May 2020
Lehigh Southwest Stockton Terminal Project
State Clearinghouse Number: 2019100510

Draft Environmental Impact Report

Prepared for the Port of Stockton

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Prepared for
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Project Number: 160377-01.11

Executive Summary

This Draft Environmental Impact Report (DEIR) was prepared in compliance with the California Environmental Quality Act (CEQA) to assist the Port of Stockton (Port) in considering the approval of the proposed Lehigh Southwest Stockton Terminal Project (proposed project) in accordance with 22 California Code of Regulations (CCR) Section 66265 et seq. Under the proposed project, an existing bulk cementitious material receiving and distribution terminal at the Port would be redeveloped to accommodate additional capacity and improve operationally efficiency. The proposed project includes a lease modification to increase the terminal's leasehold from 5.43 to 7.34 acres. The Port has principal responsibility for making a determination on the proposed project through issuance of the lease, and is the lead agency under CEQA (California Public Resources Code [PRC] 21000 et seq.) and the CEQA Guidelines for Implementation (14 CCR 15000 et seq.) for preparation and approval of the DEIR.

The Port aims to accomplish the following as part of this DEIR:

- Describe the proposed project and its regulatory background
- Identify any significant environmental effects associated with the proposed project
- Provide a discussion of alternatives and feasible mitigation measures for environmental resources where significant impacts are identified

As detailed in the Notice of Preparation (NOP)/Initial Study (IS) circulated for public review from October 25 through November 25, 2019, and included as an appendix to this DEIR, the proposed project is not expected to result in environmental impacts in several resource areas. Therefore, this document relies on the analyses presented in the NOP/IS and is focused on the areas that may result in environmental impacts: aesthetics, air quality, biological resources, cultural resources, geology and soils, greenhouse gases (GHG), hazards and hazardous materials, hydrology/water quality, noise, transportation, and tribal cultural resources.

Proposed Project

The proposed project is located at 205 Port Road 1 and the adjacent Berth 2 in Stockton, California (Figure ES-1). The existing facility is a port terminal that receives and ships bulk material; no processing or production of material occurs at the facility. The proposed project would redevelop the facility to better accommodate material in a more efficient manner, and consists of: 1) Berth 2 rehabilitation; 2) ship unloader replacement; 3) rail trestle replacement; 4) barge loading component installation; and 5) upland facility improvements, including dome construction, truck loading station modifications, a new higher-capacity rail car loading station, demolition of structures and equipment, and existing bunker dust collector replacements.

The existing ship unloader is nearing the end of its useful life and needs replacement. The proposed new ship unloader would allow operations at a higher capacity, thereby allowing greater rates of throughput while minimizing dust emissions, reducing energy load, reducing berthing time, and allowing greater dock utilization. Because a new unloader would be significantly heavier, the existing rail support beams and narrow rail gauge would not be adequate. In addition, the existing dock structure is not constructed to current seismic design. In order to accommodate the replacement ship unloader, the structure would be rehabilitated. A portion of an existing rail trestle with limited weight bearing capacity would be replaced so that the trestle could accommodate full rail cars and an engine. Upland improvements to the rail and truck loading systems are also proposed to handle cementitious material more efficiently.

The Port prepared this DEIR using available technical information and incorporating potential alternatives to the proposed project. As required by CEQA, the Port must evaluate the information in this DEIR, including the proposed mitigation measures and potentially feasible alternatives, before deciding whether to approve the proposed project or an alternative.

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Figure ES-1
Vicinity Map
Environmental Impact Report
Lehigh Southwest Stockton Terminal Project

Project Objectives

Pursuant to the CEQA Guidelines and 14 CCR 15124, a "statement of the objectives sought by the proposed project" must be provided as part of the project description in an EIR. The proposed project's goal is to upgrade an existing dock at the Port in order to handle a heavier replacement unloader, improve rail and truck loading/unloading systems, and increase storage capacity in anticipation of increased future cementitious materials supply and market demand.

To accomplish this goal, the following key project objectives must be accomplished:

- Upgrade the existing Berth 2 to support a new unloader and meet current seismic standards
- Increase the availability of cementitious material to provide a supply of critical building materials to the region and Bay Area
- Receive, store, and ship cementitious material in a manner that promotes safe and efficient handling while ensuring environmental protection and controls
- Update and renew the lease with the Port consistent with the proposed project

Summary of Project Alternatives

The CEQA Guidelines (14 CCR 15126) require that a DEIR consider a range of reasonable alternatives to the project or to the location of the project that would feasibly attain most of its basic objectives but would avoid or substantially lessen any of the significant effects of the project. The alternatives considered in this DEIR are the following:

- Alternative 1: No Project Alternative
- Alternative 2: Reduced Project Alternative

A complete evaluation of these alternatives—including their ability to meet the objectives of the proposed project and their ability to avoid or substantially reduce significant environmental impacts—is provided in Section 6 of this DEIR.

Alternative 1: No Project Alternative

The No Project Alternative, which is required by CEQA, represents what would reasonably be expected to occur in the foreseeable future if the proposed project were not approved. Under this alternative, there would be no construction or replacement of equipment at the Lehigh terminal. While throughput may increase over baseline levels to existing permit limits , the general terminal operations would remain the same. However, because the unloader is nearing the end of its useful life, operations would occur in a less efficient manner and may be reduced over current operations at some time in the future.

Alternative 2: Reduced Project Alternative

The Reduced Project Alternative would consist of the same construction and operational components as the proposed project, with the exception of the wooden rail trestle replacement. Under the Reduced Project Alternative, Lehigh would not replace the rail trestle bridge, which would reduce the overall area available for loaded rail cars, and accordingly reduce the maximum throughput expected at the terminal.

Notice of Preparation/Initial Study

The Port distributed the NOP/IS (Appendix B) for the proposed project on October 25, 2019, for a 30-day public review period ending on November 25, 2019. Public comments received during the scoping process were considered in this DEIR. The following nine comment letters were received during the public comment period for the NOP/IS:

- Environmental Justice 58 of Café Coop
- California Air Resources Board
- California Department of Transportation, Office of Metropolitan Planning
- Central Valley Flood Protection Board
- Central Valley Regional Water Quality Control Board
- California Native American Heritage Commission
- Sierra Club, Delta-Sierra Group
- San Joaquin Council of Governments
- San Joaquin Valley Air Pollution Control District

Summary of Impacts and Mitigation

Summary of Project-Level Impacts

Anticipated environmental effects associated with the proposed project are evaluated in Sections 3 and 4 of this DEIR. Feasible mitigation measures that could minimize significant adverse impacts are also identified in these sections. Table ES-1 presents a summary of the environmental effects of, proposed mitigation measures for, and residual impacts of the proposed project.

The proposed project would result in significant and unavoidable project-level impacts in the following resource areas: air quality, cultural resources, GHG, and noise. Less-than-significant or no project-level impacts would occur in the following resource areas: aesthetics; agriculture and forestry resources; biological resources; energy; geology and soils; hazards and hazardous materials; hydrology and water quality; land use and planning; mineral resources; population and housing; public services; recreation; transportation; tribal cultural resources; utilities and service systems; and wildfire. Mitigation measures have been incorporated where available and feasible.

Summary of Cumulative Impacts

For this DEIR, the potential for other regional projects to contribute to cumulative impacts was analyzed using a list of related projects that would be constructed in the cumulative geographic scope (Section 4, Table 27). In consideration of these projects, cumulative impact analyses for each environmental resource area potentially affected by the proposed project are presented in Section 4. Implementation of the proposed project, cumulatively combined with other related past, present, or probable future projects, may result in significant and unavoidable cumulative adverse impacts related to air quality, cultural resources, GHG, and noise.

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

	Impact Determination	Mitigation Measures	Impact Determination After Mitigation
Aesthetics			
AES-1: Would the project have a substantial adverse effect on a scenic vista?	No Impact	--	No Impact
AES-2: Would the project substantially damage scenic resources?	No Impact	--	No Impact
AES-3: Would the project substantially degrade the existing visual character or quality of public views of the site and its surroundings?	Less-than-significant Impact	--	Less-than-significant Impact
AES-4: Would the project create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?	No Impact	--	No Impact
Air Quality			
AQ-1: Would the project conflict with or obstruct implementation of the applicable air quality plan?	Significant Impact	MM-AQ-1 MM-AQ-2 MM-AQ-3 MM-AQ-4 MM-AQ-5	Significant and Unavoidable Impact
AQ-2: Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	Significant Impact	MM-AQ-1 MM-AQ-2 MM-AQ-3 MM-AQ-4 MM-AQ-5	Significant and Unavoidable Impact
AQ-3: Would the project expose sensitive receptors to substantial pollutant concentrations?	Less-than-significant Impact	--	Less-than-significant Impact
AQ-4: Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	Less-than-significant Impact	--	Less-than-significant Impact

	Impact Determination	Mitigation Measures	Impact Determination After Mitigation
Biological Resources			
BIO-1: Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	Significant Impact	MM-BIO-1 MM-BIO-2 MM-BIO-3 MM-BIO-4 MM-BIO-5	Less-than-significant Impact
BIO-2: Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	Significant Impact	MM-BIO-2 MM-BIO-3 MM-BIO-4 MM-BIO-5	Less-than-significant Impact
BIO-3: Would the project have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marshes, vernal pools, coastal wetlands, etc.) through direct removal, filling, hydrological interruption, or other means?	No Impact	--	No Impact
BIO-4: Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	Significant Impact	MM-BIO-3 MM-BIO-4 MM-BIO-5	Less-than-significant Impact
BIO-5: Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	No Impact	--	No Impact
BIO-6: Would the project conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan?	Significant Impact	MM-BIO-1	Less-than-significant Impact
Cultural Resources			
CHR-1: Would the project cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?	Significant Impact	MM-CHR-1	Significant and Unavoidable Impact
CHR-2: Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	Significant Impact	MM-CHR-2	Less-than-significant Impact
CHR-3: Would the project disturb any human remains, including those interred outside of formal cemeteries?	Significant Impact	MM-CHR-2	Less-than-significant Impact

	Impact Determination	Mitigation Measures	Impact Determination After Mitigation
Geology/Soils			
GEO-1: Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving: • Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? • Strong seismic ground shaking? • Seismic-related ground failure, including liquefaction? • Landslides?	Less-than-significant Impact	MM-GEO-1 MM-GEO-2	Less-than-significant Impact
GEO-2: Would the project result in substantial soil erosion or the loss of topsoil?	Significant Impact	MM-BIO-2	Less-than-significant Impact
GEO-3: Would the project be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project and potentially result in an on-site or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	Less-than-significant Impact	MM-GEO-1 MM-GEO-2	Less-than-significant Impact
GEO-4: Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	Less-than-significant Impact	MM-GEO-1 MM-GEO-2	Less-than-significant Impact
GEO-5: Would the project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems in areas where sewers are not available for the disposal of wastewater?	No Impact	--	No Impact
GEO-6: Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	No Impact	--	No Impact
Greenhouse Gas Emissions			
GHG-1: Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	Significant Impact	MM-AQ-1 MM-AQ-3 MM-AQ-4 MM-AQ-5	Significant and Unavoidable Impact

	Impact Determination	Mitigation Measures	Impact Determination After Mitigation
GHG-2: Would the project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	Significant Impact	MM-AQ-1 MM-AQ-3 MM-AQ-4 MM-AQ-5 MM-GHG-1 MM-GHG-2 MM-GHG-3	Less-than-significant Impact
Hazards and Hazardous Materials			
HAZ-1: Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	Significant Impact	MM-BIO-2 MM-BIO-5 MM-GEO-1 MM-HAZ-1 MM-HAZ-2	Less-than-significant Impact
HAZ-2: Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	Significant Impact	MM-GEO-1 MM-HAZ-1	Less-than-significant Impact
HAZ-3: Would the project emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school?	No Impact	--	No Impact
HAZ-4: Would the project be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	Less-than-significant Impact	MM-HAZ-2	Less-than-significant Impact
HAZ-5: Would the project be located within an airport land use plan area or, where such a plan has not been adopted, be within 2 miles of a public airport or public use airport, and result in a safety hazard or excessive noise for people residing or working in the project area?	No Impact	--	No Impact
HAZ-6: Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	Significant Impact	MM-GEO-1	Less-than-significant Impact
HAZ-7: Would the project expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	No Impact	--	No Impact

	Impact Determination	Mitigation Measures	Impact Determination After Mitigation
Hydrology/Water Quality			
HYD-1: Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?	Significant Impact	MM-BIO-2 MM-BIO-5 MM-GEO-1 MM-HAZ-1 MM-HAZ-2	Less-than-significant Impact
HYD-2: Would the project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	No Impact	--	No Impact
HYD-3: Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: • Result in substantial erosion or siltation on- or off site? • Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off site? • Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff? • Impede or redirect flood flows?	Significant Impact	MM-HAZ-1	Less-than-significant Impact
HYD-4: Would the project, in flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	Less-than-significant Impact	MM-HAZ-1	Less-than-significant Impact
HYD-5: Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	Significant Impact	MM-BIO-2 MM-BIO-5 MM-GEO-1 MM-HAZ-1 MM-HAZ-2	Less-than-significant Impact

	Impact Determination	Mitigation Measures	Impact Determination After Mitigation
Noise			
NV-1: Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	Significant Impact	--	Significant and Unavoidable Impact
NV-2: Would the project result in generation of excessive groundborne vibration or groundborne noise levels?	Less-than-significant Impact	--	Less-than-significant Impact
NV-3: Would the project be located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, be within 2 miles of a public airport or public use airport, and expose people residing or working in the project area to excessive noise levels?	No Impact	--	No Impact
Transportation			
TT-1: Would the project conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	Less-than-significant Impact	--	Less-than-significant Impact
TT-2: Would the project conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)?	Less-than-significant Impact	--	Less-than-significant Impact
TT-3: Would the project substantially increase hazards because of a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	No Impact	--	No Impact
TT-4: Would the project result in inadequate emergency access?	No Impact	--	No Impact
Tribal Cultural Resources			
TCR-1: Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074?	Significant Impact	MM-CHR-2	Less-than-significant Impact

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ABBREVIATIONS

--	not applicable
$\mu g/m^3$	micrograms per cubic meter
AB	Assembly Bill
AQMP	Air Quality Management Plan
ARB	California Air Resources Board
AST	aboveground storage tank
BAAQMD	Bay Area Air Quality Management District
BAU	business-as-usual
BMP	best management practice
BNSF	BNSF Railway
BPS	Best Performance Standards
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
Cal/OSHA	California Division of Occupational Safety and Health
CalEPA	California Environmental Protection Agency
Caltrans	California Department of Transportation
CAP	Climate Action Plan
CAPCOA	California Air Pollution Control Officers Association
CAPP	Community Air Protection Program
CCAA	California Clean Air Act
CCR	California Code of Regulations
CCT	Central California Traction Company
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFC	chlorofluorocarbon
CFR	Code of Federal Regulations
CGS	California Geological Survey
CH_4	methane
CHSC	California Health and Safety Code
City	City of Stockton
CNDDB	California Natural Diversity Database
CNEL	community noise equivalent level
CNPS	California Native Plant Society
CO	carbon monoxide
CO_2	carbon dioxide

CO_2e	carbon dioxide equivalent
CPUC	California Public Utilities Commission
CRHR	California Register of Historical Resources
CSLC	California State Lands Commission
CUPA	Certified Unified Program Agency
CVFPB	Central Valley Flood Protection Board
CVRWQCB	Central Valley Regional Water Quality Control Board
CWA	Clean Water Act
dB	decibel
dBA	decibel, A-weighted
DEIR	Draft Environmental Impact Report
Delta	Sacramento-San Joaquin River Delta
DOT	U.S. Department of Transportation
DPM	diesel particulate matter
DPS	distinct population segment
DSP	Development Standards Plan
DTSC	Department of Toxic Substances Control
DWSC	Deep Water Ship Channel
DWT	tons deadweight
EFH	essential fish habitat
EIR	Environmental Impact Report
Emergency Action Plan	*Emergency Action Plan for OSHA Operations* (Lehigh 2011)
EO	Executive Order
EOP	Emergency Operations Plan
EPCRA	Emergency Planning and Community Right-to-Know Act
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FGC	California Fish and Game Code
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map
FTA	Federal Transit Administration
GGBFS	ground granulated blast furnace slag
GHG	greenhouse gases
GWP	global warming potential
HCFC	hydrochlorofluorocarbon
HFC	hydrofluorocarbon

HMMP	Hazardous Materials Management Plan
HRA	Health Risk Assessment
I-5	Interstate 5
IBC	International Building Code
IS	Initial Study
ITMM	incidental take minimization measure
LCFS	Low Carbon Fuel Standard
L_{dn}	day/night average sound level
Lehigh	Lehigh Southwest Cement Company
L_{eq}	equivalent continuous noise level
L_{max}	maximum sound level
L_{min}	minimum sound level
L_n	percentile-exceeded noise level
LOS	level of service
MBTA	Migratory Bird Treaty Act
MHHW	mean higher high water
MIP	Monitoring Implementation Plan
MLLW	mean lower low water
MND	Mitigated Negative Declaration
MOTEMS	Marine Oil Terminal Engineering and Maintenance Standards
MRZ	Mineral Resource Zone
MS4	Municipal Separate Storm Sewer System
NAHC	Native American Heritage Commission
NHPA	National Historic Preservation Act
NO_2	nitrogen dioxide
NOP	Notice of Preparation
NO_X	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
O_3	ozone
OGV	ocean-going vessel
OPR	Governor's Office of Planning and Research
OPR Technical Advisory	*Technical Advisory on Evaluating Transportation Impacts in CEQA* (OPR 2018)
OSHA	Occupational Safety and Health Administration
PM	particulate matter

PM_{10}	particulate matter less than 10 microns in diameter
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
Port	Port of Stockton
ppb	parts per billion
ppm	parts per million
PPV	peak particle velocity
PRC	Public Resources Code
PTO	Permit to Operate
RCNM	Roadway Construction Noise Model
REM	Revel Environmental Manufacturing
ROG	reactive organic gases
RTP	Regional Transportation Plan
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SCAQMD	South Coast Air Quality Management District
SDS	Safety Data Sheet
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SJCEHD	San Joaquin County Public Health Services, Environmental Health Division
SJCOES	San Joaquin County Office of Emergency Services
SJCOG	San Joaquin Council of Governments
SJMSCP	San Joaquin County Multi-Species Habitat Conservation and Open Space Plan
SJVAB	San Joaquin Valley Air Basin
SJVAPCD	San Joaquin Valley Air Pollution Control District
SMAQMD	Sacramento Metropolitan Air Quality Management District
SO_2	sulfur dioxide
SR	State Route
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	toxic air contaminant
TIA	Transportation Impact Analysis
TIS	Traffic Impact Study
TMDL	Total Maximum Daily Load
TPA	transit priority area
UP	Union Pacific Railroad
USACE	U.S. Army Corps of Engineers

USC	United States Code
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VERA	Voluntary Emission Reduction Agreement
VOC	volatile organic compound

1 Introduction

1.1 Intended Use of this Environmental Impact Report

This Draft Environmental Impact Report (DEIR) was prepared by the Port of Stockton (Port) to identify the potential environmental impacts of the proposed Lehigh Southwest Stockton Terminal Project (proposed project) under the California Environmental Quality Act (CEQA; 13 Public Resources Code [PRC] 21000 et seq.) and the CEQA Guidelines (14 California Code of Regulations [CCR] 15000 et seq.). The proposed project involves redeveloping the existing bulk cementitious material receiving and distribution terminal to accommodate additional capacity and improve operational efficiency. As part of the proposed project, Berth 2 would be rehabilitated to support a new ship unloader with a greater capacity and the reach to more efficiently service wider vessels. A portion of an existing rail trestle with limited weight bearing capacity would be replaced so that the trestle could accommodate full rail cars and an engine. Upland improvements to the storage, rail, and truck systems are also proposed to handle cementitious material more efficiently and at greater capacity. In addition, the proposed project includes a lease modification to increase the terminal's leasehold from 5.43 to 7.34 acres.

CEQA, enacted by the California legislature in 1970, requires public agency decision-makers to consider the environmental effects of their actions. The primary purposes of this DEIR are to inform the public, decision-makers, and other responsible and interested agencies of the following information:

- Identification and evaluation of potential significant environmental effects of the proposed project
- The manner in which environmental effects can be avoided or significantly reduced
- Any effects that, even with implementation of mitigation measures, would be unavoidable and adverse
- Identification and analysis of alternatives that may avoid or substantially lessen any significant environmental effects of the proposed project

This DEIR is being circulated to potentially affected agencies and the public for review and comment for a 45-day review period from May 22, 2020, to July 6, 2020.

1.2 Agency Roles and Responsibilities

The CEQA Guidelines identify the lead agency as the public agency with the principal responsibility for carrying out or approving a project (CEQA Guidelines Section 15367). The Port is the CEQA lead agency for the proposed project and has the primary responsibility for updating and renewing the commercial terms in the Lehigh Southwest Cement Company (Lehigh) lease with the Port consistent with the proposed project. The Port aims to accomplish the following as part of this DEIR:

- Describe the proposed project and regulatory background
- Identify any significant environmental effects associated with construction and operation of the proposed project
- Provide a discussion of alternatives and feasible mitigation measures for environmental resources where significant effects are identified

Projects or actions undertaken by the lead agency (in this case, the Port), may require subsequent oversight, approvals, or permits from other public agencies. Other such agencies are referred to as responsible agencies and trustee agencies. Pursuant to CEQA Guidelines Sections 15381 and 15386, as amended, responsible and trustee agencies are defined as follows:

- A **responsible agency** is a public agency that proposes to carry out or approve a project for which a lead agency is preparing or has prepared an EIR or Negative Declaration. For the purposes of CEQA, the term "responsible agency" includes all public agencies other than the lead agency that have discretionary approval authority over a project (CEQA Guidelines Section 15381; Table 1).
- A **trustee agency** is a state agency having jurisdiction by law over natural resources affected by a project that are held in trust for the people of the state of California (CEQA Guidelines Section 15386). Trustee agencies have jurisdiction over natural resources held in trust for the people of California but do not have a legal authority over approving or carrying out a project. CEQA Guidelines Section 15386 identifies the following four agencies as potential trustee agencies for projects subject to CEQA:
  - California Department of Fish and Wildlife (CDFW), regarding fish and wildlife, native plants designated as rare or endangered, game refuges, and ecological reserves
  - California State Lands Commission (CSLC), regarding state-owned "sovereign" lands, such as the beds of navigable waters and state school lands
  - California Department of Parks and Recreation, regarding units of the state park system
  - University of California, regarding sites within the Natural Land and Water Reserves System

Table 1 summarizes the expected relevant regulatory agencies, their expected jurisdiction (i.e., trustee or responsible agency), and their statutory authority as related to the proposed project. The jurisdiction of these agencies will be confirmed through subsequent coordination.

Table 1
Regulatory Agencies and Authority

Regulatory Agency	Jurisdiction	Statutory Authority/Implementing Regulations
U.S. Army Corps of Engineers (USACE)	Responsible Agency	Reviews and authorizes in-water work under the Clean Water Act and Rivers and Harbors Act. The proposed project is expected to require permits under these regulations.
CSLC	Trustee Agency	Reviews dredging and placement of structures on state tidelands. Berths 2 and 3 are located in historic upland areas even though they are now in tideland areas.
CDFW	Responsible Agency	Reviews and submits recommendations in accordance with CEQA. Reviews and authorizes in-water work and work in riparian areas under the California Fish and Game Code. The proposed project is expected to require a Streambed Alteration Agreement.
Central Valley Regional Water Quality Control Board (CVRWQCB)	Responsible Agency	Permitting authority for water quality, including point and non-point source discharges. Reviews projects for authorization under the Porter-Cologne Water Quality Control Act and Clean Water Act Sections 401 and 402. The proposed project is expected to require a 401 Water Quality Certification and coverage under existing General Orders for stormwater generated at the site during construction.
Office of Historic Preservation	Responsible Agency	Consults with federal lead agencies under Section 106 of the National Historic Preservation Act regarding impacts on cultural resources that are either listed, or eligible for listing, on the National Register of Historic Places. The proposed project may require Section 106 consultation with the State Historic Preservation Officer.
San Joaquin Valley Air Pollution Control District (SJVAPCD)	Responsible Agency	Review authority under the California Clean Air Act and responsibility for implementing federal and state regulations at the local level and permitting stationary sources of air pollution. The proposed project is expected to require a Demolition Permit Release Form, and Authority to Construct permit, and modification(s) to the facility's existing Permit to Operate.
San Joaquin County Department of Environmental Health	Responsible Agency	Regulates the handling, disposal, generation of, and cleanup from, accidental spills of hazardous waste, on-site petroleum storage, and drilling activities. The proposed project will comply with these requirements.
San Joaquin Council of Governments (SJCOG)	Responsible Agency	Reviews and approves projects obtaining coverage under the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (SJMSCP). The proposed project is expected to apply for coverage under the SJMSCP.
City of Stockton Building Department	Responsible Agency	Reviews and approves of mechanical, electrical, demolition, and building permits, which are expected to be required for the proposed project.

Regulatory Agency	Jurisdiction	Statutory Authority/Implementing Regulations
City of Stockton Fire Department	Responsible Agency	Reviews and approves of fire protection systems.

1.3 Public Participation, Consultation, and Coordination

Public participation is an integral part of the CEQA process. Public participation facilitates two-way communication between the public and the lead agency (the Port) decision-makers, ensuring that public concerns and input are considered in the final decision. The Port's public participation process ensures that interested persons are informed about discretionary decisions and have the opportunity to provide input. The Port also consults with public agencies in a variety of ways when developing CEQA documents, including direct agency outreach and distribution of documents.

1.3.1 Notice of Preparation

After deciding that an EIR is needed, the state lead agency (in this case, the Port) is required to prepare and distribute a notice informing interested parties that an EIR will be prepared. CEQA requires that the lead agency prepare a Notice of Preparation (NOP) to inform interested parties of a proposed project and to solicit their participation in the EIR scoping process. The CEQA Guidelines require that an NOP be sent "immediately after deciding that an environmental impact report is required for the project" (CEQA Guidelines Section 15082[a]) and include "sufficient information describing the project and the potential environmental effects to enable the responsible agencies to make a meaningful response" (CEQA Guidelines Section 15082[a][1]). The Port distributed the NOP and accompanying Initial Study (IS; Appendix B) for the proposed project on October 25, 2019, for a 30-day public review period ending on November 25, 2019. Public comments received during the scoping process were considered in this DEIR.

1.3.2 Public Scoping and Agency Coordination

The CEQA Guidelines recommend that public scoping be combined to the extent possible with consultation with responsible agencies, as required under 14 CCR 15086. Consultation is conducted with agencies that will be locally involved in the environmental review process, as well as state and federal agencies and tribal governments, as appropriate.

CEQA Guidelines Sections 15086(a)(1–2) require that the lead agency formally consult with responsible and trustee agencies. On October 25, 2019, the Port filed the NOP/IS with the Governor's Office of Planning and Research (OPR) and the San Joaquin County Clerk. The Port also sent the NOP/IS directly to responsible and trustee agencies. In total, the following agencies received the NOP/IS prepared for the proposed project:

- California Air Resources Board (ARB)

- California Coastal Commission
- California Department of Fish and Wildlife
- California Department of Parks and Recreation
- California Department of Transportation (Caltrans), District 10
- California Department of Water Resources
- California Highway Patrol
- California Native American Heritage Commission (NAHC)
- California Natural Resources Agency
- California Public Utilities Commission
- Central Valley Flood Protection Board (CVFPB)
- Central Valley Regional Water Quality Control Board (CVRWQCB)
- City of Stockton (City) Fire and Building Departments
- CSLC
- CDFW
- Office of Historic Preservation
- San Joaquin Council of Governments
- San Joaquin County Clerk
- San Joaquin Department of Environmental Health
- San Joaquin River Conservancy
- SJVAPCD
- State Water Resources Control Board
- USACE

Nine comment letters were received during the scoping period:

- ARB
- Caltrans, Office of Metropolitan Planning
- CVFPB
- NAHC
- SJVAPCD
- SJCOG
- CVRWQCB
- Environmental Justice 58 of Café Coop
- Sierra Club, Delta-Sierra Group

The letters and a summary of the public and agency comments received on the NOP/IS are included as Appendix B. Comments were received on the proposed project in regards to: potential impacts on nearby communities resulting from the proposed project; the Port's public engagement approach for the proposed project; evaluating whether a Traffic Impact Study (TIS) or Caltrans-approved signage would be required for the proposed project; potential permitting requirements of the proposed project, specific to flood protection, water quality, biological resources, and air quality; tribal consultation requirements of the proposed project; evaluating aesthetic impacts; the proposed project's energy source; characteristics of the existing Lehigh terminal and operations; hazards associated with cementitious materials transport, storage, and distribution; and other topics related to Port operations (aside from the proposed project). The letters received on the NOP/IS are included as Appendix B.

1.3.3 Regulatory Guidance Related to Public Outreach and Coordination

1.3.3.1 Assembly Bill 52

Assembly Bill (AB) 52 became effective on July 1, 2015, requiring lead agencies to consider the effects of projects on tribal cultural resources and to conduct notification and consultation with federally and non-federally recognized Native American tribes and NAHC early in the environmental review process. Two Native American tribes, the Buena Vista Tribe of Miwok (Me-Wuk) Indians and the Wilton Rancheria Tribe, have requested consultation on CEQA documentation for projects at the Port. The Port initiated consultation with the two tribes and requested a search of NAHC's Sacred Lands Information File on October 11, 2019.

1.3.3.2 Assembly Bill 617

Assembly Bill (AB) 617 (C. Garcia, Chapter 136, Statutes of 2017), requires ARB to develop an air toxic monitoring plan for the state focusing on community air monitoring at priority locations, including the presence of sensitive receptors like schools and hospitals, whether the community is disadvantaged, and whether there is a high degree of exposure to toxic air contaminants and criteria air pollutants. In response to AB 617, ARB has established the Community Air Protection Program (CAPP). The CAPP's goal is to reduce exposure in communities most impacted by air pollution. The CAPP works with local air districts to implement monitoring networks and address emission sources. Three AB 617 communities have been identified in the San Joaquin Valley, including the Southwest Stockton Community. SJVAPCD is working closely with community residents, community businesses, and other key stakeholders, including the Port, to reduce exposure to harmful air pollutants in selected communities. Through the implementation of this legislation, SJVAPCD, with input from the community, will be deploying additional community-specific air quality monitoring to better understand the impacts of local sources of pollution and developing community-specific emission reduction programs. The Port is a member of the AB 617 community steering committee and intends to be active in developing strategies to protect public health and the environment.

1.4 Incorporation by Reference

As permitted in Section 15150 of the CEQA Guidelines, an EIR may reference all or portions of another document that is a matter of public record or is generally available to the public. Information from the documents that have been incorporated by reference has been briefly summarized in the appropriate sections of this EIR, along with a description of how the public may obtain and review these documents. The documents that are incorporated by reference are available for review at the internet links provided in the following sections or during working hours from 8:00 AM to 5:00 PM, Monday through Friday at the Port of Stockton at 2201 West Washington Street Stockton, California, 95201. Documents incorporated by reference are included as follows.

1.4.1 City of Stockton 2040 General Plan

This document, which is available online at http://www.stocktongov.com/files/Adopted_Plan.pdf, is appropriate to incorporate by reference because the City's *Envision Stockton 2040 General Plan* (2040 General Plan) establishes the land use designations for the project site with which the proposed project is consistent. Furthermore, the 2040 General Plan identifies the area surrounding the project site as Industrial/Port Use and specifically identifies the project site for commercial development on the western portion of the property and residential development on the eastern portion of the property. The 2040 General Plan also guides the maintenance, design, and operation of transportation resources in Stockton, including streets and highways, within the project area, and sets regional noise standards based on land use designations.

