbing activities. Collection of native seed shall be propagated by a County-approved contractor. Plants shall include but not be limited to California Native Plant Society (CNPS) listed plant species that may be affected. c. Quantification of impact based on "as-built plans" and quantification of mitigation areas such that the replacement criteria are met (2:1 acreage ratio, or 3:1 for Nipomo Mesa lupine individuals). d. A program schedule and success criteria for a minimum five year monitoring and reporting program that is structured to ensure the success of the DHRP. e. Provide for the in-kind replacement of the following sensitive species that occur within the Rail Spur Project area, which may include: California spineflower (Mucronea californica), sand almond (Prunus fasciculata var. punctata), Blochman's groundsel (Senecio blochmaniae),	Dune Habitat Restoration Plan	grading permits	biologist or botanist, County Planning and Building

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Mitigation Measure	Requirements	Compliance Verification		
		Method	Timing	Responsible Party
	Blochman's leafy daisy (Erigeron blochmaniae) and dune larkspur (Delphinium parryi ssp. blochmaniae). Should Nipomo Mesa lupine be identified onsite, in-kind replacement of this species shall also be included. Individuals that are removed or damaged shall be replaced in-kind at a 3:1 ratio (based on square feet cover) within the designated restoration area with 100% success in 5 years. f. Identification of access and methods of materials transport to the restoration area, including personnel, vehicles, tools, plants, irrigation equipment, water, and all other similar supplies. Access shall not result in new or additional impacts to habitat and special-status species. g. The required Dune Habitat Restoration Program shall incorporate an invasive species control program and be implemented by qualified personnel to ensure that the invasive species control program does not result in any additional impacts to Nipomo Mesa lupine, or other rare species. h. The restoration area shall be protected in perpetuity by an easement. The easement shall either be an open space easement, or a conservation easement if required by the California Department of Fish and Wildlife and United States Fish and Wildlife Service, or if chosen by the Applicant. The easement shall be in a form approved by County Counsel and CDFW and/or USFWS if required by those agencies. i. Upon successful completion of the Dune Habitat Restoration Program and subsequent approval by the permitting resource agencies, the applicant shall consider providing non-profit organizations such as California Native Plant Society and The Land Conservancy with long term access to the restoration site for the purposes of education, and long-term maintenance of the restoration site. Long-term maintenance activities would only occur if permitted by the applicant, and would require coordination with California Department of Fish and Wildlife and United States Fish and Wildlife Service. Access to the site is not guaranteed as a result of this measure. Funding for any future long-term maintenance activities shall be facilitated by the non-profit organization.			
BIO-5b	Prior to initiation of construction, the applicant shall retain a qualified biologist or botanist acceptable to the County to supervise the implementation of the DHRP. The qualified biologist or botanist shall supervise plant salvage and/or seed collection (prior to construction), plant propagation, site preparation, implementation timing, species selected for planting, planting installation, maintenance, monitoring, and reporting of the restoration efforts. The qualified biologist or botanist shall prepare and submit four annual reports and one final monitoring report to the County for review and approval in consultation with California Department of Fish and Wildlife and United States Fish and Wildlife Service.. The annual and final monitoring reports shall include discussions of the restoration activities, project photographs, an assessment of success criteria	Approval of biologist or botanist, for implementing Dune Habitat Restoration Plan	Prior to initiation of construction	County Planning and Building

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Mitigation Measure	Requirements	Compliance Verification		
		Method	Timing	Responsible Party
	attainment, and any remediation actions that may have been required in order to achieve the success criteria.			
BIO-5c	Prior to issuance of grading and construction permits, the applicant shall define and clearly mark construction zone boundaries adjacent to known sensitive species occurrences with high visibility construction fencing, and shall mark groups of individual plants located within potential disturbance areas with highly visible flagging or fencing.	Field verification of delineated construction zone boundaries	Prior to issuance of grading and construction permits	County Planning and Building
BIO-5d	Prior to construction (within 48 hours), the applicant's retained biologist or botanist shall provide instruction to construction personnel regarding avoidance of sensitive habitats and special-status plants located in the vicinities of areas experiencing ground disturbance. The training shall include presentation of photos of sensitive plant species and habitat, summary of regulations and conditions applicable to protection of the species, identification of areas where removal of the species is permitted pursuant to the final conditions of approval and DHRP, and any ramifications for non-compliance.	Onsite review of environmental training	Prior to construction (max 48 hours)	County Planning and Building
BIO-5e	During construction, where disturbance to sensitive habitat and sensitive plant species is unavoidable (and permitted by the County upon approval of the project), the top four inches of surface material shall be salvaged and stockpiled for restoration use in consultation with the County, California Department of Fish and Wildlife and United States Fish and Wildlife Service. Existing native vegetation shall also be removed and included as mulch in order to capture any existing native seed material. The salvaged material shall be used as the finish layer on fill slopes and other disturbed areas that will not require regular vegetation maintenance.	Onsite verification that topsoil is retained	During construction	County Planning and Building
BIO-5f	During construction, the use of heavy equipment shall be restricted to within the identified work areas throughout the duration of construction activities and all construction personnel shall be advised of the importance of limiting ground disturbance and construction activities to within the identified work areas. A full-time biological monitor shall monitor shall map any populations or individual sensitive species that may bloom within, or directly adjacent to, areas of ground disturbance. Should Nipomo Mesa lupine be identified at any time during construction, the species shall be completely avoided and the County shall be contacted immediately. If avoidance is not feasible, or the species was inadvertently impacted during construction before identification by the biological monitor, the County and the applicant shall coordinate directly with the California Department of Fish and Wildlife and United States Fish and Wildlife Service. At a minimum, the impacts to any sensitive plant species shall be mitigated though implementation of BIO-5a.	Onsite verification that use of equipment is restricted to designated work area	During construction	County Planning and Building
BIO-6a	At the time of application for grading and/or construction permits, the applicant shall prepare an	Review and	Prior to	County

Table 8.1 Rail Spur Project Mitigation Monitoring and Reporting Requirements

Mitigation Measure	Requirements	Compliance Verification		
		Method	Timing	Responsible Party
	Oak Tree Inventory, Avoidance, and Protection Plan as outlined herein. The plan shall be reviewed by a County-approved arborist prior to approval of grading and/or construction permits, and shall include the following items: a. Construction plans shall clearly delineate all trees within 50 feet of areas where soil disturbance would occur, and shall show which trees are to be impacted, and which trees are to remain unharmed. All inventoried trees shall be shown on maps. The species, diameter at breast height, location, and condition of these trees shall be documented in data tables. b. Prior to any grading or grubbing, all trees that are within fifty feet of construction or grading activities shall be marked for protection and their root zone shall be fenced. The outer edge of the tree root zone to be fenced shall be outside of the canopy 1/2 again the distance as measured between the tree trunk and outer edge of the canopy (i.e., 1-1/2 times the distance from the trunk to the drip line of the tree), unless otherwise shown on the approved construction plans. c. Prior to any grading or grubbing, a certified arborist shall be retained by the applicant to identify at risk limbs and perform all necessary trimming of oak tree limbs that could be damaged by project activities. Pruning shall be conducted as needed along all access roads and construction areas, including paved portions of County roads used for project equipment access. All pruning shall be conducted prior to construction equipment passage to minimize the potential for inadvertent damage to oak tree limbs. Removal of larger lower branches should be minimized to 1) avoid making tree top heavy and more susceptible to "blow-overs", 2) reduce having larger limb cuts that take longer to heal and are much more susceptible to disease and infestation, 3) retain wildlife habitat values associated with the lower branches, 4) retain shade to keep summer temperatures cooler and 5) retain the natural shape of the tree. The certified arborist shall document all pruning impacts in a report submitted to the County San Luis Obispo. d. A certified arborist shall be retained by the applicant to supervise all construction activities in areas containing oak trees in order to minimize disturbance to identified trees and their root zones wherever possible. The certified arborist will document all construction-related impacts to oak trees in an "as-built" report submitted to the County San Luis Obispo. e. Immediately following submittal of the oak tree impact "as-built" report to the County San Luis Obispo, the applicant shall implement mitigation for all identified pruning and construction-related oak impacts per current County San Luis Obispo ratios and methods for oak tree mitigation and replacement. County oak tree replacement standards require a project proponent to prepare and implement an oak tree replacement plan. The plan shall provide for the in-kind replacement, at a 4:1 ratio, of all oak trees removed as a result of the project. In addition, the	approval of Oak Tree Inventory, Avoidance, and Protection Plan	issuance of grading and construction permits	Planning and Building

Table 8.1 Rail Spur Project Mitigation Monitoring and Reporting Requirements

Mitigation Measure	Requirements	Compliance Verification		
		Method	Timing	Responsible Party
	plan must provide for the in-kind planting, at a 2:1 ratio, of all oak trees impacted but not removed. The replacement trees must be monitored for seven years after planting.			
BIO-6b	Upon application for grading and construction permits, the applicant shall submit an Oak Tree Replacement, Monitoring, and Conservation Plan to the County Department of Planning and Building. The Plan shall include the following: a. The County-approved arborist shall provide or submit approval of an oak tree replacement plan at a minimum 4:1 ratio for oak trees removed and a minimum replacement ration of 2:1 ratio for oak trees impacted (i.e., disturbance within the root zone area). b. Replacement oak trees shall be from regionally or locally collected seed stock grown in vertical tubes or deep one-gallon tree pots. Four-foot diameter shelters shall be placed over each oak tree to protect it from deer and other herbivores, and shall consist of 54-inch tall welded wire cattle panels (or equivalent material) and be staked using T-posts. Wire mesh baskets, at least two feet in diameter and two feet deep, shall be use below ground. Planting during the warmest, driest months (June through September) shall be avoided. The plan shall provide a species-specific planting schedule. If planting occurs outside this time period, an irrigation plan shall be submitted prior to permit issuance and implemented upon approval by the county. c. Replacement oak trees shall be planted no closer than 20 feet on center and shall average no more than four planted per 2,000 square feet. Trees shall be planted in random and clustered patterns to create a natural appearance. As feasible, replacement trees shall be planted in a natural setting on the north side of and at the canopy/dripline edge of existing mature native oak trees (if present); on north-facing slopes; within drainage swales (except when riparian habitat present); where topsoil is present; and away from continuously wet areas (e.g., lawns, irrigated areas, etc). Replanting areas shall be either in native topsoil or areas where native topsoil has been reapplied. A seasonally timed maintenance program, which includes regular weeding (hand removal at a minimum of once early fall and once early spring within at least a three-foot radius from the tree or installation of a staked "weed mat" or weed-free mulch) and a temporary watering program, shall be developed for all oak tree planting areas. A qualified arborist/botanist shall be retained to monitor the acquisition, installation, and maintenance of all oak trees to be replaced. Replacement trees shall be monitored and maintained by a qualified arborist/botanist for at least seven years or until the trees have successfully established as determined by the County Environmental Coordinator. Annual monitoring reports will be prepared by a qualified arborist/botanist and submitted to the County by October 15 each year. d. The restored area shall be at a minimum equal in size to the area of oak habitat lost or disturbed.	Review and approval of Oak Tree Replacement, Monitoring, and Conservation Plan	Prior to issuance of grading and construction permits	County Planning and Building
BIO-7	Prior to issuance of grading and construction permits, the existing Santa Maria Refinery Spill	Review and	Prior to	County

Table 8.1 Rail Spur Project Mitigation Monitoring and Reporting Requirements

Mitigation Measure	Requirements	Compliance Verification		
		Method	Timing	Responsible Party
	Prevention, Control and Countermeasure Plan (SPCCP) shall be amended and submitted for review and approval to the County Planning and Building Department and the California Department of Fish and Wildlife, Office of Spill Prevention and Response . The Plan shall address protection of sensitive biological resources and revegetation of any areas disturbed during an oil spill or cleanup activities. The Plan shall incorporate, at a minimum, the following: a. An estimate of the worst case spill volume associated with the rail unloading operations. b. A description of the spill containment equipment for the facility that clearly demonstrates that the worst case spill can be contained within the rail facility boundaries. c. A description of the operating procedures for the rail unloading facilities that sever to prevent an oil spill. d. Measures taken to assure that the crude oil pipeline shall be designed such that any spill from the pipeline shall drain back to rail unloading area or shall otherwise be contained within the access roadway. e. Provide a list of onsite oil spill response equipment that is adequate to handle the worst case spill volume. f. Identify training requirement for oil spill response personnel, which includes annual spill drills. g. Identification and communication protocols and agreements for responsible parties tasked with emergency response, cleanup, and rehabilitation efforts of any wildlife species and habitat that may be impacted. h. Identification of known sensitive resources within any area that may be impacted by a potential oil spill or cleanup activities, and identification of staging areas and predetermined access and egress routes that pose little or no threat to sensitive biological resources. i. Identification of oil spill cost recovery procedures for state and local government agencies. j. Specific measures to avoid impacts to native vegetation and wildlife habitats, plant and animal species, and environmentally sensitive habitat areas during oil spill response and cleanup operations. For Rail Spur construction and operation, the Plan shall specifically address measures to 1) prevent oil spills from entering the adjacent property which includes a tributary to Oso Flaco Creek, and 2) in case a spill does enter any of these water features, shall include measures to prevent a spill from reaching the waters of Oso Flaco Lake. The plan shall describe the worst case scenario for maximum oil spill volume. k. When habitat disturbance cannot be avoided, the Plan shall provide protocol and methodologies for removing contaminated vegetation from sensitive areas. Low-impact site-specific techniques such as hand-cutting contaminated vegetation, hand raking, and shoveling of contaminated soils shall be specified to remove spilled material from particularly sensitive	approval of Spill Prevention and Response Plan / Emergency Response Action Plan	issuance of grading and construction permits	Planning and Building California Department of Fish and Wildlife, Office of Spill Prevention and Response

Table 8.1 Rail Spur Project Mitigation Monitoring and Reporting Requirements

Mitigation Measure	Requirements	Compliance Verification		
		Method	Timing	Responsible Party
	wildlife habitats. l. When habitat disturbance cannot be avoided, the Plan shall provide stipulations for development and implementation of site-specific habitat restoration plans and to restore native plant communities to pre-spill conditions. Procedures for timely re-establishment of vegetation that replicates the habitats disturbed (or, in the case of disturbed habitats dominated by non-native species, replaces them with suitable native species) shall also be included.			
BIO-8a	Prior to and during construction, the applicant shall avoid disturbance of bird breeding and nesting activities if construction activities are scheduled to occur during the typical bird nesting season (February 15 and September 1). A qualified biologist shall also be retained to conduct a pre-construction survey on a weekly basis throughout the breeding season only during construction for the purpose of identifying potential bird nesting activity. Should construction continue to occur beyond September 1, a qualified biologist shall conduct a bi-weekly survey during the wintering season for overwintering use by burrowing owl. If no nesting activities or overwintering burrowing owl are detected within the proposed work area, noise-producing construction activities may proceed and no further mitigation is required. If nesting activity or overwintering burrowing owl are detected during pre-construction nesting surveys or at any time during the monitoring of construction activities, the following shall occur: a. Work activities within 300 feet (500 feet if raptors) shall be delayed. CDFW and/or USFWS shall be contacted to determine the appropriate biological buffer distance around active nest sites. b. Construction activities will be prohibited within the buffer zone until a biologist determines that the young birds have fledged and left the nest, or overwintering burrowing owl is no longer utilizing the burrow. The results of the surveys shall be immediately submitted to the CDFW and the County, demonstrating compliance with the Migratory Bird Treaty Act of 1918. c. If destruction of occupied burrows is unavoidable during the non-breeding season, or if burrowing owls must be translocated during the non-breeding season, a Burrowing Owl Exclusion Plan shall be developed by a qualified biologist following the guidance of the CDFW Staff Report on Burrowing Owl Mitigation (2012).	Avoid nesting birds through timing or verification by survey	Prior to and during construction	County approved biologist, County Planning and Building
BIO-8b	To mitigate for the loss of burrowing owl habitat, a minimum of 26.5 acres of suitable burrowing owl foraging and nesting habitat shall be provided in perpetuity through an easement prior to any project construction activities. If feasible, the protected lands shall occur within the boundaries of the Phillips 66 property or lands immediately adjacent to any known burrow site. At a minimum, the mitigation lands shall include similar vegetative attributes as the impact area, be of sufficiently large acreage and include the presence of fossorial mammals. Mitigation lands for burrowing owl	Review and approval	Prior to issuance of grading and construction permits	County Planning and Building California Department of

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Mitigation Measure	Requirements	Compliance Verification		
		Method	Timing	Responsible Party
	may overlap with lands which are designated for restoration under the Dune Habitat Restoration Plan. Should there be any overlap, neither mitigation effort should negatively affect the goals and success criteria of the other. The location of the protected lands shall be determined in coordination with CDFW.			Fish and Wildlife
BIO-9	Prior to issuance of grading and construction permits, the following measures shall be included on applicable plan sheets and the Dune Habitat Restoration Plan: a. During construction, the applicant will make all reasonable efforts to limit the use of imported soils for fill. Soils currently existing on-site should be used for fill material. If the use of imported fill material is necessary, the imported material must be obtained from a source that is known to be free is invasive plant species; or the material must consist of purchased clean material such as crushed aggregate, sorted rock, or similar. b. During construction, the contractor shall stockpile topsoil and redeposit the stockpiled soil within disturbed areas onsite after construction of the Rail Spur is complete, or transport the topsoil to a certified landfill or other allowable location for disposal if soil cannot be used within disturbed areas onsite. c. All erosion control materials including straw bales, straw wattles, or mulch used on-site must be free of invasive species seed. d. The required Dune Habitat Restoration Program shall incorporate an invasive species control program.	Review and approval of grading and construction plans	Prior to issuance of grading and construction permits	County Planning and Building
BIO-11	The Applicant's contract with UPRR, shall include a provision to provide that UPRR has an Oil Spill Contingency Plan in place for all mainline rail routes in California that could be used for transporting crude oil to the SMR. The Oil Spill Contingency Plan shall at a minimum include the following: 1. A set of notification procedures that includes a list of immediate contacts to call in the event of a threatened or actual spill. This shall include a rated oil spill response organization, the California Office of Emergency Services, California Department of Fish and Wildlife, Oil Spill Prevention and Response, and appropriate local emergency responders. 2. Identification of the resources that could be at risk from an oil spill equal to 20% of the train volume. The resources that shall be identified in the plan, and shown on route maps, include but are not limited to the following: a. Habitat types, shoreline types, and associated wildlife resources in those locations; b. The presence of state or federally-listed rare, threatened or endangered species; c. The presence of aquatic resources including state fish, invertebrates, and plants including important spawning, migratory, nursery and foraging areas;	Review and approval of Spill Contingency Plan	Prior to operation of rail unloading facility	California Department of Fish and Wildlife, Office of Spill Prevention and Response

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Mitigation Measure	Requirements	Compliance Verification		
		Method	Timing	Responsible Party
	d. The presence of terrestrial animal and plant resources; e. The presence of migratory and resident state bird and mammal migration routes, and breeding, nursery, stopover, haul-out, and population concentration areas by season; f. The presence of commercial and recreational fisheries including aquaculture sites, kelp leases and other harvest areas. g. Public beaches, parks, marinas, boat ramps and diving areas; h. Industrial and drinking water intakes, power plants, salt pond intakes, and important underwater structures; i. Areas of known historical and archaeological sites (but not their specific description or location); j. Areas of cultural or economic significance to Native Americans (but not their specific description or location). k. A description of the response strategies to protect the identified site and resources at risk. l. A list of available oil spill response equipment and staging locations along the mainline tracks and shall include. m. A program for oil spill training of response staff and a requirement for annual oil spill drillings. 3. The oil spill contingency plan must be able to demonstrate that response resources are adequate for containment and recovery of 20% of the train's volume within 24 hours. In addition, within six hours of the spill the response resources shall be adequate for containment and recovery of 50% of the spill, and 75% of the spill within 12 hours. The Applicant's contract with UPRR, shall include provision that UPRR's Oil Spill Contingency Plan shall be reviewed and approved by California Department of Fish and Wildlife, Office of Spill Prevention and Response prior to delivery of crude oil by rail to the Santa Maria Refinery. In addition, the Applicant's contract with UPRR, shall include provisions to provide a copy of UPRR's Oil Spill Contingency Plan to all first response agencies along the mainline rail routes in California that could be used by trains carrying crude oil to the Santa Maria Refinery for the life of the project. Only first response agencies that are able to receive security sensitive information as identified pursuant to Section 15.5 of Part 15 of Title 49 of the Code of Federal Regulations, shall be provided this information.			
CR-1a	Prior to issuance of grading and construction permits, the Applicant shall submit plans showing a modified road alignment for the Emergency Vehicle Access (EVA) road to the Department of Planning and Building for review and approval. Grading and construction of the EVA shall avoid all ground disturbing activities within the previously identified boundary of CA-SLO-1190. The	Avoid archaeological site.	Prior to issuance of grading and construction	County Planning and Building

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		Method	Timing	Responsible Party
	plans shall note the boundaries of the site as an Environmentally Sensitive Area (ESA) and shall include a 50-foot buffer around the ESA. No grading, storage of materials or equipment, or use of equipment shall occur within the ESA.		permits.	
CR-1b	Prior to issuance of grading and construction permits, the Applicant shall submit an Archaeological Monitoring Plan to the Department of Planning and Building for review and approval. The plan shall include, at minimum: a. List of personnel involved in the monitoring activities including a Native American monitor; b. Clear identification of what portions of the project area in relation to CA-SLO-1190 shall be monitored; c. Description of how the monitoring shall occur; d. Description of monitoring frequency; e. Description of resources expected to be encountered; f. Description of circumstances that would result in the "work diversion," in the case of discovery, at the project site; g. Description of procedures for diverting work on the site and notification procedures; and h. Description of monitoring reporting procedures.	Prepare and implement Archaeological Monitoring Plan.	Prior to issuance of grading and construction permits.	County-approved archaeologist, County Planning and Building.
CR-1c	A County approved archaeological monitor shall be present during all ground disturbing construction activities within intact native soil (i.e., undisturbed soils) within 300 feet of the previously identified boundary of CA-SLO-1190, and as noted in the approved Archaeological Monitoring Plan.	Archaeological monitoring	During all ground disturbing activities within 300 feet of sensitive site.	County-approved archaeologist, County Planning and Building.
CR-1d	Upon completion of all monitoring and mitigation activities required by CR-1 through CR-5, and prior to final inspection or occupancy, whichever occurs first, the Applicant shall submit to the Department of Planning and Building a report summarizing all monitoring and mitigation activities and confirming that all recommended mitigation measures have been met.	Submit monitoring report.	Upon completion of monitoring and mitigation.	County-approved archaeologist, County Planning and Building.
CR-2a	Prior to any grading or construction, contractors involved in grading and grubbing activities shall receive training from a County-qualified archeologist. The training shall address the following issues: a. Review the types of archaeological artifacts that may be uncovered; b. Provide examples of common archaeological artifacts to examine;	Environmental training	Prior to grading and construction.	County-approved archaeologist, County Planning and

Table 8.1 Rail Spur Project Mitigation Monitoring and Reporting Requirements

Mitigation Measure	Requirements	Compliance Verification		
		Method	Timing	Responsible Party
	c. Review what makes an archaeological resource significant to archaeologists and local native Americans; d. Describe procedures for notifying involved or interested parties in case of a new discovery; e. Describe reporting requirements and responsibilities of construction personnel; f. Review procedures that shall be used to record, evaluate, and mitigate new discoveries; g. Describe procedures that would be followed in the case of discovery of disturbed as well as intact human burials and burial-associated artifacts; and h. Employees completing this training shall be given a special helmet sticker or card to show they have completed the training, where the sticker/card shall be kept with them at all times while at the work site.			Building.
CR-2b	Prior to issuance of grading and construction permits, the Applicant shall submit an Archaeological Monitoring Plan to the Department of Planning and Building for review and approval. The plan shall include, at minimum: a. List of personnel involved in the monitoring activities including a Native American monitor; b. Description of how the monitoring shall occur; c. Description of monitoring frequency; d. Description of circumstances that would result in the "work diversion," in the case of discovery, at the project site; e. Description of procedures for diverting work on the site and notification procedures; and f. Description of monitoring reporting procedures.	Prepare and implement Archaeological Monitoring Plan.	Prior to issuance of grading and construction permits.	County-approved archaeologist, County Planning and Building.
CR-2c	A County approved archaeological monitor shall be present during all ground disturbing construction activities within intact native soil (i.e., undisturbed soils) as noted in the approved Archaeological Monitoring Plan.	Archaeological monitoring	During all ground disturbing activities	County-approved archaeologist, County Planning and Building.
CR-3	If human remains are exposed during construction, the Applicant shall notify the County Environmental Coordinator immediately and comply with State Health and Safety Code Section 7050.5, which states that no further disturbance shall occur until the County Coroner has been notified and can make the necessary findings as to origin and disposition of the remains pursuant to Public Resources Code 5097.98. Construction shall halt in the area of the discovery of human remains, the area shall be protected, and consultation and treatment shall occur as prescribed by law.	Compliance with regulations regarding human remains discovery.	Prior to, during, and following construction.	County Coroner, County Planning and Building
CR-5	If any paleontological resources are encountered during ground-disturbing activities, activities in the	Treatment	Prior to,	Applicant,

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Mitigation Measure	Requirements	Compliance Verification		
		Method	Timing	Responsible Party
	immediate area of the find shall be halted and the discovery assessed. A qualified paleontologist shall be retained to evaluate the discovery and recommend appropriate treatment options pursuant to guidelines developed by the Society of Vertebrate Paleontology. A paleontological resource impact mitigation program for treatment of the resources shall be developed and implemented if paleontological resources are encountered.	and mitigation upon incidental discovery.	during, and following construction.	Contractor, County-approved paleontologist (as necessary).
CR-6	As part of the Applicant's contract with UPRR, it shall require that a qualified archaeologist, architectural historian, and paleontologist who meet the Secretary of the Interior's Professional Qualification Standards prepare an Emergency Contingency and Treatment Plan for Cultural and Historic Resources along the rail routes in California that could be used to transport crude oil to the SMR. The treatment plan shall include, but not be limited to, the following components: a. Protocols for determining the cultural resources regulatory setting of the incident site; b. Provide various methodologies for identifying cultural resources, as needed, within the incident site (e.g., California Historical Resources Information System records search, agency contact, field survey); and c. If cultural resources are present, identify measures for their avoidance, protection, and treatment. The Treatment Plan shall be in place prior to delivery of crude by rail to the Santa Maria Refinery.	Develop avoidance, protection, and treatment plan.	Prior to crude delivery to the Santa Maria Refinery	Applicant, County-approved archaeologist and architectural historian
GR-1a	At the time of application for grading and construction permits, the proposed rail spur, unloading facility, and oil pipeline infrastructure shall be designed and constructed to withstand anticipated horizontal and vertical ground acceleration in the Project area, based on the California Building Code. The calculated design base ground motion for project components shall consider the soil type, potential for liquefaction, and the most current and applicable seismic attenuation methods that are available.	Review and approval of design drawings and seismic loading calculations	Approve design drawings and seismic loading calculations prior to issuance of building permits	County Planning and Building
GR-1b	At the time of application for construction permits, all surface facilities and equipment shall have suitable foundations and anchoring design, surface restraints, and moment-limiting supports to withstand seismically induced groundshaking.	Review and approval of design drawings	Approve design drawings prior to issuance of building permits	County Planning and Building

Table 8.1 Rail Spur Project Mitigation Monitoring and Reporting Requirements

Mitigation Measure	Requirements	Compliance Verification		
		Method	Timing	Responsible Party
GR-1c	A Registered Civil Engineer and Certified Engineering Geologist shall complete an updated geotechnical investigation specific to the proposed rail spur and oil pipeline site, as previous on-site geotechnical investigations were completed in other areas of the refinery. All geotechnical recommendations provided in the report shall be followed during grading and construction at the Project Site. The updated geotechnical evaluation shall include, but not be limited to, an estimation of both vertical and horizontal anticipated peak ground accelerations, as well as an updated liquefaction analysis.	Review and approval of geotechnical report.	Approve geotechnical report prior to issuance of grading permit.	County Planning and Building
GR-1d	The geotechnical report shall be completed prior to completion of the final Project design and shall be submitted to the County of San Luis Obispo Building Division for review and approval. The Project design must conform to the recommendations within the updated geotechnical evaluation. The geotechnical recommendations would likely include, but not be limited, to the following: a. Proposed structures shall be designed and constructed to withstand anticipated horizontal and vertical ground acceleration in the Project area, based on the California Building Code. b. Proposed structures shall be designed and constructed to withstand the effects of liquefaction, as applicable, based on the California Building Code. c. The Project Site shall be cleared of unsuitable materials and graded to provide a firm base for compacted fill, as applicable. Ground surfaces to receive compacted fill shall be prepared by removing organics, rubble, debris, existing disturbed fill, artificial fill, unconsolidated materials, and soft or disturbed soils. Removal of unconsolidated materials would likely include several feet of overexcavation. d. All fill material shall be placed in uniform lifts not exceeding 8 inches in its loose state and compacted to a minimum of 90 percent relative compaction, as determined by the latest ASTM Test Designation D-1557. e. Due to the low cohesion of the onsite soils (i.e., dune sands), the potential need for mechanical stabilization of fill slopes shall be evaluated and implemented, as applicable, to attain the acceptable factors of safety for stability. Mechanical stabilization may include Mechanically Stabilized Earth (MSE), which includes use of engineered geogrids placed at 2-foot vertical spacing within fill slopes. Cut slopes may similarly require construction of overlying stability fills, using MSE. f. Surface runoff shall be directed away from slopes and foundations and collected in lined ditches or drainage swales, via non-erodible engineered drainage devices. Fill slopes and stability fills, as applicable, shall be provided with subsurface drainage for stability.	Review and approval of geotechnical report.	Approve geotechnical report prior to issuance of grading permit.	County Planning and Building
GR-1e	At the time of application for grading and construction permits, all proposed slope, building pad, and rail track bed construction shall be properly engineered, with fill placed in accordance with	Review and approval of	Approve grading plans	County Planning and