1.4.2 City of Stockton Municipal Code

This document, which is available online at https://qcode.us/codes/stockton/, is appropriate to incorporate by reference because the City designates Landmarks and Historic Sites under the City Municipal Code, Title 16, Division 7, Chapter 16.220. Landmarks are artifacts, natural features, or structures notable for one or more of the following: archaeological interest; architectural craftsmanship, style, or type; association with a historic event or person; association with the heritage of the City, state, or nation; visual characteristics; relationship to another landmark; or integrity as a natural environment. Port resources have been identified as having significant historical or cultural significance. Title 16, Division 5, Chapter 16.130 of the City Municipal Code provides protection for heritage oaks in Stockton.

1.4.3 City of Stockton Climate Action Plan

This document, which is available online at http://www.stocktonca.gov/files/Climate_Action_Plan_August_2014.pdf, was approved in August 2014. It is appropriate to incorporate by reference because the City's Climate Action Plan (CAP) provides goals and associated measures, in the sectors of energy use, transportation, land use, water, solid waste, and off-road equipment. Consistent with SJVAPCD, the CAP relies on a goal of 29% reduction in greenhouse gas (GHG) emissions from business-as-usual (BAU) by 2020. As described in the CAP, the City will revisit this plan in the future to examine whether there exist additional options to further reduce GHG emissions, and whether such options might be feasible in improved economic conditions beyond 2020. An update is not currently available.

1.5 Scope of this Environmental Impact Report

CEQA Guidelines Section 15120 requires that an EIR include numerous components but allows for documents to be prepared in a wide variety of formats so long as the essential elements of information are included. As detailed in CEQA Guidelines Section 15126.2, an EIR shall identify and focus on the significant environmental effects of the proposed project. In assessing the potential environmental effects of the proposed project, the lead agency should normally limit its examination to changes in the existing physical conditions in the affected area as they exist at the time the NOP is published, or where no NOP is published, at the time environmental analysis is commenced. As discussed further in Sections 2.1 and 2.2, the project site is an existing bulk cementitious material receiving and distribution terminal. Lehigh currently receives, stores, and ships cementitious materials to the local Stockton area and regional northern California construction industry via ship, rail, or truck. Other berths at the Port are used by other tenants, making Berth 2 the only dock structure that Lehigh can use for cementitious material delivery by ship. However, its existing ship unloader's horizontal arm is too short to reach effectively across the ship's hold and for ships chartered with a greater width in the future, making it inadequate to extract cementitious material from the holds. The existing wooden rail trestle has limited weight bearing capacity and cannot be used to transport full rail cars or engines. Upland operations, including rail and truck loading systems are also not as efficient as needed. Therefore, this DEIR considers these environmental conditions (the existing Lehigh facility with inadequate infrastructure to support its operations) as the baseline condition by which to assess potential environmental impacts.

An IS was prepared and included in the NOP for the proposed project (Appendix B) to determine which environmental effects could potentially result in significant impacts and therefore focus the EIR on those resource areas. As detailed in the IS, the following resource areas were found to not result in any potential environmental impacts and are not addressed in this DEIR. A summary of IS findings is as follows:

- **Agriculture and Forestry Resources:** The City's 2040 General Plan designates the project site for industrial use, and the zoning classification of the project site and surrounding parcels is Port or Industrial, General (City 2018). Neither the project site nor the immediate surrounding areas currently support agricultural use or forestry resources. There are no timberland zoned properties within San Joaquin County as of 2001 (Stockton Port District 2012); the nearest forest area is the Stanislaus Forest, which is more than 50 miles away. All property surrounding the project site has been developed or planned for industrial or urban land uses. The project area is zoned for non-agricultural uses, which precludes the lease area from qualifying for Williamson Act contracts.

- **Energy:** The proposed project would not require any unusual or excessively inefficient construction equipment or practices compared to projects of similar type and size. Both construction and operations would comply with standard best management practices (BMPs) to reduce energy needs, such as equipment idling restrictions and maintaining equipment according to manufacturers' specifications. The proposed project includes an expansion of existing operations. However, the new ship unloader and cementitious material distribution system would be more efficient and would result in a decreased energy demand as compared to existing operations. Therefore, the proposed project would not result in any wasteful, inefficient, or unnecessary consumption of energy resources. The proposed project would not impede state goals on renewable energy or energy efficiency.
- **Land Use and Planning:** The City's 2040 General Plan designates the project site for industrial use, and the zoning classification of the project site and surrounding parcels is Port or Industrial, General (City 2018). There is no housing within or adjacent to the project site. The proposed project involves an industrial use, which is consistent with the current zoning and would not conflict with any land use or other plans for the project site.
- **Mineral Resources:** The project area is classified as a Mineral Resource Zone-1 (MRZ-1; Smith and Clinkenbeard 2012). As such, no significant mineral deposits are present, or it is judged that little likelihood exists for their presence. The project site does not contain any known mineral resources, including any rock, sand, or gravel resources. Therefore, the proposed project would result in no impacts related to mineral resources.
- **Population and Housing:** No new homes would be constructed as a result of the proposed project, nor are there housing units in the project area. The proposed project would have no effect on the availability of housing for existing residential areas, and the site's zoning precludes the potential for future housing developments.
- **Public Services:** The project area is adequately served by the City Fire Department, City Police Department, Port Police, U.S. Coast Guard, and other marine agencies. The proposed project would not result in increased demand on any existing facilities or services, including fire protection, police, schools, or parks.
- **Recreation:** There are limited park resources within the immediate project area, likely due to the industrial zoning and uses. Neither the construction nor the operation of the proposed facility would increase the use of existing neighborhood and regional parks or other recreational facilities. The proposed project does not include construction or expansion of any recreational facilities and would not result in increased demand or other effects to recreational facilities.

- **Utilities and Service Systems:** The existing terminal and dock include water connections to meet facility demand. Terminal and dock redevelopment may require new connections to existing utilities for proposed improvements. None of these utility connections or minor improvements would require the construction or expansion of existing utility facilities. The proposed project would not result in new demands on water supply, wastewater treatment, or solid waste management systems. Additionally, the proposed project is expected to be more energy efficient than current operations.
- **Wildfire:** The project area is located within an area considered to have lower wildfire risk (CAL FIRE 2019). The Lehigh terminal commonly handles flammable materials as part of its operations. As previously described, there are emergency response plans already in place and fire response services already adequately serving the facility.

1.6 Draft Environmental Impact Report Organization

The content and format of this DEIR are organized into the following sections to meet the requirements of CEQA and the CEQA Guidelines:

- **Executive Summary.** Summarizes the proposed project and alternatives, potential impacts, and mitigation measures
- **Section 1 – Introduction.** Describes the purpose and use of the DEIR and outlines the organization of the DEIR
- **Section 2 – Project Description.** Describes the proposed project's history, provides details on the construction and operation of the proposed project, and discloses objectives of the proposed project
- **Section 3 – Environmental Impact Analysis.** Describes the current environmental conditions existing near the proposed project and discusses the environmental setting, significance criteria, environmental impacts, and mitigation measures for each environmental resource area examined
- **Section 4 – Cumulative Impacts.** Discusses other categories of environmental impacts that must be evaluated in an EIR in addition to those addressed in Section 3
- **Section 5 – Other Required Analysis.** Identifies unavoidable significant impacts, significant irreversible environmental changes, and direct and indirect growth-inducing impacts of the proposed project
- **Section 6 – Alternatives.** Discusses a range of reasonable alternatives to the proposed project that would feasibly attain all or most of the basic objectives and would avoid or substantially lessen any of the potentially significant environmental effects of the proposed project
- **Section 7 – References.** Provides a list of references used to provide information in preparation of the DEIR
- **Appendices.** The following appendices are attached to this DEIR:

- Appendix A: List of Preparers
- Appendix B: Notice of Preparation/Initial Study
- Appendix C: Comments Received on the Notice of Preparation/Initial Study
- Appendix D: National Register of Historic Places Recommendations of Eligibility and Project Effects
- Appendix E: Air Quality and Greenhouse Gas Emissions
- Appendix F: Special-Status Species Potentially Present in the Project Area
- Appendix G: CNPS List Plant Species with the Potential to Occur in the Study Area
- Appendix H: Biological Assessment
- Appendix I: Noise Modeling Files

2 Project Description

The proposed project is the redevelopment of an existing bulk cementitious material receiving and distribution terminal at the Port. The project site is located at the existing Lehigh terminal at 205 Port Road 1 and the adjacent Berth 2 in Stockton, California (Figures 1 and 2). The proposed project involves redeveloping the terminal to accommodate additional capacity and improve operational efficiency. The proposed project also includes a lease modification to increase the terminal's leasehold from 5.43 to 7.34 acres (Figures 3 and 4). As part of the proposed project, Berth 2 would be rehabilitated to support a new ship unloader with a greater capacity and the reach to more efficiently service wider vessels. A portion of an existing rail trestle (bridge) is currently unable to support the weight of fully loaded rail cars. This section would be replaced so that the trestle could accommodate full rail cars and an engine. Upland improvements to the storage, rail, and truck loading systems are also proposed to handle cementitious material more efficiently. As discussed previously, while the proposed project would result in additional capacity, the terminal is accomodating the demand of product in the region. Material shipped through the terminal will supply various vendors and production facilities that will change depending on market forces, with some material resold prior to being processed. Therefore, this DEIR does not analyze the indirect effects of production.

2.1 Environmental Setting

2.1.1 Regional Setting

The proposed project is located within the Port, which is in the City's urban core, which is characterized by a mix of heavy industrial uses with limited landscape features, older residential neighborhoods, neighborhood commercial shopping centers, and a variety of other commercial and industrial parcels. In the area surrounding the project site, the Port leases property for a variety of industrial uses, characterized by the presence of storage tanks, maritime terminals, cementitious materials storage structures, grain silos, railroad facilities, large storage buildings, and stockpiles of various commodities that are not associated with the proposed project. The City's 2040 General Plan (City 2018) designates the project site for industrial use, and the zoning classification of the project site and surrounding parcels is Port Area (PT); Industrial, General (IG); or Unzoned (UNZ).

2.1.2 Project Setting

Lehigh's existing terminal is located in the northeast corner of the Port. It is bound by the San Joaquin River, Port Road A, Port Road 1, and Port Road 2, north of Washington Street. Existing rail facilities used by Lehigh are located on the terminal and just north of Port Road B between Berth 2 and Port Road 4. The existing dock structure is an approximately 540-foot-long concrete dock. The dock comprises nearly 1,000 timber piles that support concrete beams and a concrete sub-deck.

Columns and beams support the existing rails, main platform deck, and ship unloader. The existing dock and ship unloader were originally designed to handle 35,000-deadweight-ton (DWT) vessels. The terminal includes seven storage bunkers, as well as one steel tank to handle rail car loading. The terminal also supports two truck loading stations, each with two lanes (for a total of four truck loading lanes).

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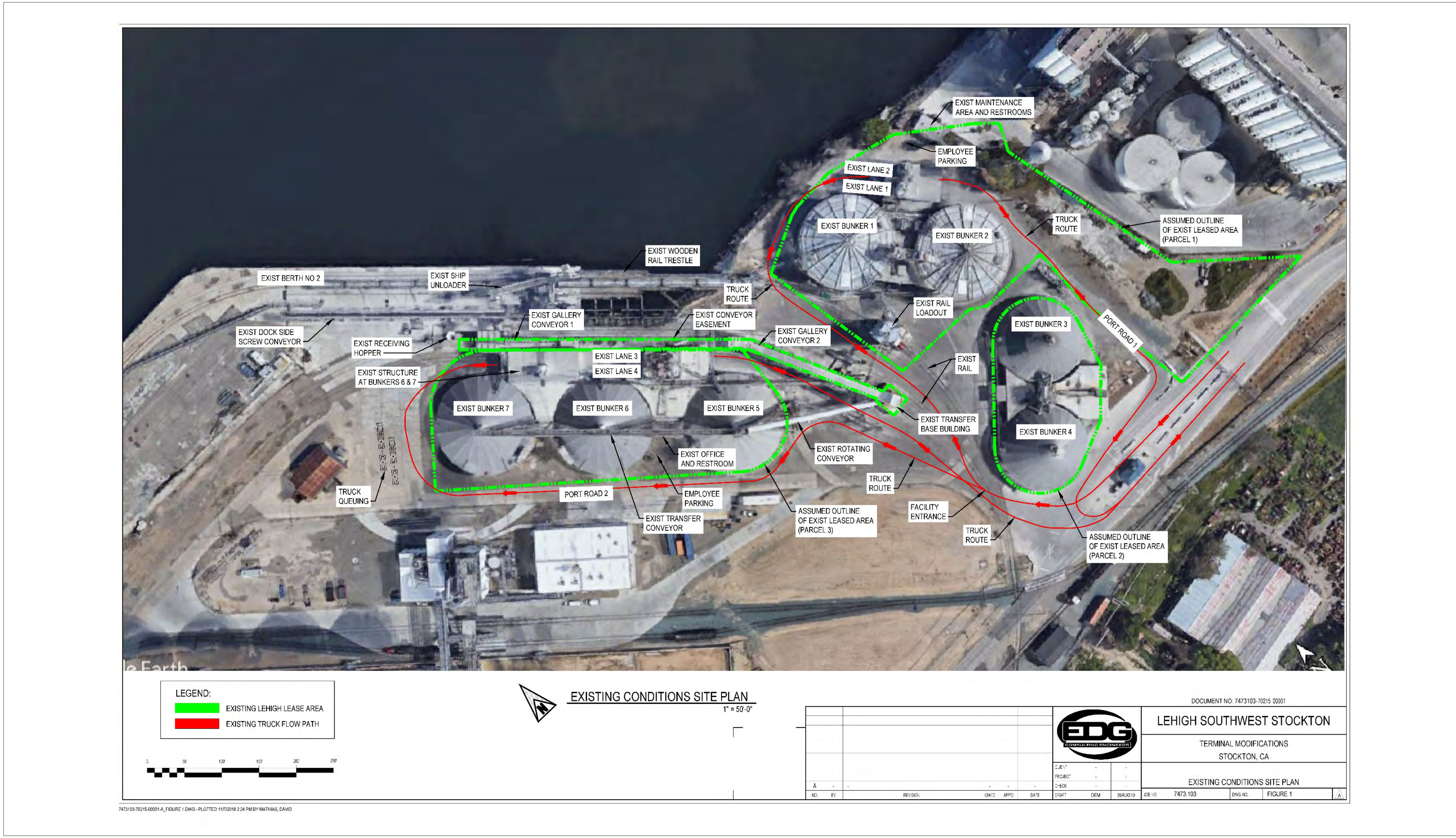
Figure 1
Vicinity Map
Environmental Impact Report
Lehigh Southwest Stockton Terminal Project



Source: Lehigh 2019

Figure 2
Existing Conditions Site Plan
Environmental Impact Report
Lehigh Southwest Stockton Terminal Project

Source: Lehigh 2019

Figure 3
Existing Lease Line Site Plan
Environmental Impact Report
Lehigh Southwest Stockton Terminal Project

Source: Lehigh 2019

Figure 4
Proposed Lease Line Site Plan

2.2 Proposed Project Overview

2.2.1 Overview of Existing Terminal Operations

Concrete is used in infrastructure projects, such as roads, sidewalks, bridges, dams, and buildings, as well as in residential projects such as homes, schools, and offices. Concrete is made up of three basic components: water, aggregate (rock, sand, or gravel), and cementitious materials. Cementitious materials, including traditional Portland cement, fly ash, ground granulated blast furnace slag (GGBFS), limestone fines, and silica fume, act as the binding agent (glue) when mixed with water and aggregates. Cementitious materials are shipped in bulk intermodal carriers (ships, barges, rail cars, and trucks) Because cementitious materials react with water, transfers between shipping modes, terminals, and the factories where cement is made are enclosed to the maximum extent possible to ensure the material remains dry. Pneumatic systems, vacuums, and enclosed conveying systems are often used to control dust during transfers and to aerate the material for better handling.

The existing Lehigh terminal receives, stores, and ships cementitious materials to the local Stockton area and regional northern California construction industry. The facility does not produce cementitious materials or concrete, or handle aggregates. Cementitious material is received via ship, truck, or rail at the terminal, unloaded, and then stored at the terminal before being shipped to the local and regional market by truck and rail. Waterborne material is unloaded from the ship by a dock-mounted unloader and transferred on a fully enclosed existing pneumatic conveying system to seven existing storage structures at the terminal (Figure 2). The existing storage structures consists of seven concrete and steel or timber roofed storage bunkers, numbered 1 through 7, and one steel tank associated with the rail loadout. The total cementitious material storage capacity of the eight storage structures is currently 94,900 tons. Bunkers 1 and 2 have approximately 27,500 tons capacity each; Bunkers 3 and 4 have approximately 6,600 tons capacity each; Bunkers 5, 6, and 7 have approximately 8,800 tons capacity each; and the steel tank has approximately 200 tons capacity. It should be noted that the actual amount of material received and shipped is limited by air district permits, not terminal capacity.

The existing terminal also includes four truck loadout stations (two truck loadout shipping areas, each with two truck scales), and a rail car loading and unloading station (Figure 2). Cementitious material is reclaimed from the existing bunkers and pneumatically transported to the truck or rail car loading stations. The existing terminal is configured to allow one lane of truck traffic to enter the terminal and then splits to two lanes of truck traffic to the two truck loadout shipping areas. Each lane[1] (Truck Loading Lanes 1 and 2 near Bunkers 1 and 2 and Truck Loading Lanes 3 and 4 near Bunkers 5 through 7) exits the existing terminal via Port roads to the main Port exit gate. The terminal handles queueing by signage, radio, and on occasion, direct verbal communication. Trucks

[1] The existing facility has a combined truck and rail shipping permitted capacity of 6,000 tons per day.

are queued in different areas, depending on how much activity is occurring at the facility and where certain cementitious materials are staged. Several pieces of yard equipment operate at the terminal to support loading and unloading including a sweeper, front-end loaders, and a rail-mounted yard wagon to move rail cars. A total of 29 air pollution control devices operate at the existing terminal, mostly independent of one another.

Employees are always on-site during unloading and loading operations. In some cases, the terminal operates 24 hours a day. While a ship is being unloaded, normal receiving hours are 24 hours a day until unloading is complete (approximately 4 to 5 days per vessel). Normal shipping hours for loading trucks and rail cars start at 10 PM and run through 7 PM the following day. In general, the terminal operates Monday through Saturday, with occasional Sunday operations.

2.2.2 Project Need and Objectives

The current berth capacity and channel depth is designed to handle 35,000 DWT vessels. The existing ship unloader is nearing the end of its useful life and needs replacement. Because of a change in the size of vessels available in the world's shipping fleet, Lehigh has been chartering longer and wider vessels; thus, the existing ship unloader's horizontal arm is too short to reach effectively across existing ships' holds. As vessels are expected to get wider, the reach will become even greater over time. The proposed new ship unloader would be supplied with a longer arm for greater reach, allowing operations at a higher capacity, thereby minimizing the possibility of dust emissions, reducing berthing time, and allowing greater dock utilization. Because a new unloader would be significantly heavier, the existing rail support beams and narrow rail gauge would not be adequate. In addition, the existing dock structure was constructed in the 1930s and thus was not constructed to current seismic design. In order to accommodate the replacement ship unloader, the structure would be rehabilitated. A portion of an existing rail trestle with limited weight bearing capacity would be replaced so that the trestle could accommodate full rail cars and an engine. Upland improvements to the rail and truck systems are also proposed to handle cementitious material more efficiently.

Pursuant to the CEQA Guidelines and 14 CCR 15124, a "statement of the objectives sought by the proposed project" must be provided as part of the project description in an EIR. The proposed project's goal is to upgrade an existing dock at the Port in order to handle a heavier replacement unloader, improve rail and truck loading/unloading systems, and increase storage capacity in anticipation of increased future cementitious materials supply and market demand.

To accomplish this goal, the following key project objectives must be accomplished:

- Upgrade the existing Berth 2 to support a new unloader and meet current seismic standards
- Receive, store, and ship cementitious material in a manner that promotes safe and efficient handling while ensuring environmental protection and controls
- Update and renew the lease with the Port consistent with the proposed project

- Increase the availability of cementitious material to provide a supply of critical building materials to the region and Bay Area.

2.2.3 California Environmental Quality Act Baseline

CEQA Guidelines Section 15125 requires that an EIR include a description of the physical environmental conditions in the vicinity of the proposed project as they exist at the time the NOP is published, or if no NOP is published, at the time the environmental analysis is commenced, from both a local and regional perspective. These environmental conditions are referred to as the environmental setting. Further, CEQA Guidelines Section 15125(a) states that “the environmental setting normally constitutes the baseline physical conditions by which a Lead Agency determines whether an impact is significant.” The CEQA baseline is the set of conditions that prevailed at the time this NOP is circulated.

Per CEQA Guidelines Section 15125, Section 2.2.1 presents a description of current conditions at the Lehigh terminal. Per the Lehigh terminal’s existing Permit to Operate (PTO; Facility Number N-153), issued by SJVAPCD in 2016, the combined permitted truck and rail shipping capacity is 6,000 tons of cementitious material per day, or 2.19 million tons per year and the facility is permitted to receive 18,000 tons per day and 2.628 million tons per year via ship or rail. Under permitted limits, the existing terminal can handle any combination of a maximum of approximately 200 trucks per day or 18 rail cars per day. However, the terminal is not currently operating at the permitted levels.

Because the volume of material moving through the terminal, or “throughput,” determines the level of operations at the terminal and how many truck, rail, and vessel calls the terminal receives, baseline is often defined for port projects in terms of throughput. Throughput activity at a terminal can vary month to month over the course of a year due to normal market forces, and therefore is generally calculated over a period time, generally preceding 12 months or a calendar year, whichever is more indicative of normal operations. At the time that the NOP was issued for the proposed project, the calendar year 2018 was chosen as the baseline because it represented the most recent full year of throughput data. Table 2 presents the throughput levels in 2018.

Table 2
Baseline (2018) Throughput Levels (Annual)

	Baseline (2018)	
	Annual Tons	**Annual Modal Activity**
Throughput (cement/slag volumes)	883,793	--
Truck Shipping[1]	505,432	18,720
Truck Receiving	0	0
Rail Cars	61,663	587
Rail Trips	--	117[2]
Ships Calls	316,698	9
Barges Calls	0	0

Notes:

1. Truck calls are expressed in one-way moves.
2. Assumes an average of five cars per train.

As shown in Table 2, the terminal handled 800,000 tons of product in 2018, which was below permitted limits. Throughput has fluctuated since the SJVAPCD permit was granted in 2016; however, it has not exceeded 1 million annual tons. Therefore, 2018 is a representative year of baseline operations.

2.3 Proposed Project Construction

Construction is anticipated to occur between 2020 and 2025. Construction work would happen in phases over the five years and would not be continuous. Work would occur concurrently with existing operations. Staging of materials and construction equipment would be coordinated with the Port to minimize disruptions to existing Port operations and would generally be limited to areas within the Lehigh terminal or directly adjacent space near Berths 3 and 4. In-water work would occur within the annual in-water construction window of July 1 through November 30.

Proposed project construction would consist of the following improvements, which are described in detail in the noted sections and shown in Figures 5 through 15:

- Upland Improvements and Berth 2 rehabilitation (Section 2.3.1)
- Ship unloader replacement (Section 2.3.2)
- Rail trestle replacement (Section 2.3.3)
- Barge loading component installation (Section 2.3.4)
- Dome construction, truck loading station modifications, and existing bunker dust collector replacement (Section 2.3.5)

The proposed construction schedule is presented in Table 3.

Table 3
Construction Schedule

Phase and Work Elements	Duration	Equipment
Phase 1: Upland Improvements	**2020-2021**	
• Demolition • Upgrade Rail Track and Rail Loading • Upgrade Transport System and Receiving Dust Filter System • Structural Installation	4 Months	Bulldozer Truck (light-duty) Excavator Crane Haul/Dump Truck Compactor Lincoln Welding Units Generator Skid Steer Loader
Phase 2: Waterfront Berth 2 Structure	**2020-2021**	
• Demolition • Test Pile Program • Fender System • New Support Piles and Pile Caps • Dock Repairs • Pile Caps, Grade Beams, Work Slabs Structural Installation	8 Months	Bulldozer Trucks (light-duty) Excavator Crane 90 Ton All terrain Haul/Dump Truck Pile-Driving Rig Skid Steer Loader
Phase 3: Ship Unloader	**2021- 2023**	
• Demolition Equipment Delivery • Mechanical and Electrical Installation	4 Months	Crane 90 Ton All terrain Haul/Dump Truck Skid Steer Loader Delivery Ship
Phase 4: Rail Loadout and Rail Trestle	**2022-2024**	
• Excavation • Pile Installation (Extended Foundations) Pile Caps, Grade Beams, Work Slabs • Backfill and Compaction • Track Installation, Structural, Equipment and Electrical Installation	8 Months	Front-end Loader Trucks (light-duty) Excavator Crane Inflator/Diesel/Electric Haul/Dump Truck Compactor Long Reach Forklift Skid Steer Loader

<table>
<tr><th>Phase and Work Elements</th><th>Duration</th><th>Equipment</th></tr>
<tr><td>Phase 5: Storage Dome and Material Handling Equipment</td><td>2023-2025</td><td></td></tr>
<tr><td rowspan="11">Demolition
Excavation
Pile Installation Pile Caps, Grade Beams, Work Slabs
Backfill and Compaction
Dome Structural, Equipment and Electrical Installation</td><td rowspan="11">18 Months</td><td>Lincoln Welding Units</td></tr>
<tr><td>Front-end Loader</td></tr>
<tr><td>Trucks (light-duty)</td></tr>
<tr><td>Excavator</td></tr>
<tr><td>Crane</td></tr>
<tr><td>Inflator/Diesel/Electric</td></tr>
<tr><td>Haul/Dump Truck</td></tr>
<tr><td>Compactor</td></tr>
<tr><td>Long Reach Forklift</td></tr>
<tr><td>Skid Steer Loader</td></tr>
<tr><td>Generators</td></tr>
</table>

Source: Lehigh 2019

Source: Lehigh 2019

Figure 6
New Condition Site Plan

Source: Lehigh 2019

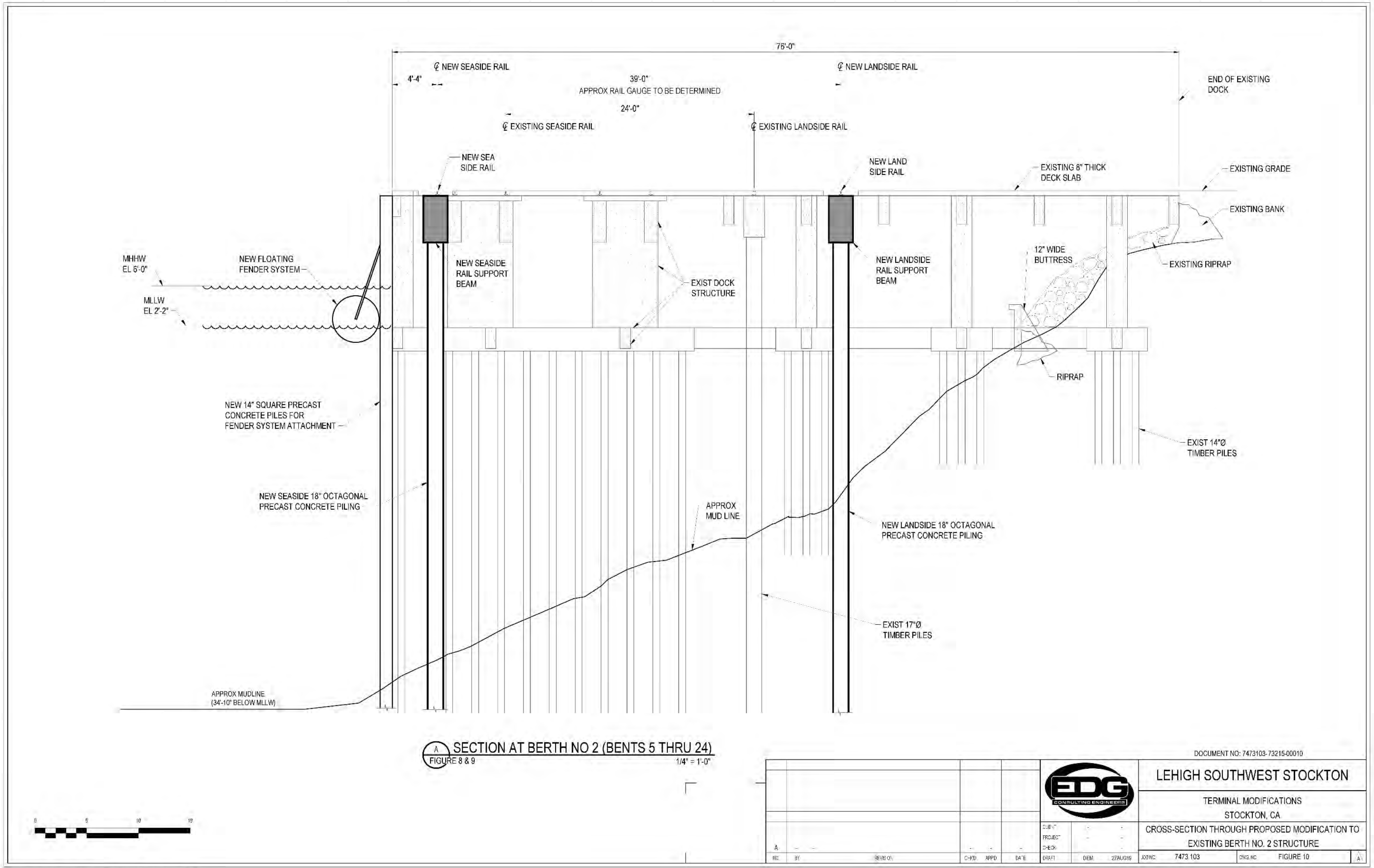
Figure 7
Proposed Laydown Area Site Plan

Source: Lehigh 2019

Figure 8
Plan of Existing Berth No. 2 Concrete Dock

Source: Lehigh 2019

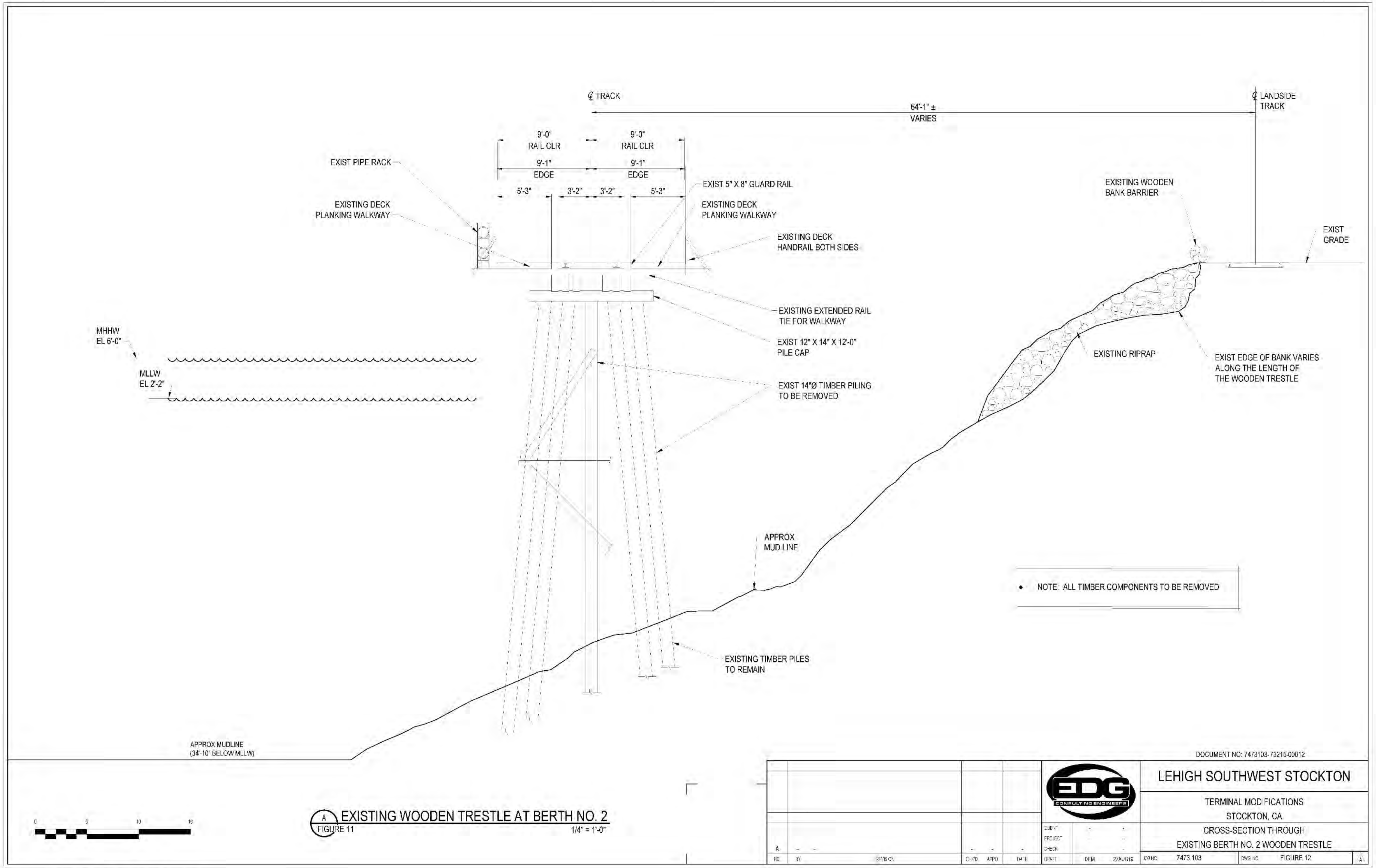
Figure 9
Proposed Dock Layout for New Piles