Table 8.1 Rail Spur Project Mitigation Monitoring and Reporting Requirements

Mitigation Measure	Requirements	Compliance Verification		
		Method	Timing	Responsible Party
	requirements of the current County of San Luis Obispo Building and Construction Ordinance (Title 19 of the San Luis Obispo County Code), and California Building Code.	grading plans	prior to issuance of building permits	Building
GR-1f	During construction, the proposed aboveground oil pipeline shall be anchored to prevent pipeline movement, as determined by a California Registered Civil Engineer, in accordance with California Building Code, San Luis Obispo County requirements, and the American Public Works Association Greenbook.	Review and approval of design drawings	Approve design drawings prior to issuance of building permits	County Planning and Building
GR-1g	At the time of application for construction permits, the facilities and equipment, including spill containment vaults and Project-related pipelines, shall be designed for predicted, site-specific seismic loading in accordance with applicable codes, including the California Building Code.	Review and approval of design drawings	Approve design drawings prior to issuance of building permits	County Planning and Building
GR-1h	The Applicant shall cease rail car unloading and pipeline oil conveyance following any perceptible (i.e., felt by humans) seismic event and inspect all project-related facilities, equipment, and pipelines for damage prior to restarting operations.	Cease any rail car unloading and pipeline oil conveyance and inspect all project-related facilities, equipment and pipelines following any perceptible seismic event.	Inspection for earthquake damage of unloading and oil conveyance infrastructure immediately following seismic events.	County Planning and Building

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		Method	Timing	Responsible Party
GR-1i	Consistent with California Building Code Section 3401.2, all project-related facilities, equipment, and pipelines shall be maintained in conformance with the California Building Code edition under which it was installed. Annual inspections shall be completed by a California Registered Civil Engineer to verify that project components have not been damaged or compromised by seismic induced ground shaking, corrosion, soil erosion, soil settlement, or other geologic hazards.	Inspection of project-related facilities, equipment, and pipelines	Annually	County Planning and Building
GR-2	During construction and operations, the Applicant shall implement a Storm Water Pollution Prevention Plan using Best Management Practices and monitor and maintain stormwater pollution control facilities identified in the Storm Water Pollution Prevention Plan, in a manner consistent with the provisions of the Federal Water Pollution Control Act (National Pollutant Discharge Elimination System Program). Stormwater management protection measures and wet weather measures shall be designed by a California registered, Qualified Storm Water Pollution Prevention Plan Developer. In addition, a California registered, Qualified Storm Water Pollution Prevention Plan Practitioner shall oversee and monitor construction and operational Best Management Practices and stormwater management, in accordance with the State General Construction Permit and the Central Coast Regional Water Quality Control Board. Conventional measures typically recommended by the State Water Resource Board and the California Department of Transportation include the following: a. Implement permanent erosion and sediment control measures: – Minimize grading, clearing, and grubbing to preserve existing vegetation; – Use mulches and hydroseed, free of invasive plants, to protect exposed soils; – Use geotextiles and mats to stabilize soils; – Use drainage swales and dissipation devices; and – Use erosion control measures outlined in the California Stormwater Quality Association Best Management Practice Handbook. b. Implement temporary Best Management Practice mitigation measures: – Use silt fences, sandbags, and straw wattles; – Use temporary sediment basins and check dams; and – Use temporary Best Management Practices outlined in the California Stormwater Quality Association Best Management Practice Handbook. c. Implement tracking control Best Management Practices to reduce tracking sediment offsite. – Use stabilized construction entrance and exit with steel shakers; – Use tire wash areas; and	Review and approval of SWPPP.	Approve SWPPP prior to issuance of grading permit.	County of San Luis Obispo

Table 8.1 Rail Spur Project Mitigation Monitoring and Reporting Requirements

Mitigation Measure	Requirements	Compliance Verification		
		Method	Timing	Responsible Party
	– Use tracking control Best Management Practices outlined in the California Stormwater Quality Association Best Management Practice Handbook. Personnel at the site shall be trained in equipment use and containment and cleanup of an oil spill. Dry cleanup methods, such as absorbents, shall be used on paved and impermeable surfaces. Spills in dirt areas shall be immediately contained with an earthen dike and the contaminated soil shall be dug up and discarded in accordance with local and state regulations.			
HM-2a	Only rail cars designed to FRA, July 23, 2014 Proposed Rulemaking Option 1: PHMSA and FRA Designed Tank Car as listed in Table 4.7.6, shall be allowed to unload crude oil at the Santa Maria Refinery.	Review of tank car specification sheets Site Inspection	Prior to Notice to Proceed During Operations	County Planning and Building
HM-2b	For crude oil shipments via rail to the SMR a rail transportation route analysis shall be conducted annually. The rail transportation route analysis shall be prepared following the requirements in 49 CFR 172.820. The route with the lowest level of safety and security risk shall be used to transport the crude oil to the Santa Maria Refinery.	Review of transportation route analysis	Annually	USDOT
HM-2c	The Applicant's contract with UPRR, shall include a provision to require that Positive Train Control (PTC) be in place for all mainline rail routes in California that could be used for transporting crude oil to the SMR.	Review of Agreement with UPPR and CTC documentation	Prior to trains arriving at the SMR	County Planning and Building
HM-2d	The refinery shall not accept or unload at the rail unloading facility any crude oil or petroleum product with an API Gravity of 30^{o} or greater.	Review of shipping papers Site Inspection	On-going during operations	County Planning and Building
N-1	The Applicant shall ensure that all construction activity at the Project Site is limited to the hours of 7:00 A.M. to 9:00 P.M., Monday through Friday, and 8:00 A.M. to 5:00 P.M. on Saturdays and Sundays. This restriction shall be a note placed on all construction plans.	Review of construction plan documents Site	Prior to grading permits	County Planning and Building

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		Method	Timing	Responsible Party
		Inspection		
N-2a	Prior to issuance of the Notice to Proceed, the Applicant shall develop for review and approved by the County Department of Building and Planning a Rail Unloading and Management Plan that addresses procedures to minimize noise levels at the rail spur, including but not limited to the following: 1) All locomotives operating to the east of the unloading rack area between the hours of 10 P.M. and 7 A.M. shall be limited to a combined total of 100 locomotive-minutes (e.g. 2 locomotives for 50 minutes each or 1 locomotive for 100 minutes, etc. including switching and idling); 2) Arriving trains that enter the refinery between the hours of 10 P.M. and 7 A.M. and are not being immediately unloaded shall shutdown all locomotives once the train is on the refinery property; 3) No horns, annunciators or other signaling devices are allowed unless it is an emergency. If horns and annunciators are needed for worker safety, then warning devices shall be developed, to CPUC standards, to alert the safety of plant personnel when trains are in motion without an audible warning device; 4) No horns are to be used on the mainline siding track adjacent to the refinery unless it is an emergency; 5) Any trains repairs shall be conducted only between the hours of 7 A.M. and 7 P.M.; and (6) The Plan shall include a copy of the agreement between the Applicant and UPRR demonstrating the two parties have entered into a legally binding contractual arrangement ensuring implementation of the above requirements.	Review of plan documents Site Inspection	Prior to construction permits	County Planning and Building
N-2b	Prior to issuance of the Notice to Proceed, the Applicant shall provide to the County Department of Planning and Building evidence that each unloading pump and associated electric motor can achieve a noise level no greater than 71 dBA at 50 feet, including the installation of pump enclosures, or similar devices if necessary.	Review of plan documents Site Inspection	Prior to construction permits	County Planning and Building
N-2c	Prior to issuance of the Notice to Proceed, the Applicant shall submit to the County Department of Planning and Building for review and approval a Noise Monitoring Plan that outlines procedures for regular noise monitoring of the operational aspect of the Rail Spur facility. The Plan shall specify at a minimum the duration and location of monitoring activities with and without trains present at the SMR site. The monitoring locations shall include at least one location within 100 to 200 feet of the unloading activities and a monitoring location located at the property line of the nearest noise-sensitive receptor. The noise monitoring shall be conducted within one month of rail spur operations commencing. The results of the monitoring shall be reported to the County 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 Rail Unloading and Management Plan with additional mitigation measures that would reduce noise levels below County thresholds. Additional	Review of plan documents Site Inspection	Prior to construction permits	County Planning and Building

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Mitigation Measure	Requirements	Compliance Verification		
		Method	Timing	Responsible Party
	mitigation could include, but not be limited to, additional limits on the times of unloading activities.			
PS-1	Prior to issuance of grading permits, the Applicant shall submit a Solid Waste Management Plan (SWMP) for approval by San Luis Obispo County to maintain a diversion rate of at least 50 percent of construction waste from reaching the landfill. The SWMP shall consist of information regarding, but not limited to: a. The name and contact information of who will be responsible for implementing the recycling plan; b. A brief description of the Project wastes to be generated, including types and estimated quantities of each material to be salvaged, reused, or recycled during the construction phase of this Project; c. Waste sorting/recycling and/or collection areas shall be clearly indicated on the Site Map; d. A description of the means of transportation and destination of recyclable materials and waste, and a description of where recyclable materials and waste will be sorted (whether materials will be site-separated and hauled to designated recycling or landfill facilities, or whether mixed materials will be removed from the site to be processed at a mixed waste sorting facility); e. The name of the landfill(s) where trash will be disposed of and a projected amount of material that will be landfilled; f. A description of meetings to be held between Applicant and contractor to ensure compliance with the recycling plan; g. A contingency plan shall identify an alternate location to recycle and/or stockpile construction debris in the event of local recycling facilities becoming unable to accept material (for example: all local recycling facilities reaching the maximum tons per day due to a time period of unusually large volume); h. Disposal information including quantity of material landfilled, which landfill was used, total landfill tipping fees paid, and copies of weight tickets, manifests, receipts, and invoices; i. Recycling information including quantity of material recycled, receiving party, and copies of weight tickets, manifests, receipts, and invoices; and j. Reuse and salvage information including quantities of salvage materials, storage locations if they are to be used on-site, or receiving party if resold/used off-site.	Review of SWMP Field verification	Prior to Grading Permit During Construction	County Planning and Building
PS-3a	Prior to issuance of construction permits, the Applicant shall submit to Cal Fire/County Fire for review and approval a final Fire Protection Plan for the Rail Spur Project that meets all the applicable requirements of API, NFPA, UFC, and Cal Fire/County Fire.	Review of Fire Protection Plan	Prior to Construction Permits	Cal Fire
PS-3b	Prior to notice to proceed for the rail unloading facility, the Applicant shall update the SMR	Review of	Prior to Notice	Cal Fire

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		Method	Timing	Responsible Party
	Emergency Response Plan to include the rail unloading facilities and operations.	Emergency Response Plan	to Proceed	County Planning and Building
PS-3c	Prior to notice to proceed for the rail unloading facility, the Applicant shall update the existing SMR Spill Prevention Control and Countermeasure Plan to include the rail unloading facilities and operations.	Review of SPCCP	Prior to Notice to Proceed	Cal Fire County Planning and Building
PS-3d	Prior to notice to proceed for the rail unloading facilities, the Applicant shall assure that the existing SMR fire brigade meets all the requirements outlined in Occupational Safety and Health Administration 29 CFR 1910.156, and NFPA 600 & 1081.	Review of training records	Prior to Notice to Proceed	Cal Fire
PS-3e	Prior to issuance of grading permits, the Applicant shall have an executed operational Memorandum of Understanding (MOU) (now called the Operating Plan) with Cal Fire/County Fire that includes fire brigade staffing/training requirements and Cal Fire/County Fire funding requirements. This MOU shall be reviewed and updated annually by Cal Fire and the Applicant.	Copy of signed MOU	Prior to Grading Permits	Cal Fire County Planning and Building
PS-3f	Prior to issuance of grading permits, the Applicant shall have an agreement to reimburse Cal Fire/County Fire for time spent by a qualified fire inspector to conduct the annual fire inspections at the SMR including all structures, and support facilities consistent with Cal Fire/County Fire's authority and jurisdiction. The Applicant shall reimburse all costs associated with travel time, inspections, inspection training, and documentation completion. The reimbursement rate shall be according to the most recent fee schedule adopted by the San Luis County Board of Supervisors.	Payment received by Cal Fire	Prior to Grading Permits	Cal Fire County Planning and Building
PS-3g	Prior to issuance of grading permits, the Applicant shall have an agreement to reimburse Cal Fire/County Fire for offsite training for emergency responders to railcar emergencies, such as the 40 hour course offered by Security and Emergency Response Training Center Railroad Incident Coordination and Safety (RICS) meeting Department of Homeland security, NIIMS, OSHA 29CFR 1910.120 compliance. Initial training shall be two members of the Interagency Hazardous materials Response Team, two members of the interagency Urban Search and Rescue Team, and two members annually from Cal Fire/County Fire or fire districts in San Luis Obispo that have automatic aid agreements with Cal Fire/County Fire for a total of six slots per year for the life of the project.	Copy of signed agreement	Prior to Grading Permits	Cal Fire
PS-3h	Prior to issuance of grading permits, the Applicant shall have an agreement to reimburse Cal Fire/County Fire for Fire Chief Officer attendance such as the 40 hour course offered by Security and Emergency Response Training Center; Leadership & Management of Surface Transportation Incidents. Funding shall be for two Fire Chief Officers annually for the life of the project.	Copy of signed agreement	Prior to Grading Permits	Cal Fire
PS-3i	Prior to issuance of grading permits, the Applicant shall have an agreement with Cal Fire/County	Copy of	Prior to	Cal Fire

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		Method	Timing	Responsible Party
	Fire to conduct annual emergency response scenario/field based training including Emergency Operations Center Training activations with the Applicant, Cal Fire/County Fire, UPRR, and other San Luis Obispo County First response agencies that have mutual aid agreements with Cal Fire/County Fire. These annual emergency response drills shall occur for the life of the project.	signed agreement	Grading Permits	
PS-4a	The Applicant shall provide advanced notice of all crude oil shipments to the Santa Maria Refinery, and quarterly hazardous commodity flow information documents to all first response agencies along the mainline rail routes within California that could be used by trains carrying crude oil to the Santa Maria Refinery for the life of the project. Only first response agencies that are able to receive security sensitive information as identified pursuant to Section 15.5 of Part 15 of Title 49 of the Code of Federal Regulations, shall be provided this information. The plan for providing notice to first response agencies shall be in place and verified by the County Department of Planning and Building prior to delivery of crude by rail to the Santa Maria Refinery.	Review of plan Review of notices to Agencies with quarterly information	Prior to Notice to Proceed During Operations	Cal Fire
PS-4b	Only rail cars designed to FRA, July 23, 2014 Proposed Rulemaking Option 1: PHMSA and FRA Designed Tank Car shall be allowed to unload crude oil at the Santa Maria Refinery.	Review of tank car specification sheets Site Inspection	Prior to Notice to Proceed During Operations	County Planning and Building
PS-4c	The Applicant shall provide annual funding for first response agencies along the mainline rail routes within California that could be used by the trains carrying crude oil to the Santa Maria Refinery to attend certified offsite training for emergency responders to railcar emergencies, such as the 40 hour course offered by Security and Emergency Response Training Center Railroad Incident Coordination and Safety (RICS) meeting Department of Homeland security, NIIMS, OSHA 29CFR 1910.120 compliance. The Applicant shall fund a minimum of 20 annual slots per year for the life of the project. The plan for funding the emergency response training shall be in place and verified by the Cal Fire/County Fire prior to delivery of crude by rail to the Santa Maria Refinery.	Review of plan Review of training records	Prior to Notice to Proceed During Operations	Cal Fire
PS-4d	As part of the Applicant's contract with UPRR, it shall require annual emergency responses scenario/field based training including Emergency Operations Center Training activations with local emergency response agencies along the mainline rail routes within California that could be used by the crude oil trains traveling to the Santa Maria Refinery for the life of the project. A total of four training sessions shall be conducted per year at various locations along the rail routes. This contract provision shall be in place and verified by the Cal Fire/County Fire prior to delivery of crude by rail	Review of contract Review of annual drill records	Prior to Notice to Proceed During Operations	Cal Fire

Table 8.1 Rail Spur Project Mitigation Monitoring and Reporting Requirements

Mitigation Measure	Requirements	Compliance Verification		
		Method	Timing	Responsible Party
	to the Santa Maria Refinery.			
PS-4e	As part of the Applicant's contract with UPRR, it shall require that all first response agencies along the mainline rail routes within California that could be used by trains carrying crude oil traveling to the Santa Maria Refinery be provided with a contact number that can provide real-time information in the event of an oil train derailment or accident. The information that would need to be provided would include, but not be limited to crude oil shipping papers that detail the type of crude oil, and information that can assist in the safe containment and removal of any crude oil spill. This contract provision shall be in place and verified by the Cal Fire/County Fire prior to delivery of crude by rail to the Santa Maria Refinery.	Review of contract Review of notices to Agencies with contact number	Prior to Notice to Proceed During Operations	Cal Fire
PS-5	Prior to notice to proceed for the rail unloading facility, the Applicant shall update their existing Security Plan to include the Rail Spur Project.	Review of Security Plan	Prior to Notice to Proceed	County Planning and Building
TR-1	Prior to issuance of grading permits, the Applicant shall develop a Construction Traffic Management Plan for review and approval by the County Public Works Department and CalTrans. The plans shall include at least the following items: a. A scheduling plan showing operational schedules to minimize traffic congestion during peak hours. The plan shall limit project related traffic to and from the refinery during the peak AM and PM hours. This plan shall note the schedule for completing various construction activities, and to the extent feasible avoid an overlap of the construction of the rail spur/unloading area and pipeline construction. The plan shall show the hours of operation to minimize traffic congestion during peak hours. b. Willow Road shall be use for truck deliveries to and from the refinery. c. Monitoring program for street surface conditions so that damage or debris resulting from construction of the Project can be identified and corrected by the Applicant. d. A traffic control plan showing proposed temporary traffic control measures, if any. e. A delivery schedule for construction materials, including an evaluation of the feasibility of transporting construction materials to the site by rail.	Review of Construction Traffic Management Plan	Prior to Grading Permits	County Public Works County Building and Planning CalTrans
TR-4	The Applicant shall work with UPRR to schedule unit trains serving the Santa Maria Refinery so that they do not interfere with passenger trains traveling the Coast Rail Route.	Review of Unit Train departure times and Amtrak departure and delay	During Operations	County Building and Planning

Table 8.1 Rail Spur Project Mitigation Monitoring and Reporting Requirements

Mitigation Measure	Requirements	Compliance Verification		
		Method	Timing	Responsible Party
		times		
WR-1	During construction, oil and other chemical spills shall be contained and cleaned according to measures outlined in the California Stormwater Quality Association Best Management Practice Handbook. Best Management Practices would likely include, but not be limited, to the following: a. Ensure minor spill containment and clean up equipment is readily available in areas of demolition, construction, and operations. b. Store petroleum products in covered areas with secondary containment dikes. c. If vehicle maintenance and fueling occur onsite, use a designated area and/or secondary containment, located away from drainage courses, to prevent the run-on of storm water and the runoff of spills. d. Regularly inspect onsite vehicles and equipment for leaks, and repair immediately. e. Always use secondary containment, such as a drain pan or drop cloth, to catch spills or leaks when removing or changing fluids. f. Use absorbent materials on small spills.	Review and approve the Storm Water Pollution Prevention Plans	Prior to issuance of grading permit	RWQCB / Department of Planning and Building
WR-2	Prior to the County's issuance of a Notice to Proceed, the existing Santa Maria Refinery Spill Prevention Control and Countermeasure Plan (SPCCP) shall be amended to reflect operation of the rail car unloading facility and associated oil pipeline. See mitigation measure BIO-7 for the detailed SPCCP requirements for the rail unloading operations.	Review and approval of SPCCP	Prior to crude oil delivery	Department of Planning and Building CDFW
WR-6	If possible, the Applicant shall use recycled water for construction and operational activities to reduce impacts to local groundwater supplies. Recycled water could be generated onsite and/or secured via truck transport or water pipeline from the South San Luis Obispo County Sanitation District.	Secure onsite or offsite recycled water source	Prior to or during operations	Department of Planning and Building

9.0 Vertical Coastal Access Assessment

The Vertical Coastal Access (Coastal Access Project) assessment includes various coastal access options through the Santa Maria Refinery (SMR) site to the California Department of Parks and Recreation Oceano Dunes State Vehicular Recreation Area (ODSVRA). The location of the vertical coastal access is shown in Figure 9-1.

Consistent with the California Constitution and the California Coastal Act, the County's Coastal Zone Land Use Ordinance (CZLUO) protects public access to the coast by requiring development occurring between the first public road and the tidelands to provide coastal access to the public. (23.04.420) Vertical access (following vertically from the first public road to the tidelands) is required of new development in rural areas where no dedicated public access exists within one mile or if the site has more than one mile of coastal frontage (23.04.420.d.ii.).

As a condition of approval of the Phillips 66 Throughput Increase Project (approved by the County Board of Supervisors in February 2013), the permit conditions require Phillips 66 to provide vertical public access from State Route 1 to their western property line to comply with the coastal access provisions of the CZLUO consistent with the standards of Section 23.04.420 of the Coastal Zone Land Use Ordinance, including provisions that a vertical right of access be provided for each mile of coastal frontage, unless that access would be inconsistent with public safety, military security needs or the protection of fragile coastal resources.

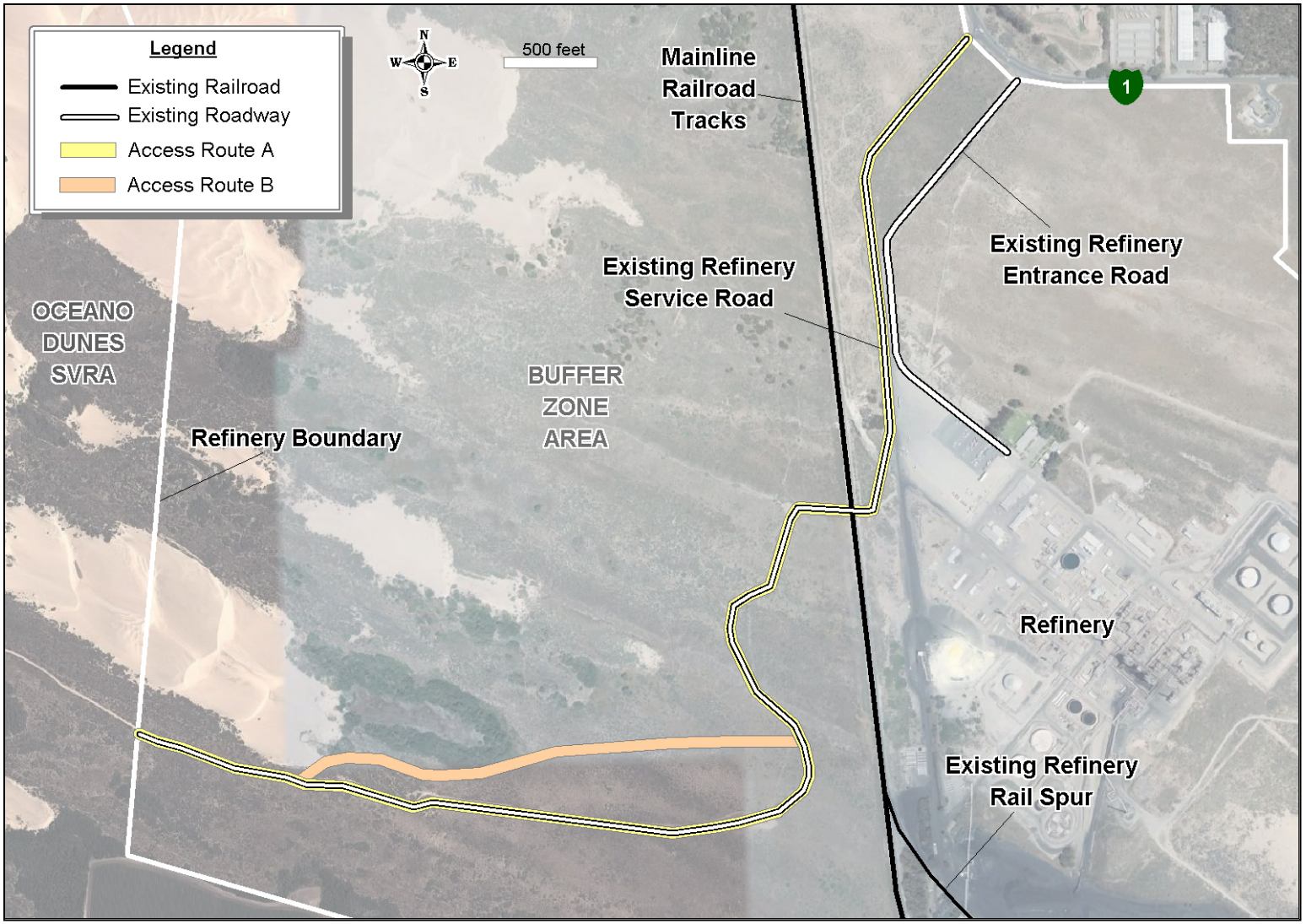
In March 2015 the County issued a final notice to proceed for the Throughput Project. As part of the requirements for a notice to proceed, Phillips 66 provided to the County an Irrevocable Offer to Dedicate Vertical Public Access Easement.

As discussed in during the Planning Commission Hearing on December 13, 2012, the steps for implementing the coastal access condition (Condition 17) would involve Phillips 66 submitting an offer to dedicate prior to notice to proceed for the Throughput Increase Project. In addition, Phillips 66 could submit documentation demonstrating that coastal access at the SMR is inconsistent with the requirements of Section 23.04.420 of the Coastal Zone Land Use Ordinance.

Phillips 66 submitted to the County a report that claimed coastal access at the SMR site was inconsistent with the requirements of Section 23.04.420 of the Coastal Zone Land Use Ordinance. Although the provision of coastal access is not integral to, and has independent utility from, the Rail Spur Project, the County determined that it was appropriate to include an independent analysis of the potential environmental impacts of the accessway to assist in determining if a vertical coastal accessway at the SMR would be consistent with the requirements of Section 23.04.420 of the Coastal Zone Land Use Ordinance.

The County determined that a programmatic assessment of various access options was the best way to provide information that would assist in making the determination of whether coastal access at the SMR site is consistent with the provision of Section 23.04.420 of the Coastal Zone Land Use Ordinance.

Figure 9-1 Possible Locations for Coastal Access Routes at the SMR Property



Source: Adapted from Arcadis 2013

This chapter of the EIR contains a programmatic assessment of the potential environmental impacts of various coastal access options for the SMR site, whether required by conditions of approval of the Throughput Project or the Rail Spur Project. This assessment will be used by the County to assist in determining:

1. Whether coastal access is appropriate for the SMR site consistent with the standards of Section 23.04.420 of the Coastal Zone Land Use Ordinance; and
2. What intensity and type of coastal access is appropriate at the SMR site.

If the County finds that coastal access for this location is consistent with the requirements of Section 23.04.420 of the Coastal Zone Land Use Ordinance, then a formal application would need to be submitted that details the type and design of the proposed access. This application would be subject to additional environmental review and an appropriate environmental determination would be required prior to final approval. An additional Coastal Development Permit would also be required based on the location of coastal access and resources found in the vicinity of the final proposed alignment.

The Coastal Zone Land Use Ordinance requires "vertical" access, defined as access from the first public road to the shore, or perpendicular to the shore. The first public road in the vicinity of the SMR site is State Route 1. The SMR property extends west from State Route 1 to the western property line shared with the ODSVRA. In addition coastal access would have to cross the Union Pacific Railroad (UPRR) Right-of-Way. In order to gain coastal access from the SMR property, access would also be required across the UPRR property as well as California Department of Parks and Recreation property.

As discussed above, the purpose of this analysis is to assist the County in determining whether coastal access is appropriate for the SMR site consistent with the standards of Section 23.04.420 of the Coastal Zone Land Use Ordinance, and if so, then what intensity and type of coastal access is appropriate at the SMR site. The purpose of this section is not to determine the appropriate location for a permanent ODSVRA access point. Existing or future ODSVRA access points are an issue for the California Department of Parks and Recreation (CDPR) and are specifically addressed in their Coastal Development Permit (CDP) issued by the California Coastal Commission (CCC) in 1982. As such, there is no connection between CDPR's CDP and the coastal access requirements associated with this project; therefore, this section only addresses the impacts associated with various options for coastal access from the SMR property. The assessment does not address any of the environmental impacts or benefits that might be associated with a separate governmental agency (CDPR) relocating the existing ODSVRA access point (under yet a separate land use permit (i.e., the 1982 CDP)) to the SMR property or to some other location at some point in the future.

9.1 Coastal Access Regulatory Background

The majority of the SMR property occurs within the Coastal Zone and is subject to the California Coastal Act and the County's Coastal Zone Land Use Ordinance enacted to ensure compliance with the California Coastal Act. The land use ordinance comprises Title 23 of the County Code.

Within the ordinance, Section 23.04.420 addresses the requirement for certain projects and project sites to provide public coastal access.

Subsection 23.04.420(c) addresses when new access is required, and specifies that public access from the nearest public roadway to the shoreline and along the coast shall be provided in new development projects except where:

1. Access would be inconsistent with public safety, military security needs or the protection of fragile coastal resources; or
2. The site already satisfies the provisions of subsection d of the section; or
3. Agriculture would be adversely affected; or
4. The proposed new development is any of the following:
    i. Replacement of any structure pursuant to the provisions of Section 30610(g) of the Coastal Act; or
    ii. The demolition and reconstruction of a single family residence; or
    iii. Improvements to any structure that do not change the intensity of its use, or increase either the floor area, height or bulk of the structure by more than 10 percent, which do not block or impede public access and do not result in additional seaward encroachment by the structure; or
    iv. The reconstruction or repair of any seawall; or
    v. Any repair or maintenance activity excluded from obtaining a land use permit.

Subsection d(1)(ii) specifies that vertical access (access between the first public road to the shore, or perpendicular to the shore) is required in rural areas where no dedicated or public access exists within one mile, or if the site has more than one mile of coastal frontage, an accessway shall be provided for each mile of frontage.

Subsection d(2) specifies that vertical access dedication shall be a minimum width of five feet in urban areas and 10 feet in rural areas.

The recently approved Throughput Increase Project at the SMR included a site-specific Condition of Approval (COA) addressing coastal access. Development Plan/Coastal Development Permit DRC2008-00146 (Throughput) includes the following condition of approval (COA #17):

"Prior to issuance of the Notice to Proceed authorizing an increase in Refinery throughput, the applicant shall comply with Section 23.04.420 – Coastal Access Required. Construction of improvements associated with vertical public access (if required) shall occur within 10 years of the effective date of this permit (including any required Coastal Development Permit to authorize such construction) or at the time of any subsequent use permit approved at the project site, whichever occurs first. The approximate location of the vertical access required by this condition of approval shall be located within or immediately adjacent to the existing maintenance road as shown in Exhibit D – Project Graphic (Coastal Access Location Map 1 and 2)."

9.2 Existing Coastal Access in the Vicinity of the Proposed Project

Figure 9-2 shows current public access routes to the beach in the vicinity of the SMR property. The nearest access is the Oso Flaco Lake Natural Area located approximately 0.73 miles south of the SMR property.

This area is part of the ODSVRA. There are at least four formal public coastal access points in the immediate SMR area listed below (in order of distance from the SMR property):

- Oso Flaco Lake Natural Area – Approximately 0.73 miles (South)
- Pier Avenue – Approximately 3.5 miles (North)
- Grand Avenue – Approximately 4.5 miles (North)
- Rancho Guadalupe Dunes County Park – Approximately 5.5 miles (South)

9.3 Coastal Access Project Description

The coastal access would be located in the southwestern corner of San Luis Obispo County, approximately one mile southwest of State Route 1, and approximately 3.5 miles west of the community of Nipomo, in the South County Coastal planning area.

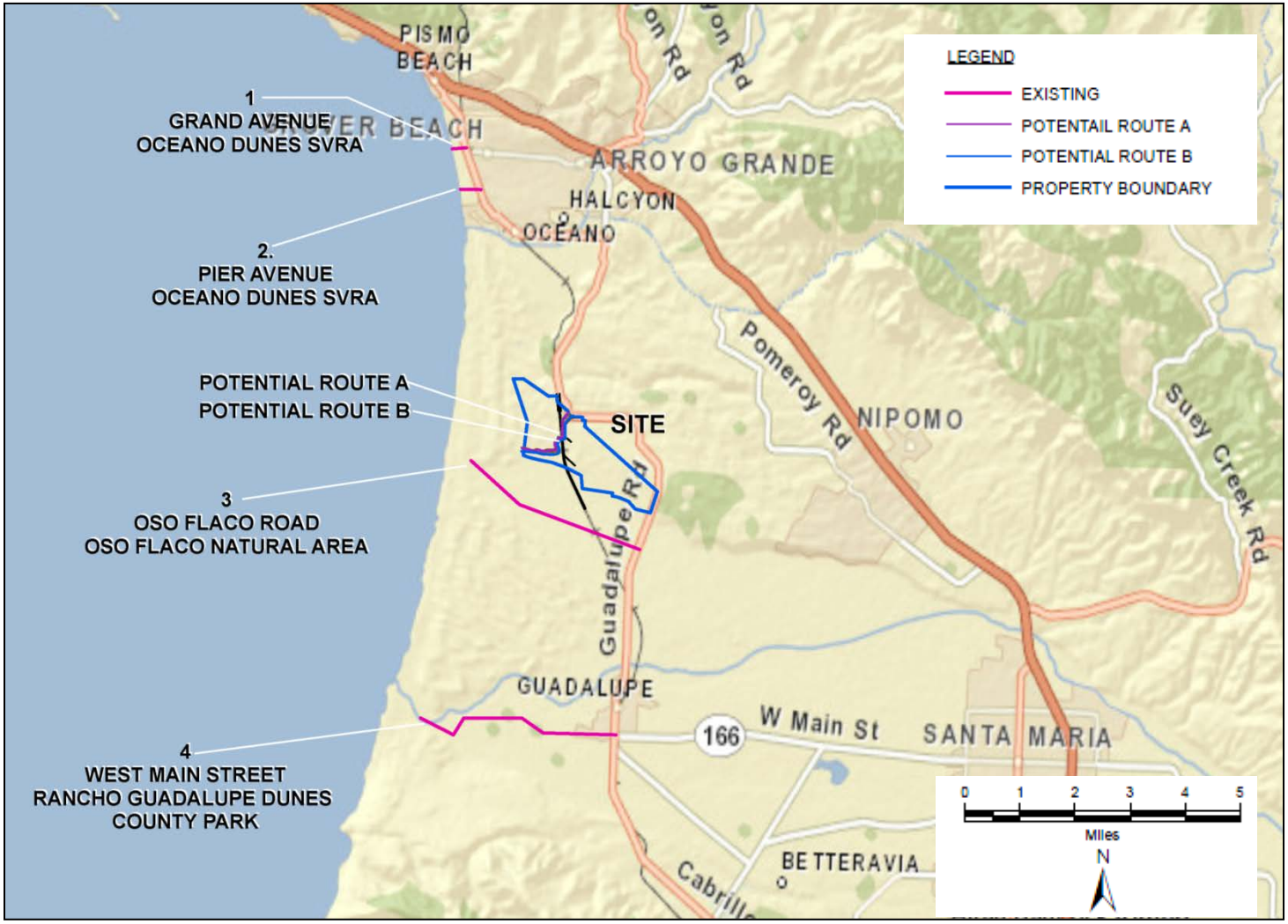
The recently approved Throughput Increase Project at the SMR included a site-specific COA that required that the coastal access "*be located within or immediately adjacent to the existing maintenance road*". This access route alignment would follow an existing refinery truck entrance road from State Route 1 to a service road that is used by Phillips 66 to maintain an outfall pipeline.

This is a practical alignment in that it follows the dune contours to provide a relatively gently sloping route, generally avoiding the steep unstable dune faces and the low-lying surface water features (e.g., Jack Lake, Lettuce Lake) and wetlands (dune slacks) throughout the area. This alignment would be approximately 2 miles in length from State Route 1 to the western SMR property line shared with the ODSVRA. The location of the existing refinery service road is shown in Figure 9-1.

At the outlet of the route alignment across the SMR property, the public users would reach the ODSVRA, and would be approximately 1.5 miles from the ocean. It is assumed that users would continue to follow the existing service road to the beach and not short-cut through the vegetated dune areas and the large dune wetland area immediately west of the SMR property. The location and design of the access across ODSVRA would ultimately have to be determined by the California Department of Parks and Recreation.

No formal design for coastal access has been developed by Phillips 66 or the County. As such, the EIR had to develop conceptual designs for various coastal access options that have been used to assess the range of environmental impacts that could occur with development of coastal access at the SMR.

Figure 9-2 Locations of Existing Coastal Access Points Near Project Site



Source: Arcadis 2013

If and when a final design is developed for a coastal access additional environmental review may be required depending upon the type of access, and the extent of improvements that would be required.

Three possible options for use of this service road and the adjacent area were identified, which included the following:

- Bicycle and Pedestrian Access,
- Motor Vehicle, Bicycle, and Pedestrian Access, and
- Docent Led Access for Pedestrians Only.

These three options were chosen since they represent the full range of intensity for the coastal access. A general description of each of these access options is provided below.

9.3.1 Bicycle and Pedestrian Access

The location of the coastal access route would be an existing refinery service road (see Figure 9-2). The first 2,300 feet of the service road is paved. The remainder of the service road is dirt. The paved portion of the service road is used for trucks entering and exiting the SMR, including the hauling of coke in trucks from the refinery. The dirt portion of the service road is used for inspection and maintenance of the refinery ocean outfall. As a result, the refinery service road requires continual maintenance to deal with blowing sand and other natural conditions that degrade road quality. The road is regularly scraped and graded to maintain its functionality. The paved portion of the service road passes along the western edge of large parking/equipment storage area just before it turns to cross the Union Pacific mainline railroad tracks. Currently there is no separation of the road from the large parking/equipment storage area.

For public safety reasons, it may be prudent to separate the existing refinery service road from the public coastal access bicycle and pedestrian path. This would help to protect the public from potential safety issues associated with encountering refinery equipment using the road (e.g., trucks, excavators, etc.) In addition, sharing of the refinery service road could raise liability issues associated with accidents between refinery vehicles and the public, and could hinder the ability of a public agency or private association to accept liability resulting from public use of the accessway (CZLUO Section 23.04.420 (e)(3). This provision of the CZLUO requires a public agency or private association, approved by the County, to agree to accept responsibility for maintenance of the accessway and any liability resulting from public use of the accessway prior to opening the access for public use.

The conceptual design for the bicycle and pedestrian access would provide for separate public and refinery service road access. The alignment of a potential bicycle and pedestrian access could follow the existing refinery service road, but would be separated by a K-rail, or some other separating structure, to limit interaction between the public and refinery traffic on the service road. With this conceptual design a new disturbance/construction corridor would be needed to accommodate the bicycle and pedestrian path. In addition fencing would need to be installed

along the portion of the service road where it passes through the large parking/equipment storage area to separate the public access from the refinery operations.

The route for the bicycle and pedestrian path would require users to cross the active main (Class I) railroad lines. The current refinery service road has an "at-grade" crossing of the railroad tracks, and is classified as a private crossing. The rail road right-of-way is owned by Union Pacific Railroad (UPRR), and an agreement with UPRR would be needed to cross their property.

The California Public Utilities Commission (CPUC) has exclusive jurisdiction over railroad crossings in California (Public Utilities Code §§1201-1202). If a bicycle and pedestrian path was to use this railroad crossing, the classification of the crossing would change from private to public, and a permit would be required from the CPUC.

UPRR has stated that they would oppose any application to the CPUC that would change the existing at-grade crossing from private to public (see NOP letter from Randolph, Creger & Chalfant LLP in Appendix H). The CPUC Policies and Procedures require that public railroad crossings use a separated grade, unless it can be shown why a separation of grades is not practicable (CPUC Policies and Procedures, Rule 3.7). In discussion with CPUC staff, they have stated that any railroad crossings that changes from private to public use must have a separation of grade (Personnel Communication with CPUC staff 2013).

Therefore, it is likely that bicycle and pedestrian path at this location would require grade separation for the crossing of the Class I railroad tracks. This would likely require the construction of an elevated crossing over the railroad tracks for bicycles and pedestrians or an under-pass. Construction of an under-pass would require a substantial amount of grading area in the vicinity of the railroad crossing for excavating and shoring up the under-pass. There would also be safety issues associated with constructing an underpass beneath the active rail lines. The larger construction footprint for the underpass would result in increased impacts to ESHA habitat. For these reasons, the use of an underpass has been dropped from further consideration as part of this programmatic assessment.

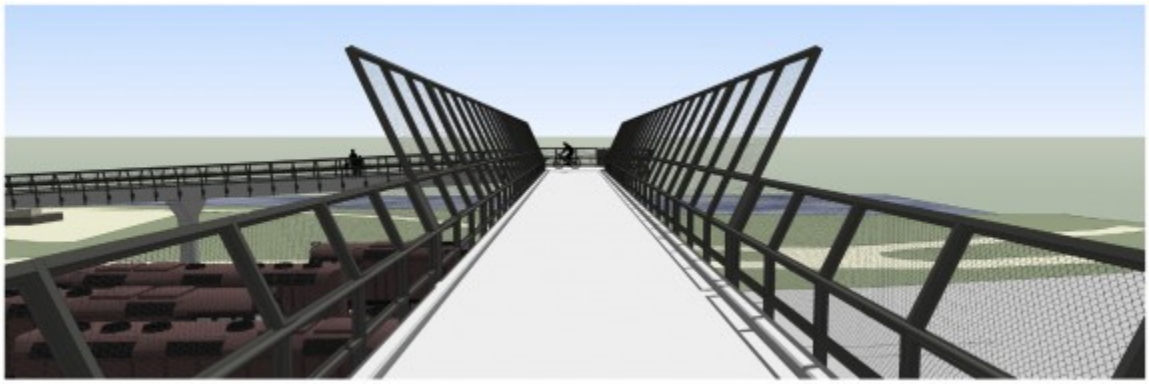
Given the likely requirement of a grade separated crossing of the railroad tracks, this assessment has evaluated the impacts of an elevated walkway over the railroad tracks for bicycles and pedestrians. The current refinery service road could retain the at-grade crossing since it would remain a private crossing. It is possible that gates would need to be installed on either side of the service road crossing to prevent the public from using the private crossing.

The conceptual route for a bicycle and pedestrian path is shown in Figure 9-2. The route would follow the existing refinery service road, with a possible alternative alignment for a small portion of the route. The conceptual route would be approximately two miles in length. The access would include a paved pedestrian and bicycle path that would be about 14 feet wide, and would include two bike lanes plus a pedestrian lane. The current refinery service road is 10 to 12 feet wide. Together, the public access path and the refiner service road would be about 30 feet wide. The fourteen foot width was based upon the American Association of State Highway and Transportation Officials (AASHTO) Guidelines for shared multi-use paths in high use areas.

The elevated walkway over the railroad tracks would have to meet the BNSF Railway/Union Pacific Railroad Guidelines for Railroad Grade Separation Projects. The elevated crossing would have to be about 25-feet high to meet the 23'-4" height above the top of rail specified in the Union Pacific Guidelines. Figure 9-3 shows a picture of a public bike and pedestrian crossing that meets these guidelines. The elevated walkway would be 14-feet wide to match the ground level bicycle and pedestrian path width. This is the AASHTO Bicycle Facilities Guide recommended width for overpasses where bicycle use is anticipated.

The only current parking area along the service road is at the far southern edge of road about one-mile along the service road from State Route 1, west of the railroad tracks. This dirt pad is used by the refinery to store tractors and trailers used for road maintenance. Use of this area for parking would not be feasible with the bicycle and pedestrian option since cars would not be able to access this existing dirt lot since it is west of the railroad tracks. Therefore, a parking lot would need to be built near the intersection of the refinery service road and State Route 1 on refinery property. One acre would be needed to accommodate 75 to 100 parking spaces. It is assumed that the parking lot would be paved and fenced to prevent access to the refinery property. Construction of the coastal access trail, railroad overpass, and the parking lot would be expected to take three to four months to complete.

Figure 9-3 Picture of Separated Grade Bicycle and Pedestrian Crossing



Source: Pedestrian and bicycle overpass over Elliott Avenue West and the Burlington Northern Santa Fe (BNSF) railroad tracks at West Thomas Street (Seattle Department of Transportation).

9.3.2 Motor Vehicle, Bicycle and Pedestrian Access

Construction of a motor vehicle, bicycle and pedestrian access would allow for access to the ODSVRA. The question of the best manner and location for access and staging for ODSVRA has not been completely resolved. It is a complicated question, and one that is informed by a long and involved permitting history and its related requirements. The question of access to ODSVRA may be resolved in the relatively near future (including in relation to an upcoming Habitat Conservation Plan for ODSVRA, ongoing Californian Coastal Commission (CCC) condition compliance and review efforts pursuant to CSPR CDP 4-82-300, and State Parks' current CDP application associated with dust control) (CCC 2013). Until the CDPR resolves the long standing issues associated with access and staging for the ODSVRA, the usefulness of this

option would be uncertain. Figure 9-4 shows the where the SMR coastal access route would enter the ODSVRA.

This coastal access option would involve the construction of an access road for motor vehicles, bicycles, and pedestrians. This option and route was addressed in the 2006 Condor Study prepared for the California Department of Parks and Recreation. The Condor study evaluated alternative access routes for the ODSVRA. The basic design of the road from the Condor Study has been used in this analysis.

With this option the existing refinery service road would be used as the coastal access (see Figure 9-2). The service road is paved up to the area just before it crosses the Union Pacific mainline railroad tracks. The remainder of the existing road is dirt. The road would be widened to about 32-feet to accommodate vehicle traffic in both directions as well as a walking path.

Figure 9-5 shows the road layout for this access option. Fencing would need to be installed along the portion of the service road where it passes through the large parking/equipment storage area to separate the public access from the refinery operations.

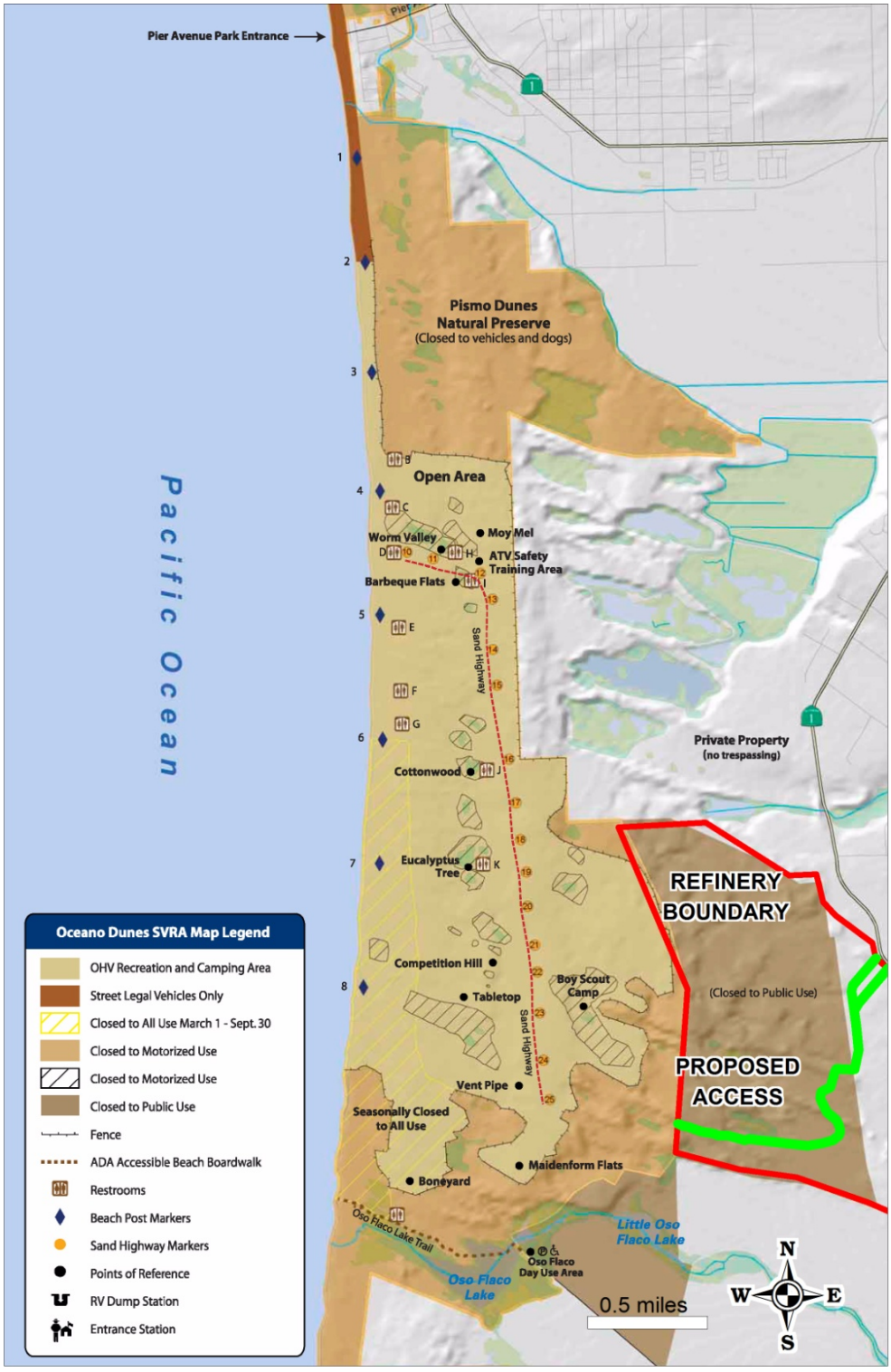
As discussed for the bicycle and pedestrian option, a grade-separated crossing of the railroad tracks would likely be needed. The current refinery service road has an "at-grade" crossing of the railroad tracks, and is classified as a private crossing.

The California Public Utilities Commission (CPUC) has exclusive jurisdiction over railroad crossings in California (Public Utilities Code §§1201-1202). If this railroad crossing was to be used for public vehicle access, the classification of the crossing would change from private to public, and a permit would be required from the CPUC. The railroad right-of-way is owned by Union Pacific Railroad (UPRR), and an agreement with UPRR would be needed to cross their property.

It is likely this option would require the construction of an over-pass or under-pass of the railroad right-of-way. Any crossing would have to meet the BNSF Railway/Union Pacific Railroad Guidelines for Railroad Grade Separation Projects. An elevated crossing would have to be about 25-feet high to meet the 23'-4" height above the top of rail specified in the Union Pacific Guidelines. Construction of an under-pass would require a substantial amount of grading area in the vicinity of the railroad crossing for excavating and shoring up the under-pass. There would also be safety issues associated with constructing an underpass beneath the active rail lines. The larger construction footprint for the underpass would result in increase impacts to ESHA habitat. For these reasons, the use of an underpass has been dropped from further consideration as part of this programmatic assessment.

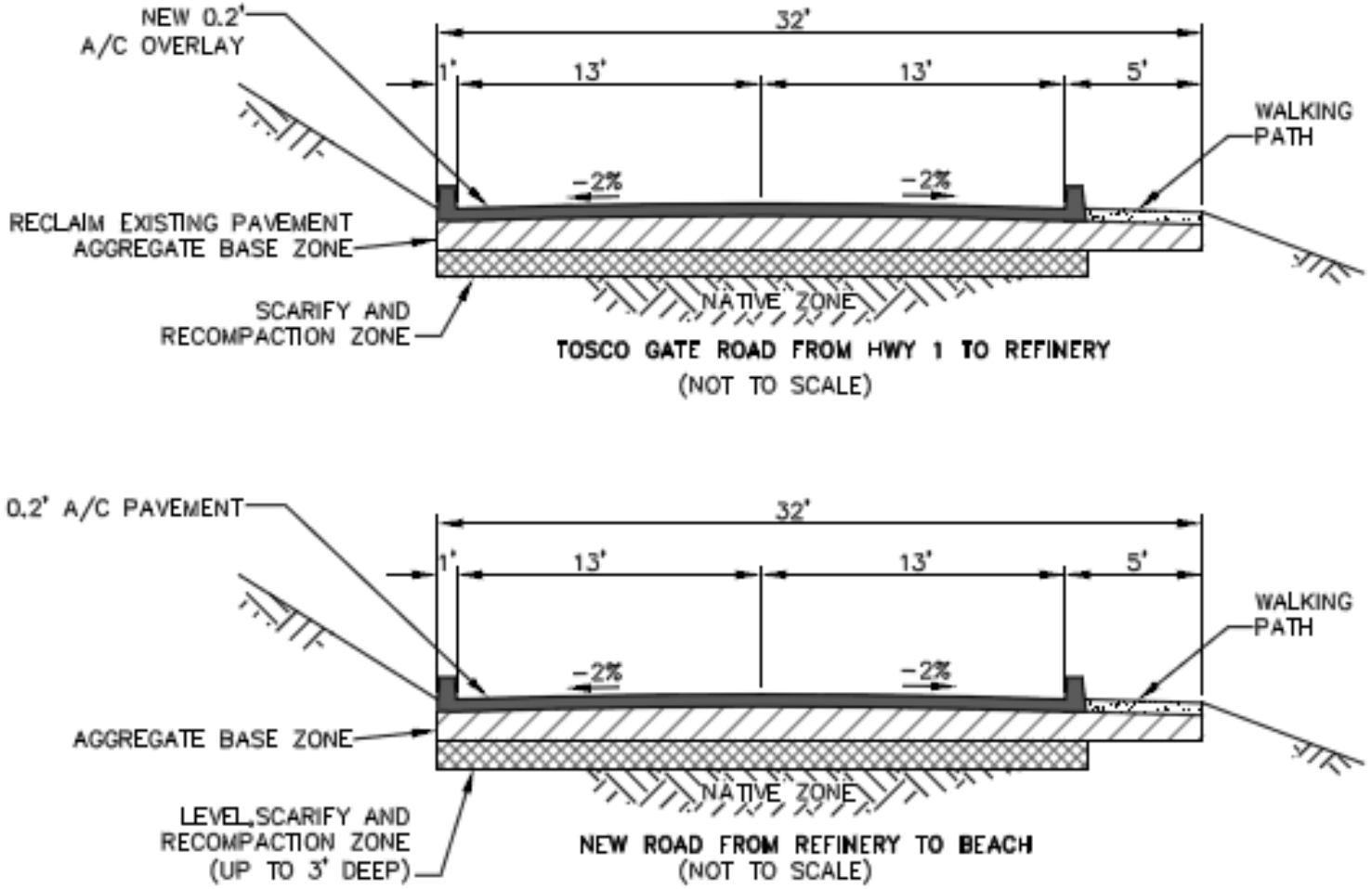
The width of the elevated crossing would need to be a minimum of 32-feet to accommodate vehicles and pedestrians. The Condor Study assumed an at-grade crossing for the rail road tracks, but based upon recent discussions with the CPUC and UPRR this is likely not a feasible option. The need for an elevated or below ground crossing of the railroad tracks would likely make vehicle access via this route infeasible due to the costs of constructing a grade separated vehicle crossing. The San Luis Obispo Coastal Plan Policies, Appendix F, identifies the construction of an overpass as a disadvantage of this location for accessing the ODSVRA.

Figure 9-4 Location of SMR Coastal Access Route Relative to ODSVRA Site



Source: Adapted from CDPR ODSVRA Park Map 2013.

Figure 9-5 Road Layout for Vehicle Access Option



Source: Condor 2006.

This document estimates the costs of the overpass at over one million dollars (SLO Coastal Plan Policies, Appendix F revised 2007).

The paved road would end at the top of the dunes on ODSVRA property, where a 25,000 square foot parking lot would be constructed. To reach the beach, people would need to drive vehicles capable of driving on steep unvegetated dunes, or walk. The distance to the beach from the parking lot was estimated to be about 7,500 feet (Condor 2006).

The existing refinery service road is used for ongoing refinery operations. The paved section of the road is used for trucks entering and exiting the SMR. This option would not provide a separate access road for refinery operations.

The use of this road for public access could result in conflicts with refinery operations, which could have potential safety issues associated with encountering refinery equipment using the public access road (e.g., trucks, excavators, etc.). Therefore, there is the potential that when the road is needed to be used for refinery operations the road would have to be closed to public access.

Sharing of the public access road with refinery operations could raise liability issues associated with accidents between refinery vehicles and the public, and could hinder the ability of a public agency or private association to accept liability resulting from public use of the accessway (CZLUO Section 23.04.420 (e)(3). This provision of the CZLUO requires a public agency or private association, approved by the County, to agree to accept responsibility for maintenance of the accessway and any liability resulting from public use of the accessway prior to opening the access for public use. The option of vehicle access may also require an amend to the South County Coastal Area Plan, which limits traffic on the current access road to only authorized vehicles use for maintenance purposes, except for special off-road, which may be permitted if the lease between State Parks and Phillips 66 is renegotiated.

Construction of the coastal access road, railroad overpass, and the parking lot would be expected to take six to 12 months to complete.

9.3.3 Docent-Led Access

This option would involve limited public access via docent-led access (i.e., supervised access). This type of public access is in use at a number of areas including property owned by Pacific Gas & Electric (PG&E) at the Diablo Canyon property, and University of San Cruz Younger Lagoon Reserve Beach. The extent of docent-led access would need to be established but could range from weekly to monthly, and could include both pedestrian and bicycle led access.

The docent-led access would use the existing SMR service road to access the ODSVRA property. The docent-led access would still need to cross the UPRR mainline tracks. It is uncertain whether docent-led access would constitute a change in the classification of the railroad crossing from private to public, and if a grade-separated crossing would be needed for this level of access. If the public access was owned, maintained, and operated by a governmental

agency or another private third party other than Phillips 66, then it is likely that the crossing classification would be changed to public.

The California Public Utilities Commission (CPUC) has exclusive jurisdiction over railroad crossings in California (Public Utilities Code §§1201-1202). If this railroad crossing was to be used for docent-led access the classification of the crossing may change from private to public, and a permit could be required from the CPUC. The CPUC Policies and Procedures require that public railroad crossings use a separated grade, unless it can be shown why a separation of grades is not practicable (CPUC Policies and Procedures, Rule 3.7). The rail road right-of-way is owned by Union Pacific Railroad (UPRR), and an agreement with UPRR would be needed to cross their property with docent-led access.

For the purposes of this analysis it has been assumed that a grade-separated crossing would not be needed for docent-led access, but that the railroad crossing would be upgraded to include automatic signals and gates to project the docent-led groups from crossing the tracks when a train is approaching. Other than the installation of automatic signal and gates, no improvements would be needed to the dirt portion of the SMR service road. This assumption was made due to the fact that this would be a limited form of access that would be controlled by a docent. However, it is uncertain if a grade-separated crossing of the Union Pacific railroad tracks would be needed for this level of access. If the CPUC considers the docent-led access to be a public crossing, then it is possible that a grade-separated crossing could be required.