Source: Lehigh 2019

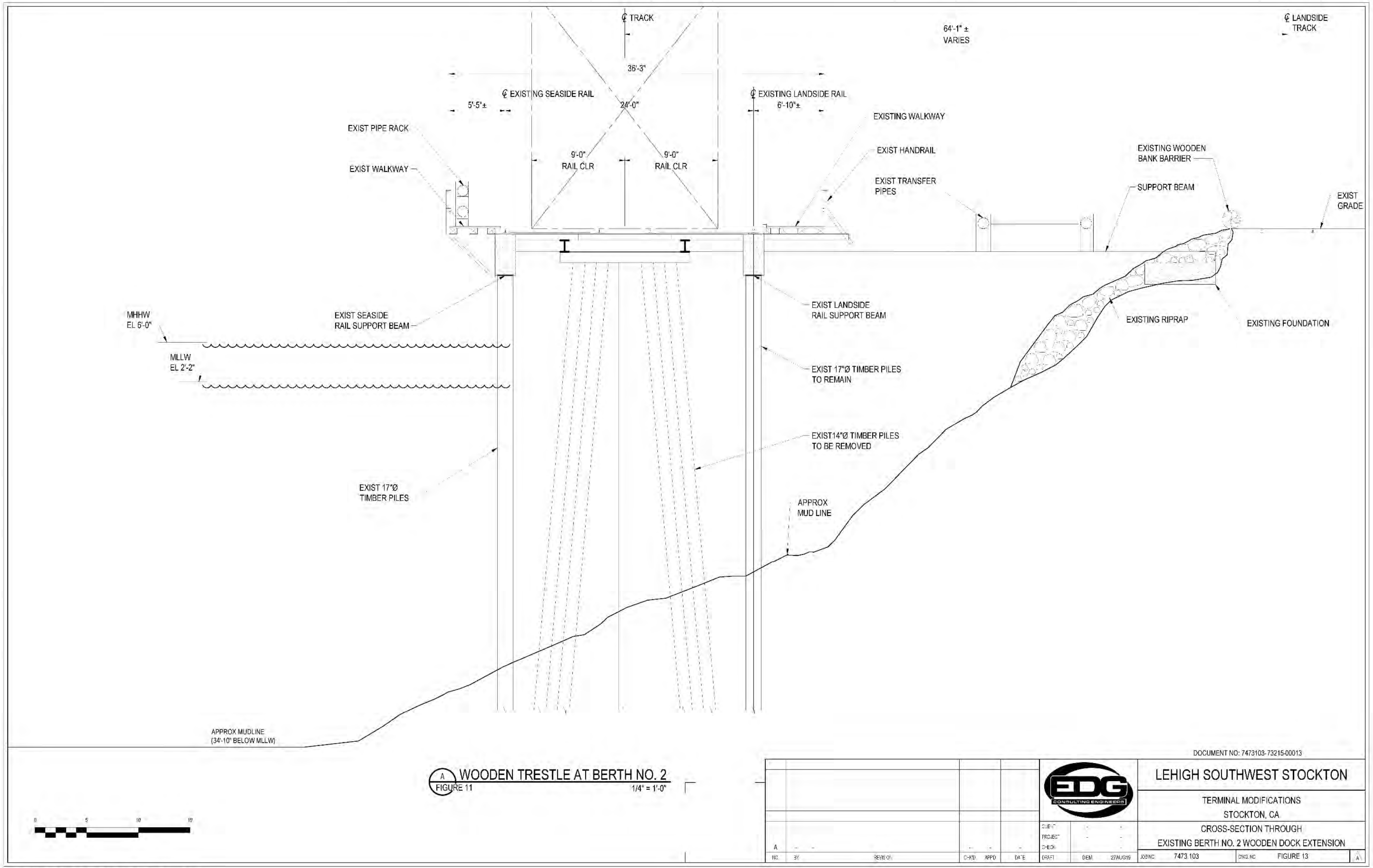
Figure 10
Cross-Section Through Proposed Modification to Existing Berth No. 2 Structure

Source: Lehigh 2019



Source: Lehigh 2019

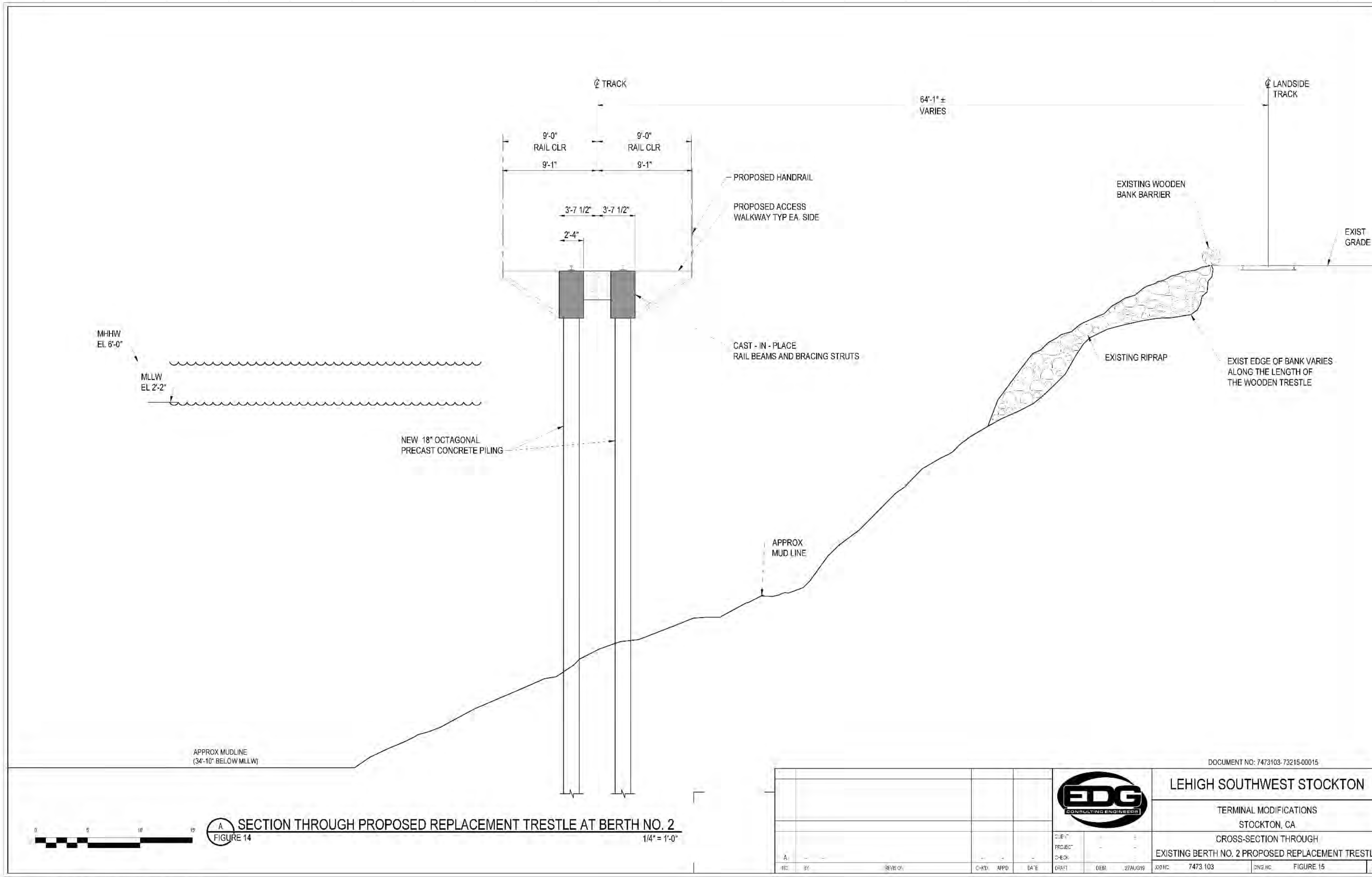
Figure 12
Cross-Section Through Existing Berth No. 2 Wooden Trestle



Source: Lehigh 2019

Source: Lehigh 2019

Figure 14
Plan of Revision to Trestle
Environmental Impact Report
Lehigh Southwest Stockton Terminal Project



Source: Lehigh 2019

Figure 15

Cross-Section Through Existing Berth No. 2 Proposed Replacement Trestle

2.3.1 Berth 2 Rehabilitation

In-water improvements to rehabilitate Berth 2 would include installing new concrete support pilings and replacing the ship fendering system (Figures 8 through 10). Additional rehabilitation activities would include installing new concrete support beams, new gantry rails, and a new stowage mast, and rehabilitating the base dock structure.

A maximum of 144 18-inch octagonal concrete piles would be installed to support the ship unloader gantry rail beams, and a maximum of 20 14-inch-square concrete piles would be driven to support the replacement fender system (Figures 9 and 10). All 164 piles would be driven in the water below the mean higher high water (MHHW) line. Slots would be cut in the 8-inch-thick Berth 2 deck to accommodate piles being driven through the structure. Installation would occur using a single impact hammer mounted to a crawler crane operating atop the Berth 2 deck. If the existing dock structure cannot support this type of crane, a floating derrick barge crane setup would be used. In addition to the fender piles, the replacement fender system would include four 5-foot-diameter by 10-foot floats fixed to the new 14-inch-square concrete piles.

Additional Berth 2 rehabilitation activities would occur above the MHHW line, including installing new concrete beams, new gantry rails, and concrete repairs. New concrete beams would be installed with below-deck ties to the existing dock structure, and new gantry rails would be installed at the appropriate rail gauge. Similar to the support piles, these features would be constructed using the same slots cut in the existing deck. The slots in the concrete deck would be formed and filled with concrete to complete the deck surface. Forms would be supported by the new piles and the existing concrete structure. A hydraulic crane would be used to install the forming and placement of the reinforced cast-in-place beams. Concrete repairs would be completed to provide structural integrity, including repair of damage to existing concrete columns, spalled concrete on beams, and to the underside of the deck.

Care would be taken to minimize debris falling into the water. Debris containment booms, floating debris screens, and/or absorbent booms would be positioned beneath and alongside work areas as needed whenever possible. If barges are used during construction, they would be moored in a position to capture and contain the debris generated during any substructure or in-water work. In the event that debris reaches the water, personnel in workboats would immediately retrieve the debris for proper handling and disposal. For small-scale overwater repairs and maintenance, tarps, tubs, or vacuums would be used as appropriate to catch sawdust, debris, or drips. Asphalt and concrete materials would be taken to a local recycle yard, steel would be taken to a local scrap yard, clean debris would be recycled when possible, and miscellaneous debris would be taken to a local landfill.

2.3.2 Ship Unloader Replacement

The existing ship unloader would be replaced with a new ship unloader. The new unloader would be equipped with a completely enclosed conveying system (Figure 6). The ship unloader components would be delivered to the site by ship from various international locations in large pre-assembled pieces and multiple shipping containers. The new ship unloader would be installed on newly installed gantry rail along the dock parallel to the berth face. A designated area of the dock would be used for assembling the unloader upon the new gantry rails. Installing the unloader would also require replacing the existing electrical connection due to location and sizing.

2.3.3 Rail Trestle Replacement

An approximately 180-foot portion of the existing wooden trestle has deteriorated and, accordingly, its load-bearing capacity has been reduced (Figures 11 through 13). In its current condition, only empty rail cars can travel or be stored on the trestle. In order to accommodate full rail cars, the existing wooden trestle deck would be replaced with a new structural bridge capable of supporting full cars and the engine.

Construction would begin with demolition of existing wooden rail trestle components. Fifty-six in-water 14-inch creosote-treated wood piles would be cut off at the mudline and left in place below the surface. Fifteen 14-inch creosote-treated wood piles located on the bank slope (10 above MHHW and five below MHHW) would be removed, and the void space caused by the removal would be filled (Figures 11 through 13). The existing gantry rail support beams, including 50 17-inch timber support piles, would remain in place and would be integrated with the replacement rail trestle design.

Following rail trestle demolition, a maximum of 30 18-inch octagonal concrete support piles would be installed in the water beneath the MHHW line (Figures 14 and 15). Piles would be installed using an impact hammer operating from a floating derrick barge crane setup.

Once piles are installed, the contractor would construct forms atop the piles, place reinforcement, then cast-in-place concrete beams and structural ties, constituting the replacement trestle. After this portion of the installation is complete, new track would be installed, as well as an access walkway alongside the rail. These improvements would be constructed above the MHHW. The replacement deck would have a smaller overwater coverage area compared to the existing wooden rail trestle, as the portion southeast of the gantry rails would be narrower.

2.3.4 Barge Loading Component Installation

Barge loading components, such as pneumatic transport piping and connection hoses, would be installed to allow for future barge loading of cementitious materials for water-based shipping. Specific designs for this proposed project element have not yet been completed but would occur entirely above MHHW and the deck of Berth 2.

2.3.5 Upland Facility Improvements

The proposed project also includes upland facility improvements to the Lehigh facility, including replacing Bunker 7 with a concrete storage dome, upgrades to existing bunkers, and modifications to the truck loading stations.

The existing Bunker 7 would be replaced with a monolithically constructed concrete storage dome to more efficiently handle Portland cement or other cementitious materials. Bunker 7 currently has a capacity of 8,800 tons and is 130 feet in diameter and 58 feet high. The new storage dome would have a capacity of 44,000 tons and would be approximately 120 feet in diameter and 132 feet high. The storage dome would be constructed entirely on land on a foundation supported by precast concrete piles. An enclosed handling system would transfer cementitious material from the ship receiving system to the new storage dome, which would include air pollution control devices and new baghouses. The new storage dome would have an automated cementitious material extraction system consisting of a sloped aerated floor that feeds into an enclosed conveying system with an above grade tunnel.

Bunkers 5 and 6 and the new storage dome would transfer extracted cementitious material to Truck Loading Lanes 3 and 4. The existing single deck scales at Truck Loading Lanes 3 and 4 would be replaced with new split-deck scales so that each tank of a dual tank trailer can be weighed and loaded separately. Truck Loading Lanes 1 and 2, which currently receive extracted cementitious material from Bunkers 1 and 2, would also be upgraded with a new dual tank loading spout system and a split-deck scale similar to what exists at Truck Loading Lanes 3 and 4; however, specific designs for these elements have not been completed. All equipment would be enclosed and operated on a negative pressure basis using existing and new dust filter systems.

To install the new storage dome's foundation system, pile driving in uplands (above the MHHW line) would be required over approximately 6 months. The dome would be constructed using a positive air-formed vinyl bladder with foam reinforcement. The structural wall of the storage dome would be built using a systematic process of installing conventional reinforcing steel covered with shotcrete. Once the dome is complete, an interior tunnel would be installed, along with compacted fill, which would form a sloped floor for installing a full-coverage aerated floor system. This floor system would include an extensive computer-controlled valve and blower system to supply pressurized air to aerate the cementitious material and promote extraction flow. An equipment building would be installed adjacent to the new storage dome to house the blowers.

Throughout dock rehabilitation, unloader installation, and new storage dome construction, a separate contractor would install fully enclosed and automated material handling equipment mounted on structural steel frames with access platforms. The installation of dust filters and their associated foundations and structural supports would require approximately 6 months, but would mostly occur concurrently with construction of the other systems.

2.4 Operations

The proposed improvements to the Lehigh terminal described in Section 2.3 would increase the terminal's existing cementitious material storage capacity from 94,900 tons to 130,100 tons. The proposed project's expected maximum throughput based on the facility's physical capacity is presented in Table 4. As shown, based on expected increases in market demand, throughput would increase over time to a maximum physical capacity in analysis year 15.

Table 4
Expected Maximum Proposed Project Throughput Compared to Existing Levels (Annual)

	Baseline (2018)		Year 1		Year 5		Year 15	
	Tons	Annual Activity	Tons	Annual Activity	Tons	Annual Activity	Tons	Annual Activity
Throughput (cement/slag volumes)	883,793	--	1,523,500	--	2,785,000	--	3,345,000	--
Truck Shipping[1]	505,432	18,720	561,750	20,806	950,000	35,185	1,072,500	39,722
Truck Receiving		0	24,300	900	50,000	1,852	75,000	2,778
Rail Cars	61,663	587	200,000	1,905	400,000	3,810	500,000	4,762
Rail Trips		117[2]		190[3]		190[3]		238[3]
Ships Calls	316,698	9	737,450	21	1,385,000	39	1,697,500	48
Barges Calls	0	0	0	0	0	0	200,000	40

Notes:
1. Truck calls are expressed in one-way moves.
2. Assumes an average of five cars per train
3. Assumes an average of 20 cars per train

As shown in Table 4, the proposed project would result in a future increase in cementitious material throughput above existing permitted limits. Therefore, Lehigh would need a new SJVAPCD PTO to operate. Lehigh submitted an Authority to Construct permit application to SJVAPCD in December 2019. The December 2019 permit application requests authorization for the upgrade of the current ship unloader, the addition of a new rail loading operation, the replacement of existing Bunker 7 with a larger storage dome, and the addition and removal of baghouses. Additionally, Lehigh wishes to remove the currently permitted Truck Loading Operation N-153-17-3 from the PTO because it is not in use and will be demolished. The December 2019 permit application does not include a request to increase the daily or annual throughput limits. This DEIR assesses the long-term maximum throughput increases that could happen based on market demand. Such future increases in throughput levels would be subject to further SJVAPCD permits.

Overall terminal operations as described in Section 2.2.1 would remain generally the same. The proposed project would result in additional vessel, truck, and rail calls. Table 4 also shows that the upgraded terminal would be designed to service barges in the future along with vessels.

The following section provides an overview on how proposed project-related improvements would modify individual operational components.

Once a bulk cargo vessel is secured at Berth 2, the new fully enclosed and self-contained mechanical unloader would unload the product from the vessel. The proposed project is designed to meet an unloading capacity of 1,820 tons (or 1,650 metric tons) per hour and would not exceed the unloader's permitted receiving rate. Each ship typically has four to six holds of dry bulk cementitious material. The unloader would be used to extract cementitious material from one hold of the ship at a time.[2] Like the existing unloader, the new unloader would be mounted on rails on the dock, which would allow it to move parallel to the ship to access the ship's holds on a systematic basis, allowing for unloading while maintaining ship ballasting. The new unloader could make up to 20 movements throughout the unloading operation. Consistent with existing cementitious material unloading operations, one facility operator would be positioned on the deck of the ship and another operator would monitor the unloading operation from a control room. As shown, Lehigh may also use barges in the future to move product from the terminal to the Bay Area. Barges would be loaded at the berth from storage units, using the same process as vessel unloading but in reverse.

Once unloaded from the ship, cementitious material would be transferred to the land-based storage structures either by a new mechanical material handling system leading to the new storage dome or by the existing pneumatic transport system to other existing storage structures. During transfer by either system, material is fully enclosed. The unloading process with the new unloader would last approximately 1.5 to 2 days, operating on a net basis of 21 hours per day.

The new storage dome replacing Bunker 7 would allow for automated extraction of cementitious material to the truck loading station, which is more efficient than the current operation's manual extraction by front-end loader. Cementitious material would be delivered from the dome and bunkers via enclosed material handling systems leading to an enclosed air gravity conveyor system

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[2] The ship unloader works to extract product directly from ships' holds to minimize dust and exposure of cementitious material to moisture and airborne dust.

to either of two existing truck loading stations. All bulk shipping operations would occur within the enclosures of the existing truck or rail loading stations. The four existing truck loading lanes and one new rail car shipping station would be used for all loading activities. Prior to entry and after the loading process, tank trailer and rail car hatch access stations would be provided for truck drivers or operators to safely open and close their hatches. Cementitious material from the terminal would be shipped by barge, truck and rail car, and intermodal volumes would fluctuate depending upon market conditions and sales destinations.

Operational hours of the Lehigh terminal would vary according to terminal functions and level of operations. In some cases, the terminal would operate 24 hours a day, which is consistent with current operations. While a ship is being unloaded, normal receiving hours would be 24 hours a day until unloading is complete (currently approximately 4 to 5 days per vessel). Normal shipping hours for loading trucks and rail cars would start at 10 PM and run through 7 PM the following day. In general, the terminal would operate Monday through Saturday, with occasional Sunday operations. Consistent with existing conditions, employees would always be on-site during unloading and loading operations.

2.5 Proposed Alternatives

Per CEQA Guidelines Section 15126.6, an EIR need only examine in detail those alternatives that could feasibly meet most of the basic objectives of the proposed project. The purpose of the proposed project is to upgrade an existing dock at the Port in order to handle a heavier replacement unloader, improve rail and truck loading/unloading systems, and increase storage capacity in anticipation of increased future cementitious materials supply and market demand. The following alternatives are currently being considered for further analysis in the DEIR.

2.5.1 No Project Alternative

The No Project Alternative, which is required by CEQA, represents what would reasonably be expected to occur in the foreseeable future if the proposed project were not approved. Under this alternative, there would be no construction or replacement of equipment at the Lehigh terminal. While throughput may increase over baseline levels to existing permit limits, the general terminal operations would remain the same. However, because the unloader is nearing the end of its useful life, operations would occur in a less efficient manner and may be reduced over current operations at some time in the future. Because the proposed project's throughput projections are based on future regional market demand, it is assumed that another facility or facilities would accommodate the material under the No Project Alternative. However, the ultimate shipping and receiving destinations are unknown and therefore, a regional analysis is speculative at this time.

2.5.2 Reduced Project Alternative

The Reduced Project Alternative was proposed to reduce impacts to cultural resources and air quality resources because it would not impact the rail trestle bridge. The Reduced Project Alternative would consist of the same construction and operational components as the proposed project, except that the wooden rail trestle, a historical resource discussed in Section 3.1, would not be replaced. Because the current wooden rail trestle bridge cannot handle loaded rail cars, leaving the existing bridge in place would reduce the overall area available for loaded rail cars, and accordingly reduce the maximum throughput expected at the terminal.

3 Environmental Impact Analysis

This section discusses the CEQA requirements and terminology used in the environmental impact analysis. The environmental resource analysis sections discuss the possible effects of the proposed project on the specific environmental resource areas. To assist the reader in comparing information about the various environmental issues, Sections 3.1 through 3.8 each contain the following information for the specific resource area:

- **Environmental setting.** The physical conditions at the time of baseline, specific to the resource area
- **Regulatory setting.** The rules, regulations, and plans specific to the proposed project and resource area
- **Methodology for determining impacts.** A description of the quantitative or qualitative methods used to analyze potential impacts, including specific thresholds of significance (the criteria against which the analysis results are compared)
- **Impacts of the proposed project.** Potential impacts are compared to the thresholds of significance to determine their level of significance
- **Mitigation measures.** Mitigation measures, as well as a plan to implement measures and findings of significance after the measures are implemented, are provided where potentially significant impacts are identified

In accordance with Section 15064 of the CEQA Guidelines, the environmental impact analysis for each resource section includes an evaluation of the direct physical changes in the environment that may be caused by the proposed project, as well as reasonably foreseeable indirect physical changes in the environment that may be caused by the proposed project. Factors that may be affected by the proposed project are evaluated using the criteria set forth in Appendix G of the CEQA Guidelines (Environmental Checklist) as amended (December 2018). Per CEQA Guidelines Section 15382, an impact is considered significant if it would result in a "substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance. An economic or social change by itself shall not be considered a significant effect on the environment. A social or economic change related to a physical change may be considered in determining whether the physical change is significant."

Short- and long-term impacts are also considered. Short-term impacts are of a limited duration, such as those that occur during a construction phase. Long-term impacts are those of a greater duration, such as those that would encompass the proposed project duration and beyond.

As reflected in CEQA Guidelines Section 15126, impacts resulting from the proposed project on environmental resources can be included in one of the following categories:

- **No impact.** No impact to the identified environmental resource would occur as a result of the proposed project.
- **Less than significant.** Some impacts to the environmental resource may result from the proposed project; however, the impacts do not reach the threshold of significance.
- **Potentially significant but mitigation measures are available to reduce impacts to a less-than-significant level.** Significant adverse impacts may occur; however, with appropriate mitigation, they can be reduced to a less-than-significant level.
- **Significant and unavoidable adverse impacts.** The environmental effect reaches or exceeds the threshold of significance even after mitigation measures have been applied to minimize their severity or no mitigation is available to reduce the impacts to a less-than-significant level.

Potential cumulative impacts for the proposed project for each environmental resource area are summarized in Section 4. Irreversible environmental changes that would be caused by the proposed project and growth-inducing impacts of the proposed project are identified in Section 5. In Section 6, the alternatives are compared to the proposed project and CEQA baseline and ranked relative to each other based on anticipated impacts for each resource area to determine the environmentally preferred alternative.

3.1 Aesthetics

This section describes existing aesthetic conditions in the project area and analyzes how the proposed project may affect aesthetics. It also describes applicable rules and regulations pertaining to aesthetics that could affect the proposed project. For the purposes of the aesthetics analysis, the study area is defined as the regional and study area settings, which affect the visual character at and around the project site. The loss of scenic resources or the introduction of contrasting features that could degrade the visual character of the project area is the focus of the aesthetics analysis.

3.1.1 Environmental Setting

The environmental setting section discusses the aesthetic and visual context in which the proposed project would be constructed and would operate, including the regional land uses that affect the visual character at and around the project site and the study area setting, which encompasses a description of the Lehigh site itself, as well as immediate surrounding properties.

3.1.1.1 Regional Setting

The proposed project would occur entirely within Port property. All of the Port's land is zoned for industrial development and is leased for a variety of industrial uses. The Port is located on flat lands which do not possess significant natural topographic variation. Industrial developments are characterized by storage tanks, power production towers, cement and grain silos, railroad tracks, large storage buildings, and stockpiles of various commodities (Stockton Port District 2013).

Regional land uses that affect the visual character at and around the project site include residential infill (the closest residential areas are located 500 feet south of the project site), industrial/commercial facilities (south, west, and east of the project site), and Central California Traction Company (CCT) rail lines and right of way (south of the project site).

3.1.1.2 Study Area Setting

The existing Lehigh terminal is bound by the San Joaquin River, Port Road A, Port Road 1, and Port Road 2, north of Washington Street. The site is almost entirely developed and contains a 540-foot-long concrete dock structure (Berth 2) with a ship unloader (Photograph 1), cementitious material storage facilities (Photograph 2), truck loading stations (Photograph 3), a wooden rail trestle (Photograph 4), and an existing rail car loadout (Photograph 5).

Berth 2 and the immediately adjacent wooden rail trestle are both located in the San Joaquin River. The project site is located just west of the San Joaquin River turning basin and adjacent to the Stockton Deep Water Ship Channel (DWSC). The San Joaquin River turning basin is located on the eastern end of the Stockton DWSC, in an area where the river widens allowing vessels to reverse orientation prior to departure from the Port area.

The terrain is primarily flat throughout the entire lease area. The Lehigh facility, including Berth 2, is entirely devoid of vegetation except for some small potted ornamental landscaping. The shoreline contains a very small area of riparian vegetation adjacent to the existing wooden trestle, including several small (less than 6 inches in diameter at breast height) walnut trees (Photograph 6). Small riparian trees are also present on the shoreline adjacent to Bunker 1 on the eastern edge of the proposed lease area, also outside the immediate improvement area.

The following properties are adjacent to the project site: Penny Newman Grain Company, a grain and agricultural commodities facility, to the east (shown in Photographs 7 and 8); Wilmar Oils and Fats, an oil refinery, to the west; Delta Surveillance Solutions, a security system supplier, to the north across the San Joaquin River; and CCT, a railroad company, to the southwest. The properties to the west and east of the Lehigh facility are nearly devoid of vegetation. The developed areas located to the south include a mix of industrial and low-density residential properties that contain lawns, trees, and shrubs. Vegetation occurs within a largely developed industrial landscape. Other residential developments do not line the shoreline across the San Joaquin River; they are located behind existing industrial areas across the San Joaquin River to the northwest of the project site. Photograph 9 is taken from the corner of San Juan Avenue and Field Avenue and is representative of the existing views from the industrial area lining the San Joaquin River. The existing facility is visible in the center distance.

The water tower near Lane 1 and 2 is 143 feet tall. The surrounding site structures, such as the Penny Newman Grain Company facility, measure up to 300 feet in height. The color palette of the existing structures is neutral with tones such as tan, grey, light brown, and white. The facility is open and operates throughout the night. As a security lighting measure to ensure that operations are safe throughout the night, operational lighting in effect doubles after dusk and before dawn.

Photograph 1
Existing Ship Unloader

Photograph 2
One Existing Cementitious Material Storage Structure

Photograph 3
Existing Truck Loading Stations

Photograph 4
Existing Wooden Rail Trestle with Empty Rail Cars and Adjacent Grasses and Shrubs

Photograph 5
Existing Rail Car Loadout

Photograph 6
View of Small Walnut Trees on Shoreline Across from Existing Wooden Rail Trestle

Photograph 7
View of Lehigh Terminal from Harbor Street (Southeast of the Project Site)

Photograph 8
View of Lehigh Terminal from Port Road A (Southwest of the Project Site)

Photograph 9
View of Lehigh Terminal from San Juan and Field Avenues (North of the Project Site)

3.1.2 Applicable Regulations

3.1.2.1 State Regulations

California's Scenic Highway Program was created by the state legislature in 1963 with the purpose of protecting and enhancing the natural scenic beauty of California highways and adjacent corridors through special conservation treatment. The state laws governing the Scenic Highway Program are found in the Streets and Highways Code, Sections 260 through 284. A list of California's scenic highways and a map showing their locations may be obtained from Caltrans' Scenic Highway Coordinators (Stockton Port District 2013). There are no designated state scenic highways in the immediate vicinity of the proposed project. The closest scenic highway to the project site is the portion of State Route 580 from Interstate 5 to State Route 205. This roadway is located 20 miles to the southwest of the Port.