Given the limited amount of public access with docent-led access, it may be possible for Phillip 66 to provide a limited number of parking spots in the large equipment storage/parking area adjacent to the start of the dirt portion of the service road, located east of the railroad tracks. This would allow the scheduled guests for the docent-led access to drive and park on SMR property. If this area is not a feasible location for parking, then a small parking area (one-quarter of an acre) would need to be built at the end of the service road near State Route 1, and a pedestrian trail would need to be constructed adjacent to the existing paved refinery service road and a k-rail would need to be installed to spate the road from the pedestrian trail. This pedestrian trail would be separated from the service road by a K-rail or some other type of barrier, to protect pedestrians and bicyclists from refinery traffic.

Docent-Led access could be scheduled around refinery maintenance activities that require the use of the service road. This would eliminate any conflicts between the access and refinery operations.

About one to two months would be needed to construct the parking lot, access trail along the paved portion of the SMR service road, and install the automatic signals and gates at the rail road crossing.

9.4 Programmatic Environmental Assessment

This section provides a programmatic level environmental assessment of each of the coastal access options discussed above. The assessment discusses the potential impacts in key issues areas that could occur with the construction and operation of the various coastal access options discussed above. The environmental assessment will be used by the County of San Luis Obispo

to determine if a coastal accessway at this site is consistent with the requirements of CZLUO Section 23.04.420, and what type and level of intensity of access is appropriate for this specific location. In assessing the potential significance of impacts the threshold provided in Chapter 4 of the EIR have been used.

Since no formal design for the coastal access route has been developed the impacts discussed in this section are preliminary and could change once a final design has been developed.

9.4.1 Aesthetic and Visual Resources

9.4.1.1 Environmental Setting

The visual context for the coastal access project is generally the same as that for the Rail Spur Project in terms of the diversity of uses in the viewshed (see Section 4.1.1 for environmental setting discussion of Rail Spur Project). The scenic quality of the area is due to the natural coastal resources such as the dunes, native vegetative landcover, the Pacific Ocean, and the coastline. The miles of agricultural fields to the south add to the visual quality. At the same time, the visual character of the area is influenced by industrial uses such as the SMR, which dominates certain views, as well as the less intensive industrial businesses between the SMR and State Route 1.

The proposed coastal access alignments would traverse the dune scrub "buffer zone" between the refinery and the ODSVRA (see Figure 9-6).

Figure 9-6 Looking west from the refinery entrance road toward the potential coastal access area in the distance

Source: Carr 2013

By design, this open space has no development other than an unpaved service road used for access to the SMR outfall pipeline to the west. Portions of the SMR can be seen throughout much of the buffer zone and the coastal access project site. However the visual quality of the area remains very high, due the undulating topography, natural vegetative patterns and the abundance of coastal-specific natural resources. Currently, no public access is allowed in the buffer zone and the coastal access project site.

Two potential coastal access alignments are proposed from State Route 1 to the ODSVRA (see Figure 9-2). Both of these access routes would generally follow the existing refinery truck entrance road from State Route 1, cross the Union Pacific mainline railroad tracks, and then follow the existing outfall service road. The alignment of the access routes would be located within or immediately adjacent to the existing maintenance road. This existing road alignment is generally sympathetic to the dune landforms, avoiding the steeper dune faces and the surface water features nearby. Route A would closely follow the service road while Route B would shift to the north for a short segment to avoid sensitive plant species. Both access routes would be approximately 2 miles in length and would connect to the eastern perimeter of the ODSVRA approximately 1.5 miles from the shore.

9.4.1.2 Coastal Access Project Impacts

Consideration of the Coastal Access Project options reveals several issues related to the visual quality of the site and surroundings. In general, the project would provide increased public access to high quality scenic coastal resources. Meandering through the back dunes and coastal scrub, then arriving to sweeping vistas of the coastline and Pacific Ocean would be a memorable experience. Because the access route would generally follow the existing road along the lower areas between the dunes, visibility from off-site locations to the route would be minimal. Impacts associated with each of the coastal access options are discussed below.

Bicycle and Pedestrian Access Option
A new pedestrian bridge would be required over the UPRR tracks. This structure would be seen in the industrial context of the SMR, truck entrance road and railroad tracks. As a result, if designed to complement the coastal setting, a pedestrian/bicycle bridge would not look out of place at this location.

The appropriate visual scale, form, materials, colors and finishes of all project features would have an effect on visual quality and compatibility. In order to minimize impacts, the ultimate design would require a careful response to the sensitivity of this unique setting, in terms of visual quality and other valuable resources.

In addition, project elements which may result in the greatest potential for adverse visual impacts would likely be:

- The public parking area at the access ‘trailhead” near State Route 1.
- The design of the pedestrian bridge over the railroad tracks.
- Visible grading to accommodate a widened service road.

- Visible grading for Route B where it diverges from the existing service road.
- Possible fencing or other built elements required to separate the public from the service road and other SMR operations.
- Security fencing associated with the SMR and the railroad tracks.

In order to ensure compatibility of the bicycle/pedestrian coastal access option with the visual context and to reduce negative visual effects, the following measures are recommended:

V-1 As part of coastal access route option selection, preliminary and final design should be based on recommendations of a multi-disciplinary team, representing expertise in all applicable resource areas, including visual quality. A qualified landscape architect should be a member of the multi-disciplinary team.

V-2 A Visual Impact Assessment should be prepared as part of the environmental review for the subsequent capital coastal access project, and completed prior to final design.

V-3 The aesthetic implications of all subsequent project features and program elements should be considered and addressed, including but not limited to fencing, structures, parking areas, signage, lighting, surfaces, etc.

V-4 All newly disturbed areas should be graded to mimic the adjacent natural dune landform.

V-5 All newly disturbed areas should be revegetated to match the adjacent natural landcover.

Because specific design information is not available, post-mitigation residual impacts can't be defined. The mitigation measures above, if implemented would substantially reduce the potential for adverse visual impacts of the bicycle/pedestrian coastal access option on the proposed alignments. However, some of the measures listed above rely on a collaborative process which would attempt to balance the protection of numerous sensitive resources. As a result, it is not possible at this time to determine what the outcome of that collaborative process or the resulting proposed design might be. Subsequent assessment of a proposed design would identify any potential visual impacts and would verify which, if any of the mitigation measures recommended in this report could be implemented.

Motor Vehicle, Bicycle and Pedestrian Access

The impacts for this option would be similar to that described above for the bicycle/pedestrian option. All of the impacts and suggested mitigation measures for the bicycle/pedestrian option would apply to this option.

This option would require that a new motor vehicle bridge be constructed over the UPRR tracks. This would be a large overpass, similar to other road overpasses over railroad tracks. While this structure would be seen in the industrial context of the SMR, it would affect the overall visual quality of the area due to the size of the structure. It is likely that this type of structure could not be designed to complement the coastal setting, and would look out of place at this location, and would be considered significant visual impact. In addition, project elements unique to this option which may result in the greatest potential for adverse visual impacts would include the public

parking area at the top of the dunes on the ODSVRA property, and vehicles traveling along the new access road.

Because specific design information is not available, post-mitigation residual impacts can't be defined. However, it is likely that the new overpass of the railroad tracks would be a significant visual impact. The mitigation measures identified for the bicycle/pedestrian option, if implemented, would reduce the severity of the visual impacts of the motor vehicle coastal access option on the proposed alignments. However, some of the measures listed above rely on a collaborative process which would attempt to balance the protection of numerous sensitive resources. As a result, it is not possible at this time to determine what the outcome of that collaborative process or the resulting proposed design might be. Subsequent assessment of a proposed design would identify any potential visual impacts and would verify which, if any of the mitigation measures recommended in this report could be implemented.

Docent-Led Option
This option would have minimal impacts to visual quality and character since minimal improvements to the existing service road would be required. The installation of the automatic signals and gates at the railroad crossing would not be visible to the surrounding areas. If a new parking lot needed to be installed at the access trail head near State Route 1, this could change the visual quality of this area. However, this could be mitigated via appropriate landscaping. If parking were available at the SMR for the docent-led access then this option would have no impacts to visual quality and character of the surrounding areas.

9.4.2 Agricultural Resources

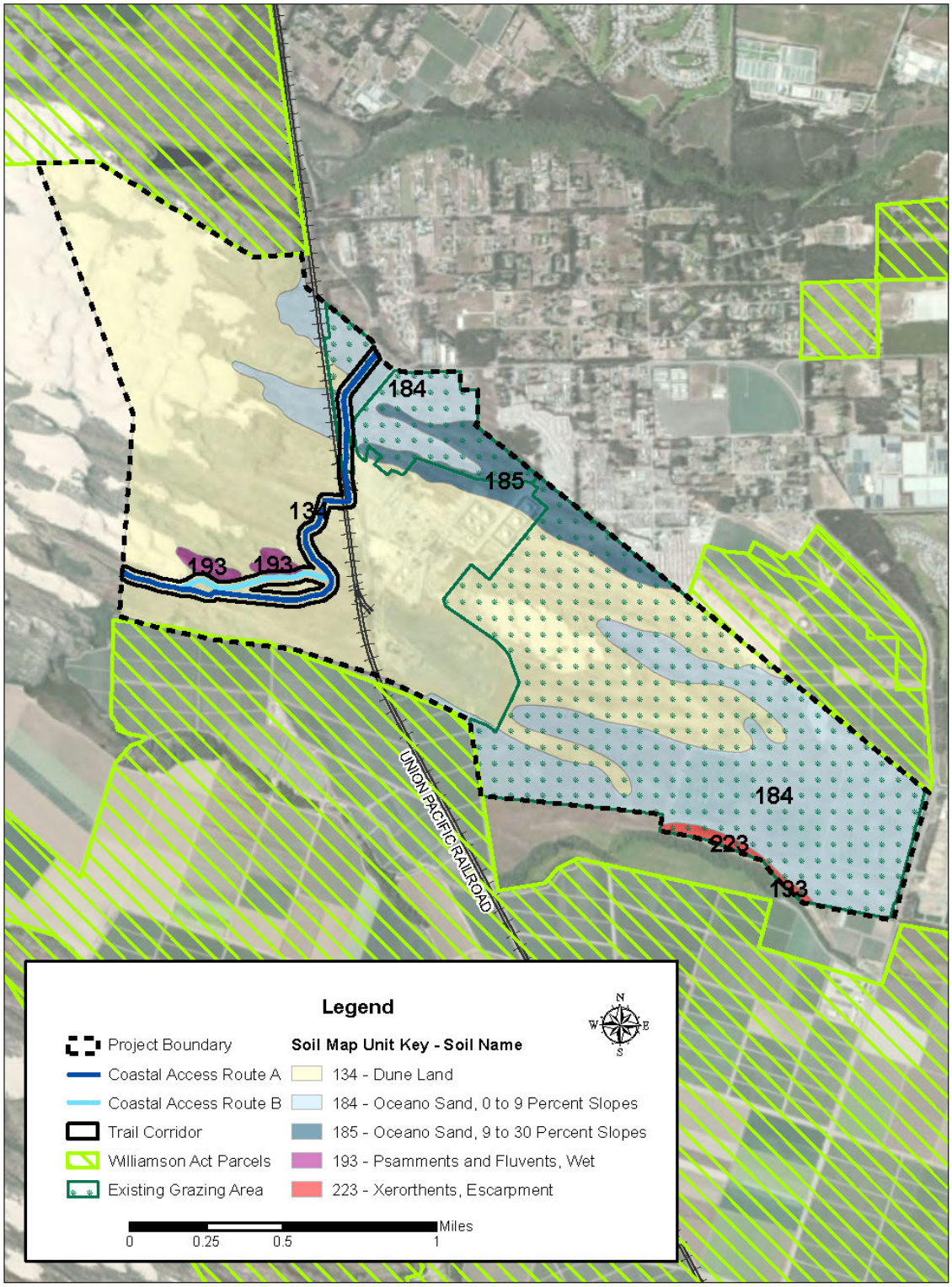
9.4.2.1 Environmental Setting

The Coastal Access Project would extend through Phillips 66 property on both sides of the UPRR. The property east of the UPRR currently supports limited grazing activities as described in Section 4.2.1.2. The areas west of the UPRR are undeveloped Open Space and does not support any agricultural activities. No portion of the Coastal Access Project Site is under a Williamson Act contract or agricultural preserve. However, adjacent properties to the north and south are both within Williamson Act contracts and used for intensive agricultural production (refer to Figure 9-7, below).

On-site Soils
Soils within the Coastal Access Project Site include predominantly Dune Land and Oceano Sand, 0 to 9 percent slopes, which make up over 97 percent of soils within the area of the proposed access easement. The Coastal Access Project Site includes both potential routes under consideration as well as an approximately 100-foot buffer on both sides of the route, which is intended to encompass areas that may be directly or indirectly affected by its development and use (refer to Figure 9-7 below). The only other soil unit present within the corridor is Psamments and Fluvents, Wet, and this soil is associated with dune lake areas west of the UPRR.

Soil characteristics and soil rating and classification systems are discussed in Sections 4.2.1.3 through 4.2.1.6. On-site soils within the Coastal Access Project corridor are shown in Figure 9-7, below and summarized in Table 9.1.

Figure 9-7 Agricultural Setting – Coastal Access Project



Source: SLOCo_NRCS_Soils. U.S. Department of Agriculture, Natural Resource Conservation Service, Soil Survey Geographic (SSURGO) Database for San Luis Obispo County. October 17, 2005.

Table 9.1 Summary of On-Site Soils – Coastal Access Project Corridor

Soil Unit	Area (acres)	Area (%)	LCC		Revised Storie Index Rating	COSE Important Agricultural Soils Classification
			irrigated	non-irrigated		
134 - Dune Land	45.5	82.1	VIIIe	VIIIe	Non-agricultural	n/a
184 - Oceano Sand (0-9% slopes)	8.3	15.0	IVe-1	VIe	Fair	Statewide Importance
193 - Psamments and Fluvents, Wet	1.6	2.9	n/a	VIw	Non-agricultural	Other Productive Soils

Source: USDA *Soil Survey of San Luis Obispo County, Coastal Part* (1984); San Luis Obispo County Conservation and Open Space Element (2010).

Farmland Classifications

The Coastal Access Project Site is predominantly comprised of Other Land per FMMP classifications. The area also includes Farmland of Local Potential near the entrance to the refinery and Urban and Build-Up Land associated with the industrial areas east of the UPRR.

According to the soil classifications in the COSE, the Coastal Access Project Site includes areas designated as Farmland of Statewide Importance near the entrance to the refinery and Other Productive Soils associated with the dune lake areas west of the UPRR. The location of FMMP- and COSE-designated farmlands is shown in Figures 9-8 and 9-9, below.

9.4.2.2 Coastal Access Impacts

Based on the NRCS Web Soil Survey, soils in the vicinity of the Coastal Access Project have the following farmland classifications.

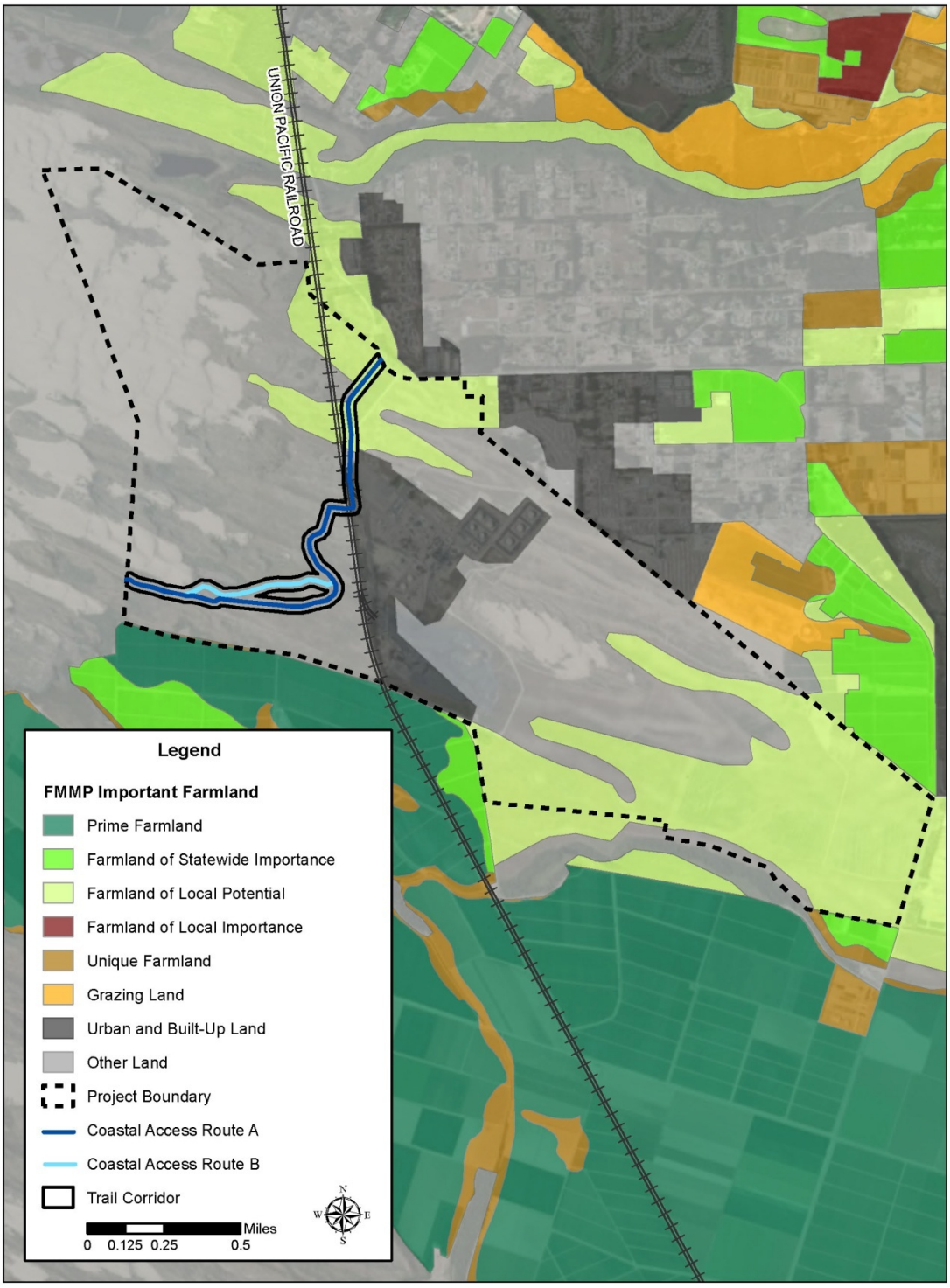
Table 9.2 NRCS Soil Classifications

Soil Unit	Farmland Classification
134 – Dune Land	Not prime farmland
184 – Oceano Sand (0-9% slopes)	Farmland of statewide importance
193 – Psamments and Fluvents, Wet	Not prime farmland

Source: USDA NRCS Web Soil Survey; http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm

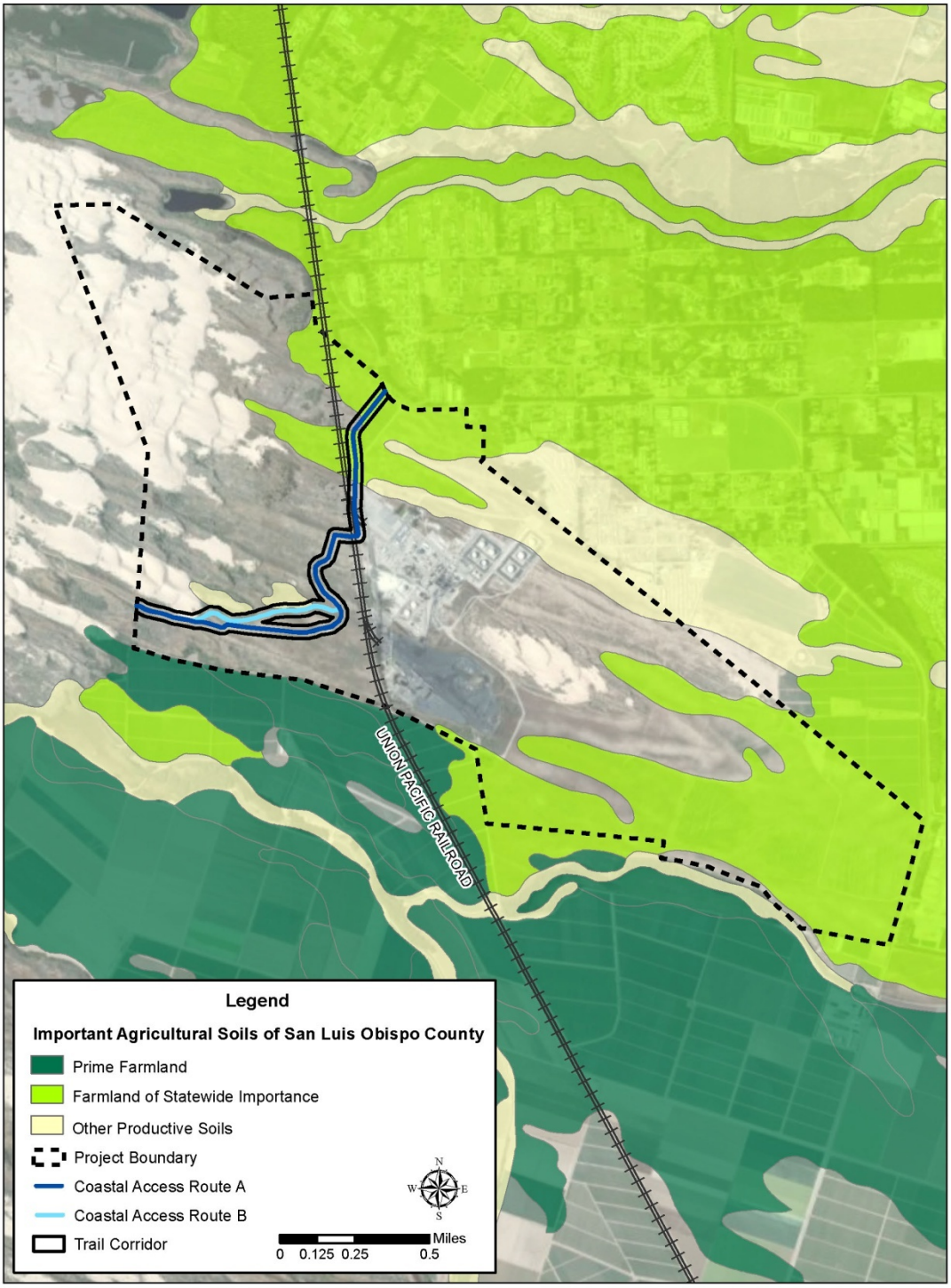
None of the soils in the vicinity of the Coastal Access Project are considered prime agricultural land per NRCS classifications. The closest prime agricultural soil, Camarillo Sandy Loam (prime if irrigated), is located over 600 feet away from both coastal access route alignments.

Figure 9-8 Important Farmland Map – FMMP Classifications



Source: Sanluisobispo2008.Department of Conservation, Farmland Mapping and Monitoring Program, 1984-2008; SLOCo_NRCS_Soils. U.S. Department of Agriculture, Natural Resources Conservation Service, Soil Survey Geographic (SSURGO).

Figure 9-9 Important Agricultural Soils Map – COSE Classifications



Source: Sanluisobispo2008.Department of Conservation, Farmland Mapping and Monitoring Program, 1984-2008; SLOCo_NRCS_Soils. U.S. Department of Agriculture, Natural Resources Conservation Service, Soil Survey Geographic (SSURGO) Database for San Luis Obispo County. October 17, 2005; County of San Luis Obispo, COSE, 2010.

Therefore, no conversion of prime agricultural land to non-agricultural use would occur with any of the coastal access options.

No Prime or Unique Farmland is located in the vicinity of the proposed Coastal Access Project. However, the Coastal Access Project would pass through areas designated in the COSE as Farmland of Statewide Importance as well as Other Productive Soils in the area of Jack Lake. The Farmlands of Statewide Importance are in the area of the refinery entrance, where both proposed route alignments follow the existing paved refinery access roads.

Bicycle and Pedestrian Access Option

The need to provide an elevated crossing over the UPRR may require the disturbance and/or use of additional areas between the UPRR and State Route 1 (outside of the existing paved roadways) to accommodate an alignment and above-grade crossing that meets UPRR design, transportation and safety standards.

Therefore, there is the potential for a conversion of Farmlands of Statewide Importance to occur in this area, depending on the final design, alignment. The construction of a parking lot near State Route 1 could also result in conversion of Farmlands of Statewide Importance.

These areas adjacent to the refinery entrance currently support limited grazing activities, and a conversion of any area outside of the existing roadway would also convert land used for that purpose. However, the low intensity of existing grazing activities could easily be continued on the remaining undeveloped portions of the SMR property even with the Rail Spur Project, and use of the coastal access route would not otherwise result in a significant interference with the limited adjacent grazing activities.

Assuming a conversion of these farmlands would occur the conversion would not result in a significant environmental impact for reasons similar to those identified in Section 4.2.4 related to the conversion of Farmlands of Statewide Importance as a result of the Rail Spur Project. These farmlands are not currently used for intensive agricultural production and such use is not likely due to zoning and historical use of the property.

The area that would potentially be converted as a result of the Coastal Access Project is further unsuited to substantial agricultural production because the area is split up and divided by existing roadways and the railroad tracks. Designated farmlands west of the UPRR are even less likely to be utilized for agricultural uses due to the Open Space land use designation, sensitive dune habitat, and LCP policies directed at protecting this area for open space, recreational and/or sensitive habitat uses.

Construction of the bicycle/pedestrian coastal access option has the potential to generate dust and other air emissions, create hazardous materials contamination, spread noxious weeds, increase water demands, and result in other effects with the potential to adversely affect adjacent agricultural areas. Long-term use of the access route would mean increased human presence in the area, and would cause an increased risk of trespass and littering or other contamination issues that may impact agricultural uses.

The nearest intensive agricultural operations are located south of the Coastal Access Project Site, and would be separated from all areas of disturbance by 600 feet or more. Water demands would likely be limited to construction activities, and no significant or long-term demand on water resources would result that could potentially reduce water supplies available for agricultural uses. The risk of users straying from the designated path is a significant one; however, it is unlikely that the trespass would extend 600 feet or more from the designated route to an area of agricultural activity. Trespassers would be more likely to explore nearby dune formations, or conduct unauthorized off-highway vehicle activity in dune areas not designated for this use. Therefore, potential impacts to adjacent agricultural uses would be less than significant.

Motor Vehicle, Bicycle and Pedestrian Access

The need to provide a large elevated crossing over the UPRR would require the disturbance and/or use of additional areas between the UPRR and State Route 1 (outside of the existing paved roadways) to accommodate an alignment and above-grade crossing that meets BNSF Railway/Union Pacific Railroad Guidelines as well as Caltrans design, transportation and safety standards for an overpass. Therefore, conversion of Farmlands of Statewide Importance would likely occur in this area.

These areas adjacent to the refinery entrance currently support limited grazing activities, and a conversion of any area outside of the existing roadway would also convert land used for that purpose. However, the low intensity of existing grazing activities could easily be continued on the remaining undeveloped portions of the SMR property even with the Rail Spur Project, and use of the coastal access route would not otherwise result in a significant interference with the limited adjacent grazing activities. This conversion would not result in a significant environmental impact for reasons similar to those identified in Section 4.2.4 related to the conversion of Farmlands of Statewide Importance as a result of the Rail Spur Project. These farmlands are not currently used for intensive agricultural production and such use is not likely due to zoning and historical use of the property.

Construction of the motor vehicle, bicycle and pedestrian coastal access option would generate dust and other air emissions, create hazardous materials contamination, spread noxious weeds, increase water demands, and result in other effects with the potential to adversely affect adjacent agricultural areas. Long-term use of the access route would mean increased human presence in the area, along with increased motor vehicle traffic and would cause an increased risk of trespass and littering or other contamination issues that may impact agricultural uses. With motor vehicle access there is the potential for increased dust generation along the road as well as at the southern end of the ODSVRA. Opening up a new motor vehicle access to ODSVRA at the southern end of the recreational area would likely increase fugitive dust emissions from sand in this area. This potentially could be a significant impact on agricultural resources in this area.

The nearest intensive agricultural operations are located south of the Coastal Access Project Site, and would be separated from all areas of disturbance by 600 feet or more. Water demands would likely be limited to construction activities, and no significant or long-term demand on water resources would result that could potentially reduce water supplies available for agricultural uses. The risk of users straying from the designated path is a significant one; however, it is unlikely that the trespass would extend 600 feet or more from the designated route to an area of agricultural activity. Trespassers would be more likely to explore nearby dune formations, or

conduct unauthorized off-highway vehicle activity in dune areas not designated for this use. This type of unauthorized activity could increase fugitive dust from the dunes that could impact agricultural activities.

Docent-Led Access
This option would have minimal impacts to agricultural resources since minimal improvements to the existing service road would be required. The installation of the automatic signals and gates at the railroad crossing would not impact agricultural lands. If a new parking lot is needed to be installed at the access trail head near State Route 1, this could result in the conversion of Farmlands of Statewide Importance, but would be less than significant as discussed above for the bicycle/pedestrian option. Agricultural impacts due to construction would not be an issue since no construction along the service road would be needed. The risk of users straying from the designated path would be unlikely since this option would involve managed access. Therefore, the impacts on agricultural resources from docent-led access would be less than significant.

9.4.3 Air Quality

9.4.3.1 Environmental Setting

The air quality setting for the coastal access project is generally the same as that for the rail spur project in terms of baseline air quality (see Section 4.3.1). The Coastal Access Project is located in an area that has historically been subject to poor air quality conditions (e.g., exceeds the state PM_{10} standard over 70 times per year) due to high northwesterly winds and blowing sand and dust across the Oceano Dunes. A study performed by the SLOCAPCD, the South County Phase 2 Particulate Study, evaluated whether impacts from off-road vehicle activities at the Oceano Dunes State Vehicle Recreational Area (ODSVRA), the Phillips Refinery coke piles, and adjacent agricultural fields were contributing to the particulate problems on the Nipomo Mesa (SLOC APCD 2010). As the ODSVRA is upwind of the Nipomo Mesa; the study data indicates that the ODSVRA in the area is the major source of particulates on the Nipomo Mesa. Average weekend and weekday particulate measurements taken on the Nipomo Mesa over the past 12 years were analyzed to determine whether there were higher PM levels on the weekends, which would be relevant to the typically higher weekend off-road vehicle activity at the ODSVRA. The analysis found higher weekend concentrations at one monitoring station but the data were not conclusive. The Phase 2 portion of the study concluded that off-road vehicle activity in the ODSVRA is a major contributing factor to the PM concentrations observed on the Nipomo Mesa and that neither the petroleum coke piles at the Phillips facility, nor agricultural fields, or activities in and around the area are a significant source of ambient PM on the Nipomo Mesa.

The study indicates that off road vehicle activity on the dunes is known to cause de-vegetation, destabilization of dune structure, and destruction of the natural crust on the dune surface. All of these increase the ability of winds to entrain sand particles from the dunes and carry them to the Nipomo Mesa, representing an indirect emissions impact from the vehicles. The study concluded that off-road vehicle activity is the primary cause of the high PM levels measured on the Nipomo Mesa during episode days.

The study documents the frequent occurrence of unhealthful particulate levels on the Nipomo Mesa. Even though the composition of the particulates is predominately natural crustal particles, the health implications are not lessened. All fine airborne particulate matter, regardless of composition, can cause respiratory distress when inhaled, especially to the very young, the elderly, and those with compromised respiratory systems. In addition, sand particles from the Oceano Dunes are high in crystalline silica, a known carcinogen. The studies provided a comprehensive picture of the characteristics of a typical dust event.

In November 2011, the SLO County APCD adopted Rule 1001, Coastal Dunes Dust Control Requirements, which requires the operator of a coastal dune vehicle activity area (CDVAA) greater than 100 acres in size to prepare and implement a Particulate Matter Reduction Plan (PMRP) to minimize emissions of PM_{10} from the area under its control. Rule 1001 defines the term CDVAA as "any area within 1.5 miles of the mean high tide line where public access to coastal dunes is allowed for vehicle activity."

As a result of this rule the Off-Highway Motor Vehicle Recreation (OHMVR) Division of the California Department of Parks and Recreation (CDPR) proposes to install, operate, and maintain meteorological, sand flux (i.e., sand movement), and particulate matter monitoring equipment and dust and track-out control measures primarily in and within the vicinity of Pismo State Beach and ODSVRA in San Luis Obispo (SLO) County. The proposed equipment and control measures are intended to provide information on the dynamics of dust generation at Pismo State Beach and ODSVRA, to help limit high levels of suspended particulate matter (PM) with an aerodynamic diameter of 10 micrometers or less (PM_{10}) on the Nipomo Mesa, in SLO County, and also to comply with SLO County Air Pollution Control District Rule 1001. The OHMVR Division is currently preparing an EIR for the PMRP.

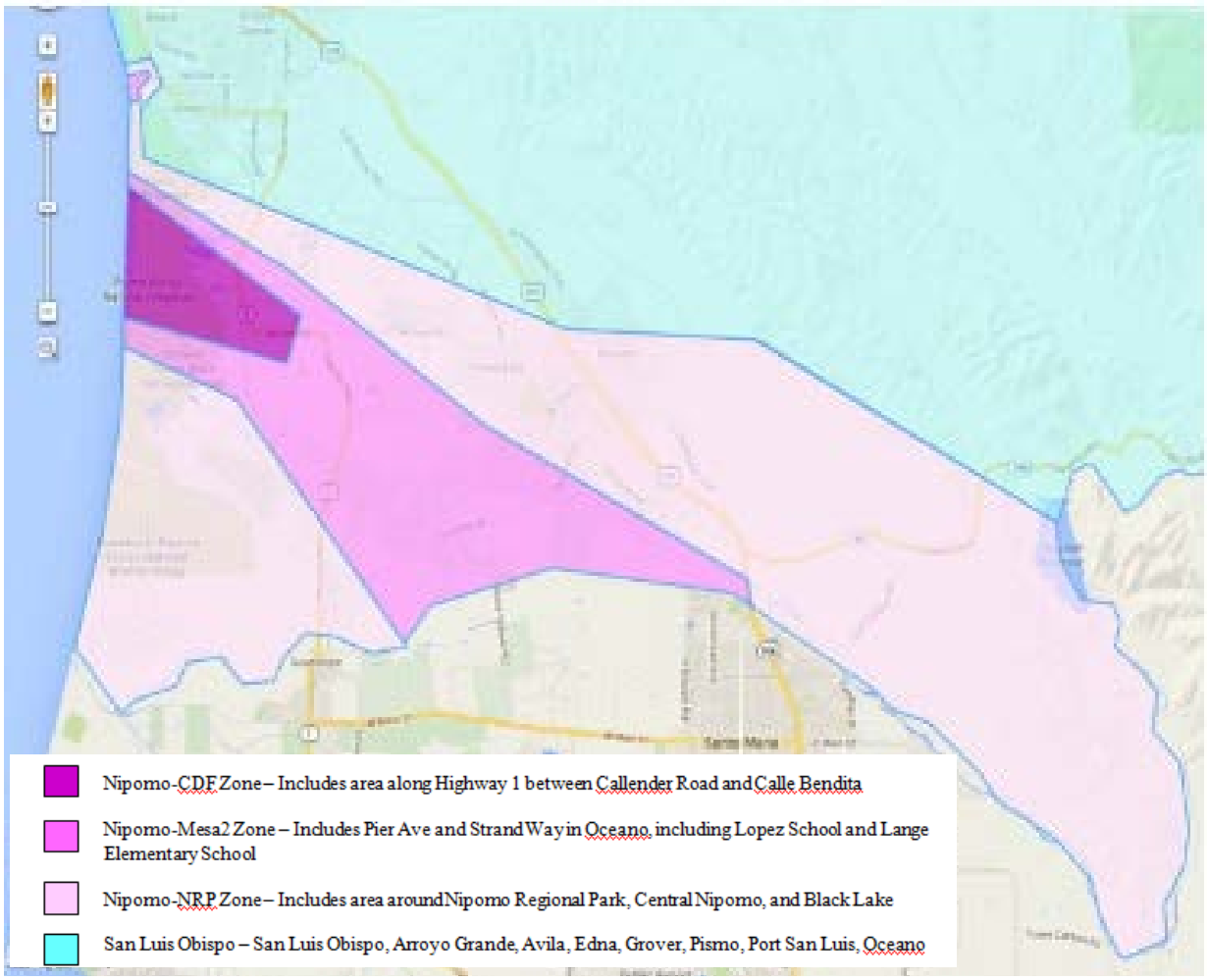
To keep the public informed of periods of deteriorating air quality, the APCD provides a daily air quality forecast for SLO County. SLO County is partitioned into nine air quality forecast zones, and an air quality forecast for a six-day period is provided for each zone. In the Nipomo Mesa area, there are four forecast zones as shown in the Figure 9-10.

The darker colors (purple/pink) in the map signify the location of the greatest dust impacts during a typical blowing dust event. The public can experience adverse health impacts in areas with blowing dust. The blue color represents the SLO forecast area, which in most cases is not impacted by the dust plume.

Children and individuals with compromised cardiac and respiratory systems or related health problems are called sensitive receptors. Sensitive receptors can experience greater health impacts than the general population during blowing dust events. Sensitive receptor locations include schools, residential dwellings, parks, day care centers, nursing homes, and hospitals.

The blowing dust events are typically most frequent in the spring; however, dust events can occur at any time of the year. The greatest impacts occur when the strong winds blow from the northwest which directs the dust plume inland over the Nipomo Mesa (as shown in the map above) where it can impact residents. A typical event tends to start around noon and end by the early evening, with peak impacts between 1:00 PM to 5:00 PM. The strongest events can result in blowing dust from 9:00 AM to 7:00 PM, with peak impacts between noon and 6:00 PM.

Figure 9-10 Nipomo Air Quality Zones



Source: SLOCAPCD http://www.slocleanair.org/air/socoaqphp.php

9.4.3.2 Coastal Access Impacts

The Coastal Access Project is conceptual at this time and therefore impact assessment of these options focus on identifying what potential impacts may occur based on information known to date. The assessment identifies what additional information would be needed in order to analyze the project upon application for permits or entitlements. Identified impacts represent a reasonable worst case scenario based on the provided conceptual projects discussed in Section 9.3.

Bicycle and Pedestrian Access Option

Construction

This option would require the construction of an approximately 30-foot wide access corridor, the construction of a bicycle/pedestrian overpass, and a parking lot near the intersection of the access

corridor with State Route 1. The access corridor and parking lot would have to be graded and paved. Table 9.3 provides an estimate of the construction emissions for this option. Without actual designs for the coastal access, some assumptions had to be made for estimating the emissions.

It was assumed that grading would take 10 days, construction and paving 20 days, and final painting of the bridge about 10 days. The total disturbed area was assumed to be about 10 acres, based upon two-miles of 35 foot wide grading and 0.5-acres needed for bridge construction, plus one-acre for the parking area.

Table 9.3 Bicycle/Pedestrian Coastal Access Construction Emissions

Pollutant	APCD Thresholds			Project Daily, pounds	Project Quarterly, tons
	Daily	Quarterly Tier 1	Quarterly Tier 2		
ROG + NO_x	137 pounds	2.5 tons	6.3 tons	62.2	0.83
Diesel Particulate Matter	7 pounds	0.13 tons	0.32 tons	2.3	0.03
Fugitive Dust Particulate Matter (PM_{10})	-	2.5 tons	-	-	0.02

Notes: Source is CalEEMod.

These emissions also include hauling of material to the site including road base, asphalt, the section of the bridge, and k-rails. The estimated construction emissions would be less than the APCD thresholds so construction impacts would be less than significant. Given that this area already exceeds PM_{10} air quality standards, the following mitigation measure would reduce the PM_{10} emissions associated with construction.

AQ-1 Prior to issuance of applicable grading permit, the fugitive dust requirements in the SLOCAPCD CEQA Handbook should be incorporated into the construction plans.

AQ-2 Construction activities that would generate dust should be limited to periods when good air quality is forecasted.

AQ-3 A geological evaluation should be conducted prior to construction to determine if the area disturbed has naturally occurring asbestos. If naturally occurring asbestos is found than the ARB Air Toxic Control Measures for Construction, Grading, Quarrying, and Surface Mining Operations shall be implemented.

Operation

The only air emission from the bicycle/pedestrian option would be associated with vehicles traveling to and from the access trail head. The peak number of vehicles associated with this option has been estimated to be 100 to 300 vehicles per day. It is not expected that these would be new trips to the ODSVRA, but rather a shift in the existing trips to the ODSVRA from other entrance locations. Therefore, there would be no new operational air emissions. Mitigation measures that should be included for air quality include the following.

AQ-4 On-site informational kiosk should be placed at the entrance to the coastal access that discusses air quality issues in the area and how to obtain daily air quality conditions and forecasts.

AQ-5 Informational component on the coastal access website that informs users of the Nipomo area air quality forecast and information about how to protect your health during periods of deteriorating air quality.

AQ-6 On-site real-time air quality display such as a solar powered sign should be installed at the entrance to the coastal access that displays the current air quality data and air quality forecast

Motor Vehicle, Bicycle and Pedestrian Access

Construction

This option would require the construction of an approximately 32-foot wide access corridor, the construction of a vehicle overpass, and a parking area on ODSVRA property. The access corridor would have to be graded and paved. Construction of the access corridor would be similar to the construction emissions provide above for the bicycle/pedestrian option. Given that detailed designs for the vehicle overpass are not available, it is not possible to estimate the construction emissions for this portion of the construction, but they would be substantially greater than that estimated for the bicycle/pedestrian overpass. Depending upon the emissions associated with the construction of the overpass, it is possible that the air emissions could be significant, but could be mitigated through the implementation of SLOCAPCD approved mitigation measures. The mitigation measures discussed above would apply for this option.

Operation

Air emissions associated with this option would result from motor vehicles using the coastal access road. Air emissions from vehicles are difficult to estimate since it would depend upon what would happen with the two existing ODSVRA main entrances. In the 2006 Condor Study, it was assumed that that both current entrances would remain open but that crossing the Arroyo Grande Creek to get to the off-road vehicle (ORV)[1] area would be prohibited. Therefore, all visitors wishing to access the riding area would have to use the SMR access point and there would be no increase on the overall vehicles using the ODSVRA. The Condor Study assumed that 90% of the vehicles using the Pier Avenue entrance would use the new SMR entrance, but that there would be no net increase in the overall vehicle traffic to the ODSVRA. The Condor Study estimated that a peak of 3,579 vehicles per day would use the new SMR access point (Condor 2006).

The park has a 1,000 vehicle per night camping limit, and a day use limit of 4,300 vehicles. These limits were established through a 1982 Coastal Development Permit and four subsequent Permit Amendments to operate the park in the Coastal Zone.

[1]ORV is interchangeable with off-highway vehicle (OHV).

Based upon the assumptions in the Condor Study, there would be no net increase in air emissions from the vehicles using the SMR coastal access road. The existing emissions would just be shifted south from the Pier Avenue entrance to the new SMR coastal access road. This shift in vehicles to the south could increase the level of ORV activity in the southern part of the ODSVRA thereby increasing PM_{10} emissions in this part of the ODSVRA. PM_{10} emissions could also be increase from travel of the new coastal access road. While the road would be paved, sand tracked onto the road could increase the level of PM_{10} emissions in the area around the refinery. As discussed above, PM_{10} emissions are a significant issue in this area. With a shift in traffic from the Pier Avenue entrance to the SMR entrance there could be a reduction in PM_{10} emissions from the ODSVRA since vehicles would not have to travel the five or so miles to get to the off-road vehicle recreation area. A conservative assumption would be that the overall level of PM_{10} emissions from the area around the ODSVRA would not be expected to increase over the current levels based upon the assumptions discussed above. However, there is the potential for an increase in localized impacts in the area of the SMR. Implementation of the PMRP that the State is currently preparing for the ODSVRA might reduce this localized impact. Given that the PMRP has not been fully developed and implemented, this localized impact could be potentially significant. Also, the addition of a new access point to the ODSVRA might require modifications to the PMRP that is currently being prepared by the State. The mitigation measures discussed above would apply for this option.

Docent-Led Access

Construction

This option would have minimal impacts to air quality since minimal improvements to the existing service road would be required. The installation of the automatic signals and gates at the railroad crossing would result in minimal air emissions. If a new parking lot is needed to be installed at the access trail head near State Route 1, this could result in some air emissions, but would be less than significant as discussed above for the bicycle/pedestrian option. Therefore, the air emissions associated with construction of the docent-led access option would be less than significant. The mitigation measures discussed above would apply for this option.

Operation

The only air emission from this option would be associated with vehicles traveling to and from the access trail head. The peak number of vehicles associated with this option has been estimated to be 10 vehicles per docent-led access, with tours occurring once a week or one every month. This small amount of vehicles would not generate significant air emissions. Therefore, the air emission impacts would be less than significant. The mitigation measures discussed above would apply for this option.

9.4.4 Biological Resources

The following section describes biological resources found within the Coastal Access Project area that have the potential to be impacted by the construction and operation of the various coastal access options. The analysis identifies potential constraints associated with biological resources, as the proposed alignments are conceptual at this time. Recommendations have been provided in order to avoid or minimize impacts to biological resources in the area.

Information for this section utilizes the resources and studies cited within Section 4.4 (Biological Resources) of this EIR, in addition to the Coastal Access Feasibility Review prepared by Arcadis (2013) and the Oceano Dunes Alternative Access Study, prepared by Condor Environmental in 2006. Impact analysis of biological resources within the Coastal Access Project Site utilizes previous discussions from Section 4.4 where applicable.

9.4.4.1 Environmental Setting

Upland Communities

The Coastal Access Project would extend through the SMR property on both sides of the UPRR. The approximate 630-acre natural dune area of the SMR property west of the UPRR provides an important buffer zone between the ODSVRA and the active portion of the SMR. Uncontrolled public off-road vehicle (ORV) use had historically had a significant impact on the area's sensitive ecological resources. Prior to 1997, an extensive trail network and associated erosion, dune destabilization, and weed dispersal was occurring in the vegetated dune areas on the SMR property. Around 1998, this area of the SMR was fenced to prevent uncontrolled access and has been managed through an agreement with CSPR to exclude general public use. Through the efforts of CSPR and the Land Conservancy of San Luis Obispo County, with the support of Phillips 66, invasive plant species have been reduced in the buffer zone area, and native plant communities and native dune stabilization have been enhanced. The area still has some level of Purple Veldt Grass (Ehrharta calycina), but a lot of this has been removed as part of restoration activities.

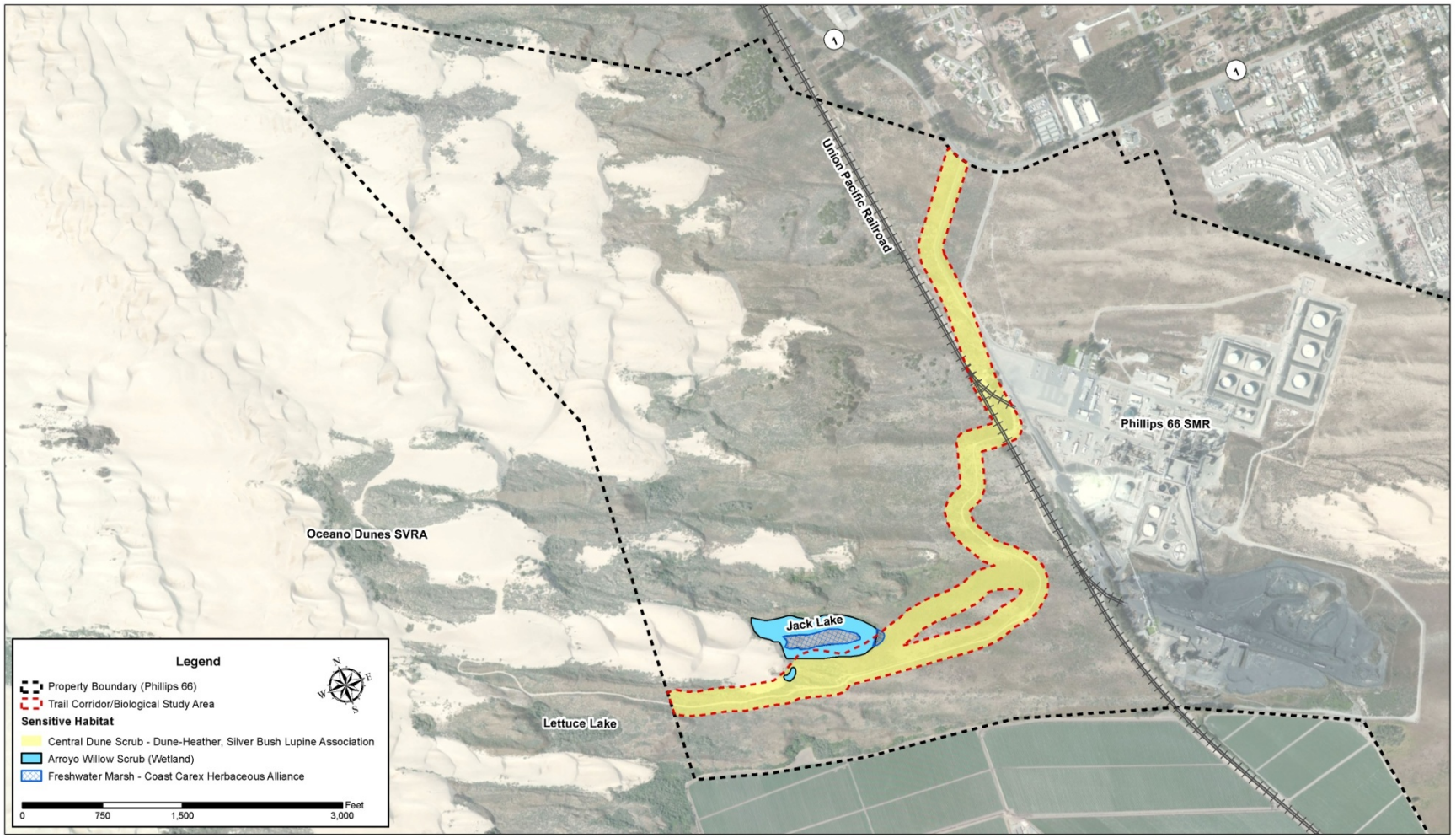
As shown in Figure 9-11, both proposed Coastal Access Project routes transect Central Dune Scrub habitat (described within Section 4.4.1.1). The vegetation within route A is dominated by the Dune-Heather - Silver Dune Lupine Alliance, which has a sensitive plant ranking of S3 in the CNDDB (CDFW 2013). Route B would traverse the same upland communities as Route A. However, Route B occurs immediately adjacent to the southern margins of Jack Lake and within 100 feet of arroyo willow (*Salix lasiolepis*) thickets and a freshwater marsh dominated by slough sedge (*Carex obnupta*). Further discussion of these wetland habitats is provided below.

Sensitive plant species observed along the Coastal Access Project Site include Blochman's leafy daisy (*Erigeron blochmaniae*), crisp monardella (*Monardella undulate* subsp. *crispa*), Blochman's groundsel (*Senecio blochmaniae*) and sand almond (*Prunus fasciculata* var. *punctata*). In addition to these species identified above, route A would be located immediately adjacent to a mapped colony of Nipomo Mesa lupine. Based on input from John Chesnut, a local species expert, large populations of this species occur along the existing service road within the Coastal Access Project Site, which is utilized by Phillips 66 to maintain and inspect the existing outfall pipeline. This service road is periodically graded, which presumably encourages germination of this species (personal communication, John Chesnut, 2013).

Wetland Communities

Freshwater marsh and arroyo willow habitat are present within Jack Lake, which is located within the property boundaries of the SMR and within the vicinity of both Coastal Access Project routes (refer to Figure 9-11 Sensitive Habitat Map).

Figure 9-11 Sensitive Habitat Map



Jack Lake is known to support suitable habitat for the federally-listed threatened California red-legged frog (*Rana draytonii*). In addition, Jack Lake provides habitat for two federal- and state-listed endangered plant species: marsh sandwort (*Arenaria paludiola*) and La Graciosa thistle. A formal wetland delineation of this area has not been conducted; however, as shown in Section 9.4.8 Land Use, Figure 9-15 Combining Designations Map, Jack Lake is a mapped Wetland (ESHA), pursuant to the South County Coastal LCP. (Figure 9-15 shows the location of mapped ESHA areas in the vicinity of the coastal access route.)

Sensitive Biological Resources

In addition to the mapped Wetland, the entire area located west of the UPRR tracks is within the Terrestrial Habitat ESHA designation, pursuant to the LCP (see Figure 9-15 Combining Designations Map in Section 9.4.8 Land Use). The following is a discussion of those sensitive biological resources that were either not previously discussed in Section 4.4.1.3 of the EIR, or warrant additional discussion due to the potential impacts that may result from the proposed Coastal Access Project. Central Dune Scrub habitat is the only sensitive plant community that is located within the Coastal Access Project Site. A discussion of this habitat type is provided in Section 4.4.1.1. In addition to Central Dune Scrub, the Coastal Access Project Site is located within Critical Habitat for La Graciosa thistle.

Sensitive Plant Species

Of the 46 sensitive plant species that are known to occur within a 10-mile vicinity of the Coastal Access Project Site, seven of these species have been recorded directly within the Biological Study Area for the Coastal Access Project routes, including:

- La Graciosa thistle (*Cisium scariosum* var. *loncholepis*)
- Blochman's leafy daisy (*Erigeron blochmaniae)*
- Nipomo Mesa lupine (*Lupinus nipomensis)*
- crisp monardella *(Monardella undulata* subsp. *crispa)*
- California spineflower (*Mucronea californica)*
- Blochman's groundsel *(Senecio blochmaniae)*
- sand almond (*Prunus fasciculata* var. *punctate)*

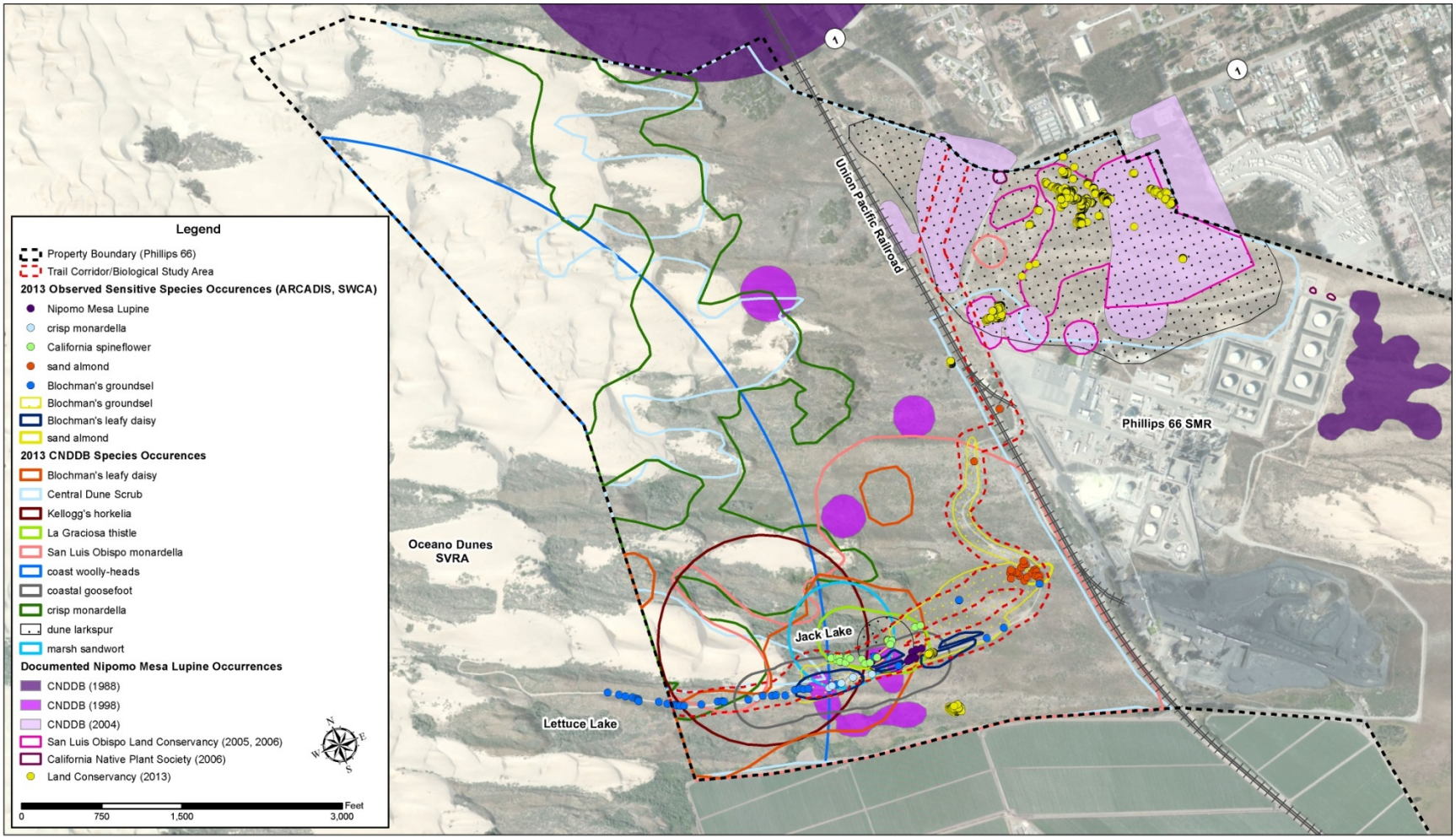
The location of these plant species are shown in Figure 9-12, Sensitive Plant Species. Further discussion of each of these species and their potential to occur, or known presence, onsite is included in Appendix C.

Sensitive Animal Species

Of the 39 animal species that are known to occur within a 10-mile vicinity of the Coastal Access Project, the following species have either been recorded adjacent to the Coastal Access Project Site or have the potential to occur due to previous observations and the presence of suitable habitat. These species include:

- California red-legged frog (*Rana draytonii*)
- Pacific pond turtle (*Actinemys marmorata*)
- Cooper's hawk (*Accipiter cooperii*)
- Bell's sage sparrow (*Amphispiza belli*)

Figure 9-12 Sensitive Plant Species



- western burrowing owl (*Athene cunicularia*)
- ferruginous hawk (*Buteo regalis*)
- northern harrier (*Circus cyaneus*)
- loggerhead shrike (*Lanius ludovicianus*)
- coast horned lizard (*Phrynosoma coronatum*)
- silvery legless lizard (*Anniella pulchra pulchra*)
- Monarch butterfly (*Danaus plexippus*)
- Migratory bird species Class Aves

The location of these species is shown in Figure 9-13, Sensitive Animal Species. Further discussion of each of these species and their potential to occur, or known presence, onsite is included in Appendix C.