3.1.2.2 Local Regulations

The City's 2040 General Plan (City 2018) sets out policies for land use, transportation, safety, and community health for the City. The land use chapter of the 2040 General Plan addresses visual quality, including urban design and aesthetics issues. Discussions under the 2040 General Plan land use chapter which may be applicable to the proposed project are as follows:

- Require the incorporation of scenic views, including open space features like waterways, wetlands, natural landscapes, and parks, into design of the built environment (Action LU-1.3C)
- Integrate nature into the city and maintain Stockton's urban forest (Policy LU-5.1)
  - Require renovated and new projects to provide open spaces that create gateways, act as collectors for pedestrian systems, and/or provide a social focal point for a project and the surrounding community and corridor, as appropriate (Action LU-5.1A)
- Protect natural resource areas, fish and wildlife habitat, scenic areas, open space areas, agricultural lands, parks, and other cultural/historic resources from encroachment or destruction by incompatible development (Policy LU-5.2)
- Design public facilities and infrastructure to maintain and improve the visual quality of the urban environment, including through the following approaches:
  - Designing buildings and infrastructure to fit into and complement their ultimate surroundings.
  - Buffering buildings and infrastructure from their surroundings as appropriate to shield unsightly areas from public view.
  - Providing appropriate landscaping (Action LU-6.2D).

3.1.3 Environmental Impacts and Mitigation Measures

3.1.3.1 Baseline

At the time of publication of the NOP for the proposed project, Lehigh operated a bulk cementitious material receiving and distribution terminal. The structures and features within the project site are described in detail in Section 3.1.1. As described, the upland areas of the site are entirely devoid of vegetation except for some small potted ornamental landscaping. As shown in Photographs 8 and 9, the area adjacent to the site is industrial and includes several port terminals with similar color palates and industrial features, including a Port water tower, a grain and agricultural commodities facility, an oil refinery, a security system supplier, and a railroad company. The project site also includes the San Joaquin River and shoreline adjacent to Berth 2 and the existing wooden rail trestle.

3.1.3.2 Thresholds

For purposes of this DEIR, the following thresholds, which are based on Appendix G of the CEQA Guidelines (Environmental Checklist), were used to determine whether the proposed project would result in impacts on aesthetics. The proposed project would have an impact on aesthetics if:

- **AES-1:** The project would have a substantial adverse effect on a scenic vista.
- **AES-2:** The project would substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.
- **AES-3:** The project would substantially degrade the existing visual character or quality of public views of the site and its surroundings.
- **AES-4**: The project would create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

3.1.3.3 Methodology for Determining Impacts

The proposed project involves redeveloping the terminal to accommodate additional capacity and improve operational efficiency. Berth 2 would be redeveloped to support a new ship unloader. A portion of an existing rail trestle (bridge) is currently unable to support the weight of fully loaded rail cars and this section would be replaced so that the trestle could accommodate full rail cars and an engine. The proposed project also includes replacing Bunker 7 with a concrete storage dome, which would be 132 feet high, with a bucket elevator which feeds the dome measuring 165 feet high. Upland improvements to the storage, rail, and truck loading systems are also proposed. There would not be any tree removal or landscaping changes. There is no anticipated change in operational or security lighting.

The CEQA Guidelines define a substantial adverse effect on aesthetics as a significant effect on the environment. A substantial adverse effect on would include impacts on scenic vistas and scenic resources, or associated with visual quality and view blockage, and nighttime illumination and glare. The loss of scenic resources or the introduction of contrasting features that could degrade the visual character of the project area is the focus of the aesthetics analysis. The analysis also addresses project consistency with applicable zoning and other regulations and policies.

An adverse visual impact may occur when an action perceptibly changes the existing physical features of the landscape that are characteristic of the region or local settings, an action introduces new features to the physical landscape that are perceptibly uncharacteristic of the region or local settings, or become visually dominant in the viewshed, or an action blocks or totally obscures aesthetic features of the landscape (CPUC 2010).

3.1.3.4 Impact Analysis

3.1.3.4.1 AES-1: Except as provided in Public Resources Code Section 21099, would the project have a substantial adverse effect on a scenic vista?

The project site is an industrial site with no identified scenic vistas. Except for the San Joaquin River shoreline, including Berth 2, areas proposed for development are shielded from long-distance view on all sides by existing topography, elevated railroads, fencing, landscaping, and buildings. This includes all areas proposed for development: the ship unloader, the rail trestle, new dome, and upland improvements to the storage, rail, and truck loading systems. Project improvements as viewed from the shoreline would be consistent with the visual character of the study area, and there would be no changes to the overall viewshed.

Impact Determination: Because there are no scenic vistas in the project area, and the proposed project is in line with the surrounding visual character, the proposed project would have no effect on a scenic vista.

Mitigation Measures: None required.

Residual Impact: No impact.

3.1.3.4.2 AES-2: Except as provided in Public Resources Code Section 21099, would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings along a scenic highway?

Impact Determination: Scenic resources are the visible physical features of a landscape and historic structures that contribute to a unique and exemplary visual setting. The closest scenic highway to the project is the California Delta Highway, located 23 miles to the west of the project site. The project site is not located along or visible from a scenic highway; therefore, it would not affect scenic resources along a scenic highway.

Mitigation Measures: None required.

Residual Impact: No impact.

3.1.3.4.3 AES-3: Except as provided in Public Resources Code Section 21099, would the project substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?

Impact Determination: While the proposed project is expected to be similar to baseline conditions, the proposed project includes dock and upland construction or improvements that would be visible and could potentially alter the existing visual character or quality of public views of the site and surroundings. The project site is visible from the San Joaquin River shoreline (Photograph 9) and to vehicles traveling on Port Road A (Photograph 8) Port Road 1, Port Road 2 (north of Washington Street), and Interstate 5 (I-5). Construction would occur entirely within Port property. While the new dome's associated equipment features would be taller than the height of the existing water tower (the tallest feature on the existing site) and taller than the height of the next tallest structure on the existing site the dome's height would not block any views and would be shorter than surrounding buildings at neighboring terminals, including the water tower near Lane 1 and 2 (143 feet tall) and the Penny Newman Grain Company facility (300 feet tall at the highest point), as shown in Photographs 7 and 8.

The color palette would not be different than the surrounding environment. All structures on site fit into and complement their ultimate surroundings, which are Port industrial uses. Finally, the proposed project is consistent with all applicable zoning and regulations discussed above governing aesthetics and scenic quality. Therefore, the proposed project would maintain the visual character of the project area and its surroundings (Port industrial uses) and impacts would be less than significant.

Mitigation Measures: None required.

Residual Impact: Less-than-significant impact.

3.1.3.4.4 AES-4: Except as provided in Public Resources Code Section 21099, would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Impact Determination: Artificial light impacts are typically associated with light that occurs during the evening and nighttime hours, and may include streetlights, illuminated signage, vehicle headlights, and other point sources. Glare is primarily caused by the reflection of sunlight or artificial light from highly polished surfaces or reflective materials. As discussed, the facility is and would continue to be open and operational throughout the night, but there would be no anticipated change in operational or security lighting as part of the proposed project. None of the new structures would be constructed with reflective material. The proposed project would not create a new source of substantial light or glare; therefore, there would be no associated impact to day or nighttime views in the project area.

Mitigation Measures: None required.

Residual Impact: No impact.

3.2 Air Quality

This section describes existing air quality conditions in the project area and analyzes how the proposed project may affect air quality. It also describes applicable rules and regulations pertaining to air quality that could affect the proposed project. For the purposes of the air quality analysis, the study area is defined as the project site and the surrounding area, including roadways, railways, and the San Joaquin River/Stockton DWSC. The closest sensitive receptor to the terminal is a residential area located approximately 500 feet to the south.

3.2.1 Environmental Setting

The proposed project would occur in the northern portion of the San Joaquin Valley Air Basin (SJVAB), which is managed by SJVAPCD. The SJVAB is bounded by the Sierra Nevada Mountains to the east, the Coast Ranges to the west, and the Tehachapi mountains to the south; and is made up of eight counties in California's Central Valley: San Joaquin; Stanislaus; Merced; Madera; Fresno; Kings; Tulare; and the SJVAB portion of Kern. The climate within the SJVAB is typical of inland valleys in California with hot, dry summers and cool, mild winters. Daytime temperatures in the summer often exceed 100°F, with lows in the 60s. In winter, daytime temperatures are usually in the 50s, with lows around 35°F. Fog is common in the winter and may persist for days. Winds are predominantly up-valley (from the north) in all seasons, but more so in the summer and spring months. Winds in the fall and winter are generally lighter and more variable in direction, but generally blow toward the south and southeast.

Air quality in the SJVAB is impacted by several sources, including motor vehicle emissions, oil production and refining, and agriculture. Because of the Valley's unique physical characteristics, the potential for pollution is very high. Surrounding elevated terrain, in conjunction with temperature inversions, frequently restrict lateral and vertical dilution of pollutants. Ozone (O_3), the major component of the Valley's summertime smog, is formed via chemical reactions between reactive organic gases (ROG) and nitrogen oxides (NO_X) in the presence of ultraviolet radiation or sunlight. Abundant sunshine and warm temperatures in summer are ideal conditions for the formation of photochemical oxidants, and the photochemical pollution (O_3) becomes common. Tiny particles of solids or liquids (excluding pure water) that are suspended in the atmosphere are known as particulate matter (PM) and are classified according to their diameter in microns as either $PM_{2.5}$ (PM less than 2.5 microns in diameter) or PM_{10} (PM less than 10 microns in diameter). PM can be emitted directly (primary PM, such as dust or soot), and also can form in the atmosphere through photochemical reactions or gaseous precursors (secondary PM). Much of the Valley's ambient PM_{10} and $PM_{2.5}$ is secondary PM, formed in atmospheric reactions of NO_X. Due to the combined air pollution sources within the SJVAB and meteorological and geographical effects that limit dispersion of air pollution, the SJVAB can experience high air pollutant concentrations.

Air pollutants are defined as two general types: 1) criteria pollutants, representing pollutants for which the U.S. Environmental Protection Agency (USEPA) and ARB have set health- and welfare-protective ambient air quality standards (national ambient air quality standards [NAAQS] and California ambient air quality standards [CAAQS]); and 2) toxic air contaminants (TACs), which may lead to serious illness or increased mortality even when present at relatively low concentrations. TACs generally do not have ambient air quality standards.

3.2.1.1 Criteria Pollutants

USEPA and ARB classify an area as attainment, unclassified, or nonattainment depending on whether the monitored ambient air quality data show compliance, lack of data, or noncompliance with the ambient air quality standards, respectively. The NAAQS and CAAQS relevant to the proposed project are provided in Table 5. Areas without monitoring data are considered unclassified and are generally treated as attainment areas. As discussed above, the NAAQS and CAAQS are health-based standards. Table 5 includes information on the main health effects associated with exceeding the standards. ARB monitors NAAQS and CAAQS standards to protect public health. For example, if the state annual average $PM_{2.5}$ standard was met, approximately 1,000 premature deaths would be avoided annually (ARB 2015). Local air districts use the NAAQS and CAAQS to develop localized thresholds based on regional risk factors such as weather patterns and geography.

Table 5
National and California Ambient Air Quality Standards

Pollutant	Averaging Period	California Standards	National Standards	Health Effects
O_3	1-hour	0.09 ppm	--	Breathing difficulties, lung tissue damage
	8-hour[b]	0.070 ppm	0.075 ppm	
PM_{10}	24-hour	50 µg/m^3	150 µg/m^3	Increased respiratory disease, lung damage, cancer, premature death
	Annual	20 µg/m^3	--	
$PM_{2.5}$	24-hour[c]	--	35 µg/m^3	Increased respiratory disease, lung damage, cancer, premature death
	Annual	12 µg/m^3	12 µg/m^3	
CO	1-hour	20 ppm	35 ppm	Chest pain in heart patients, headaches, reduced mental alertness
	8-hour	9.0 ppm	9 ppm	
NO_2	1-hour	0.18 ppm	0.100 ppm[a]	Lung irritation and damage
	Annual	0.030 ppm	0.053 ppm	
SO_2	1-hour	0.25 ppm	0.075 ppm[a]	Increases lung disease and breathing problems for asthmatics
	3-hour	--	0.5 ppm	

Pollutant	Averaging Period	California Standards	National Standards	Health Effects
	24-hour	0.04 ppm	--	
Lead	30-day	1.5 μg/m^3	--	Increased body burden and impairment of blood formation and nerve conduction
	Quarter	--	1.5 μg/m^3	
	3-month	--	0.15 μg/m^3	
Sulfates	24-hour	25 μg/m^3	--	Decrease in ventilator function, aggravation of asthmatic symptoms, aggravation of cardiopulmonary disease
Visibility-reducing particles	8-hour	In sufficient amount to give an extinction coefficient of >0.23 inverse kilometers (visual range to less than 10 miles with relative humidity less than 70%)	--	
Hydrogen sulfide	1-hour	0.03 ppm	--	Odor
Vinyl chloride	24-hour	0.01 ppm	--	Short-term exposure: central nervous system effects – dizziness, drowsiness, and headaches Long-term exposure: liver damage, cancer

Notes:
Source: ARB 2018

a. The federal 1-hour NO_2 and SO_2 standards are based on the 3-year average of the ninety-eighth and ninety-ninth percentile of daily maximum values, respectively.
b. The federal 8-hour O_3 standard is based on the annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years.
c. The federal 24-hour $PM_{2.5}$ standard is based on the 3-year average of the ninety-eighth percentile of the daily values.

The criteria pollutants of primary concern assessed in this DEIR are O_3, PM_{10}, $PM_{2.5}$, carbon monoxide (CO), nitrogen dioxide (NO_2), and sulfur dioxide (SO_2). Lead, hydrogen sulfide, and vinyl chloride would not be generated by the proposed project; therefore, these pollutants are not evaluated.

O_3 is a unique criteria pollutant because it is not directly emitted from proposed project-related sources. Rather, O_3 is a secondary pollutant, formed from the precursor pollutants ROG and NO_X, which react to form O_3 in the presence of sunlight through a complex series of photochemical reactions. Thus, unlike inert pollutants, O_3 levels usually peak several hours after the precursors are emitted and many miles downwind of the source. Because of the complexity and uncertainty in predicting photochemical pollutant concentrations, O_3 impacts are indirectly addressed by comparing proposed project-generated emissions of ROG and NO_X to daily emission thresholds set by SJVAPCD.

Table 6 summarizes the federal and state attainment status of criteria pollutants for the SJVAB based on the NAAQS and CAAQS, respectively.

Table 6
San Joaquin Valley Air Pollution Control District Attainment Status

Pollutant	Attainment Status	
	Federal	State
O_3	Nonattainment (8-hour) – Extreme	Nonattainment (1-hour) – Severe Nonattainment (8-hour)
PM_{10}	Attainment – Maintenance	Nonattainment
$PM_{2.5}$	Nonattainment – Moderate (Annual) Nonattainment – Serious (24-hour)	Nonattainment
CO	Attainment – Maintenance	Attainment
Nitrogen Dioxide (NO_2)	Attainment	Attainment
Sulfur Dioxide (SO_2)	Attainment	Attainment
Lead (Pb)	Attainment	Attainment
Hydrogen Sulfide (H_2S)	No Federal Standard	Unclassified
Visibility-reducing Particles	No Federal Standard	Unclassified

Note:
Sources: USEPA 2019a; ARB 2019

3.2.1.2 Local Air Monitoring Levels

Table 7 shows the most recent 3 years of monitored values for those criteria pollutants currently monitored at the Hazelton Street station (1593 East Hazelton Street, Stockton, California) located approximately 2.5 miles east of the project site. During this time, there were exceedances of the state and national 8-hour O_3 standard, the state PM_{10} standard, and the state and national $PM_{2.5}$ 24-hour standard. No violations were recorded of the NO_2 or CO standards.

Table 7
Maximum Pollutant Concentrations Measured at the Stockton-Hazelton Street Monitoring Station

Pollutant/Parameter	2013	2014	2015
O_3			
Maximum 1-hour/8-hour average concentration (ppm)	0.080/0.067	0.090/0.077	0.094/0.078
Number of days state/national 1-hour standard exceeded (ppm)	0	0	0
Number of days state/national 8-hour standard exceeded	0	4	2
PM_{10}			
Maximum state/national 24-hour concentration (μg/m^3)	95.5/90.1	94.0/90.0	55.3/54.1

Pollutant/Parameter	2013	2014	2015
Number of days state/national 24-hour standard exceeded	58.2/0.0	18.0/0.0	24.5/0.0
$PM_{2.5}$			
Maximum state/national 24-hour concentration (μg/m^3)	66.5/66.5	56.8/56.8	58.8/58.8
Annual state/national average	--/17.6	12.3/12.1	12/12.8
Number of days national 24-hour standard exceeded	27.6	16.0	12.2
NO_2			
Maximum 1-hour average concentration (ppb)	62.4	66.9	58.0
Annual average (ppb)	16	13	12
Number of days state/national standard exceeded	0/0	0/0	0/0
CO			
Maximum 1-hour/8-hour average concentration (ppm)	2.7/1.8	2.8/2.1	2.3/1.5
Number of days state/national 1-hour standard exceeded	0	0	0
Number of days state/national 8-hour standard exceeded	0	0	0

Notes:
Sources: ARB 2019; USEPA 2019a.
CO is no longer monitored in the Stockton area.
O_3 8-hour exceedances are based on 0.070 ppm.

3.2.1.3 Toxic Air Contaminants

TACs are airborne compounds that are known or suspected to cause adverse human health effects after long-term or short-term exposure. Cancer risk can result from long-term exposure, and non-cancer health effects can result from either chronic or acute exposure. Examples of TAC sources are diesel- and gasoline-powered internal combustion engines in mobile sources; industrial processes and stationary sources such as dry cleaners, gasoline stations, and paint and solvent operations; and stationary fossil fuel-burning combustion sources, such as power plants. Table 8 describes health effects of the possible TACs of concern monitored in California. Of the pollutants listed in Table 8, diesel particulate matter (DPM) from combustion engines in ships, rail and trucks would be the primary TAC of concern.

Table 8
Toxic Air Contaminant Health Effects

Pollutant	Health Effects
Benzene	Central nervous system depression, nausea, tremors, drowsiness, dizziness, headache, irritation of the eyes and respiratory tract. Chronic exposure may reduce the production of both red and white blood cells resulting in aplastic anemia. Exposure to benzene may result in an increased risk of contracting cancer
Chlorobenzene	Headaches, numbness, sleepiness, nausea, and vomiting
Diesel particulate matter	Respiratory damage and premature death, and may result in increased risk of contracting cancer

Pollutant	Health Effects
Ethyl benzene	Eye and throat irritation; exposure to high levels can result in vertigo and dizziness
Ethylene glycol monobutyl ether	Eye, respiratory tract and skin irritation and burns; inhalation may cause headaches and hemolysis (red blood cell breakage)
Hexane	Short-term exposure affects the nervous system and can cause dizziness, nausea, headaches, and even unconsciousness. Chronic exposure can cause more severe damage to the nervous system
Isopropyl alcohol	Skin rash, itching, dryness and redness, irritation of the nose and throat. Repeated high exposure can cause headache, dizziness, confusion, loss of coordination, unconsciousness and even death
Methanol	Chronic exposure can cause visual problems and blindness, convulsions, coma, loss of consciousness, kidney failure, liver damage, low blood pressure, respiratory arrest, and damage to the central nervous system
Naphthalene	May cause nausea, vomiting, diarrhea, blood in the urine, and a yellow color to the skin
Propylene glycol monomethyl ether	Can irritate the noise, throat, and lungs causing coughing, wheezing, and/or shortness of breath, headaches, dizziness, lightheadedness, and passing out
Toluene	Irritation of the eyes and nose; weakness, exhaustion, confusion, euphoria, dizziness, headache; dilated pupils, lacrimation (discharge of tears); anxiety, muscle fatigue, insomnia; numbness or tingling of the skin; dermatitis; liver and kidney damage
Xylenes (mixed)	Depression of the central nervous system, with symptoms such as headache, dizziness, nausea, and vomiting

Note:
Source: USEPA Integrated Risk Information System (USEPA 2019b)

3.2.2 Applicable Regulations

3.2.2.1 Federal

3.2.2.1.1 Clean Air Act

USEPA is responsible for setting and enforcing the NAAQS for O_3, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and lead under the Clean Air Act (CAA). USEPA also establishes emission standards for on-road vehicles and off-road engines. The CAA forms the basis for national pollution control and delegates the enforcement of the federal standards to the states. In California, ARB and local air agencies have the shared responsibility for enforcing air pollution regulations, with the local agencies having primary responsibility for regulating stationary emission sources. In the SJVAB, SJVAPCD has this responsibility.

In federal nonattainment areas, the CAA requires preparation of a State Implementation Plan (SIP) detailing how the state will attain the NAAQS within mandated time frames. In response to this requirement, local air quality agencies, in collaboration with other agencies, such as ARB, periodically prepare Air Quality Management Plans (AQMPs) designed to bring the area into attainment with federal requirements and to incorporate the latest technical planning information. The AQMP for each nonattainment area is then incorporated into the SIP, which is submitted by ARB to USEPA for approval. USEPA often approves portions and disapproves other portions of submitted SIPs.

3.2.2.1.2 Emission Standards for Non-Road Diesel Engines

USEPA has established a series of progressively cleaner emission standards for new non-road (off-road) diesel engines. Tier 1 standards were phased in from 1996 to 2000; Tier 2 standards were phased in from 2001 to 2006; Tier 3 standards were phased in from 2006 to 2008; and Tier 4 standards, which may require add-on emission control equipment, were phased in from 2008 to 2015. For each tier, the phase-in schedule is driven by engine size. To enable sulfur-sensitive control technologies in Tier 4 engines, USEPA mandated reductions in the sulfur content of non-road diesel fuels to 15 parts per million (ppm; also known as ultra-low-sulfur diesel), effective 2010 (DieselNet 2017). The federal fuel standard is preempted by the California standard, which took effect in 2006. These standards would apply primarily to construction equipment associated with the proposed project.

3.2.2.2 State

3.2.2.2.1 California Clean Air Act

The California Clean Air Act (CCAA), adopted in 1988, requires nonattainment areas to achieve and maintain CAAQS and mandates that local air districts develop triennial plans for attaining CAAQS. ARB is responsible for establishing CAAQS, ensuring CCAA implementation, and regulating emissions from consumer products and motor vehicles. ARB established CAAQS for all pollutants for which USEPA has established NAAQS, as well as for sulfates, visibility, hydrogen sulfide, and vinyl chloride. CAAQS are generally more stringent than NAAQS.

3.2.2.2.2 California Diesel Fuel Regulation

ARB has set sulfur limitations for diesel fuel sold in California for use in on- and off-road motor vehicles and to fulfill ARB's 2000 Diesel Risk Reduction Plan. Harbor craft and intrastate locomotives (switch locomotives) were originally excluded from the rule, but were later included by 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 and to 15 ppm sulfur since September 2006. Diesel fuel used in harbor craft in SJVAPCD was limited to 500 ppm sulfur starting January 1, 2006, and 15-ppm sulfur starting September 1, 2006. Diesel fuel used in intrastate locomotives has been limited to 15 ppm sulfur since January 1, 2007.

3.2.2.2.3 California Air Resources Board Heavy-Duty Truck Idling Regulation

This ARB rule became effective in 2005 and prohibits heavy-duty diesel trucks from idling for longer than 5 minutes at a time, unless they are queueing, provided the queue is located beyond 100 feet from homes or schools.

3.2.2.2.4 California Air Resources Board Cargo Handling Equipment at Ports and Intermodal Rail Yards

This rule became effective in December 2005 when ARB approved the Regulation for Mobile Cargo Handling Equipment at Ports and Intermodal Rail Yards (13 CCR 79), which was designed to use best available control technology to reduce diesel PM and NO_X emissions from mobile cargo handling equipment at ports and intermodal rail yards. Since January 1, 2007, the regulation has imposed emission performance standards on new and in-use terminal equipment that vary by equipment type. In October 2012, the Office of Administrative Law approved amendments to the regulation to provide additional flexibility for cargo handling equipment owners/operators in an effort to reduce compliance costs while continuing to reduce emissions.

3.2.2.2.5 California Air Resources Board In-Use Off-Road Diesel Vehicle Rule

In July 2007, ARB adopted a rule that requires owners of off-road mobile equipment powered by diesel engines 25 horsepower or larger to meet the fleet average or best available control technology requirements for NO_X and PM emissions by March 1 of each year. The rule is structured by fleet size: large, medium, and small. Medium-sized fleets receive deferred compliance, and small fleets are exempt from NO_X requirements and receive deferred compliance. The regulation was adopted in April 2008 and amended in 2011, delaying the initial compliance date for all fleets by 4 years.

3.2.2.2.6 California Air Resources Board Statewide Bus and Truck Regulation

This regulation, adopted in 2008, requires the installation of PM retrofits on all heavy-duty trucks beginning in 2012 and replacement of older trucks starting in 2015. All vehicles must have 2010 model year engines or equivalent by 2023.

3.2.2.2.7 *California Air Resources Board Regulation to Reduce Emissions from Diesel Engines on Commercial Harbor Craft*

In November 2007, ARB adopted a regulation to reduce DPM and NO_X emissions from new and in-use commercial harbor craft. Under ARB's definition, commercial harbor craft include tugboats, tow boats, ferries, excursion vessels, work boats, crew boats, and fishing vessels. The regulation implemented stringent emission limits on harbor craft auxiliary and propulsion engines. In 2010, ARB amended the regulation to add specific in-use requirements for barges, dredges, and crew/supply vessels.

3.2.2.2.8 *California Air Resources Board Regulations for Fuel Sulfur and Other Operational Requirements for Ocean-Going Vessels within California Waters and 24 Nautical Miles of the California Coast*

In 2008, ARB adopted a clean fuel regulation for OGVs within 24 nautical miles of the California coast to further reduce emissions from shipping. Since then, the permitted sulfur content of marine gas oil and marine diesel oil has been progressively lowered and since 2014 may not exceed 0.1%. ARB passed a rule in 2014 that allows marine vessels to be considered in compliance with the California ocean-going fuel regulation when they are complying with the North American Emission Control Area using alternative emission control technologies or non-distillate low sulfur (less than or equal to 0.1% sulfur) marine fuels.

3.2.2.2.9 *Toxic Air Contaminant Regulations*

California established the California TAC Program (AB 1807 and AB 2728) in 1983. This program sets provisions to implement the national program for control of hazardous air pollutants. The Air Toxics "Hot Spots" Information and Assessment Act (AB 2588), established in 1987, is designed to provide information to state and local agencies and to the public on the extent of airborne TAC emissions from stationary sources and the potential public health impact of those emissions. The Hot Spots Act requires that the Office of Environmental Health Hazard Assessment develop health risk assessment (HRA) guidelines. The Hot Spots Act requires operators of certain stationary sources to inventory air toxic emissions from their operations and prepare an HRA, if directed by their local air district, to determine the potential health impacts of their air toxic emissions.

3.2.2.3 Regional

3.2.2.3.1 *San Joaquin Valley Air Pollution Control District*

SJVAPCD is responsible for implementing federal and state regulations at the local level, permitting stationary sources of air pollution, and developing the local elements of the SIP. Emissions from indirect sources, such as automobile traffic associated with development projects, are addressed through SJVAPCD's air quality plans, which are each air quality district's contribution to the SIP. The most recent 2018 $PM_{2.5}$ Plan was adopted by the District Governing Board on November 15, 2018, and by ARB on January 24, 2019, and has been forwarded to USEPA for final approval.

In addition to permitting and rule compliance, air quality management at the local level is also accomplished through development of regional CEQA significance thresholds and mitigation measures. SJVAPCD's thresholds of significance are based on the CAAQS and NAAQS and represent a regional approach to meeting CAAQS and NAAQS recognizing the air districts attainment status, emission sources, and regional geography. SJVAPCD's CEQA significance thresholds are applicable to the proposed project.

SJVAPCD is responsible for permitting several components of the proposed project's operation. The facility currently is authorized to operate various unloading operations under a PTO. Specific regulations applicable to the project include the following.

- **SJVAPCD Rule 4101 – Visible Emissions:** SJVAPCD Rule 4101 prohibits a single source to discharge any air contaminant, other than uncombined water vapor, which exceeds the standards set forth in Section 5 of this Rule. The facility is subject to requirements of this rule and will continue to comply with SJVAPCD Rule 4101.
- **SJVAPCD Rule 4102 – Nuisance:** SJVAPCD Rule 4102-4 prohibits the discharge any air contaminants, which would cause injury, detriment, nuisance, or annoyance to the public. The facility is subject to requirements of this rule and will continue to comply with SJVAPCD Rule 4102.
- **SJVAPCD Rule 4201 – Particulate Matter Concentration:** SJVAPCD Rule 4201-3 prohibits a single source to discharge dust, fumes or suspended PM in excess of 0.1 grains per dry standard cubic foot under dry conditions. The facility is subject to the requirements of this rule and will continue to comply with SJVAPCD Rule 4201.
- **SJVAPCD Rule 4202 – Particulate Matter Emission Rate:** SJVAPCD Rule 4202-4 prohibits the discharge of PM into the atmosphere at a rate which exceeds the limitations determined by the process weight as defined and detailed in SJVAPCD Rule 4202. The facility is subject to the requirements of this rule and will continue to comply with SJVAPCD Rule 4202.
- **SJVAPCD Rule 8021 – Construction, Demolition, Excavation, Extraction, and Other Earthmoving Activities:** SJVAPCD Rule 8021 provides fugitive dust control requirements for any construction, demolition, excavation, extraction, and other earthmoving activities. Lehigh will comply with all provisions of SJVAPCD Rule 8021.
- **SJVAPCD Rule 8061 – Paved and Unpaved Roads:** SJVAPCD Rule 8061 limits fugitive dust emissions from paved and unpaved roads by implementing control measures and design criteria. This rule applies to any new or existing public or private paved or unpaved road, road construction project, or road modification project.

- **SJVAPCD Rule 8041 – Carryout and Track Out:** SJVAPCD Rule 8041 limits fugitive dust emissions from carryout and track out. Under this rule, the owner/operator shall remove all visible carry out and trackout at the end of each workday.

As part of the proposed project, Lehigh would submit new permit applications, which would be reviewed and considered by SJVAPCD.

3.2.3 Environmental Impacts and Mitigation Measures

3.2.3.1 Baseline

At the time of the NOP for the proposed project, the Lehigh terminal was fully operational. As discussed in Section 2.2.3, the terminal operated below its permitted limits. The existing PTO (Facility Number N-153), issued by SJVAPCD in 2016, allows for a combined permitted truck and rail shipping capacity of 6,000 tons of cementitious material per day, or 2.19 million tons per year and the facility is permitted to receive 18,000 tons per day and 2.628 million tons per year via ship or rail. Under permitted limits, the existing terminal can handle any combination of a maximum of approximately 200 trucks per day or 18 rail cars per day. However, the terminal is not currently operating at the permitted levels. As shown in Table 9, the terminal handled 880,000 tons of product and generated 18,720 annual truck trips, 117 annual train trips, and nine ship calls in 2018, which is considered the baseline conditions.

Terminal operations during baseline operations included the use of several pieces of terminal equipment namely two front-end loaders, a rail-mounted yard wagon, a sweeper and a forklift.

Table 9
Baseline (2018) Throughput Levels and Modal Moves

	Annual Tons of Product (metric tons)	Annual Modal Moves	Daily Modal Moves[2]
Throughput (cement/slag volume)	883,793	--	--
Truck Calls[1]	505,432	18,720	62
Rail Cars	61,663	587	5
Rail Trips[3]	--	117	--
Ships Calls	316,698	9	45

Notes:
1. Truck calls are expressed in one-way moves
2. Assumes 300 working days
3. Assumes an average of five cars per train

3.2.3.2 Thresholds

For purposes of this DEIR, the following thresholds, which are based on the Appendix G of the CEQA Guidelines (Environmental Checklist) and SJVAPCD guidance (Table 10), were used to determine whether the proposed project would result in air quality impacts. The proposed project would have an impact on air quality if:

- **AQ-1:** The project would conflict with or obstruct implementation of the applicable air quality plan.
- **AQ-2:** The project would result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard.
- **AQ-3:** The project would expose sensitive receptors to substantial pollutant concentrations.
- **AQ-4**: The project would result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

Table 10
San Joaquin Valley Air Pollution Control District Criteria Pollutant Thresholds

Pollutant	Construction Emission Thresholds (tons per year)	Operations		NAAQS/CAAQS Screening Level (pounds per day)
		Non-Permitted Equipment and Activity Threshold (tons per year)	Permitted Equipment and Activity Threshold (tons per year)	
NO_X	100	100	100	100
ROG	10	10	10	100
CO	100	100	100	100
PM_{10}	15	15	15	100
$PM_{2.5}$	15	15	15	100
SO_2	27	27	27	100

Note:
Source: SJVAPCD 2015a.