9.4.4.2 Coastal Access Impacts

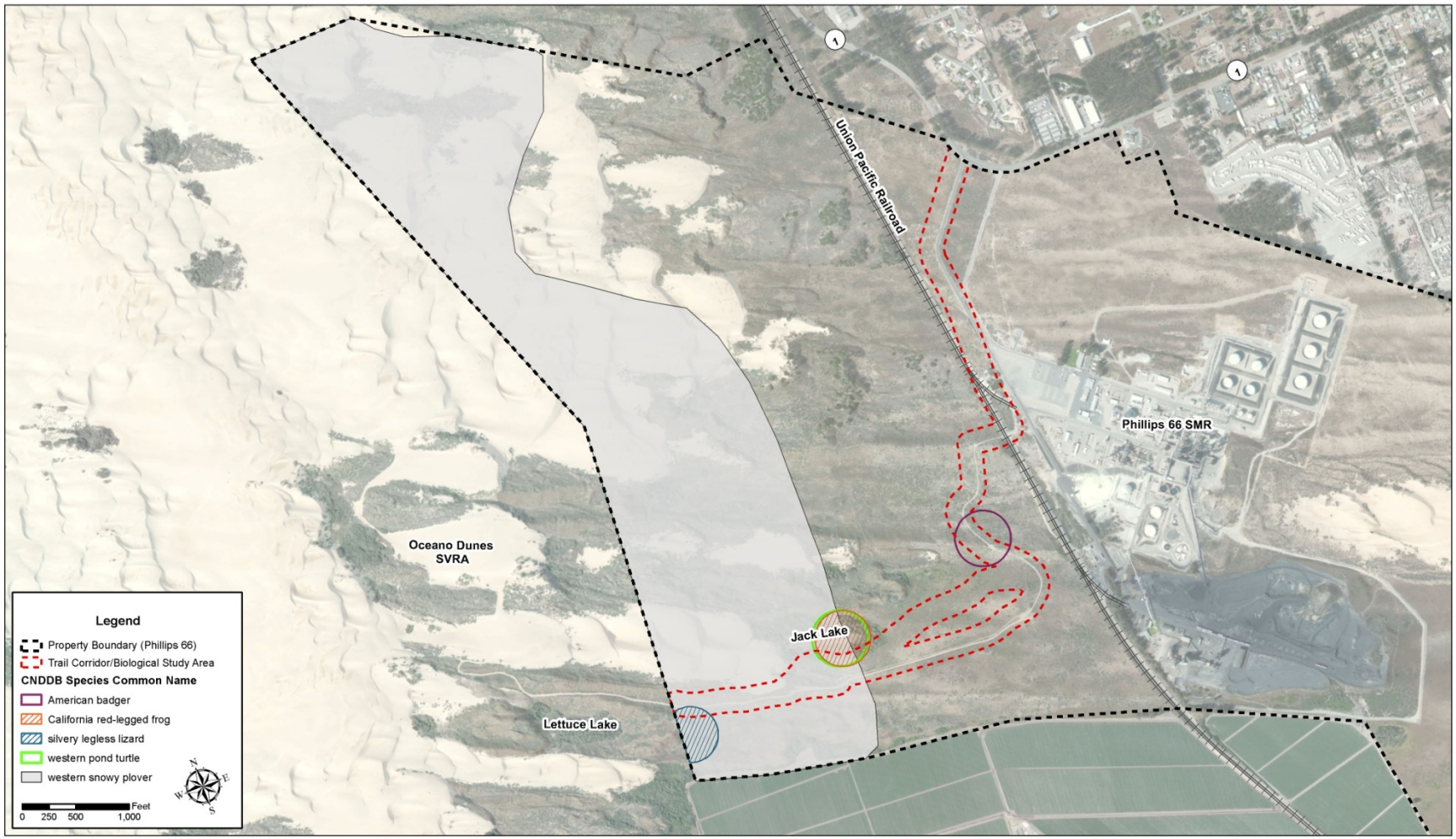
Methodologies used to conduct impact analysis for the Coastal Access options follows the methodologies outlined within Section 4.4.4 of this EIR. SWCA conducted a review of applicant prepared biological studies, including a Coastal Access Feasibility Review prepared by Arcadis in August 2013. SWCA also acquired additional data from The Land Conservancy, documenting the results of recent Nipomo Mesa lupine surveys within this portion of the SMR site. Following a review of the CNDDB, applicant prepared reports, and other existing data/reports, SWCA biologists conducted a reconnaissance field survey. This survey area reviewed by SWCA included a study corridor of 100-feet on each side of the coastal access routes, consistent with the studies conducted by the Arcadis in 2013. The reconnaissance survey evaluated the accuracy of the applicant-prepared data as it is related to existing conditions and sensitive biological resources (e.g., regulated habitats, special-status species, and sensitive habitats) that could be affected by the Coastal Access Project.

The coastal access options have the potential to impact a variety of biological resources within and adjacent to the alignment. In general, the construction of either proposed route would have the potential to directly impact natural plant communities and sensitive plant and animal species. The severity of potential impacts would vary depending on the type of access that would be constructed.

An access option that would not require construction, and would be docent-led would have fewer potential adverse impacts than the construction of an improved access road accessible to motor vehicles.

Aquatic and semi-aquatic resources associated with Jack Lake could also be directly and indirectly impacted. Wildlife may be adversely affected by vegetation removal, increased human presence, and increased storm water runoff containing pollutants from vehicles that may utilize this access route. Such pollutants may include residual hydrocarbons, and other chemicals that may be commonly used by coastal access users.

Figure 9-13 Sensitive Animal Species



The Coastal Access Project is conceptual at this time and therefore impact assessment of these options focus on identifying what potential impacts may occur based on information known to date. The assessment identifies what additional information would be needed in order to analyze the project upon application for permits or entitlements.

Identified impacts represent a reasonable worst case scenario based on the provided conceptual projects discussed in Section 9.3. As part of this EIR, impacts and mitigation measures have been previously identified as part of the Rail Spur Project and would overlap with any proposed action within the Coastal Access Project. These impacts and mitigations are referenced and incorporated below, and additional discussion is provided for those impacts that have not been previously addressed or provided mitigation measures.

Bicycle and Pedestrian Access Option

Sensitive Plant Species

Construction of this option would result in impacts to seven sensitive plant species: California spineflower (*Mucronea californica*), sand almond (*Prunus fasciculata* var. *punctate*), Blochman's groundsel (*Senecio blochmaniae*), and Blochman's leafy daisy (*Erigeron blochmaniae*), Nipomo Mesa lupine (*Lupins nipomensis*), La Graciosa thistle (*Cirsium scariosum* var. *loncholepis*) and marsh sandwort (*Arenaria paludicola*). Direct impacts would result from loss of habitat due to access trail, overpass, and parking lot construction. Inadvertent direct impacts would also likely occur as a result of increased human presence. Construction of the parking lot near State Route 1 could also in direct impacts of some of these species.

Development of the bicycle/pedestrian option would result in impacts to California spineflower, sand almond, Blochman's groundsel, Blochman's leafy daisy, and Nipomo Mesa lupine. Impacts to these species would be considered significant without implementation of mitigation measures, which are described below.

La Graciosa thistle (*Cirsium scariosum* var. *loncholepis*) and marsh sandwort (*Arenaria paludicola*) are also located with the Coastal Access Project Site. La Graciosa thistle is a federally endangered and state threatened plant species that has been documented as occurring west of the UPPR within the coastal access site (CNDDB 2013). Likewise, Marsh sandwort is only found west of the UPPR on the SMR property and is considered both state and federally endangered. Both of these species have been documented within the Jack Lake area, adjacent to the coastal access routes. These species were not identified during the botanical survey conducted by Arcadis in 2013. However, the botanical surveys were conducted during a drought year, and due to their documented presence in the area, there is a potential for this species to be present. Therefore, development of either coastal access route for the bicycle/pedestrian option may have direct impacts to these species and would be considered significant. It is expected that implementation of the mitigation measures listed below could reduce the severity of the impact, but depending upon the final design, impacts could remain significant.

BIO-1 *Prior to application for permits or entitlements for the Coastal Access Project, a focused survey should be conducted during a normal rainfall season to determine presence/absence of Nipomo Mesa lupine within the Project Site. The results of this survey should be submitted to the County and USFWS and CDFW within 30 days of*

completing the survey. If the results of this survey effort determine that Nipomo Mesa lupine is absent from the Disturbance Area, no further mitigation for this species should be required. If the results of this survey effort determine that Nipomo Mesa lupine is present within the Disturbance Area then the applicant should coordinate with the County and CDFW to acquire a 2081 Incidental Take Permit for this species and comply with any conditions imposed by that permit. At a minimum, the applicant should implement a Dune Habitat Restoration Plan and include Conservation Measures to establish and monitor Nipomo Mesa lupine population(s) within the identified on-site mitigation area at a ratio of 3:1.

BIO-2 Prior to application for permits or entitlements for the Coastal Access Project, a qualified wildlife biologist should prepare a Sensitive Species Management Plan, which outlines the procedures and protocols for capturing and relocating sensitive animal species including coast horned lizard, badgers, and silvery legless lizard during all phases of grading. This plan should be approved by the County and California Department of Fish and Wildlife. Implementation of the Plan is required where impacts to sensitive animal species and their habitats are unavoidable and located within a minimum of 100 feet of the Disturbance Area (or greater as determined by the California Department of Fish and Wildlife). Within 30 days prior to mobilization, grading or construction, a qualified wildlife biologist should conduct a pre-construction survey of the area of impact to determine the presence of sensitive wildlife species. Individuals will be searched and captured using techniques appropriate to the species of concern and approved by the appropriate resource agencies. All captured individuals will be released as soon as possible into nearby suitable habitat that has been previously identified. The size or age-class, location of capture, and the relocation site should be recorded for each individual relocated from the site. Specifically for badgers, the following measures should be incorporated in the Sensitive Species Management Plan:

a. Prior to grading activities, a County-approved biologist should conduct a survey to identify whether badgers are using any portion of the site near the area in which disturbance is proposed. The survey should be conducted no less than 14 days and no more than 30 days prior to construction. The survey should cover the boundaries of proposed disturbance and 100 feet beyond, including all access roads, and should examine both old and new dens. If potential badgers dens are found, they should be inspected to determine whether they are occupied by badgers. Occupation of the den should be determined by one or more of the following methods:

1. Use of a fiber-optic scope to examine the den to the end:

2. Partially obstruct the den entrance with sticks, grass, and leaves for three consecutive nights and examine for signs that animals are entering or leaving the den;

3. Dust the den entrance with a fine layer of dust or tracking medium for three consecutive nights and examine the following mornings for tracks.

b. Inactive dens within construction areas should be excavated by hand with a shovel to prevent re-use of dens during construction.

c. If badgers are found in dens between August and January, a qualified biologist should establish a 50 foot diameter exclusion zone around the entrance. To avoid disturbance and the possibility of direct take of badgers, no construction, grading, or staging of equipment should be conducted within the buffer area until the biologist has determined that the badger(s) have vacated the den.

d. If badgers are found in dens between February and July, nursing young may be present. Therefore, a County-approved biologist should establish a 200-foot diameter buffer around the den. No construction, grading, or staging of equipment should be conducted within the buffer area until the biologist has determined that the badgers have vacated the den.

BIO-3 Prior to application for permits or entitlements for the Coastal Access Project, the applicant shall retain a qualified biologist and/or botanist acceptable to the County to prepare a Dune Habitat Restoration Plan (DHRP) for review and approval by the County in consultation with the California Department of Fish and Wildlife (CDFW) and the United States Fish and Wildlife Service (USFWS). The DHRP should be signed by the retained qualified biologist and/or botanist and should detail the methods for restoring or enhancing 53 acres of central dune scrub habitat. The restoration area(s) should be located within the Phillips 66 property boundary. The DHRP should focus on restoring and enhancing central dune scrub habitat by removing invasive species (iceplant, veldt grass, and other invasive species) and planting appropriate native species, including but not limited to: mock heather, purple nightshade, Blochman's ragwort, Blochman's leafy daisy, California spineflower, sand almond and suffrutescent wall flower. Regardless of whether Nipomo Mesa lupine is identified on-site, the DHRP should also focus on restoring and enhancing central dune scrub habitat immediately adjacent to known Nipomo Mesa lupine populations. At a minimum, the DHRP should include the following elements:

a. Identification of locations, amounts, size and types of plants to be replanted, as well as any other necessary components (e.g., temporary irrigation, amendments, etc.) to ensure successful reestablishment.

b. Provide for a native plant salvage effort prior to ground disturbing activities. Salvaged plants should include but not be limited to California Native Plant Society (CNPS) listed plant species that may be affected.

c. Quantification of impact based on "as-built plans" and quantification of mitigation areas such that the replacement criteria are met (2:1 acreage ratio).

d. A program schedule and success criteria for a minimum five year monitoring and reporting program that is structured to ensure the success of the DHRP.

e. Provide for the in-kind replacement of the following sensitive species that occur within the central dune scrub habitat and Project Site: California spineflower

(Mucronea californica), sand almond (Prunus fasciculata var. punctata), Blochman's groundsel (Senecio blochmaniae), and Blochman's leafy daisy (Erigeron blochmaniae). Should Nipomo mesa lupine be identified onsite, in-kind replacement of this species would also be included. Individuals that are removed or damaged should be replaced in-kind at a 3:1 ratio (based on square feet cover) within the designated restoration area with 100% success in 5 years.

f. Identification of access and methods of materials transport to the restoration area, including personnel, vehicles, tools, plants, irrigation equipment, water, and all other similar supplies. Access should not result in new or additional impacts to habitat and special-status species.

g. The restoration area should be protected in perpetuity by an open space easement or a conservation easement if required by the CDFW or USFWS or if chosen by the Applicant. The easement should be in a form approved by County Counsel and CDFW and/or USFWS if required by those agencies. The required Dune Habitat Restoration Program should incorporate an invasive species control program.

Sensitive Terrestrial and Semi-Aquatic Wildlife Species

Impacts to common and sensitive ground-dwelling animal species have been identified and discussed within Section 4.4.4.1 as part of the Rail Spur Project. It is expected that the construction of the bicycle/pedestrian coastal access option would have similar impacts to these sensitive species should either of the conceptual routes be implemented. Impacts to these species would be considered less than significant with implementation of BIO-2 (i.e., Sensitive Species Management Plan) listed above.

The coastal access routes include the presence of aquatic habitat. The presence of Jack Lake, a Coastal Wetland (ESHA) and other surrounding wetland features provide suitable habitat several semi-aquatic sensitive species. California red-legged frog (*Rana draytonii*) and Pacific pond turtle (*Actinemys marmorata*) have both been documented within Jack Lake (CNDDB 2013). Focused surveys for these species were not conducted as part of the Coastal Access Feasibility Review, but the presence of these species within Jack Lake is inferred based on CNDDB records. Development of either coastal access routes (A or B) would result in potential impacts to these species. These species could be impacted from construction activities as well as from users straying from the designated path into areas that have sensitive wildlife species. Impacts to these species would be considered significant. Implementation of the following mitigation measures would serve to reduce the level of severity of this impact, but depending upon the final design, the impact could remain significant.

BIO-4 Prior to application for permits or entitlements for the Coastal Access Project, a qualified biologist should complete an updated Biological Resources Survey Report that includes an inventory of species occurring, or expected to occur, within the Coastal Access Project. The findings from this survey effort should be provided to the County following the most recent version of the County approved reporting format. The study will also provide recommendations to avoid and minimize impacts to common and sensitive wildlife species that may be found within the project area and surrounding habitat.

BIO-5 Prior to application for permits or entitlements for the Coastal Access Project, the applicant shall retain a qualified biologist to conduct a habitat assessment for California red-legged frog following the most recent USFWS protocol. The Habitat Assessment shall be submitted to the USFWS to determine whether protocol-level field surveys are warranted. Should protocol-level field surveys be required by the USFWS, these studies shall be documented within a Biological Resources Survey Report prior to submittal of any permit applications to the County of San Luis Obispo.

Central Dune Scrub

Development of either coastal access routes for bicycle/pedestrian access would have significant impacts to Central Dune Scrub habitat since the access road widening would impact this habitat. Impacts to this habitat may be less than significant with implementation of a mitigation measure BIO-3 (i.e., Dune Habitat Restoration Plan) that is discussed above.

Wetlands

Construction of a bicycle/pedestrian coastal access has the potential to have direct impacts or loss of wetland habitat. Although a formal wetland delineation was not conducted as part of the Coastal Access Feasibility Review (Arcadis, 2013), it is likely that wetland features such as Jack Lake and isolated arroyo willow thickets, and other surrounding features may qualify as wetlands pursuant to the CZLUO. In addition, the County's LCP identifies Jack Lake as a Coastal Wetland (ESHA). Development of either Coastal Access Project has the potential to result in impacts, or loss, of habitat. Wetlands could be impacted from construction activities as well as from users straying from the designated path into wetland areas. Impacts to these wetlands would be considered significant. Implementation of the following mitigation measure may be able to reduce the level of severity of this impact, but depending upon the final design, the impact could remain significant.

BIO-6 Prior to application for permits or entitlements for the Coastal Access Project, the applicant shall retain a qualified biologist to complete a formal wetland delineation following the most recent guidance provided by federal and state agencies. The findings from this survey effort shall be provided to the County. Should the development result in loss of wetland habitat, a Habitat Mitigation and Monitoring Plan shall be developed following requirements set forth by the U.S. Army Corps of Engineers and submitted to the County prior to submittal of the project application package. At a minimum, permanent loss of wetlands shall be mitigated at a 3:1 ratio and monitored for 100% success over a 5 year period.

Nesting Migratory Bird Species

Impacts to resident and migratory wildlife species have been identified and discussed within Section 4.4.4.4 as part of the Rail Spur Project. Construction of the bicycle/pedestrian option would have significant impacts as a result of removing prime Central Dune Scrub habitat, which is mapped ESHA along the access corridor. Although impacts to migratory bird species within the Coastal Access Project Site would be considered less than significant with implementation of similar mitigation measures that have been proposed for the Rail Spur Project, the long term impact of increased human presence in this habitat may affect species such as Western snowy plover that occur outside of the Coastal Access Project boundaries. Both coastal access routes

would provide access to foredune habitat that supports nesting Western snowy plovers, which may limit or disturb nesting activity. Implementation of the following mitigation measures would reduce the severity of this impact to less than significant levels.

BIO-7 *If construction is proposed to occur during the breeding and nesting season (February 15th through September 1st), disturbance of bird breeding and nesting activities shall be avoided by limiting the vegetation removal and all excessive noise-producing activities within 300 feet of an active nest. If construction is proposed to occur during the breeding and nesting season, pre-construction surveys (approximately 2 weeks prior to construction) shall be conducted to determine presence or absence of nesting birds within 300 feet of the construction area. If no breeding or nesting activities are detected within 300 feet of the proposed work area, noise-producing construction activities may proceed. If breeding or nesting activity is confirmed, work activities within 300 feet shall be delayed until the young birds have fledged and left the nest.*

BIO-8 *Prior to application for permits or entitlements for the Coastal Access Project, the applicant shall retain a qualified biologist to evaluate the long-term effects on wildlife species including Western snowy plover as part of the updated Biological Resources Survey Report. The study shall also provide recommendations to avoid and minimize impacts to common and sensitive wildlife species that may be found within the project area and surrounding habitat.*

BIO-9 *The access trail should be closed to the public during the Western snowy plover breeding season.*

Adopted HCP or NCCP

There are no approved habitat conservation plans (HCP) or natural community conservation plans (NCCP) that encompass the Coastal Access Site that would be affected or are applicable. Based on a search of the USFWS HCP Database, the closest HCPs to the Project Site are located in Los Osos and Morro Bay, over 20 miles away.

An HCP is currently being drafted by the California Department of Parks and Recreation (State Parks) for all state parks in the County, including the ODSVRA. While the HCP has not yet been adopted, the status of the HCP for County Parks should be revisited upon application for permits or entitlements. Any coastal access from the SMR site would likely affect uses within the adjacent ODSVRA that would have implications under any HCP ultimately adopted for the site.

Spread of Invasive Plant Species

Introduction of invasive species has been identified and discussed within Section 4.4.4.9 as part of the Rail Spur Project. Construction of the bicycle/pedestrian option would result in the removal of native habitat and increase the potential for invasive species to spread in and out of the Project Site. Impacts from the spread of invasive species would be considered less than significant with implementation of the following mitigation measure.

BIO-10 *Prior to application for permits or entitlements for the Coastal Access Project, the following measures shall be included on applicable plan sheets:*

a. *During construction, the applicant should make all reasonable efforts to limit the use of imported soils for fill. Soils currently existing on-site should be used for fill material. If the use of imported fill material is necessary, the imported material must be obtained from a source that is known to be free is invasive plant species; or the material must consist of purchased clean material such as crushed aggregate, sorted rock, or similar.*

b. *During construction, the contractor should stockpile topsoil and redeposit the stockpiled soil on the slopes after construction of the Coastal Access Project is complete, or transport the topsoil to a certified landfill or other allowable location for disposal if soil cannot be used within disturbed areas onsite.*

c. *All erosion control materials including straw bales, straw wattles, or mulch used on-site must be free of invasive species seed.*

d. *The required Dune Habitat Restoration Program should incorporate an invasive species control program.*

Motor Vehicle, Bicycle and Pedestrian Access

The impacts associated with the motor vehicle, bicycle and pedestrian option would be similar to what is discussed above for the bicycle/pedestrian option. All of the impacts and suggested mitigation measures discussed above for the bicycle/pedestrian option would apply to this option. The construction impacts would be slightly larger with this option since the roadway width would be about two feet wider then for the bicycle/pedestrian option.

Long-term use of the access route would mean increased human presence in the area, along with increased motor vehicle traffic and would cause an increased risk of trespass and littering or other contamination issues that may impact sensitive biological resources. With motor vehicle access there is the potential for increased dust generation along the road as well as at the southern end of the ODSVRA. Opening up a new motor vehicle access to ODSVRA at the southern end of the recreational area would likely increase fugitive dust emissions from sand in this area. This increase in fugitive dust could have a significant impact on sensitive biological resources, which would be a potentially significant impact.

Docent-Led Access

This option would have minimal impacts to biological resources since minimal improvements to the existing service road would be required. The installation of the automatic signals and gates at the railroad crossing would have no impact to biological resources. If a new parking lot needed to be installed at the access trail head near State Route 1, this could result in impacts to sensitive plant species, which could be significant as discussed above for the bicycle/pedestrian option. Use of parking at the SMR would eliminate this potential impact. There would be no biological impacts along the dirt portion of the road since no construction would be needed.

The risk of users straying from the designated path and impacting biological resources would be unlikely since this option would involve managed access.

9.4.5 Cultural Resources

9.4.5.1 Environmental Setting

The Coastal Access Project would extend through Phillips 66 property on both sides of the UPRR. Refer to Section 4.5.1 for a summary of the cultural resources environmental setting. Additional information that relates to the area located west of the UPRR is provided below, to the extent it differs from that provided in Section 4.5.1.

Pre-History
Approximately 25 previously documented cultural resources have been identified in the dunes west of the Phillips 66 Refinery (Perez 2011). Although the proposed access route alternatives avoids all but one (CA-SLO-859) of these previously identified resources, the general area is considered to have high sensitivity for the presence of previously unidentified cultural resources. In addition, input from the local Native American community suggests that the high density of known cultural resources represents a cultural landscape, rather than a series of discontinuous discrete sites.

CA-SLO-859 was originally recorded by West and Bell (1978). Subsequent studies by Perez (2011), Arcadis (2013a), and as part of this EIR failed to relocate the site in its purported location. West and Bell (1978) note extensive disturbance at the site as a result of the construction of a pipeline and off highway vehicle traffic. As originally documented by West and Bell (1978), the site is within a highly mobile dune environment, subject to aeolian deposition and erosion. It is possible the mobile dune complex within the purported site location shifted and subsumed the entire resource.

9.4.5.2 Coastal Access Impacts

Bicycle and Pedestrian Access Option

Cultural Resources
Construction of the bicycle/pedestrian coastal access option has the potential to result in direct and indirect impacts to known and unknown cultural resources. Direct impacts may result from land modification directly and immediately caused by the construction, landscaping, maintenance, and use of the proposed access and parking lot. Potential indirect impacts include unauthorized artifact collecting and vandalism. One previously identified cultural resource, CA-SLO-859, is within the vicinity of the currently proposed access route alternatives (Arcadis 2013a).

Given the mobile nature of portions of these dunes, specifically areas with less vegetation, the potential exists for cultural resources to be periodically exposed and/or obscured. As such, any ground disturbance associated with the development of the bicycle/pedestrian coastal access option has the potential to impact potentially significant previously undocumented cultural resources. In addition, the increase in pedestrian and/or vehicle traffic in this area may result in indirect impacts (e.g., collection, vandalism) to known and previously unidentified cultural resources.

Aside from CA-SLO-859, which was not relocated by either Perez (2011) or Arcadis 2013, no archaeological resources were identified within or adjacent to the proposed coastal access routes. Arcadis (2013a) could not, however, exclude the possibility that unrecorded buried archaeological material could exist and be encountered during grading, clearing, grubbing, and/or other construction activities. If intact cultural remains are encountered during grading, clearing, grubbing, and/or other construction activities, the potential for destruction of these potential unknown finds would be a potentially significant impact on cultural resources. Archaeological monitoring should focus on the entirety of the proposed access route, which would be identified in the Archaeological Monitoring Plan prepared for the project.

As discussed above, the landscape encompassing the vicinity of the proposed coastal access routes contains a high density of previously identified cultural resources. In addition, input from the local Native American community suggests this complex of resources represents a cultural landscape and not a series of isolated prehistoric use areas. Increased bicycle and pedestrian traffic in this area could result in increased site vandalism and artifact collection due to people wandering off of the access route.

With the implementation of the following mitigation measures potential direct and indirect impacts to cultural resources could potentially be reduced to less than significant.

CR-1 *The Coastal Access Project should be designed to avoid the purported location of CA-SLO-859. The site plan should designate the approximate location of CA-SLO-859 as an environmentally sensitive area (ESA) and should include a 100-foot buffer around the ESA. No grading, storage of materials or equipment, or use of equipment should occur within the ESA.*

CR-2 *Upon application for permits or entitlements for the Coastal Access Project, the applicant shall prepare an Archaeological Monitoring Plan, which should include, at minimum:*

a. List of personnel involved in the monitoring activities including a Native American monitor;

b. Clear identification of what portions of the project area in relation to CA-SLO-859 should be monitored;

c. Description of how the monitoring should occur;

d. Description of monitoring frequency;

e. Description of resources expected to be encountered;

f. Description of circumstances that would result in the "work diversion," in the case of discovery, at the project site;

g. Description of procedures for diverting work on the site and notification procedures; and

h. Description of monitoring reporting procedures.

CR-3 A County approved archaeological monitor should be present during all ground disturbing construction activities within 100 feet of the purported location of CA-SLO-859, and as noted in the approved Archaeological Monitoring Plan.

CR-4 Upon completion of all monitoring and mitigation activities, and prior to final inspection or occupancy, whichever occurs first, the applicant shall submit a report summarizing all monitoring and mitigation activities and confirming that all recommended mitigation measures have been met.

CR-5 Upon application for permits or entitlements for the Coastal Access Project, a Phase I Surface Survey prepared by a qualified archaeologist shall be submitted to the County that includes the entirety of the Coastal Access Project easement. The Phase I should include an updated records search, results of Native American consultation efforts conducted as part of the background information review, and the results of an intensive pedestrian survey of the proposed coastal access route including a 100-feet buffer. The findings of the effort should:

- *a. Be documented in a cultural resources technical report prepared by a cultural resources professional meeting the Secretary of Interior's professional qualification standards;*
- *b. Describe the methods and results of the literature review, Native American consultation, intensive pedestrian survey, any archaeological testing or data recovery conducted;*
- *c. Provide recommendations for the management of cultural resources within the survey area, including both direct and indirect impacts;*
- *d. Include maps depicting the area surveyed for cultural resources, the locations of cultural resources identified during the survey, and site records or updates for cultural resources encountered during the survey;*
- *e. Be prepared in accordance with the Office of Historic Preservation's Archaeological Resources Management Reports (ARMR) guidelines and should include an environmental setting and detailed cultural setting that includes prehistoric, ethnographic, and historic period subsections.*

CR-6 Prior to any grading or construction, contractors involved in grading and grubbing activities shall receive training from a County-qualified archeologist. The training should address the following issues:

- *a. Review the types of archaeological artifacts that may be uncovered;*
- *b. Provide examples of common archaeological artifacts to examine;*
- *c. Review what makes an archaeological resource significant to archaeologists and local native Americans;*
- *d. Describe procedures for notifying involved or interested parties in case of a new discovery;*
- *e. Describe reporting requirements and responsibilities of construction personnel;*

f. Review procedures that should be used to record, evaluate, and mitigate new discoveries; and

g. Describe procedures that would be followed in the case of discovery of disturbed as well as intact human burials and burial-associated artifacts.

h. Employees completing this training should be given a special helmet sticker or card to show they have completed the training, where the sticker/card should be kept with them at all times while at the work site.

CR-7 Prior to operation of the Coastal Access Project, signage shall be installed instructing all bicycle, vehicle, and pedestrian traffic to stay on existing roads.

Human Remains

According to CEQA, "Archaeological sites known to contain human remains shall be treated in accordance with the provisions of Section (7050.5) Health and Safety Code." The PRC also ensures the protection of human remains (Sections 5097.94, 5097.98, and 5097.99). Section 23.05.140 of San Luis Obispo County's Coastal Zone Land Use Ordinance has similar stipulations stating that "(i)n the event archeological resources are found to include human remains, or in any other case when human remains are discovered during construction, the County Coroner shall be notified in addition to the Department so proper disposition may be accomplished." The Coroner will notify the Native American Heritage Commission, which will determine and notify a most likely descendant. The most likely descendant shall complete the inspection of the site within 48 hours of notification and may recommend scientific removal and nondestructive analysis of human remains and items associated with Native American burials. If human remains were encountered during grading, the potential for disturbance of these remains would be potentially significant. Implementation of the following mitigation measure would reduce the impact to less than significant.

CR-8 If human remains are exposed, the applicant shall notify the County Environmental Coordinator immediately and comply with State Health and Safety Code Section 7050.5, which states that no further disturbance should occur until the County Coroner has been notified and can make the necessary findings as to origin and disposition of the remains pursuant to Public Resources Code 5097.98. All ground disturbing activity shall halt in the area of the discovery of human remains, the area should be protected, and consultation and treatment should occur as prescribed by law.