3.2.3.3 Methodology for Determining Impacts

Complete details, as well as modeling results related to the air quality analysis, can be found in Appendix E. A summary of assumptions related to the air quality analysis is provided as follows.

3.2.3.3.1 Construction

Construction emissions would be generated by construction equipment and worker vehicles and are anticipated to occur over a period of 18 months. Work would occur concurrently with existing operations. Proposed project construction would consist of the following improvements:

- Upland improvements and Berth 2 rehabilitation
- Ship unloader replacement and barge loading component
- Rail trestle replacement
- Dome construction, truck loading station modifications, and existing bunker dust collector replacement

Based on the construction schedule (Table 3), maximum daily and annual construction emissions were calculated by individual activity and total activity. Daily emissions for overlapping activities were summed for each calendar quarter. Construction emissions would result from diesel-fueled construction equipment, marine vessels, and on-road vehicles. Land-based construction emissions for the proposed project were calculated using CalEEMod software, version 2016.3.2 (CAPCOA 2016). In addition to land-based construction sources, one ocean-going vessel (OGV) would deliver a new ship unloader during Phase 3 of construction. Tugboats would assist the marine delivery vessel to and from berth. Because CalEEMod does not quantify marine source emissions, emissions associated with the marine delivery vessel and tugboats were calculated outside of CalEEMod and added to the land-based emissions.

A full description of construction assumptions, including equipment horsepower ratings, can be found in Appendix E, Tables E1.1 through E1.4.

3.2.3.3.2 Operations

Operational emissions would originate from terminal operations, including the unloader, on-terminal equipment, vessels, rail activities, trucks, and employee vehicle movements. Vessels would originate from international ports-of-call, enter through the San Francisco Bay and travel up the San Joaquin River. Because vessels would pass through both SJVAPCD and the Bay Area Air Quality Management District (BAAQMD), emissions were quantified in each district. The vessel unloading process would last approximately 1.5 to 2 days (21 hours per day). Although the number of OGV calls is expected to increase, the hoteling time of each OGV at berth would be reduced from 4 days to 2 days in analysis year 5 and remain unchanged for future analysis years. This reduction in hoteling time would be realized once the proposed new ship unloader is installed, increasing the efficiency of the unloading process. Vessel engine characteristics, speed, and transit distance in each transit zone were based on similar vessels operating at the Port. Emission factors for OGV propulsion engines, auxiliary engines, and auxiliary boilers were obtained from emission inventories at other ports for similar vessels. Two tugboats would assist each vessel during maneuvering in the harbor and during transit from Rough and Ready Island to the berth. In analysis year 15, up to 40 barges would also be used to ship product from the facility to locations in the San Francisco Bay. Because barges are not self-propelled, one tugboat would be necessary to transport each barge during transit.

Once unloaded from the ship, cementitious material would be transferred to the land-based storage structures either by a new mechanical material handling system leading to the new storage dome or by the existing pneumatic transport system to other existing storage structures. All bulk shipping operations would occur within the enclosures of the existing truck or rail loading stations. All conveying and loading equipment would be powered by electric motors and as such would not generate emissions associated with fuel combustion. Particulate emissions have been and would continue to be controlled with air quality control systems permitted by SJVAPCD. Particulate emissions were quantified based on receiving (conveying) and shipping (loading) activity in each analysis year and on emission factors stipulated in the facility’s SJVAPCD air quality permits for conveying and loading activities (SJVAPCD 2019).

Truck trips would be a mixture of local deliveries and regional travel to the Bay Area to the west. The average truck trip is 30 miles in the baseline and would grow to 40 miles as part of the proposed project as deliveries to the Bay Area are expected to increase. Exhaust, brake wear, and tire wear emission factors reflect existing USEPA on-road engine standards per ARB’s On-Road EMFAC Database (ARB 2017). Entrained road dust emissions were quantified per ARB's methodology for entrained road dust (ARB 2016). Emissions were calculated by multiplying truck activity by the emission factors.

Rail deliveries would be made by manifest rail and be moved on-site by a dedicated rail yard shuttle wagon. Line-haul trains would transport the product from the Port of Stockton to Union Pacific Railroad’s (UP’s) J.R. Davis Yard in Roseville, California; line-haul locomotive emissions were therefore calculated within SJVAPCD and Sacramento Metropolitan Air Quality Management District (SMAQMD). From Roseville, train cars would be shipped to a variety of destinations in unknown numbers. Switcher trains owned by CCT, the switcher operator at the Port, would be used to assemble/disassemble line-haul trains and provide short transport to the UP line-haul connection. Switcher locomotives would operate within or near the Port, in SJVAPCD. Therefore, switcher emissions were calculated within SJVAPCD.

Line-haul locomotive emissions were calculated based on locomotive fuel use and locomotive emission factors. Fuel use was determined based on the number and weight of filled rail cars needed to transport product, the number and weight of locomotives needed to transport the required rail cars, rail transit distance, and a fuel consumption factor reported by ARB for line-haul locomotives (ARB 2017a). Line-haul locomotive emission factors for each engine tier were obtained by calculating an average of the USEPA line-haul emission factors weighted by ARB’s line-haul engine tier distribution for each analysis year (ARB 2017a).

Switcher locomotive emissions were calculated based on locomotive fuel use and locomotive emission factors. Fuel use was calculated based on the number of switcher locomotives required for a switch, an average number of switching events, and average switching time based on past Port documents and confirmed by Lehigh. Switcher locomotive emission factors reflect USEPA short-haul distance locomotive emission factors for each engine tier (ARB 2017a), weighted by CCT's switcher engine distribution (CCT 2018).

On-site mobile sources include a shuttle wagon used to push/pull rail cars through the rail car loading station, front-end loaders used in OGV cleanup and inside storage bunkers, forklifts, a sweeper, and a manlift. The level of use of the forklifts, sweeper, and manlift would not change due to the proposed project; therefore, their emissions would not exceed baseline conditions. Use of the shuttle wagon and front-end loaders would increase with the proposed project.

Operational hours of the Lehigh terminal would vary according to terminal functions and level of operations. In some cases, the terminal would operate 24 hours a day, which is consistent with current operations. In general, the terminal would operate Monday through Saturday, with occasional Sunday operations.

All operational modeling assumptions and emission factors can be found in Appendix E2. Emissions were calculated using industry accepted emission factors, and source activity (e.g., truck and vessel transit distance, vessel characteristics) provided by Lehigh. Emission factors for vessel propulsion engines and auxiliary engines, as well as harbor craft activity, are provided in Appendix E, Tables E2.12 through E2.23. Truck activity and calculated emissions are provided in Appendix E, Tables E2.24 through E2.31. Rail activity and calculated emissions are provided in Appendix E, Tables E2.32 through E2.46.

Proposed project throughput and transportation mode split numbers are presented in Table 4. As shown in Table 4, throughput levels in the future would exceed existing SJVAPCD PTO limits. Lehigh has submitted an application for an Authority to Construct Permit (December 2019). The December 2019 permit application requests authorization for the upgrade of the current ship unloader, the addition of a new rail loading operation, the replacement of existing Storage Bunker 7 with a larger storage dome, and the addition and removal of baghouses. Additionally, Lehigh wishes to remove the currently permitted Truck Loading Operation N-153-17-3 from the PTO because it is not in use and will be demolished. The December 2019 permit application does not include a request to increase the daily or annual throughput limits. This DEIR assesses the long-term maximum throughput increases that could happen based on market demand. Such throughput levels would be subject to further SJVAPCD permits.

3.2.3.4 Impact Analysis

3.2.3.4.1 AQ-1: Would the project conflict with or obstruct implementation of the applicable air quality plan?

SJVAPCD has established thresholds of significance for criteria pollutant emissions, which are based on New Source Review offset requirements for stationary sources. Because the SJVAB is an extreme O_3 nonattainment area, stationary sources in SJVAPCD are subject to some of the toughest regulatory requirements in the nation. Emission reductions achieved through implementation of offset requirements are a major component of SJVAPCD's air quality plans. Therefore, projects with emissions below the thresholds of significance for criteria pollutants would be determined to not conflict or obstruct implementation of the air quality plans, while emissions exceeding those thresholds would conflict with and obstruct implementation.

Tables 11 through 13 present the construction and operational emissions resulting from the proposed project. As shown, construction emissions would be below significance thresholds, but annual operational emissions would exceed thresholds.

Impact Determination: As shown under AQ-2, because the proposed project would exceed thresholds, it would conflict with and obstruct implementation of SJVAPCD's O_3 attainment plans, including its most recent 2016 plan for the 2008 8-hour O_3 standard. Impacts would be considered significant.

Mitigation Measures:

- **MM-AQ-1: Construction Truck Idling** (see AQ-2 for more information).
- **MM-AQ-2: Use of Tier 4 Engines During Construction** (see AQ-2 for more information).
- **MM-AQ-3: Truck Idling Reductions** (see AQ-2 for more information).
- **MM-AQ-4: Use of Clean Trucks** (see AQ-2 for more information).
- **MM-AQ-5: Use of Clean Yard Equipment** (see AQ-2 for more information).

Residual Impact: Implementation of MM-AQ-1 through MM-AQ-5 would reduce operational emissions but emissions would remain above thresholds. As discussed in more detail under AQ-2, because operational emissions would come largely from sources with limited mitigation options, impacts would remain significant and unavoidable for proposed project operations.

3.2.3.4.2 AQ-2: Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

SJVAPCD has developed quantitative criteria to evaluate the significance of air emissions under CEQA. Specifically, a significant impact would occur if implementation of a project would result in emissions that exceed the SJVAPCD-established thresholds shown in Table 10. SJVAPCD's CEQA thresholds represent the emission levels that would result in a direct or indirect project impact, as well as impacts resulting in a cumulatively considerable net increase in pollutants. SJVAPCD applies the CEQA thresholds separately to three emission categories: 1) construction emissions; 2) operational non-exempt equipment emissions; and 3) operational exempt emissions.

Construction. Table 11 shows that the proposed project would not generate construction emissions that exceed SJVAPCD's thresholds.

Table 11
Proposed Project Construction Emissions

Year	PM_{10}	$PM_{2.5}$	NO_X	SO_X	CO	VOC
Annual (tons per year)						
2020 Total	0.26	0.16	3.42	0.01	2.35	0.33
2021 Total	0.34	0.21	5.07	0.06	3.24	0.42
2022 Total	0.40	0.28	5.26	0.01	4.86	0.54
2023 Total	0.24	0.20	3.85	0.01	3.59	0.42
2024 Total	0.06	0.05	0.92	0.00	0.90	0.10
Significance Threshold	15	15	10	27	100	10
Significant?	No	No	No	No	No	No
Daily (pounds per day)						
2020 Total	1.22	1.08	24.60	0.03	16.51	2.31
2021 Total	1.11	1.00	26.48	0.31	17.10	2.07
2022 Total	1.62	1.49	30.05	0.05	28.22	3.00
2023 Total	1.30	1.19	24.54	0.04	22.31	2.57
2024 Total	1.18	1.08	23.05	0.04	22.15	2.44
Significance Threshold	100	100	100	100	100	100
Significant?	No	No	No	No	No	No

Notes:
Emissions may not add precisely due to rounding.
Emissions estimated using CalEEMod 2016.3.1.

Operations. Operational exempt emissions include emissions from all operational sources that are exempt from stationary source air permitting, including both stationary and mobile sources. Operational non-exempt emissions include emissions from any operational source subject to stationary source air permitting (SJVAPCD 2015a). Because the ship unloader and enclosed conveyor systems are powered by electricity, they are not considered non-exempt sources, even though permitting is required.

Tables 12 and 13 show operational emissions for the proposed project.

Table 12
Proposed Project Annual Operational Emissions in the San Joaquin Valley Air Basin (tons per year)

Source Category	PM_{10}	$PM_{2.5}$	NO_X	SO_X	CO	VOC
Baseline						
Trucks	0.22	0.06	3.99	0.01	0.62	0.19
Ships at Berth	0.06	0.05	2.68	0.15	0.24	0.12
Ships Maneuvering and Transit	0.03	0.03	1.49	0.04	0.18	0.12
Tugboats	0.04	0.04	0.84	0	0.46	0.05
Rail	0.02	0.02	0.67	0	0.18	0.03
Employee Vehicles	0.01	0	0.02	0	0.17	0
Conveying/Loading	0.84	0.84	--	--	--	--
Mobile On-site	0	0	0.03	0	0.3	0.01
Baseline Total	**1.21**	**1.04**	**9.72**	**0.21**	**2.15**	**0.51**
Proposed Project Year 1						
Trucks	0.31	0.09	5.89	0.02	0.87	0.23
Ships at Berth	0.13	0.12	6.25	0.36	0.57	0.27
Ships Maneuvering and Transit	0.07	0.06	3.48	0.09	0.42	0.28
Tugboats	0.1	0.09	1.96	0	1.06	0.11
Rail	0.05	0.05	1.96	0	0.6	0.09
Employee Vehicles	0.01	0	0.01	0	0.17	0
Conveying/Loading	1.19	1.19	--	--	--	--
Mobile On-site	0	0	0.07	0	0.54	0.02
Year 1 Total	**1.86**	**1.61**	**19.62**	**0.48**	**4.24**	**1.00**
Proposed Project Year 5						
Trucks	0.5	0.13	6.91	0.02	0.73	0.05
Ships at Berth	0.12	0.11	5.8	0.34	0.53	0.25
Ships Maneuvering and Transit	0.12	0.11	6.46	0.18	0.79	0.52
Tugboats	0.19	0.17	3.65	0	1.97	0.2
Rail	0.03	0.03	1.34	0	0.59	0.06
Employee Vehicles	0.01	0	0.01	0	0.11	0
Conveying/Loading	2.12	2.12	--	--	--	--
Mobile On-site	0.01	0.01	0.14	0	0.96	0.05
Year 5 Total	**3.1**	**2.69**	**24.3**	**0.54**	**5.69**	**1.13**
Proposed Project Year 15						
Trucks	0.57	0.15	7.79	0.02	0.82	0.06
Ships at Berth	0.15	0.14	7.14	0.41	0.65	0.31
Ships Maneuvering and Transit	0.15	0.14	7.95	0.22	0.97	0.64

Source Category	PM_{10}	$PM_{2.5}$	NO_X	SO_X	CO	VOC
Tugboats	0.04	0.03	1.71	0.01	4.44	0.18
Rail	0.03	0.03	1.11	0	0.74	0.06
Employee Vehicles	0.01	0	0	0	0.08	0
Conveying/Loading	2.77	2.77	--	--	--	--
Mobile On-site	0.01	0.01	0.17	0	1.15	0.06
Year 15 Total	**3.72**	**3.26**	**25.87**	**0.66**	**8.85**	**1.3**
CEQA Impacts						
Significance Threshold	15	15	10	27	100	10
Proposed Project Year 1 Increment	0.6	0.6	9.9	0.3	3.5	0.6
Proposed Project Year 5 Increment	1.9	1.6	**14.6**	0.3	3.5	0.6
Proposed Project Year 15 Increment	2.5	2.2	**16.1**	0.5	6.7	0.8
Significant?	No	No	**Yes**	No	No	No

Notes:
Emissions might not add precisely due to rounding.
Truck emissions include truck transit on-site and truck idling on-site.
Tugboat emissions reflect OGV and barge assist.
Rail emissions reflect 1 switching event on site.
PM10 and PM2.5 truck emissions include on-site exhaust and road dust.
Conveying/loading reflect material handling dust emissions from bunkers and dome.
Mobile on-site sources include shuttle wagon and front-end loaders.

Table 13
Proposed Project Daily Operational Emissions in the San Joaquin Valley Air Basin (pounds per day)

Source Category	PM_{10}	$PM_{2.5}$	NO_X	SO_X	CO	VOC
Baseline						
Trucks On-Site	0.3	0.1	0.9	0.0	0.2	0.1
Ships at Berth	0.3	0.3	14.7	0.8	1.3	0.6
Tugboats at Berth	0.0	0.0	0.5	0.0	0.3	0.0
Rail On-Site	0.0	0.0	0.9	0.0	0.2	0.1
Conveying/Loading	4.6	4.6	--	--	--	--
Mobile On-site	0.0	0.0	0.2	0.0	1.6	0.0
Baseline Total	5.3	5.0	17.1	0.9	3.7	0.8
Proposed Project Year 1						
Trucks On-Site	0.4	0.1	1.0	0.0	0.2	0.1
Ships at Berth	07	0.7	34.2	.0	3.1	1.5
Tugboats at Berth	0.1	0.1	1.1	0.0	0.6	0.1
Rail On-Site	0.1	0.1	2.9	0.0	0.8	0.2
Conveying/Loading	6.5	6.5	--	--	--	--
Mobile On-site	0.0	0.0	0.4	0.0	3.0	0.1

Source Category	PM_{10}	$PM_{2.5}$	NO_X	SO_X	CO	VOC
Year 1 Total	7.4	7.1	22.5	1.0	6.1	1.1
Proposed Project Year 5						
Trucks On-Site	0.6	0.1	1.6	0.0	0.2	0.0
Ships at Berth	0.7	0.6	31.8	1.8	2.9	1.4
Tugboats at Berth	0.1	0.1	2.0	0.0	1.1	0.1
Rail On-Site	0.1	0.0	1.4	0.0	0.4	0.1
Conveying/Loading	11.6	11.6	--	--	--	--
Mobile On-site	0.0	0.0	0.7	0.0	5.3	0.3
Year 5 Total	13.1	12.5	37.6	1.9	9.9	1.9
Proposed Project Year 15						
Trucks On-Site	0.7	0.1	1.9	0.0	0.3	0.0
Ships at Berth	0.8	0.8	39.1	2.3	3.6	1.7
Tugboats at Berth	0.0	0.0	0.7	0.0	1.9	0.1
Rail On-Site	0.1	0.1	1.8	0.0	0.5	0.1
Conveying/Loading	15.2	15.2	--	--	--	--
Mobile On-site	0.0	0.0	0.9	0.0	6.3	0.3
Year 15 Total	16.8	16.1	44.4	2.3	12.5	2.2
CEQA Impacts						
Significance Threshold	100	100	100	100	100	100
Proposed Project Year 1 Increment	2.5	2.4	22.6	1.1	4.0	1.1
Proposed Project Year 5 Increment	7.8	7.5	20.5	1.0	6.2	1.0
Proposed Project Year 15 Increment	11.5	11.1	27.4	1.4	8.9	1.4
Significant?	No	No	No	No	No	No

Notes:
Emissions might not add precisely due to rounding.
Truck emissions include truck transit on-site and truck idling on-site.
Tugboat emissions reflect OGV and barge assist.
Rail emissions reflect one switching event on site.
PM_{10} and $PM_{2.5}$ truck emissions include on-site exhaust and road dust.
Conveying/loading reflect material handling dust emissions from bunkers and dome.
Mobile on-site sources include shuttle wagon and front-end loaders.

Tables 12 and 13 present criteria pollutant emissions within the SJVAB. The proposed project would also result in vessel, truck and rail trips in other air basins as shown in Tables 14 through 17. Ships would travel through the Bay Area to the Port through areas under the jurisdiction of the BAAQMD. Trucks and rail would travel to various destinations in northern California, including through areas overseen by the BAAQMD and the Sacramento Metropolitan Air Quality Management District (SMAQMD). Lehigh sells the cementitious material to various customers throughout the local region and the Bay Area depending on market demand and project need. While determining actual travel routes (and the specific numbers of trucks and trains on each route) in the regional area is somewhat speculative, generally available routes are known by Lehigh. Travel assumptions are summarized in Section 3.2.3.3 and detailed in Appendix E2.

Table 14
Annual Emissions within the Bay Area Air Quality Management District Air Quality Management District (tons per year)

Source Category	PM_{10}	$PM_{2.5}$	NO_X	VOC
Baseline				
Ship Transit	0.07	0.07	3.75	0.35
Tugboats – Barges	0.00	0.00	0.00	0.00
Truck Transit	0.00	0.00	0.00	0.00
Rail Transit	0.00	0.00	0.00	0.00
Baseline Total	0.07	0.07	3.75	0.35
Proposed Project Year 1				
Ship Transit	0.17	0.16	8.76	0.81
Tugboats - barges	0.00	0.00	0.00	0.00
Truck Transit	0.00	0.00	0.00	0.00
Rail Transit	0.00	0.00	0.00	0.00
Year 1 Total	0.17	0.16	8.76	0.81
Proposed Project Year 5				
Ship Transit	0.32	0.30	16.27	1.51
Tugboats – Barges	0.00	0.00	0.00	0.00
Truck Transit	0.00	0.00	0.00	0.00
Rail Transit	0.00	0.00	0.00	0.00
Year 5 Total	0.32	0.30	16.27	1.51
Proposed Project Year 15				
Ship Transit	0.39	0.36	20.02	1.85
Tugboats – Barges	0.05	0.04	2.18	0.23
Truck Transit	0.00	0.00	0.00	0.00
Rail Transit	0.00	0.00	0.00	0.00
Year 15 Total	0.44	0.41	22.20	2.08
CEQA Impacts				
BAAQMD Significance Threshold	15	10	10	10
Proposed Project Year 1 Increment	0.1	0.1	5.0	0.5
Proposed Project Year 5 Increment	0.2	0.2	**12.5**	1.2
Proposed Project Year 15 Increment	0.4	0.3	**18.4**	1.7
Significant?	No	No	**Yes**	No

Notes:
Emissions may not add precisely due to rounding.
Truck transit split between the BAAQMD and SMAQMD.

Table 15
Daily Emissions within the Bay Area Air Quality Management District (pounds per day)

Source Category	PM_{10}	$PM_{2.5}$	NO_X	VOC
Baseline				
Ship Transit	0.40	0.37	20.57	1.90
Tugboats – Barges	0.00	0.00	0.00	0.00
Truck Transit	0.00	0.00	0.00	0.00
Rail Transit	0.00	0.00	0.00	0.00
Baseline Total	0.40	0.37	20.57	1.90
Proposed Project Year 1				
Ship Transit	0.94	0.87	48.00	4.44
Tugboats – Barges	0.00	0.00	0.00	0.00
Truck Transit	0.00	0.00	0.00	0.00
Rail Transit	0.00	0.00	0.00	0.00
Year 1 Total	0.94	0.87	48.00	4.44
Proposed Project Year 5				
Ship Transit	1.75	1.62	89.14	8.25
Tugboats – Barges	0.00	0.00	0.00	0.00
Truck Transit	0.00	0.00	0.00	0.00
Rail Transit	0.00	0.00	0.00	0.00
Year 5 Total	1.75	1.62	89.14	8.25
Proposed Project Year 15				
Ship Transit	2.16	1.99	109.71	10.15
Tugboats – Barges	0.27	0.24	11.94	1.26
Truck Transit	0.00	0.00	0.00	0.00
Rail Transit	0.00	0.00	0.00	0.00
Year 15 Total	2.42	2.23	121.65	11.41
CEQA Impacts				
BAAQMD Significance Threshold	82	54	54	54
Proposed Project Year 1 Increment	0.5	0.5	27.4	2.5
Proposed Project Year 5 Increment	1.3	1.2	**68.6**	6.3
Proposed Project Year 15 Increment	2.0	1.9	**101.1**	9.5
Significant?	No	No	**Yes**	No

Notes:
Emissions may not add precisely due to rounding.
Truck transit split between the BAAQMD and SMAQMD.

Table 16
Annual Operational Emissions in the Sacramento Metropolitan Air Quality Management District (tons per year)

Source Category	PM_{10}	$PM_{2.5}$
Baseline		
Ship Transit	0.00	0.00
Tugboats – Barges	0.00	0.00
Truck Transit	0.00	0.00
Rail Transit	0.01	0.01
Baseline Total	0.01	0.01
Proposed Project Year 1		
Ship Transit	0.00	0.00
Tugboats – Barges	0.00	0.00
Truck Transit	0.00	0.00
Rail Transit	0.03	0.02
Year 1 Total	0.03	0.02
Proposed Project Year 5		
Ship Transit	0.00	0.00
Tugboats – Barges	0.00	0.00
Truck Transit	0.00	0.00
Rail Transit	0.02	0.02
Year 5 Total	0.02	0.02
Proposed Project Year 15		
Ship Transit	0.00	0.00
Tugboats – Barges	0.00	0.00
Truck Transit	0.00	0.00
Rail Transit	0.01	0.01
Year 15 Total	0.01	0.01
CEQA Impacts		
SMAQMD Significance Threshold	14.6	15
Proposed Project Year 1 Increment	0.0	0.0
Proposed Project Year 5 Increment	0.0	0.0
Proposed Project Year 15 Increment	0.0	0.0
Significant?	No	No

Notes:

Emissions may not add precisely due to rounding.
Truck transit split between the BAAQMD and SMAQMD.
No vessel, tugboat or barge transit in the SMAQMD.

Table 17
Daily Operational Emissions in the Sacramento Metropolitan Air Quality Management District (pounds per day)

Source Category	PM_{10}	$PM_{2.5}$	NO_X	VOC
Baseline				
Ship Transit	0.00	0.00	0.00	0.00
Tugboats – Barges	0.00	0.00	0.00	0.00
Truck Transit	0.00	0.00	0.00	0.00
Rail Transit	0.07	0.06	3.32	0.11
Baseline Total	0.07	0.06	3.32	0.11
Proposed Project Year 1				
Ship Transit	0.00	0.00	0.00	0.00
Tugboats – Barges	0.00	0.00	0.00	0.00
Truck Transit	0.00	0.00	0.00	0.00
Rail Transit	0.14	0.13	8.65	0.26
Year 1 Total	0.14	0.13	8.65	0.26
Proposed Project Year 5				
Ship Transit	0.00	0.00	0.00	0.00
Tugboats – Barges	0.00	0.00	0.00	0.00
Truck Transit	0.00	0.00	0.00	0.00
Rail Transit	0.12	0.11	7.73	0.25
Year 5 Total	0.12	0.11	7.73	0.25
Proposed Project Year 15				
Ship Transit	0.00	0.00	0.00	0.00
Tugboats – Barges	0.00	0.00	0.00	0.00
Truck Transit	0.00	0.00	0.00	0.00
Rail Transit	0.06	0.06	4.33	0.18
Year 15 Total	0.06	0.06	4.33	0.18
CEQA Impacts				
SMAQMD Significance Threshold	80	82	65	65
Proposed Project Year 1 Increment	0.1	0.1	5.3	0.1
Proposed Project Year 5 Increment	0.1	0.0	4.4	0.1
Proposed Project Year 15 Increment	0.0	0.0	1.0	0.1
Significant?	No	No	No	No

Notes:

Emissions may not add precisely due to rounding.
Truck transit split between the BAAQMD and SMAQMD.
No vessel, tugboat or barge transit in the SMAQMD.

Impact Determination: As shown in Table 11, construction emissions would be below SJVAPCD significance thresholds. As shown in Tables 12 through 17, operational emissions would exceed annual SJVAPCD NO_X thresholds in the SJVAB by analysis year 5. As discussed in Section 2, operations modeled in this DEIR represent maximum capacity operations. While Lehigh plans on operating at such levels, these levels are based on anticipated market demand, which may fluctuate year over year. Therefore, the maximum capacity analysis represents a conservative analysis. In addition, Lehigh would require further permits from SJVAPCD to operate at these levels. NO_X emissions would be generated by vessel transit and hoteling, harbor craft movement, truck operations on terminal and travel, and rail operations on terminal and travel. Operational emissions would also exceed annual BAAQMD NO_X thresholds by analysis year 5. Emissions in the BAAQMD would be generated from vessel transit. Impacts would therefore be considered significant.

Mitigation Measures: The following mitigation measures would be implemented to reduce construction and operational emissions:

- **MM-AQ-1: Construction Idling Reductions.** Lehigh will require construction contractors to minimize heavy-duty construction idling time to 2 minutes where feasible. Exceptions include vehicles that need to idle to perform work (such as a crane providing hydraulic power to the boom), vehicles being serviced, or vehicles in a queue waiting for work.
- **MM-AQ-2: Use of Tier 4 Engines During Construction.** All off-road diesel-powered heavy equipment exceeding 50 horsepower used to construct the proposed Project will be equipped with Tier 4 engines, except for specialized equipment or when Tier 4 engines are not available. In place of Tier 4 engines, off-road diesel-powered heavy equipment will incorporate retrofits such that emission reductions achieved equal or exceed that of a Tier 4 engine.
- **MM-AQ-3: Truck Idling Reductions.** Lehigh will require trucks to minimize idling time to 2 minutes while on terminal.
- **MM-AQ-4: Use of Clean Trucks.** Where possible, Lehigh will encourage the use of clean trucks (defined as model year 2017 or newer) to transport cementitious material. Lehigh will also educate customers about the SJVAPCD Truck Replacement Program via direct mailings. In addition, Lehigh will require all trucks be in compliane with ARB air quality regulations for on-road trucks, including ARB's Heavy-Duty (Tractor-Trailer) Greenhouse Gas Regulation, Periodic Smoke Inspection Program (PSIP), and the Statewide Truck and Bus Regulation. Lehigh Hanson will post a copy of the SJVAPCD Truck Replacement Program information currently available at http://valleyair.org/grants/truck-replacement.htm and applicable ARB regulations at the project site.

- **MM-AQ-5: Use of Clean Yard Equipment.** Lehigh will replace cargo handling equipment with the cleanest available equipment anytime new or replacement equipment is purchased. Considerations for clean equipment will include a first preference for zero-emission equipment, a second preference for near-zero equipment, and then for the cleanest available equipment if neither zero nor near-zero equipment are available. If zero emission equipment is available, Lehigh will ensure the proper infrastructure to support such equipment is available. Based on the type of yard equipment used, infrastructure will be limited to charging stations.

Residual Impact: As shown in Tables 12 through 17, the proposed project's operational emissions in the SJVAB are mainly the result of vessel, rail, and truck emissions. Operational emissions in the areas overseen by the BAAQMD are the result of vessel transit.

While truck idling restrictions would reduce emissions slightly, truck emissions are being generated mainly through transit; therefore, MM-AQ-3 would not reduce emissions below significance. Use of cleaner trucks, defined as model year 2017 or newer, implemented through contracts with material suppliers, would result in reduced transit emissions. However, it is unknown at this time how many such trucks would visit the terminal. While not a significant source of emissions, transitioning to clean yard equipment would reduce on-terminal emissions. While heavy-duty electric trucks are under development, they are not readily available throughout the state at commercial levels, and it is unknown if they would be by 2030. The terminal does not use light and medium duty vans and vehicles as part of operations. Therefore, while such vehicles are commercially available, they would not be in use at the terminal.

Because there are only two mainline rail companies (UP and BNSF) that service the entire rail network as well as interstate commerce, mainline locomotives are regulated by the federal and state governments. ARB is addressing rail emissions through a statewide rail plan, which includes agreements directly with the two mainline locomotive companies. The 2005 Statewide Railyard Agreement, which was completed in 2015, included a statewide idle reduction program, maximized the use of state and federal ultra-low-sulfur (15 ppm maximum) diesel fuel, and established a statewide visible emissions reduction and repair program. The agreement also required the preparation of 17 railyard inventories and health risk assessments. Switcher engines are also a source of emissions. CCT has also recently upgraded several of its locomotives, including upgrading gensets and adding a new ultra-low-emissions locomotive purchased through USEPA's Diesel Emissions Reduction Program. To achieve further emissions reductions would require purchases of new equipment or a move to electrification, which is beyond the scope of one terminal project.