Paleontological Resources

At present, there are no known paleontological resources or unique geologic formations or sites located within the Coastal Access Project Site. However, it is possible that paleontological resources could be discovered during ground disturbing activities associated with construction of the route, depending on the depth of construction. Implementation of the following mitigation measure would reduce potential impacts to unknown paleontological resources to a less than significant level.

CR-9 If any paleontological resources are encountered during ground-disturbing activities, activities in the immediate area of the find shall be halted and the discovery assessed.

A qualified paleontologist shall be retained to evaluate the discovery and recommend appropriate treatment options pursuant to guidelines developed by the Society of Vertebrate Paleontology. A paleontological resource impact mitigation program for treatment of the resources shall be developed and implemented if paleontological resources are encountered.

Motor Vehicle, Bicycle and Pedestrian Access

The impacts associated with the motor vehicle, bicycle and pedestrian option would be similar to what is discussed above for the bicycle/pedestrian option. All of the impacts and suggested mitigation measures discussed above for the bicycle/pedestrian option would apply to this option. The construction impacts would be slightly larger with this option since the roadway width would be about two feet wider then for the bicycle/pedestrian option. However, all of the construction impacts would remain the same as discussed above for the bicycle/pedestrian option.

Long-term use of the access route would mean increased human presence in the area, along with increased motor vehicle traffic and would cause an increased risk of trespass and the driving of off-road vehicles in to areas with sensitive cultural resources. This could result in significant impacts to cultural resources. Implementation of mitigation measure CR-7, requiring signs to instruct vehicles to say on the access road would serve to reduce potential impacts to cultural resources associated with off-road vehicles.

Docent-Led Access

This option would have minimal impacts to cultural resources since minimal improvements to the existing service road would be required. The installation of the automatic signals and gates at the railroad crossing would have no impact to cultural resources. If a new parking lot needed to be installed at the access trail head near State Route 1, this could result in impacts to unknown cultural resources, which could be significant as discussed above for the bicycle/pedestrian option. Implementation of mitigation measures CR-1 through CR-6 would reduce the impacts associated with construction of the parking lot to less than significant. Use of parking at the SMR would eliminate this potential impact. There would be no cultural resource impacts along the dirt portion of the road since no construction would be needed.

The risk of users straying from the designated path and impacting cultural resources would be unlikely since this option would involve managed access.

9.4.6 Hazards and Hazardous Materials

9.4.6.1 Environmental Setting

The SMR processes crude oil and produced gas, both of which could present risks to the public. The main hazards to the public from the SMR are due to:

- Releases of flammable and/or toxic gases that could result in toxic and/or flammable vapor clouds, fires, and BLEVEs (boiling liquid expanding vapor explosions);
- Crude oil fires and BLEVEs; and

- Crude oil spills.

Crude oil is processed and then stored in tanks that could spill and ignite, creating thermal radiation impacts. Thermal radiation impacts from crude oil tank fires could cause injury 220 feet away. The closest population to the crude oil tanks at the Refinery is an industrial area 425 feet northeast of the crude oil storage facilities. The closest residence to the crude oil tanks, which is located within the industrial area, is 1,200 feet northeast of the tank storage area. The gas processing equipment and piping are at least 1,700 feet from the property fence line. Given the limited population and significant distance between these receptors and the SMR, there would not be a significant risk level to the existing surrounding population (SLO County 2012).

A search of historical release data for the SMR through the Federal Emergency Response Notification System indicates that in the last 28 years a total of 16 reportable releases occurred (from 1982 through 2010). Fifteen of these releases were associated with releases of excess gases to the emergency-only flare stack due to several equipment failures, including boiler and compressor failures. In 2004, a leaking crude oil pipeline caused a release.

The SMR is located on approximately 1,600 acre site. The majority of this site is undeveloped (about 750 acres) and provides a buffer between the refinery operations and the public, thereby limiting the potential for accidents at the refinery from impacted surrounding populations.

There is also the existing hazard associated with trains moving along the UPPR mainline tracks, which represent a hazard to pedestrians. While these tracks are not directly assessable in the area of the refinery, opening up a new access point would bring people in closer proximity to the tracks.

9.4.6.2 Coastal Access Impacts

All of the coastal access options would result in bringing the public closer to the refinery operations. The coastal access route would pass through an existing truck and equipment storage area, and would be about 900 feet from some of the refinery processing equipment. In the event of an incident at the refinery there would be an increase in the potential for impacts to the public using the coastal access. There is also the increased potential for vandalism and terrorist attacks at the SMR as the public is allowed closer access to the refinery operations. The existing security systems at the SMR would help to reduce the potential for these types of events. These hazard and safety impacts would apply to varying degrees for all of the coastal access options.

Bicycle and Pedestrian Access Option

The coastal access option would allow uncontrolled access to property that is in close proximity to the existing refinery operations and UPRR tracks. In the event of an incident at the SMR people using the bicycle/pedestrian access would need to be directed away from the SMR site. Since it is uncontrolled access, it would likely fall on the emergency response teams to direct people away from the refinery and toward the beach area. The public would have to exit the beach area using the existing ODSVRA access point, which is located away from the refinery. Depending upon the type and nature of the incident, people in close proximity to the refinery could be injured or killed. Clearing and closing the access trail as well as dealing with potential

public injuries would place an additional load on the emergency response teams at a time when the focus should be on the incident. This would potentially be a significant impact to emergency response staffing.

Pedestrian and bicycle uses in this area would be in closer proximity to the UPRR tracks, which could be a safety hazard. An elevated railroad crossing would reduce these safety risks substantially; however, there would be the potential for recreational users to stray from the trail and explore areas along the railroad tracks.

Implementation of the following mitigation measure could potentially reduce the severity of the impact to emergency response and hazards to the public to less than significant levels.

H-1 Prior to application for permits or entitlements for the Coastal Access Project, a quantitative risk assessment (QRA) shall be conducted to determine the minimum distance from refinery operations that the access trail and any associated parking lot should be located to assure acceptable levels of public risk. The final location of the access trail should be based upon the results of the QRA.

Motor Vehicle, Bicycle and Pedestrian Access

The impacts discuss above for the bicycle/pedestrian option would also apply to the motor vehicle, bicycle, and pedestrian option. The access route for this option would use one of the two access roads to the SMR (the current truck access road). Both of these access roads are critical for emergency response teams to access the SMR in the event of an incident. The increase level of traffic on State Route 1 and along the current SMR truck access route could hinder the ability of emergency response vehicles to access the SMR in a timely manner, which could be a potentially significant impact. In addition, in the event of an incident at the SMR it is likely that the coastal access road would have to be shutdown and the public would have to exit the beach area using the existing ODSVRA access point, which is located away from the refinery. Implementation of mitigation measure H-1 and the measure below could potentially reduce the severity of the impact to emergency response and hazards to the public to less than significant levels.

H-2 Motor Vehicle Coastal Access shall be designed in a manner to ensure the existing SMR access roads from State Route 1 are not obstructed.

Docent-Led Access

This option would have the lowest level of use for the coastal access and access would be supervised. The schedule of docent-led access has not been determined, but could be on the order of once a week or once a month. It is likely that docent-led access would occur in small groups of about ten people. This would limit the potential for impacts to the public from an incident at the SMR. Docents that would lead the tours would need to be educated about the hazards of the refinery and what action to take if an incident occurs at the SMR. This would allow docents to properly evacuate the members of the group away from the area of any refinery incident. This would help to reduce any demand of emergency response staff. Given the hazardous nature of the SMR, it would be prudent to implement mitigation measure H-1 to assure that the coastal access trail provides an adequate buffer from the SMR.

9.4.7 Land Use

9.4.7.1 Environmental Setting

The Coastal Access Project would extend through the SMR property on both sides of the Union Pacific Railroad (UPRR). Refer to Section 4.8.1 for existing land use setting information on areas east of the UPRR. Additional information that relates to the area located west of the UPRR is provided below, to the extent it differs from that provided in Section 4.8.1.

The Coastal Access Project Site west of the UPRR is entirely within the California Coastal Zone and South County Coastal planning area. The approximately 630-acre area is comprised of the following parcels: Assessor Parcel Numbers 091-141-062, 092-391-020, 092-391-021, and 092-391-034. The area currently supports relatively undisturbed dune habitat. The only existing development within the area is an unpaved service road used by the SMR to maintain an outfall pipeline. The area supports numerous sensitive botanical and wildlife species, dune wetland areas (Jack Lake), and high quality native central dune scrub habitat.

The area is bounded on the north by agricultural uses and dune lakes, on the south by intensive agricultural production, on the west by the Oceano Dunes State Vehicular Recreational Area (ODSVRA) and beach, and on the east by the UPRR and the SMR.

The entire area west of the UPRR is within the Open Space land use category with a Local Coastal Plan, Coastal Appealable Zone, and Sensitive Resource Area (SRA) combining designation overlays. The SRA designation in this area is associated with the Coastal Zone Terrestrial Habitat sub-category. Jack Lake is also identified as a Coastal Wetland.

The Terrestrial Habitat designation applies to sensitive plant or animal habitats within land areas of an SRA (as opposed to marine areas). The Wetlands designation is applied to lands that may be covered by shallow water, including saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mud flats and fens.

The Flood Hazard combining designation lies adjacent to the southern boundary of the Coastal Access Project Site and covers a large area just south of the dunes. The area of the Coastal Access Project Site that is located east of the UPRR is not subject to any combining designations other than Local Coastal Plan and Coastal Appealable Zone.

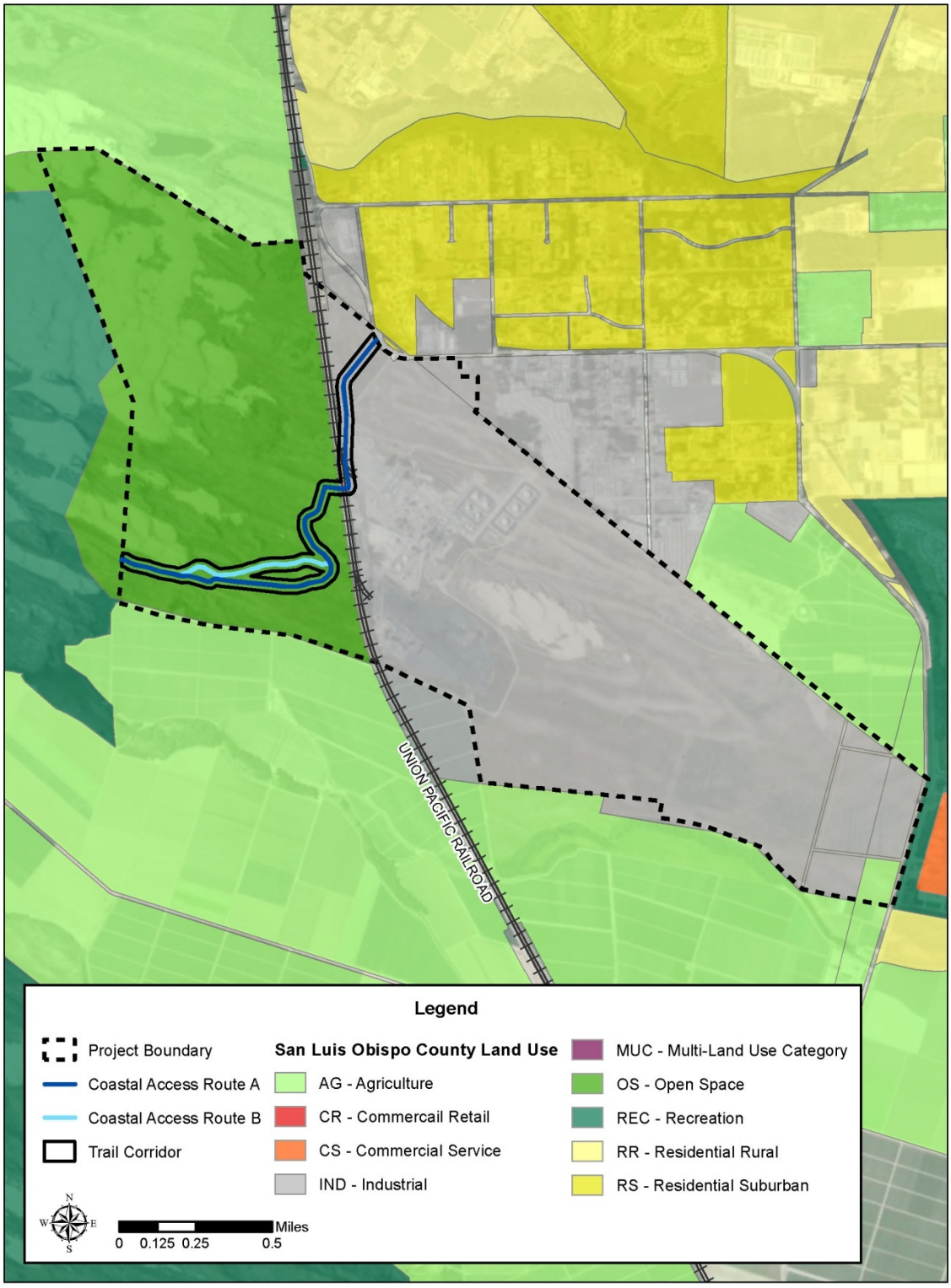
The Coastal Access Project Site land use designations and combining designations are shown in Figures 9-14 and 9-15, below.

9.4.7.2 Coastal Access Impacts

Consistency Analysis

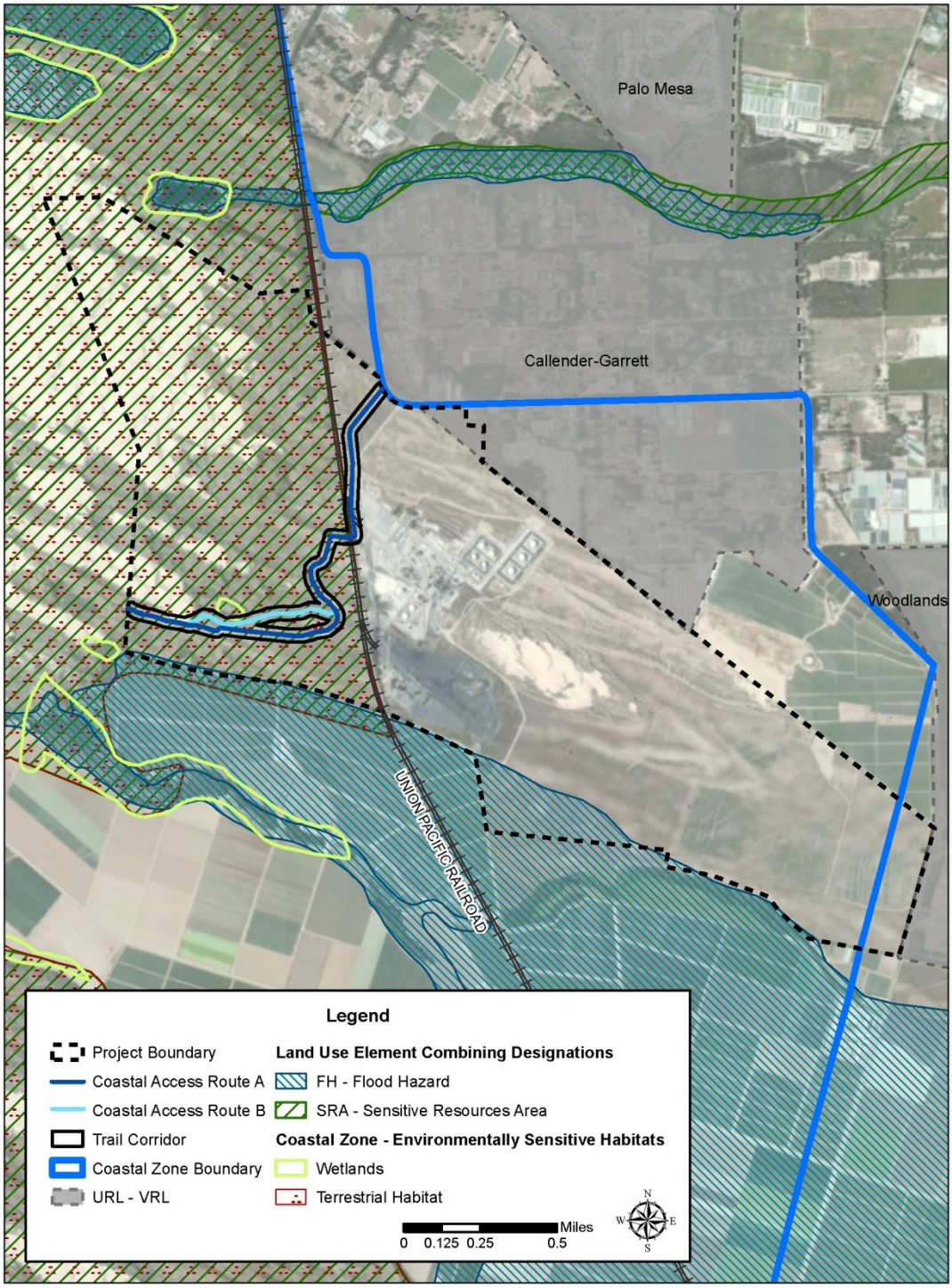
The consistency analysis that is present below has been based on the conceptual designs present in Section 9.3. The analysis has been prepared to better understand the types of consistency issues that could arise with coastal access in this area. A more detailed consistency analysis would have to be prepared if and when a precise project description is submitted to the County.

Figure 9-14 Land Use Map



Source: Countywide_luc. SLO County Planning & Building Geographic Technology & Design. April 23, 2009

Figure 9-15 Combining Designations Map



Source: Digital Flood Insurance Rate Map Database, San Luis Obispo County, California, USA. Federal Emergency Management Agency. Washington DC. August 28, 2008; des-coastal_zone, des-coastal_creeks, des-inland_creeks, des-flood-FEMA, des-sra, des-wetlands, des-terrestrial, url_vrl_polygon_2009. SLO County Planning & Building Geographic Technology & Design. April 23, 2009.

Pursuant to CEQA, a significant impact may result if the project would be potentially inconsistent with a land use policy/regulation adopted to avoid or mitigate for environmental effects, and that inconsistency would result in an adverse physical effect on the environment.

The major policies applicable to a possible Coastal Access Project are listed in Table 9.4, below. A preliminary determination of a conceptual project's consistency has been provided for each policy, and an assessment of whether potential adverse physical effects on the environment could result from any potential inconsistencies is made.

The preliminary consistency analysis for the Coastal Access Project is not typical of that which is usually provided in an EIR because a specific project has not yet been decided. Therefore, the consistency determination considers coastal access through this area more generally, and when appropriate, distinguishes between the different access options and alignments.

Note that there may be instances where potential inconsistencies and adverse environmental effects are identified, but those effects have also been identified as potentially significant impacts in other sections of this Chapter. In that situation, this section will refer to the impact discussion of the specific resource area (i.e., Biological Resources), rather than discuss the potential for an additional significant impact under a land use threshold, based on the same adverse environmental effect.

The policies identified in Table 9.4, do not provide an exhaustive list of all of the policies and regulations that would be at issue if project level analysis of the Coastal Access Project was being conducted. Given that no detailed project description is available for the Coastal Access Project, it is not possible to conduct a detailed consistency analysis.

However, the consistency analysis does include those most directly applicable and relevant to a Coastal Access Project on the SMR property.

By considering several feasible alternatives for access through this area in an effort to balance important land use considerations and avoid or minimize sensitive resources to the extent feasible, the Coastal Access Project would be largely consistent with the applicable plans and policies discussed above. The most likely inconsistencies would result from effects on sensitive biological resources, including impacts to mapped ESHA areas, air quality from PM_{10} emissions and possibly traffic which are identified and discussed in the applicable issue area sections of this chapter.

Compatibility with Surrounding Land Uses

The Coastal Access Project would bring pedestrian, bicycle, vehicular, and/or docent-led traffic through the SMR site, across the UPRR and undeveloped dunes to provide access from State Route 1 to the ODSVRA.

The Coastal Access would lead to the off-road vehicle (ORV) area of the ODSVRA, which is directly adjacent to the western boundary of the Coastal Access Project Site. Use of the access route could be significant based on current usage rates of the ODSVRA.

Table 9.4 Conceptual Coastal Access Project Policy Consistency Analysis

Policy	Preliminary Consistency Determination	Potential Adverse Environmental Effect?
Coastal Plan Policies		
Policies for Shoreline Access. Policy 2: New Development The size and location of vertical accessways should be based upon the level and intensity of proposed or existing access. Site review shall consider: safety hazards; adequate parking provisions; privacy needs of adjacent residential property owners; provisions for requiring adequate public notification of accessway; and levels of improvements or facilities necessary to provide for existing level of access. In some areas of the county, access may need to be limited and controlled such that adequate protection is given to agricultural uses and sensitive habitat areas. The level and intensity of access should be consistent with the following considerations: Maximum access within new development may be inconsistent with the protection of sensitive habitats. To optimize public access while protecting resources and land uses, limited forms of access and mitigation methods should be considered. Such mitigation methods may include establishment of a monitoring and maintenance program to assess the impacts of public use and to propose protection limitations. For example, access near a sensitive habitat may be restricted to a particular time of year to avoid conflicts with nesting seasons or other seasonal conditions. In other areas, such as Dune Lakes, this may require limitation on access to scientific or educational study, at the discretion and with the permission of the property owner. In some areas it may be appropriate to require no new vertical access. This may be where adequate access exists nearby, or where adequate mitigation cannot be given to protect agricultural operations or sensitive habitat areas.	**Potentially Consistent.** The County is currently assessing the appropriate size and location of vertical public access at this location consistent with this policy. Factors related to the presence of potential safety hazards and sensitive habitat areas are being studied. Docent-led access is being considered as an access alternative, consistent with the use identified as potentially appropriate in areas with coastal wetlands, such as Dune Lakes. Whether the ultimate option for coastal access selected is consistent with this policy is yet to be determined. However, at this time, the Coastal Access Project is complying with the intent of this policy by considering options and ways to minimize impacts.	n/a
Policies for Environmentally Sensitive Habitats. **B. Wetlands. Policy 16: Adjacent Development** Development adjacent to coastal wetlands shall be sited and designed to	**Potentially Inconsistent.** Development of the Coastal Access Project would result in the development of a pedestrian and/or vehicular access	**Adverse Physical Environmental Effect.** Potential adverse environmental

Table 9.4 Conceptual Coastal Access Project Policy Consistency Analysis

Policy	Preliminary Consistency Determination	Potential Adverse Environmental Effect?
prevent significant impacts to wetlands through noise, sediment or other disturbances. Development shall be located as far away from the wetland as feasible, consistent with other habitat values on the site.	path in proximity of a designated coastal wetland. Coastal Access Route A would be located approximately 150 feet south of the wetland area, but the potential for trespass and disturbance is still present. Coastal Access Route B would pass directly adjacent to the wetland area, and well within the LCP's recommended 100-foot buffer which would require a setback adjustment from the decision making authority.	effects on coastal wetlands are assessed in Section 9.4, Biological Resources. No additional analysis of potential environmental impacts resulting from the same physical effect is necessary.
Policies for Environmentally Sensitive Habitats. **D. Terrestrial Environments. Policy 31: Design of Trails In and Adjoining Sensitive Habitats** San Luis Obispo County, or the appropriate public agency, shall ensure that the design of trails in and adjoining sensitive habitat areas shall minimize adverse impact on these areas.	**Potentially Consistent.** The County is currently assessing the appropriate size and location of vertical public access at this location consistent with this policy. Factors related to the presence of sensitive habitat areas are being studied. Any alternative would result in disturbance of Terrestrial Habitat; however, access limited to pedestrians or which coincides with the existing service roadway would further reduce impacts. Whether the ultimate option for coastal access selected is consistent with this policy is yet to be determined. However, at this time, the Coastal Access Project is complying with the intent of this policy by considering options and ways to minimize impacts.	n/a
Policies for Environmentally Sensitive Habitats. **D. Terrestrial Environments. Policy 35: Protection of Vegetation** Vegetation which is rare or endangered or serves as cover for endangered wildlife shall be protected against any significant disruption of habitat value. All development shall be designed to disturb the minimum amount possible of wildlife or plant habitat.	**Potentially Inconsistent.** The County is currently assessing the appropriate size and location of vertical public access at this location consistent with this policy. Factors related to the presence of sensitive habitat areas, including the Nipomo Mesa lupine and Central Dune Scrub, are being studied. Any access alternative would likely disturb sensitive plant species unless minimal improvements (sited in appropriate locations) were required to provide vertical access. Coastal Access Route A passes	**Adverse Physical Environmental Effect.** Potential adverse environmental effects on sensitive terrestrial plant species such as Nipomo Mesa lupine and Central Dune Scrub are assessed in Section 9.4, Biological Resources. No additional analysis of potential environmental impacts resulting

Table 9.4 Conceptual Coastal Access Project Policy Consistency Analysis

Policy	Preliminary Consistency Determination	Potential Adverse Environmental Effect?
	through an area with documented occurrences of the state and federally listed endangered Nipomo Mesa lupine. Coastal Route B passes immediately adjacent to a mapped colony of Nipomo Mesa lupine and could also result in indirect disturbance. The Coastal Access Route passes through areas of Mapped ESHA, primarily Central Dune Scrub. This could make any expansion of the current access road inconsistent with CZLUO ESHA requirements (23.07.170) and Terrestrial Habitat requirements (23.07.176). Whether the ultimate option for coastal access selected is consistent with this policy is yet to be determined. However, at this time, the Coastal Access Project is complying with the intent of this policy by considering options and ways to minimize impacts.	from the same physical effect is necessary.
Policies for Environmentally Sensitive Habitats. **D. Terrestrial Environments. Policy 36: Protection of Dune Vegetation** Disturbance or destruction of any dune vegetation shall be limited to those projects which are dependent upon such resources where no feasible alternatives exist and then shall be limited to the smallest area possible. Development activities and uses within dune vegetation shall protect the dune resources and shall be limited to resource dependent, scientific, educational and passive recreational uses.	**Potentially Consistent.** The Coastal Access Project would result in the disturbance of dune vegetation; however, its purpose would be to provide coastal access in an area where it has been determined to be currently insufficient and the costal access trail would provide a public access easement. The County is conducting a preliminary assessment of alternatives in an attempt to determine the type and location of suitable and feasible coastal access. Whether the ultimate option for coastal access selected is consistent with this policy is yet to be determined (i.e., vehicular access may be inconsistent with the provision that the use be limited to the smallest area possible). However, at this time, the Coastal Access Project is complying with the intent of this policy by considering options and ways	n/a

Table 9.4 Conceptual Coastal Access Project Policy Consistency Analysis

Policy	Preliminary Consistency Determination	Potential Adverse Environmental Effect?
	to minimize impacts.	
Parks and Recreation Element – San Luis Obispo County General Plan		
Trails Policy 3.15: The County shall fully indemnify, protect and hold harmless (including all costs and attorney fees) private property owners who dedicate or grant a public trail easement from, and against, those risks and damages that arise out of the usage of the trail easement by the public and which, in good conscience, should not be borne by the private property owner.	**Potentially Consistent.** The County is currently assessing the potential risks associated with public trail easement at this location and Phillips 66 and Union Pacific Railroad have expressed concern over safety issues associated with public access at this location. It is assumed that the County would indemnify these private property owners from risks and damages that arise out of use of the trail consistent with this policy.	n/a
South County Coastal Area Plan (Coastal Zone Land Use and Circulation Elements)		
CHAPTER 6: LAND USE. **A. RURAL AREA LAND USE. Open Space** The area designated as Open Space within the Nipomo Dunes is identified for the preservation of the sensitive dune habitats. This area represents an important buffer zone to protect the vegetated back dunes and dune lakes. This buffer is necessary to protect the sensitive habitat from two adjacent uses: the off-road vehicular use to the west in the Pismo Beach State Vehicular Recreation Area; and the oil refinery operations to the east. Only passive recreational activities that are consistent with protection of the sensitive habitat will be permitted. (LCP)	**Potentially Consistent/Inconsistent.** The Coastal Access Project appears to allow passive recreational activities, such as the docent lead tours, which would be consistent with this policy. The County is currently assessing the various alternative access options to determine the potential for effects on the sensitive habitat at this location. The options that would allow for access for vehicles and bicycles access would likely be inconsistent with this policy.	n/a
CHAPTER 8: PLANNING AREA STANDARDS. A. SOUTH COUNTY RURAL AREA STANDARDS. OPEN SPACE 2. **Limitation of Use.** This area shall be maintained in its natural state to provide a buffer from the off-road vehicular area to the west and to afford protection to the refinery area to the east. Only authorized vehicles used for maintenance purposes are permitted, except for special off-road events which may be permitted if the lease between Union Oil and State Parks is renegotiated. (LCP)	**Potentially Inconsistent.** This policy specifically refers to the Coastal Access Project Site area west of the UPRR. It limits permitted vehicular uses to authorized maintenance vehicles and special off-road vehicle events. If the Coastal Access Project provided vehicular access, it would not be a permitted use consistent with this policy and would introduce what could be a fairly intensive use based on the popularity of the Oceano Dunes SVRA within this area intended to serve as a buffer in its natural state. Allowing public vehicular access through the	**Adverse Physical Environmental Effect.** If the Coastal Access Project provided vehicular access, it would introduce a more intense use in this area intended to serve as a natural buffer between the SVRA and Santa Maria Refinery inconsistent with this policy. However, it would not substantially reduce the

Table 9.4 Conceptual Coastal Access Project Policy Consistency Analysis

Policy	Preliminary Consistency Determination	Potential Adverse Environmental Effect?
	Coastal Access Project may require amendment of this Planning Area Standard and/or a renegotiation of the lease between Phillips, as successor in interest to Union Oil, and State Parks.	effective buffering of these two uses, as neither of these uses would be expended in this area and the vast majority of the dune area would remain undeveloped.
CHAPTER 8: PLANNING AREA STANDARDS. A. SOUTH COUNTY RURAL AREA STANDARDS. OPEN SPACE 4. **Buffer Zones.** No facilities shall be located in the area west of the railroad, which shall serve as a protective, natural buffer separating the heavy industrial use from the recreational activities within the dunes. This buffer area shall be managed cooperatively between the property owners and the California Department of Parks and Recreation to encourage dune revegetation and stabilization within the buffer area. A buffer area shall be required to reduce impacts to the nearby residential areas. (LCP)	**Potentially Inconsistent.** This policy specifically refers to the Coastal Access Project Site area west of the UPRR. It prohibits facilities in this buffer area. The Coastal Access Project could potentially be considered a facility within this buffer zone.	**Adverse Physical Environmental Effect.** The Coastal Access Project would introduce a more intense use in this area intended to serve as a natural buffer between the SVRA and Santa Maria Refinery, which may be inconsistent with this policy. The project would not substantially reduce the effective buffering of these two uses, as neither of these uses would be expended in this area and the vast majority of the dune area would remain undeveloped. However, increased traffic from a vehicle access road could increase air and traffic impact to near residential areas.