ARB also regulates marine vessels through several comprehensive measures, including fuel and engine standards. In December 2007, ARB approved the "Airborne Toxic Control Measure for

Auxiliary Diesel Engines Operated on Ocean-Going Vessels At-Berth in a California Port" regulation, commonly referred to as the At-Berth Regulation, to reduce NO_X and PM emissions from diesel auxiliary engines on container ships, passenger ships, and refrigerated-cargo ships while they are berthing at a California port, defined as the ports of Los Angeles, Long Beach, Oakland, San Diego, San Francisco, and Hueneme. The At-Berth Regulation provides two options to reduce at-berth emissions: shore power or an alternative control technology that achieves equivalent emission reductions. Neither the Port nor liquid bulk vessels are covered under the 2007 At-Berth Rule. ARB is currently considering expanding the rule to include smaller fleets, additional vessel visits and types, and ports, including the Port. However, there are several issues, including cost and equipment availability, which would need to be addressed prior to expanding this rule to the Port and operations such as Lehigh's. For example, most vessel calls related to the proposed project are one-time visits, meaning they would call at the Port only one time per year; therefore, the cost to retrofit a ship to accept shore power would be cost-prohibitive. Exhaust gas scrubber systems, in which a bonnet scrubber is placed over a ship's stack either from a barge that is positioned alongside the ship or from a system placed on the terminal adjacent to the berth, were also considered for the proposed project. However, these systems require proper placement due to the configuration and accessibility of the exhaust stacks to place a bonnet over the stack. The narrow width of the channel in the project area would prohibit the use of a barge-based bonnet system, and the barge would create a navigational constraint, especially when tug maneuvering is required to maintain the barge's position. In addition, the berth is not configured with large available backlands to support a terminal-based exhaust gas scrubber system.

As shown in Table 12, if operating at maximum capacity, the proposed project would exceed the NO_X threshold by 4.1 tons per year by year 5 and 6.1 tons per year by year 15. SJVAPCD offers a Voluntary Emission Reduction Agreement (VERA) program to offset emissions. Under the program, the project proponent purchases credits, which can only be purchased for up to 10 years. The cost of credits is determined in SJVAPCD Rule 9510 (Indirect Source Review) and is approximately $9,000 to $10,000 per ton per year for up to 10 years. VERA agreements leave it to the discretion of SJVAPCD to identify and carry out projects that it determines are equivalent to the emissions of the project subject to the agreement. VERA credits are not banked but are used to fund prospective projects. Unlike credit banks used to mitigate for biological impacts, the emission reduction projects are not completed at the onset with emissions savings banked for future use as a form of mitigation. SJVAPCD instead uses the money generated by the VERA program to fund future emissions-savings projects, and there is no guarantee when such opportunities may arise, if at all. This arrangement may allow for a lapse between funding and emissions savings and/or emissions not being offset at all. Therefore, VERAs cannot ensure timely and effective CEQA mitigation of on-site emissions.

All feasible mitigation has been applied. For the reasons noted above, no additional mitigation is available, and impacts are considered significant and unavoidable.

3.2.3.4.3 AQ-3: Would the project expose sensitive receptors to substantial pollutant concentrations?

A significant impact would occur if a project would emit TACs that could cause a significant increase in health risks, including both carcinogenic and non-carcinogenic risks. A project is considered to have a significant TAC impact if it would:

- Result in ground-level concentrations of carcinogenic TACs that would increase the probability of contracting cancer for the maximally exposed individual by 20 in 1 million or more (SJVAPCD 2015b)
- Increase ground-level concentrations of non-carcinogenic TACs that would result in an acute or chronic hazard index exceeding 1 for the maximally exposed individual receptor (SJVAPCD 2015b)

Impacts to sensitive receptors are typically evaluated in terms of exposure to TACs. ARB classifies DPM as a TAC and uses PM_{10} emissions from diesel exhaust as a surrogate for DPM. Health effects from carcinogenic TACs are described in terms of individual cancer risk, which is based on a 30-year lifetime exposure to TACs. More than 90% of DPM is less than 1 micrometer in diameter, and thus is a subset of $PM_{2.5}$. $PM_{2.5}$ comes from a variety of sources, but primarily from the burning of carbon-based fuels, such as gasoline, diesel, and wood. Numerous scientific studies have linked exposure to airborne $PM_{2.5}$ to increased severity of asthma attacks, development of chronic bronchitis, decreased lung function in children, respiratory and cardiovascular hospitalizations, and even premature death in people with existing heart or lung disease (ARB 2019). Because DPM is a subset of $PM_{2.5}$, DPM also contributes to the same non-cancer health effects as $PM_{2.5}$ exposure. These effects include premature death, hospitalizations and emergency department visits for exacerbated chronic heart and lung disease, including asthma, increased respiratory symptoms, and decreased lung function in children. Several studies suggest that exposure to DPM may also facilitate development of new allergies. Those most vulnerable to non-cancer health effects are children whose lungs are still developing and the elderly, who often have chronic health problems (ARB 2019)

CEQA does not require comprehensive quantification of health risk for every project. Rather, projects are evaluated or screened for a need to quantify health risks and a quantitative HRA is conducted if it is determined that impacts could potentially exceed thresholds of significance. An HRA is dependent on several key variables: TAC emissions, TAC potency, exposure duration, and distance from sensitive receptors. If one of these variables (such as TAC emissions) is low, that, by itself, is not a basis for determining whether an HRA is needed. However, taken together these variables make a compelling argument for determining the need for a quantitative HRA. For example, low TAC emissions emitted far from sensitive receptors and for a short duration would indicate that impacts are unlikely to exceed thresholds of significance.

SJVAPCD recommends conducting a screening analysis that includes all sources of emissions and recommends using the California Air Pollution Control Officers Association's (CAPCOA's) updated methodology to determine prioritization. However, CAPCOA's Prioritization Guidance is intended as a screening methodology for facilities subject to AB 2588,[3] which is applicable to stationary sources and does not account for mobile sources (i.e., sources which move around on site or transit off site) which are the majority of the project's source of emissions. CAPCOA's Prioritization Guidelines for stationary sources includes two methodologies. The first and most conservative serves as the basis for SJVAPCD's prioritization calculator. This conservative approach, called the Emissions and Potency Procedure, is based on three parameters: emissions, toxicity, and proximity to receptors. CAPCOA's second screening approach, called the Dispersion Adjustment Procedure, adjusts the first screening approach to address dispersion of pollutants for sources with different release heights. SJVAPCD's prioritization calculator is based on CAPCOA's Emissions and Potency Procedure and as such does not account for dispersion of pollutants for sources with different release heights. CAPCOA's Dispersion Adjustment Procedure shows that the prioritization score calculated using the Emissions and Potency Procedure would be reduced by 85% and 99% for sources with stacks that are greater than 20 and 45 meters, respectively (vessels which account for most proposed project emissions have release heights of 50 meters). Because nearly all proposed project emissions would occur from mobile sources such as OGVs, tugboats, locomotives, and trucks, and stationary sources are electric and therefore would not have stack emissions, CAPCOA's Prioritization Guidance would not provide a useful screening tool in determining health impacts from these sources. For these reasons, the CAPCOA methodology is not applicable to the proposed project.

Proposed project construction activities would result in temporary DPM emissions, from the combustion of diesel fuel in off-road construction equipment engines and on-road trucks, of less than 0.2 ton per year. The proposed project construction period of approximately 1,260 days, spread over 5 years, would be much less than the 30 years typically used for risk determination. These emissions would be comparable to other recent Port projects for which cancer risk was quantified to be below SJVAPCD's threshold of 20 in 1 million.

Operation of the proposed project would result in incremental DPM emissions from trucks, OGVs, rail, and other diesel-fueled equipment of less than 0.2 ton per year. Even overlapping construction and operational emissions would result in less than 0.5 ton per year. These emissions would be substantially less than other recent Port projects for which cancer risk was quantified to be below SJVAPCD's threshold of 20 in 1 million. For example, the HRA completed for the Contanda Renewable Diesel Bulk Liquid Terminal Development Project (2019; Port 2019a) showed an increased

[3] The Air Toxics "Hot Spots" Information and Assessment Act (AB 2588) requires stationary sources to report the types and quantities of certain substances routinely released into the air. The goals of the Air Toxics "Hot Spots" Act are to collect emission data, to identify facilities having localized impacts, to ascertain health risks, to notify nearby residents of significant risks, and to reduce those significant risks to acceptable levels.

risk of 6.7 in 1 million at 1 ton of PM per year, well under the threshold of 10 in 1 million. While the receptors are not identical, the Contanda Renewable Diesel Bulk Liquid Terminal Development Project had similar vessel truck and rail routes within the Port (areas most affecting local receptors) and is located in close proximity to the Lehigh terminal with similar air dispersion patterns.

Finally, ARB has determined that TAC impacts are localized in nature and that exposure from TACs decline by approximately 70% at 500 feet from the emissions source (ARB 2005). As shown, the majority of mobile source PM_{10} emissions are coming from vessels. The nearest sensitive receptors are residences located 1,300 feet south of Berth 2 where the majority of the vessel DPM emissions are concentrated (ship stack during berthing).

In addition to long-term cancer and acute risks from project emissions, direct exposure to cement dust can cause acute health impacts. Cement dust can irritate eyes, nose, throat and the upper respiratory system and cause acute skin reactions (burns), and long-term exposure to silica is linked to cancer. Because cementitious materials react with water, the material is enclosed to the extent possible at all points of transferring and conveying to ensure the material is not exposed and remains dry. All ship to shore transfers occur in the ships' holds to limit dust, material is fully enclosed in the conveyor and new loading systems, and material transfer throughout the improved facility would occur either by a new mechanical material handling system leading to the new storage dome or by the existing pneumatic transport system to other existing storage structures to keep the product contained and dry. The concrete dome planned to replace the existing Bunker 7 would be thoroughly modernized to provide improved containment. Upgrades to the truck loading lanes and Bunkers 1 and 2 would also provide improved material containment and reduce idling times. Facility stationary sources would also have extensive dust filter systems consistent with SJVAPCD permitting requirements.

Impact Determination: As shown in Tables 12 and 13, the majority of the $PM_{2.5}$, of which DPM would be a component, would be generated from ships at berth, which would be located 1,300 feet from the nearest receptor. Overall incremental PM levels are lower than similar projects that did not produce health risks. The proposed project would result in a less-than-significant cancer risk, chronic health hazard, and acute health hazard at the maximally affected individual receptors. Therefore, the proposed project's health risk impacts would be less than significant.

Mitigation Measures: None required.

Residual Impact: Less-than-significant impact.

3.2.3.4.4 AQ-4: Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

SJVAPCD's CEQA guidance defines a significant odor impact as one that creates objectionable odors affecting a substantial number of people. SJVAPCD's guidance lists facility types that commonly produce odors and the separation distance from sensitive receptors (typically 1 mile) needed to prevent significant odor impacts (SJVAPCD 2015a). As noted in SJVAPCD's guidance, the list of facility types is not meant to be all-inclusive. Consequently, SJVAPCD recommends that all potential odor sources be evaluated in additional detail if they are located within 1 mile of sensitive receptors. The closest sensitive receptor to the terminal is a residential area located approximately 500 feet to the south.

During construction, diesel exhaust produced by off-road construction equipment could generate odors; however, several pieces of construction equipment would need to operate concurrently in a relatively small area to generate a constant plume of diesel exhaust that would cause objectionable odors for a substantial number of people. These circumstances would not occur as part of the proposed project because construction would occur over a broad area and construction equipment would not all operate at the same time.

During operation, diesel exhaust produced by vessels and trucks could generate odors. However, the majority of the operation would occur within the confines of the Port. Odors from the product unloading area are not expected to be significant because of the low amount of fugitive emissions that would be generated and because of the substantial distance of the product unloading area from residences.

Impact Determination: Construction and operational odors would not affect a substantial number of people. Therefore, this impact is considered to be less than significant.

Mitigation Measures: None required.

Residual Impact: Less-than-significant impact.

3.3 Biological Resources

This section describes existing biological resources conditions in the study area and analyzes how the proposed project may affect these resources. It also describes applicable rules and regulations pertaining to biological resources that could affect the proposed project. For the purposes of the biological resources analysis, the upland portion of the study area is defined as the project site including the proposed lease area (Figure 4), potential lay down areas (Figure 7), the above-water Berth 2 and rail trestle improvement areas (Figures 7, 9, and 14), immediate adjacent areas, and areas that may be affected by construction noise; the aquatic portion of the study area includes the area of in-water Berth 2 and rail trestle improvements (Figures 7, 9, and 14) and adjoining areas of the San Joaquin River affected by construction.

3.3.1 Environmental Setting

Biological conditions occurring in the project area were observed during a reconnaissance survey conducted on October 17, 2019, to assess current habitat conditions, determine presence of any jurisdictional waters and wetlands, and evaluate the project area's potential to support special-status species or sensitive habitats (Anchor QEA 2019a). A search of the California Natural Diversity Database (CNDDB) was conducted to identify recorded special-status species occurrences within the U.S. Geological Survey (USGS) Stockton West 7.5-minute quadrangle and surrounding quadrangles (Terminous, Lodi South, Waterloo, Stockton East, Manteca, Lathrop, Union Island, and Holt; CDFW CNDDB 2019). Fish monitoring data were also reviewed to determine potential presence of special-status fish species, including monitoring completed during previous operations and maintenance dredging episodes completed by USACE (USACE 2015) and as part of CDFW's Fall Midwater Trawl Program (CDFW 2019a).

3.3.1.1 Habitat Communities

The proposed project is located within the City's urban core, which is characterized by a mix of heavy industrial uses with limited landscape features, older residential neighborhoods, neighborhood commercial shopping centers, and a variety of other commercial and industrial parcels. In the area surrounding the project site, the Port leases property for a variety of industrial uses, characterized by the presence of storage tanks, maritime terminals, cementitious materials storage structures, grain silos, railroad facilities, large storage buildings, and stockpiles of various commodities. Immediately east of the site is the Penny Newman Grain terminal, which is similarly developed.

The existing Lehigh terminal is bound by the San Joaquin River, Harbor Street, Port Road 1 and Port Road 2, north of Washington Street. The site is almost entirely developed and contains a dock structure (Berth 2) with a ship unloader (Photograph 1), cementitious material storage facilities, truck loading stations, a wooden rail trestle (Photograph 4), and abandoned fertilizer material handling equipment, which would be demolished. Berth 2 and the immediately adjacent wooden rail trestle are both located in the San Joaquin River. There is a small undeveloped but disturbed area located on the shoreline adjacent to Bunker 1, which contains ruderal vegetation and small riparian trees.

The Lehigh facility, including Berth 2, is entirely devoid of vegetation with the exception of some small potted ornamental landscaping. The shoreline adjacent to the rail trestle contains a very small area of riparian vegetation, including several small (less than 6 inches in diameter at breast height) walnut trees (Photograph 6). Small riparian trees are also present on the shoreline adjacent to Bunker 1 on the eastern edge of the proposed lease area, also outside the immediate improvement area.

West of the Lehigh facility is the Wilmar Oils and Fats terminal, leased from the Port, and east of the facility is the Penny Newman Grain terminal. Both of these properties are nearly devoid of vegetation. The developed areas located to south include a mix of industrial and low-density residential properties that contain lawns, trees, and shrubs. The project site is located adjacent to the Stockton DWSC and just west of the San Joaquin River turning basin (an area where the river widens allowing vessels to reverse orientation prior to departure). As noted, vegetation occurs within a largely developed industrial landscape.

3.3.1.2 Wetlands and Jurisdictional Waters

There are no known wetlands within the proposed project footprint. As noted, Berth 2 and the immediately adjacent wooden rail trestle are both located in the San Joaquin River. Because of the turning basin, the San Joaquin River measures approximately 1,300 feet wide at the Berth 2 area, and operational depths are maintained to -35 feet mean lower low water (MLLW) through routine maintenance dredging undertaken by USACE. Adjacent dock areas are maintained by the Port. The San Joaquin River channel substrate in the project area contains mud and silt, and water quality is characterized by low dissolved oxygen levels and high water temperatures during the late summer and early fall.

3.3.1.3 Special-Status Wildlife Species

The CNDDB identifies 21 special-status (threatened or endangered under the federal Endangered Species Act [ESA] or California Endangered Species Act [CESA], state species of special concern, or CDFW fully protected species) wildlife species within the study area, as identified through a search of the proposed project quadrangle and eight surrounding quadrangles (Appendix F). Potential species occurrence was determined based on habitat requirements and on-site conditions.

The project site's developed condition and location within a highly industrialized area precludes the presence of most terrestrial special-status species, although several special-status bird and reptile species may have a very low to low potential for occurrence in or around the project site. This includes Swainson's hawk (*Buteo swainsoni*; CESA threatened), white-tailed kite *(Elanus leucurus*; CDFW fully protected), and western pond turtle (*Emys marmorata*; State Species of Special Concern).

The project site may also provide suitable nesting habitat for Migratory Bird Treaty Act (MBTA)-protected bird species.

Fish species potentially present in the project area (specifically within the San Joaquin River adjacent to Berth 2) were identified based on critical habitat and essential fish habitat (EFH) designations (50 Code of Federal Regulations [CFR] 226; NOAA 2009). San Joaquin River waters that would accommodate project vessels and proposed in-water improvements are within designated critical habitat for delta smelt (*Hypomesus transpacificus*), Central Valley steelhead (*Oncorhynchus mykiss irideus*), and green sturgeon (*Acipenser medirostris*). San Joaquin River waters in the project area are also considered EFH for Pacific salmon and may provide habitat to Central Valley spring-run Chinook salmon (*Oncorhynchus tshawytscha*; NMFS 2019; CDFW 2019b). State-threatened longfin smelt (*Spirinchus thaleichthys*) and Marine Mammal Protection Act protected harbor seals (*Phoca vitulina*) may also inhabit San Joaquin River waters. These potentially present species are described in the following subsections.

3.3.1.3.1 Swainson's Hawk

Swainson's hawk is a long-distance migrant species. Central Valley populations winter primarily in Mexico and arrive at their Central Valley breeding grounds in mid-March to early April. Nests are generally found in scattered trees or along riparian systems adjacent to agricultural fields or pastures. Egg laying generally occurs in April, and young are present in May and June. Most young have fledged the nest by the end of July and are relatively independent of parental protection; however, fledged young remain with their parents until they depart in the fall for migration. Migration to wintering grounds generally occurs around September; however, some individuals or small groups may winter in California (Caltrans and Port 2013).

Swainson's hawks are regularly observed throughout the Port. Trees along the San Joaquin River shoreline located across the San Joaquin River and up and downstream of Berth 2 and the rail trestle may provide nesting habitat to the Swainson's hawk.

3.3.1.3.2 White-Tailed Kite

White-tailed kites nest and forage in a variety of settings. They hunt over grassland, savanna, cultivated fields, marshes, and riparian woodland and are also commonly observed foraging along freeway medians and edges. Kites prey primarily on voles and other small rodents but also eat birds, snakes, lizards, frogs, and large insects. They build stick nests in the tops of trees, preferentially near an open foraging area, and typically forage within 0.5 mile of the nest during breeding season, which extends from February through October. The nearest white-tailed kite occurrence was recorded approximately 3.6 miles southeast of the project area in April 2002 (CDFW CNDDB 2019).

As with Swainson's hawk, trees across the San Joaquin River and along the shoreline up and downstream of Berth 2 and the rail trestle may provide nesting habitat for white-tailed kites.

3.3.1.3.3 Western Pond Turtle

The western pond turtle is a highly aquatic species found in ponds, marshes, rivers, streams, lakes, creeks, and irrigation ditches throughout central and coastal California up to 6,000 feet in elevation. Suitable habitat typically includes aquatic areas with rocky or muddy bottoms, aquatic vegetation, and basking habitat (e.g., logs, rocks, or riprap).

Although there are no recorded occurrences of the western pond turtle within a 2-mile radius of the project area (CDFW CNDDB 2019), riverbank areas adjacent to the rail trestle may provide suitable basking habitat for this species.

3.3.1.3.4 Green Sturgeon (Southern DPS)

Subadult and adult green sturgeon inhabit nearshore oceanic waters, bays, and estuaries while also migrating to and from freshwater habitats. Freshwater occurrence of this species occurs during the early life history stage (less than 4 years old) and later when adults return to freshwater to spawn (spawn age range of 10 to 15 years old). Spawning occurs in the spring and summer, as recorded in the upper Sacramento River and tributaries such as the Feather, Yuba, and American rivers. During the juvenile stage, green sturgeon can be found throughout the freshwater portions of their habitat the entire year. San Joaquin River waters adjacent to Berth 2 and the rail trestle are within designated critical habitat for green sturgeon.

Based on past historical conditions, monitoring data, and this species' characteristics, there exists a small potential for green sturgeon to be present in the project area during the in-water construction window (USACE 2015; CDFW 2019a; Anchor QEA 2019b). In addition, the species may occur within waters used for Lehigh vessel berthing during the upstream migration of spawning adults and downstream migration, resting, and foraging of juveniles (Caltrans and Port 2013). The San Joaquin River adjacent to Berth 2 and the rail trestle does not provide suitable spawning habitat for green sturgeon.

3.3.1.3.5 Delta Smelt

The delta smelt is a euryhaline fish with a habitat range extending from the lower reaches of the Sacramento and San Joaquin rivers, through the Sacramento-San Joaquin River Delta (Delta), and into Suisun Bay. Delta smelt are a relatively small species (2 to 3 inches long) that typically have an annual life cycle, although some individuals may live up to 2 years. Prior to spawning, adult delta smelt tend to migrate upstream into the lower reaches of the Sacramento and San Joaquin River systems, where spawning occurs from approximately February through June, with the greatest spawning activity occurring in April and May. Females deposit adhesive eggs on substrates such as gravel, rock, and submerged vegetation. Eggs hatch in approximately 2 weeks, when planktonic larvae are passively dispersed downstream by river flow. Larval and juvenile delta smelt rear within the estuarine portions of the Delta for a period of approximately 6 to 9 months before beginning their upstream spawning movement into freshwater areas of the lower rivers. San Joaquin River waters adjacent to Berth 2 and the rail trestle are within designated critical habitat for delta smelt. The currently authorized work window for delta smelt is from August 1 to November 30.

Based on past monitoring data and this species' characteristics, delta smelt are highly unlikely to be present in the action area during the in-water construction window (USACE 2015; CDFW 2019a; Anchor QEA 2019b). The Berth 2 area has already been developed and currently accommodates large vessels. This area does not provide the shallow edge waters preferred by delta smelt during spawning, which typically occurs within sloughs and shallow edge waters located within the upper Delta.

3.3.1.3.6 Central Valley Steelhead (Central Valley Distinct Population Segment)

The Central Valley distinct population segment (DPS) of steelhead includes all populations in the Sacramento and San Joaquin rivers and their tributaries. The current distribution ranges from Keswick Dam in the Upper Sacramento River to the Merced River in the San Joaquin River Basin, with distribution primarily limited by impassable dams. Anadromous adults make their upstream spawning migrations beginning in July (peaking in September and October) after residing in the ocean for 2 to 3 years. Spawning occurs from December through April. Spawning, incubation, and the majority of rearing occurs farther upstream than the project area. Waters in the Berth 2 area are within designated critical habitat for this species. The currently authorized work window for steelhead is from June 1 to November 30.

Based on the past monitoring data, there exists a very small potential for this species to be present in the project area during the in-water construction window (USACE 2015; CDFW 2019a; Anchor QEA 2019b). In addition, steelhead may occur within waters used for Lehigh vessel berthing during the upstream migration of spawning adults and downstream migration, resting, and foraging of juveniles (Caltrans and Port 2013). The Berth 2 area has already been developed; this area does not contain river bottom habitat suitable for spawning or incubation.

3.3.1.3.7 Chinook Salmon (Central Valley Spring-Run Evolutionarily Significant Unit)

The Central Valley spring-run evolutionarily significant unit of Chinook salmon is one of four distinct runs of salmon that spawn in the Sacramento-San Joaquin River system. The Chinook salmon was historically the most abundant salmon species in the Central Valley. Populations remain in some tributaries of the Sacramento River, including Butte, Mill, Deer, Antelope, and Beegum creeks, and the Yolo Bypass. In general, spring-run Chinook salmon are found in the Suisun Marsh/North San Francisco Bay, Delta, Sacramento River, Feather River/Sutter Basin, Butte Basin, and North Sacramento Valley Ecological Zones (CDFG 1998). Spring-run Chinook salmon adults typically migrate upstream to spawn from April to October and spawn from August through October. Chinook salmon alevins have been collected from Suisun Bay in January and February. Larger parr juveniles have been found from April to June. Juvenile life stages are commonly found inshore, in willow water, and throughout estuarine habitat. Some Chinook salmon delay their downstream migration until the early smolt stage. Juvenile out-migration peaks from May to June (USACE 2015). The currently authorized work window for Chinook salmon is from June 1 to November 30.

Based on the past monitoring data, this species is highly unlikely to be present in the action area during the in-water construction window (USACE 2015; CDFW 2019a; Anchor QEA 2019b). Chinook salmon may however migrate, forage, or rest within waters used for Lehigh vessel berthing. The Berth 2 area has already been developed; this area does not contain river bottom habitat suitable for spawning or incubation.

3.3.1.3.8 Longfin Smelt

Longfin smelt, a small euryhaline and anadromous fish, was historically among the most abundant fish in the Delta. Spawning adults congregate at the upper end of Suisun Bay and in the lower and middle Delta, especially in the Sacramento River channel and adjacent sloughs (USACE 2015). As they mature in the fall, adults found throughout San Francisco Bay migrate to brackish or freshwater in Suisun Bay, Montezuma Slough, and the lower reaches of the Sacramento and San Joaquin rivers.

Based on the past monitoring data and this species' characteristics, this species is highly unlikely to be present in the project area (USACE 2015; CDFW 2019a; Anchor QEA 2019b) The Berth 2 area does not provide suitable spawning habitat for this species.

3.3.1.3.9 Marine Mammals

Harbor seals are known to occur in the San Joaquin River near the project site. Their presence is largely transitory because there are no rookeries or suitable haul-out sites at or near the Lehigh facility. Habitat for harbor seals within the project area of effect is generally low quality relative to the greater Bay-Delta because of the high level of vessel traffic in the Stockton DWSC and turning basin, and the disturbed condition of the San Joaquin River.

3.3.1.3.10 Special-Status Plant Species

There are 20 plant species considered rare, threatened, or endangered by the California Native Plant Society (CNPS; a CNPS Rank 1 or 2 species) with recorded occurrences in the vicinity of the project site, as identified through a search of the proposed project quadrangle and eight surrounding quadrangles (Appendix G; CDFW CNDDB 2019). Of these 19 species, two are state or federal endangered: palmate-bracted bird's-beak (*Chloropyron palmatum*; federal and state endangered) and Delta button-celery (*Eryngium racemosum*; state endangered). Due to the lack of suitable habitats within the project area, none of the special-status plant species with recorded occurrences have the potential to occur within the project site.

3.3.1.3.11 Migratory Bird Treaty Act Protected Birds and Raptors

Several species of birds protected by the MBTA may occur in the proposed project vicinity. Although the shoreline in the project area serves industrial functions, MBTA-protected birds could nest in disturbed but barren areas within the project site such as on the armored shoreline adjacent to the rail trestle. MBTA-protected birds could also roost or nest in mature trees located across the San Joaquin River or downstream from the project site. Several MBTA-protected birds have been observed at the Port, including, but not limited to the following (Anchor QEA 2018):

- Barn swallow (*Hirundo rustica*)
- Bushtit (*Psaltriparus minimus*)
- Belted kingfisher (*Megaceryle alcyon*)
- House finch (*Haemorhous mexicanus*)
- Cliff swallow (*Petrochelidon pyrrhonota*)
- White-tailed kite (*Elanus leucurus*)
- Swainson’s hawk (*Buteo swainsoni*)
- Common raven (*Corvus corax*)

3.3.2 Applicable Regulations

3.3.2.1 Federal

3.3.2.1.1 Federal Endangered Species Act

Under the ESA, the Secretary of the Interior and the Secretary of Commerce have the joint authority to list a species as threatened or endangered (16 United States Code [USC] 1533[c]). Pursuant to the requirements of the ESA, an agency reviewing a proposed project within its jurisdiction must determine whether any federally listed threatened or endangered species may be present in the study area and determine whether the proposed project may affect or “take” such species. “Take” is defined by the ESA (16 USC 1532[19]) to mean, “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct.” Section 7 of the ESA requires USACE to consult with the U.S. Fish and Wildlife Service (USFWS) or National Marine Fisheries Service to determine whether the proposed project is likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of critical habitat proposed to be designated for such species (16 USC 1536[a][3]).

3.3.2.1.2 Migratory Bird Treaty Act

The MBTA of 1918 (16 USC 703–712) is the primary legislation in the United States to conserve migratory birds. It implements the United States’ commitment to four bilateral treaties, or conventions, for the protection of a shared migratory bird resource. The MBTA prohibits the taking, killing, trading, or possessing of migratory birds. This includes disturbance that causes nest abandonment or loss of reproductive effort (e.g., killing or abandonment of eggs or young).

3.3.2.2 State

3.3.2.2.1 California Endangered Species Act

Under the CESA, CDFW is responsible for maintaining a list of threatened, endangered, and candidate species (California Fish and Game Code [FGC] 2070). CDFW also designates "fully protected" or "protected" species as those that may not be taken or possessed. Species designated as fully protected or protected may or may not be listed as endangered or threatened. CDFW also tracks species of special concern, which are animal species whose populations have diminished and may be considered for listing if declines continue. Pursuant to the requirements of the CESA, an agency reviewing a proposed project within its jurisdiction must determine whether any state-listed endangered or threatened species may be present in the study area and determine whether the proposed project would have a potentially significant impact on such species. "Take" of a species, under the CESA, means to "hunt, pursue, catch, capture, kill, or attempt to hunt, pursue, catch, capture, or kill" (FGC 86). The CESA definition of "take" does not include "harm" or "harass," as is included in ESA. As a result, the threshold for a take under the CESA may be higher than under ESA because habitat modification is not necessarily considered take under the CESA. CDFW may issue incidental take permits when adequate minimization measures are met and issuance of the permit would not jeopardize the continued existence of a state-listed species. Should the project applicant receive authorization to take federally listed species under ESA, take authorization may also be sought as a "consistency determination" from CDFW under FGC 2080.1.

3.3.2.2.2 California Native Plant Protection Act

The California Native Plant Protection Act (FGC 1900–1913), Natural Communities Conservation Planning Act, and CESA provide guidance on the preservation of plant resources. Vascular plants listed as rare or endangered by the CNPS, but which may have no designated status or protection under federal or state endangered species legislation, are defined as follows:

- Rank 1A: Plants presumed to be extirpated in California and either rare or extinct elsewhere.
- Rank 1B: Plants rare, threatened, or endangered in California and elsewhere.
- Rank 2A: Plants presumed to be extirpated in California, but more common elsewhere.
- Rank 2B: Plants rare, threatened, or endangered in California, but more common elsewhere.
- Rank 3: Plants about which more information is needed—a review list.
- Rank 4: Plants of limited distribution—a watch list.

In general, plants listed as CNPS Ranks 1A, 1B, 2A, or 2B also meet the definition of FGC 1901, Chapter 10 of the Native Plant Protection Act, and FGC 2062 and 2067. The CNDDB identifies three special-status plant species (CNPS Rank 1 or 2 species) with historic ranges in the vicinity of the study area. However, suitable habitat or microhabitat conditions specific to these species does not exist at the project site.

3.3.2.2.3 Fish and Game Code 3503, 3511, 3513, 4700, 5050, and 5515

Provisions of the MBTA are adopted through the FGC. Under FGC 3503, it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or related regulations. FGC 3513 prohibits take or possession of any designated migratory non-game bird or any part of such migratory non-game bird. The state code offers no mechanism for obtaining an incidental take permit for the loss of non-game, migratory birds.