Source: San Luis Obispo County Area Plans, Available at: http://www.slocounty.ca.gov/planning/General_Plan__Ordinances_and_Elements/Area_Plans.htm

Depending on the type of access provided by the Coastal Access Project, the recreational use proposed could be incompatible with industrial uses to the east, off-highway vehicle uses to the west, or both.

Pedestrian and/or Bicycle Access

Pedestrian/bicycle access would lead to potential incompatibilities with the adjacent SMR and industrial uses east of the Coastal Access Project Site. It would bring potentially large numbers of individuals in an area characterized by heavy industrial uses, including refining, processing, handling, shipping and stockpiling of hazardous substances. These activities typically generate air emissions, odors, noise, safety issues, and aesthetic impacts that make it appropriate to situate them away from other more sensitive land uses (like recreation). The location of the route predominantly west of the heavy industrial uses would be beneficial, as northwest winds are predominant and would help shield users to the west from these objectionable effects. However, the initial portion of the access route would bring individuals in close proximity to the active SMR operations, which would increase public safety concerns (refer to Hazards discussion above).

Pedestrian and bicycle uses in this area may also be incompatible with surrounding uses because of the safety risks associated with the UPRR and refinery. An elevated railroad crossing would reduce safety risks substantially; however, there would be the potential for recreational users to stray from the trail and explore areas along the railroad tracks. The refinery facility is subject to strict safety requirements and access restrictions. The refinery is surrounded by 8-foot tall chain-link fencing, topped with barbed wire as required by U.S. Department of Homeland Security regulations. Therefore, the potential for trespassing in to the SMR by passive recreational users is considered low. However, public users could be impacted in the unlikely event of an incident at the SMR. As such, impacts could be potentially significant.

Pedestrian and bicycle access to the ORV area west of the Coastal Access Project Site may also be somewhat incompatible. This area is designated for off-highway vehicle use and is currently somewhat inaccessible by pedestrians due to its distance from the existing park entrances. The extent of potential safety hazards associated with the introduction of pedestrians into an area typically occupied by various motorized off-highway vehicles (i.e., dune buggies, four-wheelers, sandrails, etc.) are not yet known, but would include collisions, roll-overs, overcrowding, and lack of visibility of pedestrians in steep dune areas. Further study should be conducted to asses these effects.

This type of access may also be incompatible with existing uses on the Coastal Access Project Site west of the UPRR. Aside from the initial disturbance and conversion of sensitive biological resources associated with development of the access route (refer to Section 9.4.4, Biological Resources), the introduction of increased human activity in the natural dune setting would create the increased potential for conflicts with the sensitive plant and wildlife species that currently exist at the site. Widening of the current access road would result in impacts to Mapped ESHA since most of the area west of the UPRR railroad tracks is mapped ESHA, primarily due to Central Dune Scrub and wetland areas. These impacts must be balanced against the potential benefit of providing public coastal access in this area to determine if development of the Coastal Access Project would be feasible at this location pursuant to CZLUO Section 23.04.420.

Docent-Led Access

The option for coastal access that would only allow docent-led access would result in impacts similar to those discussed above for pedestrian and bicycle access, except that it would be less likely that users would stray from the path into areas not intended to be accessed due to the presence of a supervising docent. Additionally, minimal improvements would be required to allow docent-led access at the project site resulting is lesser impacts associated with fragile coastal resources. Users would be subjected to similar incompatibilities associated with industrial activity on the adjacent parcel (air quality, noise, odor, etc.). However, potential safety issues related to the UPRR, refinery, and ORV area would be similar to that for the bicycle/pedestrian option.

Vehicular Access

Vehicular coastal access would be generally compatible with the adjacent industrial and off-highway vehicle land uses. Traffic commonly exists adjacent to industrial uses and railroad crossings, and vehicles are not likely to stray from the designated roadway. Railroad crossings are subject to standard safety regulations that make vehicle crossings familiar occurrences and an elevated crossing, as proposed, would further eliminate potential conflicts. Vehicles would provide some shelter to recreational users from objectionable air emissions, odors, dust and noise that may be associated with the refinery, UPRR and related industrial uses. However, vehicular access could present public safety and emergency response concerns due to the close proximity of the proposed access road to the SMR. Use of the one of the primary access road to the SMR as the coastal access road could interfere with emergency response vehicles in the unlikely event of an incident at the SMR. As such, impacts could be potentially significant.

Opening up a new access point for motor vehicles at the SMR has the potential to increase the level of PM_{10} emissions from sand at the southern end of the ODSVRA. While the overall baseline level of PM_{10} emissions would not be expected to increase, there could be an increase in the localized impacts in the area of the SMR increasing impact on local residences. This might possibly be mitigated with the implementation of the Particulate Matter Reduction Plan (PMRP) that the State is currently preparing for the ODSVRA.

Vehicular access to the ORV area would also be compatible and consistent with how this area is currently accessed within the ODSVRA (the area must be accessed by street-legal vehicles, where off-highway vehicles can be unloaded and used in the ORV area).

However, vehicular access would be incompatible with the sensitive resources located on the Coastal Access Project Site, and could be inconsistent with the ESHA requirements since the majority of the access route passes through areas that are mapped ESHA. Access for vehicles would require a larger road width, additional disturbance/conversion areas, and would generate noise and air emissions resulting from vehicle exhaust in a generally undeveloped area currently supporting substantial sensitive vegetative and wildlife species. Potential incompatibilities with this land use would be significant.

In addition, design standards for vehicular access would likely require that any such access also provide accommodations for bicyclists and pedestrians as well. Therefore, the incompatibilities

discussed above for these users would most likely also be implicated under an access route alternative that provided for vehicles.

9.4.8 Recreation

9.4.8.1 Environmental Setting

There are four existing public coastal access routes in the vicinity of the Coastal Access Project Site:

- Oso Flaco Lake Natural Area – approximately 0.73 mile south
- Pier Avenue in Oceano – approximately 3.5 miles north
- Grand Avenue in Grover Beach – approximately 4.5 miles north
- Rancho Guadalupe Dunes County Park – approximately 5.5 miles south

The Oceano Dunes SVRA directly borders the west edge of the Coastal Access Project Site. The entire ODSVRA includes 7.4 miles of coastline and 3,854 acres of land owned by the California Department of Parks and Recreation (State Parks), the County, and Phillips 66 (Willey 2013). Of this total area, approximately 1,637 acres are open to use by off-highway vehicles (the ORV area). Sensitive areas within the ORV area are fenced off to keep users out and minimize disturbance.

The Oceano Dunes SVRA is the only California State Park where you can drive your vehicle on the beach. Average annual usage of the park is over 2 million visitors, over 325,000 street-legal vehicles, and over 200,000 off-highway vehicles. Busy holiday weekends, such as Memorial Day weekend, bring an estimated 50,000 to 60,000 visitors to the SVRA (Willey 2013). Besides off-highway vehicle use in the designated ORV area, the park also offers beach camping, fishing, hiking, clamming, swimming, surfing, and broad opportunities for plant and wildlife viewing. Camping and day-use vehicular access within the park are subject to use fees.

The SVRA also includes the Pismo Dunes Natural Preserve, which is closed to all vehicles (off-highway and street-legal), and provides virtually isolated hiking opportunities into a dune preserve area a few hundred yards inland from the shoreline. The southern boundary of the Natural Preserve is located approximately 1.25 miles north of the Coastal Access Project Site.

Street-legal vehicles currently access the ODSVRA by the existing coastal access routes at Pier Avenue in Oceano and Grand Avenue in Grover Beach. Both accessways provide vehicular access to the beach so that vehicles can drive along the shoreline to camp in the state park or access the ORV area. Off-highway vehicles must be transported to the entrance at the north end of the ORV area and unloaded at that location prior to entry. Additional pedestrian access to the SVRA is available at the Oso Flaco Lake Natural Area south of the Project Site. However, because no vehicular access is allowed, the ORV area cannot be accessed from the Oso Flaco route. The existing coastal access routes and recreational resources described above are shown in Figure 9-16, below. Refer to Section 4.8.1.3 for additional information related to recreational resources in the Coastal Access Project vicinity.

Figure 9-16 Recreational Setting

Off-Highway Vehicle (OHV) Area is the same as Off-Road Vehicle (ORV) Area.
Source: Oceano Dunes SVRA Map, available at: http://ohv.parks.ca.gov/?page_id=1208.

9.4.8.2 Coastal Access Impacts

The Coastal Access Project would increase recreational opportunities within the project area and could provide a significant new opportunity for access to the ORV area within ODSVRA. It would not increase the use or demand for parks or recreation opportunities in the area and would not affect access to existing trails, parks, or recreation opportunities (refer to Section 4.8.4.6 for a discussion of the historic Juan Bautista de Anza Trail). Therefore, no impacts to recreational resources would occur.

9.4.9 Transportation and Circulation

9.4.9.1 Environmental Setting

The Coastal Access Project would extend through the SMR property on both sides of the Union Pacific Railroad (UPRR). Refer to Section 4.12.1 for existing traffic and circulation setting information in the vicinity of the SMR. The likely primary use of any access trail on the SMR property would be to access the ODSVRA.

In 2010, annual attendance at ODSVRA was nearly 1.6 million visitors. With its primitive beach and dune camping, the SVRA is the most popular camping destination in all of the State Parks. The park has a 1,000 vehicle per night camping limit, and a day use limit of 4,300 vehicles. These limits were established through a 1982 Coastal Development Permit and four subsequent Permit Amendments to operate the park in the Coastal Zone.

There are two main entrances to ODSVRA. One at the end of Grand Avenue in Grover Beach, and one at the end of Pier Avenue in Oceano. The Pier Avenue entrance, to the south, is the main entrance for ODSVRA, and has more commercial development than Grand Avenue entrance.

From Grand Avenue entrance, park visitors drive south along the beach for approximately one mile until they reach the Pier Avenue entrance, after which they continue for another 0.5 mile to the ORV riding area. The beach between Grand Avenue and the ORV area is a day-use only area. In order to get to the ORV area, visitors accessing the area from both the Pier Avenue and Grand Avenue entrances must drive through the mouth of Arroyo Grande Creek (Condor 2006).

9.4.9.2 Coastal Access Impacts

The traffic and circulation impacts would vary depending upon the type of access that is provided at the SMR site. Each of the access options are discussed below.

Bicycle and Pedestrian Access Option
It is uncertain how much traffic this option would generate. The ODSVRA is primarily used for vehicle camping and off-road vehicle recreation. This could limit the interest in accessing this area for bicyclists and pedestrians, due to the high vehicle traffic on the beach. The conceptual design for this option assumed a parking lot sized for about 50 cars. Therefore, for the purposes of this analysis it has been assumed that the peak day would see somewhere between 100 and 200 vehicles per day would use the access point. As discussed in Section 4.12.1, the average

daily traffic on State Route 1 at the SMR entrance is about 6,000 vehicles. The capacity of the road is between 12,000 and 16,000 vehicles per day. The addition of 100 to 300 vehicles per day would not represent a significant impact to the traffic on State Route 1 in the vicinity of the SMR. The completion of the Willow Road/Highway 101 interchange would make access to the parking site easier.

The intersection of State Route 1 and the entrance to the coastal access route is currently uncontrolled. As discussed in Section 9.3 the costal access entrance from State Route 1 is the current truck entrance to the SMR. In 2009, the SMR has approximately 41 truck trips per day that used this entrance. In addition, just past the truck entrance is the main entrance to the SMR (see Figure 9-2). In 2009, the main entrance was used by about 160 vehicles per day. With the addition of the bicycle/pedestrian access option, this intersection could see peak traffic of 300 to 500 vehicles per day, which would be a less than significant impact.

Motor Vehicle, Bicycle and Pedestrian Access

The impacts associated with the motor vehicle, bicycle and pedestrian option on traffic and circulation are difficult to estimate since it would depend upon what would happen with the two existing ODSVRA main entrances. In the 2006 Condor Study, it was assumed that that both current entrances would remain open but that crossing the Arroyo Grande Creek to get to the ORV area would be prohibited. Therefore, all visitors wishing to access the riding area would have to use the SMR access point and that the number of vehicles equals number of daily trips. This probably results in an estimate that is substantially higher than what should be expected since vehicles will remain parked in the ODSVRA for one or more days. The Condor Study assumed that 90% of the vehicles counted at the Pier Avenue entrance would use the new SMR entrance. It was also assumed that all trips to the park would be in addition to traffic already present on the road. The Condor Study estimated that a peak of 3,579 vehicles per day would use the new SMR access point (Condor 2006).

This level of traffic increase on State Route 1 would not exceed the design average daily traffic. However, traffic at the intersection of State Route 1 and the SMR would substantially increase and would likely cause backups along State Route 1 as vehicles wait to make the turn into and out of the access route. This would also increase traffic safety issues at the intersection due to the increase level of traffic turning at this uncontrolled intersection. This would be considered a significant impact. While a signalized intersection at State Route 1 and the SMR would reduce the severity of this impact, it potentially could remain a significant impact. The completion of the Willow Road/Highway 101 interchange would make vehicle access to the new coastal access road easier, and the interchange is operating well below the design average daily traffic.

This option could require substantial improvements to State Route 1 in the vicinity of the SMR including the addition of turn lanes to better handle the increased flow of traffic.

T-1 The application for permits or entitlements for the Coastal Access Project should include the installation of a signalized intersection at State Route 1 and the entrance to the coastal access road.

T-2 Prior to application for permits or entitlements for the Coastal Access Project, a traffic study should be conducted to determine what improvements to the State Route 1 and coastal access road intersection would be needed. This study should be conducted in cooperation with Caltrans. Any improvements identified in the study should be incorporated into the final design for the Coastal Access Project.

Docent-Led Access

This option would have minimal impacts to traffic and circulation since docent-led access would likely be limited to no more than ten people at a time. This would limit traffic to no more than ten vehicles per day on the days that docent-led access was offered. Therefore, the traffic impacts associated with the access option would be less than significant.

9.5 Comparison of Coastal Access Options

Table 9.5 provides a comparison of the potential impacts that were identified for each of the coastal access options by issue area. The impacts identified in this assessment were based upon very limited conceptual designs, and therefore, represent potential impacts that could occur. The severity and significance of these impacts could change once detailed designs for each of the options were developed. However, the impact assessment can be used to gauge the type and possible extent of the impacts could occur with each of the coastal access options.

Docent-Led Access

The docent-led coastal access option would have the lowest level of impacts on the environment. Minimal construction would be needed to implement this option. This option would have the lowest intensity of public use and access to the coastal trail would be supervised. However, this option would provide limited public access. If a new parking lot would have to be built, there could be impacts to Nipomo Mesa lupine, which would be a significant biological impact. It is also uncertain if a grade-separated crossing of the Union Pacific railroad tracks would be needed for this level of access. If the CPUC considers the docent-led access to be a public crossing, then it is possible that a grade-separated crossing could be required. This would increase some of the construction impacts associated with this option.

Bicycle/Pedestrian Access

The bicycle/pedestrian coastal access option would have the second lowest level of impacts on the environment. While the construction impacts of this option would similar to the motor vehicle option, the intensity of public use would be substantially less. Construction of the bicycle/pedestrian access path could result in significant biological impact to sensitive plant species including the Nipomo Mesa lupine, sensitive terrestrial and semi-aquatic wildlife species, and wetlands. Impacts to sensitive biological and cultural resources could also occur from users straying from the designated path into sensitive areas.

This option would likely require the construction of a separated-grade crossing of the Union Pacific railroad tracks. The most likely type of separated-grade crossing would be an elevated walkway.

Motor Vehicle Access

The motor vehicle coastal access would provide the highest intensity of public use, but would also have the greatest level of impacts on the environment and most potential for inconsistencies with land use policies. Construction of the motor vehicle access road could result in significant biological impact to sensitive plant species including the Nipomo Mesa lupine, sensitive terrestrial and semi-aquatic wildlife species, and wetlands. Impacts to sensitive biological and cultural resources could also occur from users straying from the designated path into sensitive areas.

This option would likely require the construction of a separated-grade crossing of the Union Pacific railroad tracks. The most likely type of separated-grade crossing would be a vehicle overpass, which would likely have significant visual impacts since it would be a large structure that would be visible from the beach.

The motor vehicle coastal access would also have the greatest level of traffic impacts. It has been estimated that 3,579 peak daily vehicles would possible use this coastal access road. To handle this level of traffic a signal would likely have to be installed at the intersection of State Route 1 and the SMR. In addition, other improvements may have to be made to State Route 1 such as turnout lanes.

Opening up a new access point for motor vehicles at the SMR has the potential to increase the level of PM_{10} emissions from sand at the southern end of the ODSVRA. While the overall baseline level of PM_{10} emissions would not be expected to increase, there could be an increase in the localized impacts in the area of the SMR. This might possibly be mitigated with the implementation of the PMRP that the State is currently preparing for the ODSVRA.

Public Safety

The coastal access route evaluated in this assessment would pass within about 900 feet of the active refinery operations, and would parallel or use one of the two main access roads to the SMR. Opening up a public access route in close proximity to an active refinery presents a number of public safety issues. In the event of an incident at the SMR members of the public would be at greater risk of being injured or killed. There is also the potential for interference with emergency response activities at the refinery in the even to an incident.

While these types of incidents at the SMR are extremely unlikely, typically it is prudent to maintain an adequate buffer between the active refinery operations and the general public. To avoid these public safety issues a quantitative risk assessment (QRA) should be conducted to determine the minimum distance from the SMR operations the coastal access route should be located.

Relationship to Ongoing ODSVRA Evaluations

Construction of the coastal access across the SMR property would be for access to the ODSVRA. This would be particularly true for the motor vehicle access. The question of the best manner and location for access and staging for ODSVRA has not been completely resolved. It is a complicated question, and one that is informed by a long and involved permitting history. The question of access and staging for the ODSVRA may be resolved in the relatively near future

(including in relation to an upcoming Habitat Conservation Plan for ODSVRA, ongoing Californian Coastal Commission (CCC) condition compliance and review efforts pursuant to CSPR CDP 4-82-300, and State Parks' current CDP application associated with dust control) (CCC 2013).

Conditions included in CDPR's CDP issued by the CCC (CDP 4-82-300, as amended) for ODSVRA operations require CDPR to determine a permanent access and staging location for ORV activities that is the least environmentally damaging alternative and that incorporates all feasible mitigation measures. As a result, a number of studies have been conducted to examine potential alternative access routes into the ODSVRA. These studies have included a 1991 Environmental Impact Report for the Pismo Dunes State Vehicular Recreation Area Access Corridor Project (CDPR), and a 2006 Alternative Access Study Oceano Dunes State Vehicle Recreation Area (Condor Environmental Planning Service, Inc.). Until the CDPR resolves the long standing issues associated with access and staging for the ODSVRA, the type of access for the SMR site is uncertain.

Table 9.5 Comparison of Environmental Impacts for the Various Coastal Access Options

Issue Area	Bicycle/Pedestrian Option	Motor Vehicle Option	Docent-Led Option
Aesthetic and Visual Resources	• Construction of a new parking lot at the intersection of the coastal access and State Route 1 and the bridge over the railroad tracks could impact the visual quality of the site and surroundings. These impacts could likely be mitigated to a level of less than significant.	• The construction of a motor vehicle overpass over the railroad tracks could impact the visual quality of the site and surroundings. Due to the large scale of the structure that would likely be needed, the impact would likely be significant.	• Construction of a new parking lot at the intersection of the coastal access and State Route 1 could impact the visual quality of the site and surroundings. These impacts could likely be mitigated to a level of insignificance.
Agricultural Resources	• Construction of a new parking lot at the intersection of the coastal access and State Route 1 and the bridge over the railroad tracks has the potential for conversion of Farmlands of Statewide Importance. However, this would be less than significant.	• Construction of a new parking lot at the intersection of the coastal access and State Route 1 and the bridge over the railroad tracks has the potential for conversion of Farmlands of Statewide Importance. However, this would be less than significant. • Opening up a new motor vehicle access to ODSVRA at the southern end of the recreational area would likely increase fugitive dust emissions from sand in the area of the SMR. This potentially could be a significant impact on agricultural resources in this area.	• Construction of a new parking lot at the intersection of the coastal access and State Route 1 has the potential for conversion of Farmlands of Statewide Importance. However, this would be less than significant.
Air Quality	• Construction of the parking lot, bridge and access trail would generate air emissions. However, these emissions would be less than significant. • Vehicles traveling to and from the new access point would generate air emissions, but it is expected that these would not be new travelers, but rather travelers displaced from other ODSVRA access points. Therefore, impacts would be less than significant.	• Construction of the overpass and access road would generate air emissions that could be significant. With SLOCAPCD approved mitigation measures these impacts could likely be reduced to less than significant levels. • Vehicles traveling to the ODSVRA on the access road would generate air emissions, but it is expected that these would not be new travelers, but rather travelers displaced from other ODSVRA access points. Therefore, impacts would be less than significant. • Opening up a new access point for motor	• Construction of the parking lot would generate air emissions. However, these emissions would be less than significant. • On improvements would be made to the existing service road. • Docent-led access would generate low levels of vehicles and the frequency of visits would be low. This would result in less than significant air emissions for operations.

Table 9.5 Comparison of Environmental Impacts for the Various Coastal Access Options

Issue Area	Bicycle/Pedestrian Option	Motor Vehicle Option	Docent-Led Option
		vehicles at the SMR has the potential to increase the level of PM_{10} emissions from sand at the southern end of the ODSVRA. While the overall baseline level of PM_{10} emissions would not be expected to increase, there could be an increase in the localized impacts in the area of the SMR. This might possibly be mitigated with the implementation of the PMRP that the State is currently preparing for the ODSVRA.	
Biological Resources	• Construction of the access path, parking lot, and bridge over the railroad tracks would result in impact to sensitive plant species including a number of Federally endangered and state threatened species including the Nipomo Mesa lupine. While a number of mitigation measures have been identified to reduce the severity of impacts to these plant species, the impact would likely remain significant. • Impacts to sensitive terrestrial and Semi-Aquatic wildlife species could occur due to construction and from users straying from the designated path into areas that have sensitive wildlife species. While a number of mitigation measures have been identified to reduce the severity of impacts to these wildlife species, the impact would likely remain significant. • Wetlands could be impacted from construction activities as well as from users straying from the designated path into wetland areas. Impacts to these wetlands would be considered significant. While a number of mitigation measures have been identified to reduce	• Construction of the access road and overpass over the railroad tracks would result in impact to sensitive plant species including a number of federally endangered and state threatened species including the Nipomo Mesa lupine. While a number of mitigation measures have been identified to reduce the severity of impacts to these plant species, the impact would likely remain significant. • Impacts to sensitive terrestrial and Semi-Aquatic wildlife species could occur due to construction and from users straying from the designated road into areas that have sensitive wildlife species. While a number of mitigation measures have been identified to reduce the severity of impacts to these wildlife species, the impact would likely remain significant. • Wetlands could be impacted from construction activities as well as from users straying from the designated road into wetland areas. Impacts to these wetlands would be considered significant. While a number of mitigation measures have been identified to reduce the severity of impacts to wetlands, the impact would likely remain	• Construction of a new parking lot at the intersection of the coastal access and State Route 1 has the potential to impact a number of sensitive plant species include the Nipomo Mesa lupine, which is a Federally endangered species. This could be a potentially significant impact. • No other construction activities would be required for this option. • The risk of users straying from the designated path and impacting biological resources would be unlikely since this option would involve managed access.

Table 9.5 Comparison of Environmental Impacts for the Various Coastal Access Options

Issue Area	Bicycle/Pedestrian Option	Motor Vehicle Option	Docent-Led Option
	the severity of impacts to wetlands, the impact would likely remain significant. • The coastal access trail would provide direct access to the foredune habitat the supports the nesting Western snowy plover. Use of the access trail during the breading season could have a significant impact on the plover. Closing the access trail during the breading season would reduce this impact to less than significant.	significant. • The coastal access road would provide direct access to the foredune habitat the supports the nesting Western snowy plover. Use of the access trail during the breading season could have a significant impact on the plover. Closing the access trail during the breading season would reduce this impact to less than significant. • Motor vehicle activity along the access road increased risk of trespassing, littering, or spills of petroleum products such as oil and gasoline, which all could impact sensitive biological resources. • Opening up a new motor vehicle access to ODSVRA at the southern end of the recreational area would likely increase fugitive dust emissions from sand in this area. This increase in fugitive dust could have a significant impact on sensitive biological resources, which would be a potentially significant impact.	
Cultural Resources	• Construction of the bicycle/pedestrian coastal access path has the potential to result in direct and indirect impacts to known and unknown cultural resources. One previously identified cultural resource, CA-SLO-859, is within the vicinity of the currently proposed access route. These impacts could likely be mitigated to a level of less than significant. • Increased bicycle and pedestrian traffic in this area could result in increased site vandalism and artifact collection due to	• Construction of the motor vehicle coastal access road has the potential to result in direct and indirect impacts to known and unknown cultural resources. One previously identified cultural resource, CA-SLO-859, is within the vicinity of the currently proposed access route. These impacts could likely be mitigated to a level of less than significant. • Increased traffic in this area could result in increased site vandalism and artifact collection due to people wandering off of the access route. Mitigation measures could	• Construction of a new parking lot at the intersection of the coastal access and State Route 1 has the potential to impact unknown cultural resources. These impacts could likely be mitigated to a level of less than significant. • No other construction activities would be required for this option. • The risk of users straying from the designated path and impacting cultural resources would be unlikely since this option would involve

Table 9.5 Comparison of Environmental Impacts for the Various Coastal Access Options

Issue Area	Bicycle/Pedestrian Option	Motor Vehicle Option	Docent-Led Option
	people wandering off of the access route. Mitigation measures could be implemented that would reduce the likelihood of this impact occurring.	be implemented that would reduce the likelihood of this impact occurring.	managed access.
Hazards and Hazardous Materials	• The construction and use of this coastal access route would bring the public within about 900 feet of the active refinery areas. In the event of an incident at the refinery people using the trail could be injured or killed. A QRA would need to be conducted to determine what the safe a distance between the coastal access trail and the SMR.. • In the event of an incident at the refinery emergency response staff would be responsible for clearing the trail and assisting any one that is injured. This would place additional responsibilities on emergency response staff, which would be a significant impact. • Pedestrian and bicycle users in this area may stray from the trail and explore areas along the railroad tracks, which would represent an increased safety risk.	• The construction and use of this coastal access route would bring the public within about 900 feet of the active refinery areas. In the event of an incident at the refinery people using the trail could be injured or killed. A QRA would need to be conducted to determine what the safe a distance between the coastal access trail and the SMR. In the event of an incident at the refinery emergency response staff would be responsible for clearing the trail and assisting any one that is injured. This would place additional responsibilities on emergency response staff, which would be a significant impact. The first part of the access road from State Route 1 is currently the truck entrance road for the SMR. This road also serves as one of the two emergency access roads to the refinery. Use of this road for public coastal access could impact the ability of emergency response vehicles to access the SMR site in the event of an incident, which would be a significant impact. This can be mitigated by modifying the coastal access route to avoid the use of the truck road entrance to the SMR.	Docent-led access would also bring members of the public within about 900 feet of active refinery areas. However, the number of people would be about 10 per tour, and access might only occur between once a week to one a month. This would limit the potential exposure of member of the public to possible incidents at the SMR.
Recreation	• Would increase recreational opportunities within the project area and could provide a significant new opportunity for access to the ORV area within ODSVRA, which could be a beneficial impact.	• Would increase recreational opportunities within the project area and could provide a significant new opportunity for access to the ORV area within ODSVRA, which could be a beneficial impact.	• Would increase recreational opportunities within the project area and could provide a significant new opportunity for access to the ORV area within ODSVRA, which could be a beneficial impact.

Table 9.5 Comparison of Environmental Impacts for the Various Coastal Access Options

Issue Area	Bicycle/Pedestrian Option	Motor Vehicle Option	Docent-Led Option
Traffic and Circulation	• Traffic for the bicycle/pedestrian option has been estimated to be a peak of about 100 to 200 vehicles per day. The project would include a one-acre parking lot that would be able to accommodate 75 to 100 vehicles. The parking lot would be at the trail head off of State Route 1. This limited level of traffic would represent a less than significant impact.	• Traffic for the motor vehicle option has been estimated to be a peak of about 3,579 vehicles per day. While State Route 1 can accommodate this level of traffic, there would be traffic and safety issues associated with the currently uncontrolled State Route 1/SMR intersection. This impact could be mitigated with the installation of a traffic signal at the intersection. This option may also require the addition of turn lanes to better handle the increased flow of traffic.	• Traffic for the docent-led option has been estimated to be a peak of about 10 vehicles for each tour. The project could include a one-quarter acre parking lot near the trail head off of State Route 1. This limited level of traffic would represent a less than significant impact.

9.6 References

These are the references that are unique to this chapter of the EIR. Additional references can be found at the end of each issue area section in Chapter 4.

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