The FGC strictly prohibits the incidental or deliberate take of fully protected species. CDFW cannot issue a take permit for fully protected species, except under narrow conditions for scientific research or the protection of livestock; therefore, avoidance measures may be required to avoid a take (FGC 3511 for birds, 4700 for mammals, 5050 for reptiles and amphibians, and 5515 for fish).

3.3.2.3 Local

3.3.2.3.1 San Joaquin County Multi-Species Habitat Conservation and Open Space Plan

The SJMSCP, in accordance with ESA Section 10(a)(1)(B) and CESA Section 2081(b) Incidental Take Permits, provides compensation for the conversion of open space to non-open space uses which affect the plant, fish, and wildlife species covered by the plan. The SJMSCP covers 97 species, including federal and state-listed species, as well as species specifically addressed by CEQA.

For projects with the potential to adversely affect special-status species or habitats, project proponents may opt into the SJMSCP to obtain take coverage for species covered by the plan. Opting into the SJMSCP typically entails adhering to avoidance and minimization measures during project construction and mitigating for potential species take or loss of habitat (through credit purchase or other means).

3.3.2.3.2 Stockton Municipal Code Title 16, Division 5, Chapter 16.130

Title 16, Division 5, Chapter 16.130 of the City Municipal Code provides protection for heritage oaks in the City. Heritage oak trees are defined as any *Quercus lobata* (commonly known as valley oak), *Quercus agrifolia* (coast live oak), or *Quercus wislizeni* (interior live oak) tree which is located on public or private property within the limits of the City and which has a trunk diameter of 16 inches or more, measured at 24 inches above actual grade. Removal of any heritage oak requires a permit from the City Community Development Department.

3.3.3 Environmental Impacts and Mitigation Measures

3.3.3.1 Baseline

At the time of publication of the NOP for the proposed project, Lehigh operated a bulk cementitious material receiving and distribution terminal. The structures and features within the project site are described in detail in Section 3.3.1. As described, the upland areas of the site are entirely devoid of vegetation with the exception of some small potted ornamental landscaping. The project site also includes the San Joaquin River and shoreline adjacent to Berth 2 and the existing wooden rail trestle.

3.3.3.2 Thresholds

For purposes of this DEIR, the following thresholds, which are based on Appendix G of the CEQA Guidelines (Environmental Checklist), were used to determine whether the proposed project would result in impacts on biological resources. The proposed project would have an impact on biological resources if:

- **BIO-1:** The project would have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or USFWS.
- **BIO-2:** The project would have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by CDFW or USFWS.
- **BIO-3:** The project would have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marshes, vernal pools, coastal wetlands, etc.) through direct removal, filling, hydrological interruption, or other means.
- **BIO-4:** The project would interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.
- **BIO-5:** The project would conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
- **BIO-6:** The project would conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

3.3.3.3 Methodology for Determining Impacts

Potential impacts on biological resources were qualitatively evaluated based on the habitat preferences for various species known or suspected to be in the project area, as well as the quantity and quality of existing habitat. Potential impacts were analyzed using recent USFWS and CDFW lists for special-status species with the potential to inhabit the study area, local observations, and professional expertise and judgment in evaluating how the proposed project could interact with biological resources. This impacts analysis also references the Biological Assessment prepared for in-water components of the proposed project (Appendix H; Anchor QEA 2019b), which included a bioacoustics evaluation of potential impacts from pile driving.

The proposed measurement indices used to evaluate impacts on biological resources include impacts on special-status species or habitats. The proposed project would be considered to have a significant impact if it would be inconsistent with applicable regulations and policies protecting biological resources.

3.3.3.4 Impact Analysis

3.3.3.4.1 BIO-1: Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

As described in Section 3.3.1, the upland portion of the project site and surrounding area are devoid of unique habitats or habitat features suitable for terrestrial special-status species. The San Joaquin River shoreline does include some mature trees across the channel and downstream from the project site, which may provide suitable nesting habitat for Swainson's hawk, white-tailed kites, or MBTA-protected bird species. Ground-nesting birds protected by the MBTA may also be present within or near the immediate project footprint. Riverbank areas adjacent to the rail trestle may provide suitable basking habitat to the aquatic western pond turtle. Construction activities have the potential to disturb ground nests or western pond turtle, if present. The proposed project would not remove or directly disturb any mature trees; however, construction noise could temporarily adversely affect nesting birds off site, if present.

Pile driving may temporarily disturb benthic sediments and increase turbidity and suspended sediment levels in the immediate vicinity of the project area during construction. Turbidity resulting from construction may affect marine organisms and aquatic wildlife during various life stages by affecting respiration (clogging gills), reducing visibility and the ability to forage or avoid predators, and altering movement patterns (due to avoidance of turbid waters). Suspended sediments have been shown to affect fish behavior, including avoidance responses, territoriality, feeding, and homing behavior. Generally, bottom-dwelling fish species are the most tolerant of suspended solids, and filter feeders are the most sensitive. Motile organisms can generally avoid unsuitable conditions in the field.

Increases in turbidity and suspended sediment levels from of pile driving would be substantially less significant than similar effects from regular USACE and Port maintenance dredging in the project area. The USACE Waterways Experiment Station Technical Report DS-78-5 (Hirsch et al. 1978), *Effects of Dredging and Disposal on Aquatic Organisms*, states that: "Most organisms tested are very resistant to the effects of sediment suspensions in the water, and aside from natural systems requiring clear water such as coral reefs and some aquatic plant beds, dredging induced turbidity is not a major ecological concern." Proposed turbidity and suspended sediment effects to fish from pile driving are expected to be less than these minor effects from dredging.

Pile driving has the potential to release sediment-associated metals and other pollutants by dispersion within the resulting sediment plume. Water quality monitoring and elutriate toxicity testing results from past Port maintenance dredging sediment characterization efforts have not indicated toxicity concerns (ERS 2012, 2013; Anchor QEA 2017) for sediments within the project area. Impacts to fish from uptake of pollutants in disturbed sediment is therefore not anticipated.

Construction has the potential to result in accidental spills, if improperly managed. Various contaminants, such as fuel oils, grease, and other petroleum products used in construction activities, could be introduced into the system either directly or through surface runoff. Contaminants may be toxic to fish or cause altered oxygen diffusion rates and acute and chronic toxicity to aquatic organisms, thereby reducing growth and survival. Because the proposed project would include more than 1 acre of ground disturbance, a National Pollutant Discharge Elimination System (NPDES) Construction Stormwater General Permit addressing these types of impacts would be required.

Underwater noise from construction, particularly from pile installation over approximately 35 days, has the potential to adversely affect fish. This may include mortality, injury, or behavioral impacts if fish are present in proximity to the pile driving source. Comprehensive bioacoustics modeling was performed to identify proposed action impact radiuses (for injury and behavior effects) from impact pile driving and to assess potential impacts to special-status fish species (Anchor QEA 2019b). Per the bioacoustics modeling, the calculated area of physical injury associated with increased sound pressure levels during pile driving is relatively small in comparison to the size of the San Joaquin River.

Project construction, primarily pile driving, may impeded localized movement or migration of special-status fish (if present). This would be limited to impediment within the southern portion of the San Joaquin River channel. Passage within northern portion of the San Joaquin River would remain unaffected, and fish would therefore remain able to move up and downstream.

Benthic habitat can provide important foraging areas for special-status species, especially for steelhead, Chinook salmon, green sturgeon, and longfin smelt, which forage in the benthos. Because delta smelt feed in the water column, benthic habitat is less important for this species. During construction, benthic habitat in the project area would be largely unavailable for fish foraging. Following sediment-disturbing activities such as pile driving, disturbed areas are usually recolonized quickly by benthic organisms (Newell et al. 1998).

Some permanent loss of benthic habitat would also result from installation of piles (280.38 square feet of permanent loss). Recent examination of benthic invertebrate communities in the Stockton and Sacramento DWSCs shows strong dominance of Asian clams (USACE 2015), which are a less-favorable prey species. Additionally, the benthic environment in the project area has been severely impacted by historic Port and military operations, USACE operations and maintenance dredging of the Stockton DWSC, and urban development throughout the City. Affected benthic habitat is therefore unlikely to offer high-quality foraging opportunities to special-status species.

Although minor loss of low-quality benthic habitat would occur, it is anticipated that the additional encrusting habitat provided by the proposed piles would offset any loss of foraging opportunities. The proposed action would also result in a decrease in overwater coverage, which may encourage growth of aquatic vegetation potentially used for foraging.

The proposed project would result in a minor increase in the number of vessels calling on Berth 2, although changes to the size or type of vessels are not anticipated. Currently, a number of additional vessels calling on the Port pass by the project area to use the adjacent turning basin. The minimal increase in vessel traffic at Berth 2 resulting from the proposed action would have a negligible effect on aquatic habitat when accounting for existing fluctuations in vessel traffic from ships using the existing Berth 2 and the turning basin. In addition, adverse environmental effects from propeller wash and vessel strikes are not among the primary existing threats identified for potentially present fish. Therefore, operational changes associated with the proposed project are unlikely to result in adverse impacts.

Impact Determination: Construction of the proposed project has the potential to adversely affect special-status species that could be present in the project area. This includes potential input of pollutants to the waterway that could affect water quality, and pile driving that could also affect water quality or result in injury or mortality of special-status fish. These would constitute potentially significant impacts.

Mitigation Measures: The following mitigation measures would be implemented during construction to reduce potential impacts:

- **MM-BIO-1: Obtain Coverage under the SJMSCP or Conduct Nesting Bird Surveys and Establish Western Pond Turtle Buffers.** To avoid impacts on potentially present special-status species, the proposed project will obtain coverage under the SJMSCP. Lehigh will submit an application for coverage to SJCOG within 60 days of project construction. SJCOG will review the project, prepare a staff report, and submit the report to the SJMSCP Habitat Technical Advisory Committee, which determines whether the project will be covered under the SJMSCP. Assuming the project is approved for coverage, a SJCOG biologist will conduct a site visit to determine which incidental take minimization measures (ITMMs) included in the SJMSCP are applicable to the project. SJCOG will then execute a final summary of applicable ITMMs for the project. ITMMs would include surveys, monitoring, and applying temporary construction buffers, if determined appropriate by SJCOG. Lehigh will implement all required ITMMs identified by the SJCOG. Ground disturbance will not occur until the ITMMs have been satisfied.

  If the proposed project is not able to obtain coverage under the SJMSCP, Lehigh will implement avoidance and minimization measures specific to nesting birds and western pond turtle as detailed below.

  - For nesting birds, alternatives to SJMSCP coverage will include surveys and avoidance measures consistent with CDFW's standard requirements. If equipment staging, site preparation, or other project-related construction work is scheduled to occur between February 1 and September 15, the nesting season of protected raptors and other avian species, a CDFW-approved biologist will conduct a pre-construction survey of the project area for active nests within 7 days prior to commencing project construction. The minimum survey area will be 250 feet for passerines, 500 feet for small raptors, and 1,000 feet for larger raptors. Surveys will be conducted during periods of peak activity (early morning or dusk) and be of sufficient duration to observe movement patterns. If a lapse in project-related work of 15 days or longer occurs, another survey will be performed before construction is re-initiated. If any active bird nests are found, a buffer around the nest will be established by the biologist in coordination with CDFW. The buffer area will be fenced off from work activities and avoided until the young have fledged, as determined by the biologist. The biologist will monitor the active nest until the young have fledged for at least 2 hours per day when project activities are occurring to observe the behavior of the nesting birds. If the birds show signs of disruption to nesting activities (e.g., defensive flights/vocalizations directed toward project personnel, standing up from a brooding position, or flying away from the nest), the buffers will be expanded by the biologist until no further interruptions to nesting behavior are detectable.

  - For western pond turtle, alternatives to SJMSCP coverage will include establishing a buffer area of 300 feet between any nesting turtle sites and the wetland located near the nesting site. These buffers shall be indicated by temporary fencing if construction has or will begin before nesting periods are ended (the period from egg laying to emergence of hatchlings is normally April to November).

- **MM-BIO-2: Obtain and Implement NPDES Construction Stormwater General Permit.** A NPDES Construction Stormwater General Permit will be obtained for the proposed project, which will require the development of a construction Stormwater Pollution Prevention Plan (SWPPP). The construction SWPPP would include BMPs including or similar to use of barriers (e.g., netting or sandbags) to prevent pollutants from entering the water, equipment inspection for spills, and maintenance and implementation of material spill prevention and cleanup plans. The construction SWPPP would ensure that contaminants are not accidentally introduced into the waterway.
- **MM-BIO-3: Conduct In-water Construction During Established Window.** All in-water work will be conducted during the annual CDFW, NMFS, and USFWS approved work window, which is expected to span from July 1 through November 30.
- **MM-BIO-4: Employ Soft-Start Techniques for Impact Pile Driving.** During construction, Lehigh would implement soft-start techniques for impact pile driving, which is industry standard and will be required per regulatory permits. Soft-start techniques include bringing pile driving or other loud equipment online slowly, providing fish potentially present the opportunity to disperse from the project area.
- **MM-BIO-5: Compliance with Permitting Requirements for In-Water Work.** For in-water work, Lehigh would comply with permitting requirements from USACE, RWQCB, and CDFW to avoid water quality and other natural habitat impacts. Requirements will likely include implementing erosion controls, designating appropriate staging and fueling areas, requiring equipment inspections and maintenance, and additional standard construction BMPs.

Residual Impact: Mitigation Measures MM-BIO-1, MM-BIO-3, MM-BIO-4, and MM-BIO-5 would reduce the potential exposure of special-status species to construction impacts to the extent feasible. This includes reducing potential presence of special-status species by completing surveys (MM-BIO-1), establishing buffer zones (MM-BIO-1), complying with construction windows (MM-BIO-3), and providing species with opportunity to flee the impact area (MM-BIO-4). Mitigation Measures MM-BIO-2 and MM-BIO-5 would reduce the potential for pollutant inputs to the waterbody which could adversely impact special-status aquatic species.

For construction during the established in-water construction window (MM-BIO-3), delta smelt and longfin smelt are not anticipated to be present in the project area (as detailed in Section 3.3.1), and would therefore not be affected by impact pile driving noise during this period. Salmonids are similarly unlikely to be present during the construction window. Although some steelhead may migrate early, their likelihood of occurring in the project area during the in-water construction window remains very low and would be confined to the latter portion of the construction window. There is a small potential for green sturgeon to be present in the project area during and outside the construction window, and there is very low risk for green sturgeon injury from pile driving. The relatively small area of physical injury identified in the bioacoustics modeling and the use of soft-start techniques during all pile driving (MM-BIO-4) would further reduce the potential for fish to be present and subject to construction impacts.

With implementation of mitigation measures MM-BIO-1 through MM-BIO-5, impacts would be less than significant.

3.3.3.4.2 BIO-2: Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

There are no riparian habitats or other sensitive natural communities within the immediate project footprint. The shoreline adjacent to the existing wooden rail trestle has several small riparian trees (approximately 6 inches in diameter at breast height walnut trees), which would not be affected by proposed project construction.

The proposed project would occur within areas designated as critical habitat for southern DPS green sturgeon, delta smelt, and Central Valley DPS steelhead; and within EFH for the Pacific Coast salmon and Pacific Coast Groundfish Fisheries Management Plans. Permanent habitat impacts would be limited to negligible loss of low-quality benthic habitat, which would be more than offset by improvement to foraging opportunities from increased encrusting habitat and increased light transmission from a reduction in overwater coverage. As described above, temporary impacts would be minimal, including those related to water quality impacts, underwater noise, impediment of localized movement, loss of benthic habitat, and increased vessel traffic.

Impact Determination: Based on the analysis presented above, the proposed project would result in no impact to riparian habitat. However, construction of the proposed project has the potential to adversely affect critical habitat or EFH for aquatic species, which would constitute a potentially significant impact. This includes potential impacts from pile driving (noise impacts, turbidity increases, benthic habitat loss, localized movement impacts) and potential pollutant inputs from construction.

Mitigation Measures:

- **MM-BIO-2: Obtain and Implement NPDES Construction Stormwater General Permit** (see BIO-1 for more information).
- **MM-BIO-3: Conduct In-water Construction During Established Window** (see BIO-1 for more information).
- **MM-BIO-4: Employ Soft-start Techniques for Impact Pile Driving** (see BIO-1 for more information).
- **MM-BIO-5: Compliance with Permitting Requirements for In-Water Work** (see BIO-1 for more information).

Residual Impact: Implementing MM-BIO-2 and MM-BIO-5 would reduce the potential for pollutant inputs to the San Joaquin River which could adversely impact critical habitat or EFH. Implementing MM-BIO-3 would ensure that construction impacts occur when species associated with certain critical habitats and EFH are least likely to be present, while MM-BIO-4 would allow any species present to flee from the impact area. With implementation of these mitigation measures, impacts would be less than significant.

3.3.3.4.3 BIO-3: Would the project have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marshes, vernal pools, coastal wetlands, etc.) through direct removal, filling, hydrological interruption, or other means?

There are no wetlands within the proposed project footprint. Proposed construction improvements would occur within waters of the United States and state but outside of any wetlands, and there would be no secondary impacts to any wetland habitat. Ships would berth at existing docks that currently receive vessels or other ship calls.

Impact Determination: Based on the analysis presented above, the proposed project would result in no impact to state or federally protected wetlands.

Mitigation Measures: None required.

Residual Impact: No impact.

3.3.3.4.4 BIO-4: Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

Although the project area is along the Pacific Flyway, an established air route of waterfowl and other birds migrating between wintering grounds in Central and South America and nesting grounds in Pacific Coast states and provinces of North America, the developed nature of the project area and small size of the riparian corridor along the San Joaquin River likely preclude migratory bird species from using the project site as a stopover during their migration.

The Berth 2 area is not within any nursery sites for special-status fish species, and the proposed project would not impede migration within the San Joaquin River or other waters. Although docked vessels would temporarily impede localized movement of fish within the immediate berthing area, and proposed project construction would impede movement within the southern portion of the San Joaquin River, fish movement throughout the remainder of the channel would remain unimpeded.

The increase in vessels calls to existing docks (estimated at up to 50 ship visits per year by the year 2028) is not anticipated to degrade aquatic habitat values compared to existing conditions. Under existing conditions, Port docks accommodate a multitude of vessels throughout the year (252 vessels in 2018 [Port 2019b]) and numerous other vessels, tugs, and skiffs pass by Berth 2 en route to the turning basin or other marine terminals to the east.

Impact Determination: Based on the analysis presented above, the proposed project would result in no impact to native wildlife nursery sites. Proposed project construction may impede localized movement of resident migratory fish, which would constitute a potentially significant impact.

Mitigation Measures:

- **MM-BIO-3: Conduct In-water Construction During Established Window** (see BIO-1 for more information).
- **MM-BIO-4: Employ Soft-start Techniques for Impact Pile Driving** (see BIO-1 for more information).
- **MM-BIO-5: Compliance with Permitting Requirements for In-Water Work** (see BIO-1 for more information).

Residual Impact: Implementing MM-BIO-3 would ensure that construction occurs when special-status fish species are least likely to be present, thereby further reducing any impacts on localized movement. Implementing MM-BIO-4 would ensure that any fish present are able to flee the area of impact in adjoining waters where movement would not be affected by construction noise. MM-BIO-5 may provide additional protections movement of wildlife. With implementation of these mitigation measures, impacts would be less than significant.

3.3.3.4.5 BIO-5: Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

The proposed project would not require removal of any oak or street trees and would therefore not conflict with the City Heritage Tree Ordinance or City Municipal Code pertaining to street trees. Conformance with the SJMSCP is addressed under BIO-1. There are no other local policies or ordinances for protecting biological resources that are applicable to the project site or proposed project.

Impact Determination: Based on the analysis presented above, the proposed project would result in no impact from conflicting with local policies or ordinances pertaining to biological resources.

Mitigation Measures: None required.

Residual Impact: No impact.

3.3.3.4.6 BIO-6: Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

The SJMSCP is the only conservation plan in the project area. As discussed under BIO-1, mature trees near the project footprint, including riparian trees along the San Joaquin River, may provide suitable nesting habitat for Swainson's hawk, white-tailed kites, or MBTA-protected bird species. Nests of ground-nesting MBTA-protected bird species may also be present in the project area. Western pond turtle may also use riverbank areas adjacent to the rail trestle. Construction activities associated with the proposed project may directly disturb ground-nesting birds or nesting western pond turtles, or indirectly disturb birds nesting in trees away from the project site (i.e., noise disturbance), if present.

Impact Determination: Because the proposed project has the potential to temporarily adversely affect special-status species, it has the potential to conflict with biological resource goals and policies from the SJMSCP.

Mitigation Measures:

- **MM-BIO-1: Obtain Coverage under the SJMSCP or Conduct Nesting Bird Surveys and Establish Western Pond Turtle Buffers** (see BIO-1 for more information).

Residual Impact: Implementing MM-BIO-1 includes adherence with SJMSCP requirements or implementation of equivalent avoidance measures. With implementation of this mitigation measure, impacts would be less than significant.

3.4 Cultural Resources

This section details the existing historical and archaeological resources within the project area; the variety of resources in the project area and surrounding vicinity; and the relevant federal, state, and local regulations and policies. The information presented in this section is largely based on historical maps and documents about the development of the project area.

Cultural resources are defined as archaeological sites, elements of the historic built environment (e.g., buildings, structures, bridges, or other built features), and places of traditional cultural importance that meet one of the following criteria (14 CCR 15064.5):

- Listed in or eligible for listing in the California Register of Historical Resources (CRHR)
- Listed in a local preservation register
- Identified as significant in a historical resource survey (unless the preponderance of evidence demonstrates that it is not historically or culturally significant)
- Determined to be significant by the CEQA lead agency, provided the determination is supported by substantial evidence considering the whole record

For the purposes of this analysis, the study area is defined as the project site (the terminal and Berth 2). Because the project site is already an industrial port and there will be no change in use, no effects to setting or landscape are expected.

3.4.1 Environmental Setting

The Delta has probably been occupied since the late Pleistocene/early Holocene, beginning around 11,000 years ago. However, alluvial processes have likely erased most early archaeological sites. The earliest documented sites in the region date to about 9,000 years ago and are thought to have been mobile communities focused on hunting and fishing (Milliken et al. 2007; Chartkoff and Chartkoff 1984). Warm and dry conditions in the mid-Holocene (about 7,000 to 3,000 years ago) are associated with a change in subsistence focus towards plant gathering; millingstones are common during this period, though communities are still thought to have been fairly mobile (Fagan 2003). Later in this period, a trend towards sedentary communities and economic diversification emerges. The late Holocene is characterized by a continued increase in economic diversity and sociopolitical complexity, with emphasis on long-distance trade (Moratto 1984; Chartkoff and Chartkoff 1984). Cultures from this era correspond with ethnographically described cultures.

The project area is in the traditional territory of the Yokuts tribe and may also have been used or settled by Plains Miwok and Wintun peoples. Yokuts communities were organized into a number of tribes united by a common language (Golla 2007). They lived throughout the San Joaquin Valley and relied on the region’s rich fishing and hunting resources (Kroeber 1976). Native American communities were severely impacted by European contact (Milliken 1995). However, Yokuts people have endured and are now members of several federally recognized tribes.

The earliest European contact in the region dates to the late 1500s and was characterized by the establishment of Spanish missions and pueblos. Trappers from the Hudson's Bay Company also settled in the area that would become Stockton in the early 1800s, founding what is still known as French Camp (Wood 1973). The new Mexican government took control of California in 1822 and began to distribute lands to private owners. In 1842, German immigrant Charles Weber passed through what would become Stockton; he settled there and established a store in 1847 (Wood 1973).

The gold rush that began in 1848 spurred a boom in the Stockton area, and the City incorporated in 1850. Hundreds of vessels, from paddlewheelers to barks, plied the area serving miners. The Swamp Land Act of 1850 (also known as the Overflow Land Act) allowed for the transfer of wetlands from federal to state ownership, which began the process of reclaiming lands through drainage, dredging, levee construction, and fill placement (Garone 2011). After the gold rush, the economy was driven by shipbuilding and agriculture, which remain primary industries today.

There is evidence of industrial and land development in the immediate vicinity of the project site since at least the early 1900s, which intensified through the mid to late twentieth century. By 1913, levees had been constructed that channelized the San Joaquin River and Stockton DWSC and allowed for landmaking through filling of adjacent uplands. Prior to historic landmaking, the project area would have been seasonally inundated. A USGS topographic map from 1913 shows the levees adjacent to waterways and a dirt road in roughly the same location as Navy Drive.

Dredging to create the Stockton DWSC began in 1930; the original navigational depth of 15 feet was deepened to 26 feet. A rail line was constructed in 1932 through the area that would become the East Complex (now known as the Belt Line rail). At that time, Berth 2 and the rail trestle from the Belt Line that serves it were constructed. The Port was founded immediately afterward, in 1933.

The area became part of the Stockton Ordnance Depot during World War II, and paved roads and rail spurs at the Port are visible in USGS topographic maps from this period and a 1947 aerial photograph. In the photograph, the existing terminal portion of the project area was an agricultural field adjacent to the Stockton Ordnance Depot. Industrial development intensified through the mid to late twentieth century. The terminal portion of the project area has been used for bulk liquid storage since at least 1952. The Berth 2 dock appears to have been built around 1970 (parts of the structure first appear on a topographic map from that year) and it is visible in a 1971 aerial photograph.

Findings from geotechnical studies at various locations around the Port are consistent with the area's environmental and cultural history. Two geotechnical borings conducted at the terminal site for the project revealed 5.5 to 10 feet of artificial fill (Kleinfelder 2019).

According to a search of the California Historical Resources Information System, there are no previously recorded cultural resources in the project area. Two archaeological sites have been recorded within 1 mile of the project area. Site P-39-05238 is a historic refuse scatter along West Charter Way, approximately 0.9 mile southeast of the project area. Site CA-SJO-103, a precontact village site containing burials, is located near the eastern approach of the West Charter Way Bridge (Garwood Bridge) over the San Joaquin River, approximately 0.75 mile south of the project area. No archaeological surveys have been conducted in the project area.

3.4.2 Applicable Regulations

3.4.2.1 State

3.4.2.1.1 California Environmental Quality Act

CEQA and the CEQA Guidelines include procedures for identifying, analyzing, and disclosing potentially significant adverse impacts of a project to historical and unique archaeological resources, including resources listed in or formally determined eligible for the National Register of Historic Places (NRHP), the CRHR, or local registers. CEQA requires the lead agency to consider the effects of a project on archaeological resources and determine whether any identified archaeological resource is a historical resource (i.e., if the archaeological resource meets the criteria for listing in the CRHR) (CEQA Guidelines Sections 15064.5[a][1],[3] and 15064.5[c][1–2]). An archaeological resource that qualifies as a historical resource under CEQA generally qualifies for listing under Criterion 4 of the CRHR (CEQA Guidelines Section 15064.5[a][3][D]; NRHP Criterion D). An archaeological resource may qualify for listing under Criterion 4 when it can be demonstrated that the resource has the potential to significantly contribute to questions of scientific or historical importance. Archaeological resources that are not historical resources according to the above definitions may be "unique archaeological resources," as defined in PRC 21083.2, which generally provides that "non-unique archaeological resources" do not receive any protection under CEQA. If an archaeological resource is neither a unique archaeological resource nor a historical resource, the effects of a project on those resources are not considered significant under CEQA.

3.4.2.1.2 California Executive Order W-26-92

California Executive Order (EO) W-26-92 affirms that all state agencies shall recognize, preserve, and maintain significant heritage resources of the state.

3.4.2.2 Local

3.4.2.2.1 City of Stockton Municipal Code

The City designates Landmarks and Historic Sites under the City Municipal Code, Title 16, Division 7, Chapter 16.220. Landmarks are artifacts, natural features, or structures notable for one or more of the following: archaeological interest; architectural craftsmanship, style, or type; association with a historic event or person; association with the heritage of the City, state, or nation; visual characteristics; relationship to another landmark; or integrity as a natural environment. Historic sites are areas, neighborhoods, properties, or sites which meet one or more of the following: archaeological interest; association with the heritage of the City, state, or nation; visual characteristics; association with a particular way of life important to the City; or association with a historic event, significant person, or a person significant to a specific national origin. Historic sites cannot be relocated or demolished without a permit.

3.4.3 Environmental Impacts and Mitigation Measures

3.4.3.1 Baseline

At the time of the NOP for the proposed project, the existing Lehigh terminal was fully operational. The terminal handled 880,000 tons of product and generated 18,720 annual truck trips, 117 annual trains trips and nine ship calls. The terminal operated below its permitted capacity of 6,000 tons of cementitious material per day (or 2.628 million tons per year received via ship or rail).

3.4.3.2 Thresholds

For purposes of this DEIR, the following thresholds, which are based on Appendix G of the CEQA Guidelines (Environmental Checklist), were used to determine whether the proposed project would result in impacts on cultural resources. The proposed project would have an impact on cultural resources, including tribal cultural resources, if:

- **CHR-1:** The project would cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5.
- **CHR-2:** The project would cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5.
- **CHR-3:** The project would disturb any human remains, including those interred outside of formal cemeteries.

3.4.3.3 Methodology for Determining Impacts

The CEQA Guidelines define a substantial adverse change in the significance of a historical resource as a significant effect on the environment. A substantial adverse change to archaeological or historical resources is defined to include physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of the historical resource would be materially impaired (CEQA Guidelines Section 15064.5[b][1]). The significance of a historical resource is materially impaired when a project diminishes the characteristics that convey its historical significance and that justify its inclusion on a historic register. This is consistent with the criteria for determination of adverse effect in the National Historic Preservation Act (NHPA) Section 106 regulations and guidelines.

3.4.3.4 Impact Analysis

3.4.3.4.1 CHR-1: Would the project cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?

Two structures older than 50 years would be affected by the proposed project: Berth 2 and the rail trestle. Both structures were evaluated by a qualified professional historian in the *National Register of Historic Places Recommendations of Eligibility and Project Effect* review (Appendix D). The review recommended that the rail trestle is NRHP- and CRHR-eligible based on the finding that the Belt Line rail and its trestle are important in transportation history, and the on-berth design was uncommon for ports built in the first half of the twentieth century. The railroad and trestle represent a type of engineering design that was unusual in 1932.

The review also recommended that Berth 2 is not NRHP- or CRHR-eligible. While the Port is clearly important in California history, Berth 2 is one of 14 berths at the Port, and while it contributes to the importance of the Port and is contemporary with its construction and age, it is not individually historically important. Berth 2 is not associated with a person or company important in local or state history. The design is common for ports built in the first half of the twentieth century and the berth is not an outstanding example of a berth in design or workmanship. The berth is in a dredged channel that has been maintained and deepened through the years and has no associated archaeological deposits. Its scientific importance is not outstanding.

Impact Determination: While Berth 2 redevelopment was not found to be significant, the rail trestle was determined to be a significant historical resource. Because it is NRHP- and CRHR-eligible, its demolition would be considered a significant impact.

Mitigation Measures: Mitigation measures will be developed through compliance with Section 106 of the NHPA, a process that will be led by USACE and requires consultation with the State Historic Preservation Officer (SHPO), Native American tribes, and other interested parties.

- **MM-CHR-1: Implement Section 106-Directed Mitigation (Recordation, Research, and Interpretation).** As a NRHP- and CRHR-eligible resource, demolition of the rail trestle will require consultation with USACE, the SHPO, and Native American tribes. Section 106-directed measures will be determined by USACE in coordination with consulting parties. Measures could include recordation of the structure to standards used by the Historic American

Engineering Record, additional historical research, and/or interpretation for the public. This interpretation could include adding information on the structure to the Port's website, which will include a history portal site, and/or developing informational brochures or signage on site or in the Port administrative building.

Residual Impact: While measures such as recordation, historical research, and/or interpretation for the public are expected to be the recommended course of action, such mitigation measures are not considered to fully mitigate the physical impact on the environment caused by demolition or destruction of an historical resource under CEQA (14 CCR 15126.4[b]). Full mitigation of the impact would only be achieved by reusing or relocating the physical resource. Because of its deteriorated condition, the structure cannot be reused or relocated without destroying its historical integrity. Therefore, impacts are considered significant and unavoidable.

3.4.3.4.2 CHR-2: Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?

Ground-disturbing activities to be undertaken as part of the proposed project would include the following:

- Approximately 4 feet below the surface along the portions of the pipeline where trenching is needed (approximately 700 feet).
- Up to 50 feet below the surface along the portions of the pipeline where directional drilling will occur (approximately 2,800 feet)
- Approximately 4 feet deep at the directional drilling entry point (directional drilling exits at a trenching section)

Artificial fill in the project area is likely 5.5 to 10 feet thick (possibly underlain by an unknown amount of dredge spoils), so trenching and drilling entry are unlikely to encounter native sediments. Directional drilling would encounter native sediments below fill. However, the landform history and nearby borings results indicate that the native sediments in the project area were probably inundated at least seasonally, and if so, would have little potential for archaeological resources.

Impact Determination: The proposed project is not expected to encounter intact archaeological resources. However, because the proposed project includes disturbance of soil through direct removal, if archaeological materials are present in previously undisturbed native sediments, they could potentially be disturbed during construction, which would constitute a potentially significant impact.

Mitigation Measures: While the proposed project is not expected to encounter archaeological resources, in the unlikely event of such a discovery, the following mitigation measure would be implemented to reduce any impacts:

- **MM-CHR-2: Stop Work in the Area If Prehistoric or Historical Archaeological Resources Are Encountered.** In the event that any artifact, or an unusual amount of bone, shell, or non-native stone, is encountered during construction, work would be immediately stopped and relocated to another area. The contractor would stop construction within 10 meters (30 feet) of the exposure of these finds until a qualified archaeologist can be retained by the Port to evaluate the find (see 36 CFR 800.11.1 and 14 CCR 15064.5[f]). Examples of such cultural materials might include concentrations of ground stone tools such as mortars, bowls, pestles, and manos; chipped stone tools such as projectile points or choppers; flakes of stone not consistent with the immediate geology, such as obsidian or fused shale; a historic trash pit containing bottles and/or ceramics; or structural remains. Native American tribes and the Office of Historic Preservation would be notified of the find. Native American tribes consulted on the proposed project to date include the Wilton Rancheria and the Buena Vista Tribe of Miwuk Indians. If the resources are found to be significant, they would be avoided or if avoidance is not possible, mitigated. Mitigation would be developed in coordination with SHPO and Native American tribes, and could include data recovery and interpretation of results for the public. This interpretation could include adding information on the resources to the Port's website, which will include a history portal site, developing informational brochures or signage on site or in the Port administrative building, and/or providing material to the tribes.

Residual Impact: With implementation of MM-CHR-2, impacts would be less than significant.

3.4.3.4.3 CHR-3: Would the project disturb any human remains, including those interred outside of formal cemeteries?

Impact Determination: As described under CHR-2, the proposed project would be built in fill, possibly extending into native sediments that have low potential for human remains. However, because the proposed project includes disturbance of soil through direct removal, if remains are present in previously undisturbed native sediments, they could potentially be disturbed during construction, which would constitute a potentially significant impact.

Mitigation Measures:

- **MM-CHR-2: Stop Work in the Area If Prehistoric or Historical Archaeological Resources Are Encountered** (see CHR-2 for more information).

Residual Impact: Less-than-significant impact.

3.5 Geology/Soils

This section describes the geology and soil conditions at the project site and analyzes how the proposed project may affect those conditions. This section also describes applicable rules and regulations pertaining to geology and soil conditions, including but not limited to seismic hazards. For the purposes of the geology and soils analysis, the study area is defined as the project site including the proposed lease area (Figure 4), potential lay down areas (Figure 7), the Berth 2 and rail trestle improvement areas (Figures 7, 9, and 14), and immediate adjacent areas. The analysis in this section is based on regional soil and seismic hazard information provide by federal, state, and local government agencies, and in part on information and data presented in the *Preliminary Geotechnical Investigation Report* prepared for the proposed project (Kleinfelder 2019).

3.5.1 Environmental Setting

3.5.1.1 Soils

The Lehigh facility is underlain almost entirely by Yellowlark gravelly loam with 2% to 5% slopes as well as a small amount of Jacktone-Urban land complex with 0% to 2% slopes, as mapped by the Natural Resources Conservation Service (NRCS; NRCS 2019). Soil conditions within the project area have been identified through on-site borings taken for the *Preliminary Geotechnical Investigation Report* (Kleinfelder 2019). Site-specific observations at the facility identify near-surface soils composed predominantly of fill to depths of 5.5 to 10 feet below existing ground surface, placed when the berth was constructed in approximately 1930. This fill was underlain by stiff to hard lean clay and sandy lean clay, and medium dense to dense sandy silt and poorly graded sands (Kleinfelder 2019).

The geology of this area has been mapped by several geologists, including Wagner et al. (1990). According to Wagner et al. (1990), the subject site lies within artificial fill. Soil types recorded in proximity to the site include Dos Palos Alluvium to the southwest, Modesto Formation to the south, and Peaty Mud to the northwest along the San Joaquin River. The Dos Palos Alluvium is generally described as unconsolidated, moderately to well sorted gravel, sand, silt, and clay. The Modesto Formation is generally described as alluvial fan deposits composed of gravel, sand, and silt. The Peaty Mud unit is generally described as an intertidal deposit which consists of soft mud and peaty mud (Kleinfelder 2019).

During boring, groundwater was encountered at depths ranging from approximately 15.5 to 25 feet below ground surface (Kleinfelder 2019). Typical groundwater depths range from 3 to 4 feet below ground surface for Yellowlark gravelly loam and at approximately 5 feet below ground surface for Jackton-Urban land complex (NRCS 2019).

3.5.1.2 Fault Rupture

Surface fault rupture is defined as slip on a fault plane that has spread to the Earth's surface and caused a rupture or disturbance. Fault rupture almost always follows pre-existing faults, which are zones of weakness. No known active faults (defined by the state of California as faults that show evidence of movement during the past 10,000 years) are within 25 miles of the project area (Caltrans and Port 2013), and the project site is not located within a currently designated Alquist-Priolo Earthquake Fault Zone (California Department of Conservation 2019). Numerous active and potentially active faults, however, are identified east and west of the project site. The closest significant earthquake fault to the City is the Greenville Fault, which is located roughly 22 miles west-southwest of the City (City 2018).

3.5.1.3 Ground Shaking

Ground shaking is the most widespread effect of earthquakes. The estimated likelihood of a magnitude 6.7 or greater earthquake in greater San Francisco Bay area before 2036 is 63%. For individual faults in proximity to the project site, forecasted probabilities include 31% for the Hayward Fault, 7% for the Calaveras Fault, and 3% for the Greenville Fault (22 miles from the City; the closest earthquake fault to the project site). The project site's significant setback from active earthquake faults would help mitigate impacts related to ground shaking. For other similar industrial sites at the Port in proximity to the project site, the estimated Maximum Considered Earthquake peak ground acceleration adjusted for site class effects was determined to be 0.393g (based on both probabilistic and deterministic seismic ground motion; SEG 2018). Nonetheless, regional seismic activity could cause accelerations severe enough to cause major damage to structures and foundations not designed to resist the forces generated by earthquakes. Underground utility lines are also susceptible where they lack sufficient flexibility to accommodate the seismic ground motion (City 2018).

3.5.1.4 Liquefaction

Soil liquefaction is a state of soil particle suspension caused by a complete loss of strength when the effective stress drops to zero. Liquefaction normally occurs under saturated conditions in soils such as sand in which the strength is purely frictional. Primary factors that trigger liquefaction are: moderate to strong ground shaking (seismic source); relatively clean, loose granular soils (primarily poorly graded sands and silty sands); and saturated soil conditions (shallow groundwater). Because of the increasing overburden pressure with depth, liquefaction of granular soils is generally limited to the upper 50 feet of a soil profile. However, liquefaction has occurred in soils other than clean sand.

Although the California Geological Survey (CGS) and USGS have not mapped any seismically induced liquefaction hazard zones at the project site or within the City (City 2018), the *Preliminary Geotechnical Investigation* (Kleinfelder 2019) identifies a main liquefiable zone for the site between depths in the range of 5 to 10 feet and 20 to 45 feet. The type of ground movement expected from large earthquakes in San Joaquin County is a rolling type of motion, which would be less likely to cause liquefaction (San Joaquin County 2010).

3.5.1.5 Lateral Spreading

Lateral spreading is a form of liquefaction that results in lateral ground movement during which cohesive soil layers may fracture, subside, rotate, or disintegrate as a result of seismic activity. During an earthquake, lateral spreading usually takes place along weak shear zones that have formed within a liquefiable soil layer. Lateral spreading has generally been observed to take place in the direction of a free face (i.e., retaining wall, slope, and channel) but has also been observed to a lesser extent on ground surfaces with very gentle slopes.

The *Preliminary Geotechnical Investigation* (Kleinfelder 2019) identifies a potential for lateral spreading at the project site based on the liquefaction analysis. If lateral spreading were to occur, a lateral load due to the ground movement into the adjacent river channel may be applied against the structure foundations. In an extreme earthquake event, the ground deformation associated with lateral spreading could cause excessive pile and/or structure deformation.

3.5.1.6 Slope Failure and Slope Stability

Earthquakes can cause significant slope stress, potentially resulting in earthquake-induced landslides. Landslides most commonly occur in areas with steep slopes or within slide-prone geologic units that contain excessive amounts of water. Other factors that affect slope stability include site geology, climate, and human activity. The project site largely has flat topography, although the Berth 2 and rail trestle project improvement areas are on or adjacent to the sloped San Joaquin River shoreline. CGS has not mapped any landslide hazard zones in the project area or in its immediate vicinity (City 2018).

3.5.1.7 Expansive Soils

Expansive soils are high in clay content and increase and decrease in volume upon wetting and drying, respectively. The change in volume exerts stress on buildings and other loads placed on these soils. Expansive soils are common throughout California and can cause damage to foundations and slabs unless properly treated during construction. Grading, site preparations, and backfill operations associated with subsurface structures can often eliminate the potential for expansion.

NRCS identifies the entirety of the project site as containing expansive soils (SJCGIS 1999), and clay soils were identified at the Lehigh facility (Kleinfelder 2019). No evidence of expansive soil damage, such as foundation uplift or swelling, was observed at the project site (Anchor QEA 2019a).

3.5.1.8 Subsidence and Settlement

Subsidence involves a sudden sinking or gradual settling and compaction of soil and other surface material with little or no horizontal motion. Land surface subsidence can result from both natural and artificial phenomena, including tectonic deformation, consolidation, hydrocompaction, collapse of underground cavities, oxidation of organic-rich soils, rapid sedimentation, and the withdrawal of groundwater. Expansive soils and materials are more susceptible to subsidence, including estuarine sediments, organic detritus, or thick organic deposits. Settlement occurs when ground shaking reduces the amount of pressure existing between soil particles, resulting in a reduction of the volume of the soil. Areas are susceptible to differential settlement if they are underlain by compressible sediments, such as poorly engineered artificial fill. Differential settlement can damage structures, pipelines, and other subsurface entities. Earthquakes and seismic activity can accelerate and accentuate settlement.

As noted, the project site has been identified as potentially susceptible to soil expansion, which may also reveal susceptibility to subsidence. As modeled for an earthquake of magnitude 6.5, total seismic settlements in the range of 1.5 to 7 inches are predicted (Kleinfelder 2019). In addition, levees and islands throughout the delta are known to be composed of fill materials, which may be susceptible to settlement.

3.5.1.9 Erosion

Erosion is the detachment and movement of soil materials through natural processes or human activities. The project site is within a Mediterranean climate, which is exemplified by moist winters and dry summers. Therefore, during the winter the project area is more prone to water erosion, while in the summer the project area is more prone to wind erosion. No evidence of erosion was observed within the project site (Anchor QEA 2019a), although the boneyard (an undeveloped area on the eastern edge of the lease area, adjacent to the Penny Newman Grain Company facility) has been identified as containing slopes with potential for erosion (Lehigh 2015). This potential for erosion is likely minor because of the compacted surface conditions observed in this area. Routine sweeping of the boneyard occurs as part of the Facility-wide Site Management Program, which addresses deposition in this area and also includes BMPs to address erosion (Lehigh 2020a).

3.5.1.10 Paleontology

The proposed project is located in an already disturbed area east of the San Joaquin River, south of the confluence with the Stockton DWSC. Prior to historic land modifications, the region was characterized by extensive wetlands, with dry land available only on small hills and natural levees (Wagner et al. 1981). The area was a slightly elevated stream terrace with the low-lying Delta to the west and the higher ground of the Central Valley to the east.

The Bureau of Land Management developed a classification system based on the potential for the occurrence of significant paleontological resources in a geologic unit and the associated risk for impacts to the resource (BLM 2007, 2008). The system is summarized here. Any rock material that contains fossils has the potential to yield fossils that are unique or significant to science. However, paleontologists consider that geological formations having the potential to contain vertebrate fossils are more sensitive than those likely to contain only invertebrate fossils. Invertebrate fossils found in marine sediments are usually not considered by paleontologists to be unique resources, because the geological contexts in which they are encountered are widespread and fairly predictable. Invertebrate fossil species are usually abundant and well-preserved. In contrast, vertebrate fossils are much rarer than invertebrate fossils, and are often poorly preserved. Therefore, when found in a complete state, vertebrate fossils are more likely to be a significant resource than are invertebrate fossils. Thus, geologic formations having the potential to contain vertebrate fossils are considered the most sensitive. Vertebrate fossil sites are usually found in non-marine upland deposits (BLM 2007). The project site is situated on fill materials, atop Holocene alluvium. Alluvial deposits typically contain only invertebrate fossils (if any), and those are out of original depositional context (BLM 2007). Vertebrate fossils are considerably more likely to be significant or unique, as are fossils in their original context (BLM 2008).

3.5.2 Applicable Regulations

3.5.2.1 Federal

3.5.2.1.1 International Building Code

The International Building Code (IBC) addresses the design and installation of building systems through requirements that safeguard public health and safety. The code establishes minimum regulations for building systems, using prescriptive and performance-related provisions. The IBC is available for adoption and use by jurisdictions internationally, and the California Building Code is based on the IBC.

3.5.2.2 State

3.5.2.2.1 Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act was passed in 1972 to mitigate the hazard of surface faulting to structures for human occupancy. According to the act, buildings for human occupancy cannot be constructed in regulatory earthquake fault zones established and mapped around the surface traces of active faults. This typically includes areas within approximately 200 to 500 feet of major fault lines. The construction of habitable structures is not proposed as part of the proposed project, and the study area is not in an earthquake fault zone as defined by the act; therefore, the act would not apply to the proposed project.

3.5.2.2.2 Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act of 1990 was developed to reduce threats to public health and safety and to minimize property damage caused by earthquakes, including the effects of ground shaking, liquefaction, landslides, other ground failure, and other hazards. The act directs CGS to identify and map seismic hazard zones for the purpose of assisting cities, counties, and other local permitting agencies to regulate certain development projects in these zones. Before a development permit may be granted for a site in a seismic hazard zone, a geotechnical investigation of the site must be conducted, and appropriate mitigation measures must be incorporated into the project's design.

3.5.2.2.3 California Building Code

The California Building Code contains the minimum standards for design and construction in California. The standards provide requirements for general structural design and include means for determining earthquake loads, as well as other loads (e.g., flood, snow, and wind), for inclusion into building codes. The provisions of the California Building Code apply to the construction, alteration, movement, replacement, and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures throughout California. This code would apply to construction of the proposed project.

3.5.2.3 Local

3.5.2.3.1 Stockton Municipal Code

City Municipal Code Section 15.48.050, "Construction and Application," includes a requirement that seeks to mitigate hazards associated with erosion: "During construction, construction activities shall be designed and conducted to minimize runoff of sediment and all other pollutants onto public properties, other private properties and into the waters of the United States." Section 15.48.110, "Erosion Control Requirements," contains specific provisions for erosion control for those construction projects where a grading permit is not required. Section 15.48.070 includes requirements for a grading permit that apply to most construction projects. Such permits require implementation of erosion control measures, often referred to as BMPs.

3.5.2.3.2 2040 General Plan

The City's 2040 General Plan (City 2018) contains a safety element that addresses environmental hazards, including but not limited to seismic hazards. Relevant safety element policies include the following:

- **Policy SAF-2.1:** Ensure that community members are adequately prepared for natural disasters and emergencies through education and training.
- **Policy SAF-2.2:** Prepare sufficiently for major events to enable quick and effective response.

The 2040 General Plan is considered a policy document rather than a formal regulation, though many elements are based on existing regulations.

3.5.3 Environmental Impacts and Mitigation Measures

3.5.3.1 Baseline

At the time of publication of the NOP for the proposed project, Lehigh operated a bulk cementitious material receiving and distribution terminal. The project site was within a highly developed and industrialized area on the San Joaquin River shoreline.

3.5.3.2 Thresholds

For purposes of this DEIR, the following thresholds, which are based on Appendix G of the CEQA Guidelines (Environmental Checklist), were used to determine whether the proposed project would result in impacts related to geology and soils. The proposed project would have an impact related to this topic if:

- **GEO-1:** The project would directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:
  - Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault.
  - Strong seismic ground shaking.
  - Seismic-related ground failure, including liquefaction.
  - Landslides.
- **GEO-2:** The project would result in substantial soil erosion or the loss of topsoil.
- **GEO-3:** The project would be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project, and potentially result in an on-site or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.
- **GEO-4:** The project would be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property.
- **GEO-5:** The project would have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.
- **GEO-6:** The project would directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

3.5.3.3 Methodology for Determining Impacts

Impacts to or associated with geological conditions were qualitatively evaluated based on the potential for the alternatives to temporarily or permanently alter the geology of the project area. In addition, because geological hazards such as earthquakes happen independently of the proposed project, the potential for damage to proposed structures or increased risk of injury due to geologic and seismic hazards were also qualitatively evaluated.

The measurement index for evaluating impacts associated with geology, soils, or seismicity is risk to the public or the environment from geologic processes. A project would be considered to have a major impact if it would result in substantial changes in risks to the public and the environment throughout the project area.

3.5.3.4 Impact Analysis

3.5.3.4.1 GEO-1: Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving: 1) rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault (refer to Division of Mines and Geology Special Publication 42); 2) strong seismic ground shaking; 3) seismic-related ground failure, including liquefaction; or 4) landslides?

The project area is not located within a currently designated Alquist-Priolo Earthquake Fault Zone, and no known surface expression of active faults is believed to cross the project site; therefore, fault rupture through the site is not anticipated.

The project area is considered subject to relatively low seismicity and ground shaking. Maximum Considered Earthquake peak ground acceleration for similar nearby facilities at the Port has been estimated at 0.393g. Damage to existing structures and on-site improvements would be possible in the event of a large earthquake. Proposed improvements would be constructed in adherence with applicable seismic design parameters and would not increase the potential for human injury or loss of life. This includes adherence to seismic design parameters from the 2019 California Building Code and American Society of Civil Engineers.

The Lehigh facility does not contain any steep slopes or other features suggesting susceptibility to slope failure or landslides. The shoreline adjacent to Berth 2 and the rail trestle contains slopes typical of riverbank settings. In this area, riprap and vegetation provide slope stability. The proposed project would not result in changes that would increase the potential for slope failure or landslides.

NRCS maps identify the site as within an area with expansive soils, and site-specific investigations identified potential susceptibility to liquefaction and lateral spreading. Existing structures do not exhibit any damage from these geologic hazards. All grading would be performed in accordance with the recommended grading specifications contained in the City Grading Regulations, and the proposed improvements would be constructed in adherence with applicable seismic standards.

While existing regulations and hazard response plans sufficiently reduce the potential for seismic hazards to a less-than-significant level, additional protection from seismic hazards would be provided through maintenance and as-needed implementation of applicable hazard response plans and geotechnical recommendations specific to the Lehigh facility.

Impact Determination: Based on the analysis presented above, the proposed project would result in no impacts related to fault rupture, liquefaction, lateral spreading, and landslides and less-than-significant impacts related to seismic ground shaking. The significance and potential for these impacts would be further reduced through implementation of the mitigation measures detailed below.

Mitigation Measures: The following mitigation measures would be implemented during construction to reduce potential impacts:

- **MM-GEO-1: Maintain, Update, and Implement Emergency Response Plans.** Lehigh will continue to implement and update as needed its existing *Consolidated Emergency Response/Contingency Plan* (Lehigh 2019) and *Emergency Action Plan* (Lehigh 2011). The *Consolidated Emergency Response/Contingency Plan* identifies response procedures for chemical spills, fires, and earthquakes involving hazardous materials and hazardous wastes. Lehigh will also continue to provide California Environmental Reporting System and Hazardous Materials and Wastes Inventory Matrix Report submittals in association with the *Consolidated Emergency Response/Contingency Plan*. The *Emergency Action Plan* establishes requirements and procedures needed to protect employees from serious injury, property loss, or loss of life in the event of fires, other emergencies, or major disasters.
- **MM-GEO-2: As-Needed Implementation of Geotechnical Recommendations.** Recommendations from the *Preliminary Geotechnical Investigation* (Kleinfelder 2019) would be implemented as needed, including use of materials and construction techniques specifically addressing potential seismic and geologic hazards.

Residual Impact: Less-than-significant impact.

3.5.3.4.2 GEO-2: Would the project result in substantial soil erosion or the loss of topsoil?

Because the Lehigh facility is generally flat and largely contains previously developed surfaces that appear to have been compacted, surfaced in concrete, or otherwise prepared for development, the potential for substantial soil erosion is considered minimal. Although Berth 2 and the rail trestle portions of the project site are located on the San Joaquin River, this riverbank area contains vegetation and armoring (e.g., riprap) that provides slope stability. Evidence of erosion was not observed within or surrounding the project site, although the boneyard has been identified as containing slopes with potential for erosion (Lehigh 2015). This potential for erosion is, however, minor, given the compacted surface conditions in this area. Routine sweeping of the boneyard occurs as part of the Facility-wide Site Management Program, which addresses deposition in this area and would also address erosion through management measures such as such as use of netting, sandbags, or other barriers. The proposed project would not affect potential for erosion in the boneyard area.

Despite the facilities relatively low susceptibility to erosion, construction would require surface excavation which could erode soils if improperly managed. Topsoil that would be removed during grading or other surface preparation does not serve agricultural purposes or other valuable functions.

Impact Determination: Construction has the potential to result in soil erosion, which would be a potentially significant impact.

Mitigation Measures: The following mitigation measure would be implemented during construction to reduce potential impacts:

- **MM-BIO-2: Obtain and Implement NPDES Construction Stormwater General Permit** (see BIO-1 for more information).

Residual Impact: Implementation of MM-BIO-2 would include erosion control measures such as use of netting, sandbags, or other barriers, which would reduce the significance of erosion impacts during construction to less than significant.

3.5.3.4.3 GEO-3: Would the project be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project, and potentially result in an on-site or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?

Although the *Preliminary Geotechnical Investigation* (Kleinfelder 2019) identified the site as potentially susceptible to liquefaction, lateral spreading, and settlement, the project site is located in an area considered subject to relatively low seismicity and ground shaking. In addition, susceptibility to geologic hazards is addressed through established design standards. In consideration of these standards, and the site's relatively low seismicity, there would be low potential for impacts from ground shaking, lateral spreading, and settlement. During construction, adherence to Occupational Safety and Health Administration (OSHA) excavation safety guidelines would minimize the potential for worker injury associated with unstable soils. There are no additional hazards pertaining to unstable geologic units or soil on site or off site.

Similar to the discussion provided for GEO-1, the potential for impacts related to these geologic hazards would be further reduced by through maintenance and as-needed implementation of applicable hazard response plans and geotechnical recommendations.

Impact Determination: Based on the analysis presented above, the proposed project would result in less-than-significant impacts related to geologic unit or soils instability. The significance and potential for these impacts would be further reduced through implementation of the mitigation measures detailed below.

Mitigation Measures:

- **MM-GEO-1: Maintain, Update, and Implement Emergency Response Plans** (see GEO-1 for more information).
- **MM-GEO-2: As-Needed Implementation of Geotechnical Recommendations** (see GEO-1 for more information).

Residual Impact: Less-than-significant impact.

3.5.3.4.4 GEO-4: Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?

NRCS identifies the entirety of the project site as containing expansive soils (SJCGIS 1999), and site-specific investigations have encountered clay soils (Kleinfelder 2019). Evidence of expansive soil damage such as foundation uplift or swelling was not observed at the Lehigh facility (Anchor QEA 2019a). As part of the proposed project, site grading and surface preparation would be completed as needed to comply with design standards addressing the potential for expansion.

Similar to the discussion provided for GEO-1 and GEO-3, the potential for impacts related to these geologic hazards would be further reduced by through maintenance and as-needed implementation of applicable hazard response plans and geotechnical recommendations.

Impact Determination: Based on the analysis presented above, the proposed project would result in less-than-significant impacts related to siting on expansive soils. The significance and potential for these impacts would be further reduced through implementation of the mitigation measures detailed below.

Mitigation Measures:

- **MM-GEO-1: Maintain, Update, and Implement Emergency Response Plans** (see GEO-1 for more information).
- **MM-GEO-2: As-Needed Implementation of Geotechnical Recommendations** (see GEO-1 for more information).

Residual Impact: Less-than-significant impact.

3.5.3.4.5 *GEO-5: Would the project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?*

The proposed project would be served by the municipal sewage system and would not require the use of septic tanks or alternative wastewater disposal systems or affect any such systems.

Impact Determination: Based on the analysis presented above, the proposed project would result in no impact related to septic tanks or alternative wastewater disposal systems.

Mitigation Measures: None required.

Residual Impact: No impact.

3.5.3.4.6 *GEO-6: Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?*

There are no known unique geological or paleontological resources in the project area. Ground disturbance would occur in already disturbed or previously developed areas. Because of its geomorphological history, the project area is not likely to contain any fossils other than invertebrate fossils that are in a re-deposited context (more information is included in Section 3.4).

Impact Determination: Based on the analysis presented above, the proposed project would result in no impact related to unique paleontological or geologic resources.

Mitigation Measures: None required.

Residual Impact: No impact.

3.6 Greenhouse Gas Emissions

This section describes the GHG impacts of the proposed project and analyzes how the proposed project may affect global climate change. It also describes applicable rules and regulations pertaining to GHG emissions. Because GHG emissions are global and the state includes a comprehensive GHG reduction program required to be implemented at state, regional, and local levels, the study area is defined as California.

3.6.1 Environmental Setting

Global climate change results from GHG emissions caused by several activities, including fossil fuel combustion, deforestation, and land use change. GHGs play a critical role in the Earth's radiation budget by trapping infrared radiation emitted from the Earth's surface, which otherwise escapes to space. The most prominent GHGs contributing to this process include carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). Certain refrigerants, including chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs), and hydrofluorocarbons (HFCs), also contribute to climate change. The greenhouse effect keeps the Earth's atmosphere near the surface warmer than it would be otherwise and allows for successful habitation by humans and other forms of life.

Global warming potential (GWP) is a measure of how much a given mass of GHG contributes to global warming. A relative scale is used to compare the gas in question to carbon dioxide (whose GWP is defined as 1). In this analysis, CH_4 is assumed to have a GWP of 21 and N_2O is assumed to have a GWP of 310. Refrigerants have GWPs ranging from 76 to 12,240. Consequently, using each pollutant's GWP, emissions of CO_2, CH_4, N_2O, CFCs, HCFCs, and HFCs can be converted into CO_2 equivalents, also denoted as CO_2e.

Fossil fuel combustion removes carbon stored underground and releases it into the atmosphere. Emissions of GHGs are responsible for the enhancement of the greenhouse effect and contribute to what is termed "global warming," a trend of unnatural warming of the Earth's natural climate. Global warming is the increase in average global temperatures of the Earth's surface and atmosphere. The natural balance of GHGs in the atmosphere regulates the Earth's temperature; without this natural greenhouse effect, the Earth's surface would be approximately 60°F cooler (USGCRP 2014).

Increased concentrations of GHGs in the Earth's atmosphere increase the absorption of radiation and further warm the lower atmosphere. This process increases evaporation rates and temperatures near the surface. Climate change is a global problem, and GHGs are global pollutants, unlike criteria pollutants (such as O_3, CO, and PM) and TACs, which are pollutants of regional and local concern.

Recent environmental changes linked to global warming include rising temperatures, shrinking glaciers, thawing permafrost, a lengthened growing season, and shifts in plant and animal ranges (IPCC 1995; USGCRP 2014; CCCC 2012). In California, an assessment of climate change impacts predicts that temperatures will increase between 4.1°F to 8.6°F by 2100, based on low and high global GHG emission scenarios (CCCC 2012). Predictions of long-term negative environmental impacts in California include worsening of air quality problems; a reduction in municipal water supply from the Sierra snowpack; sea level rise; an increase in wildfires; damage to marine and terrestrial ecosystems; and an increase in the incidence of infectious diseases, asthma, and other human health problems (CCCC 2012).

3.6.2 Applicable Regulations

3.6.2.1 Federal

3.6.2.1.1 Greenhouse Gas Endangerment Finding (December 7, 2009)

In the 2007 *Massachusetts v. Environmental Protection Agency* case, the U.S. Supreme Court gave USEPA the authority to regulate GHGs as air pollutants under the CAA. The endangerment finding was published by USEPA on December 15, 2009 (74 Federal Register 239).

3.6.2.1.2 Heavy-Duty Vehicle National Program

In September 2011, USEPA and the National Highway Traffic Safety Administration (NHTSA) developed a program designed to reduce fuel consumption (and GHG emissions by association) from medium- and heavy-duty vehicles. The program was directed at model year 2014 to 2018 vehicles and is projected to reduce GHG emissions by approximately 270 million metric tons.

3.6.2.1.3 Light-Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy Standards

In May 2010, USEPA and NHTSA developed a program designed to reduce fuel consumption (and GHG emissions by association) from light-duty vehicles. The program was directed at model year 2012 to 2016 vehicles and is projected to reduce GHG emissions by approximately 960 million metric tons. In October 2012, USEPA and NHTSA expanded the program to vehicle model years 2017 through 2025. Requirements of this program apply to light-duty vehicles, such as worker vehicles, used during proposed closure activities.

3.6.2.1.4 Renewable Fuel Standard

In 2005, USEPA's Renewable Fuel Standard established the first renewable fuel volume mandate in the United States. The original Renewable Fuel Standard program required 7.5 billion gallons of renewable fuel to be blended into gasoline by 2012. The program was expanded in 2007 and currently requires that 36 billion gallons of renewable fuel be blended into gasoline by 2022. This program, although not directly relevant to proposed project activities, serves to highlight the developing GHG regulatory framework.

3.6.2.2 State

3.6.2.2.1 California Executive Order S-3-05

EO S-3-05, signed by then-Governor Schwarzenegger on June 1, 2005, established the following GHG reduction targets for California: 1) by 2010, reduce GHG emissions to 2000 levels; 2) by 2020, reduce GHG emissions to 1990 levels; and 3) by 2050, reduce GHG emissions to 80% below 1990 levels. EO S-3-05 also called for the California Environmental Protection Agency (CalEPA) to prepare biennial reports on: 1) progress made towards achieving these goals; 2) impacts to California from global warming; and 3) mitigation and adaptation plans to combat these impacts. The most recent of these Climate Action Team reports was completed in December 2010 (CAT 2010).

3.6.2.2.2 Assembly Bill 32: California Global Warming Solutions Act of 2006, Scoping Plan (2008), Scoping Plan Update (2014), and Scoping Plan 2030 (2017)

The California Global Warming Solutions Act of 2006, widely known as AB 32, required ARB to develop and enforce regulations for the reporting and verification of statewide GHG emissions. ARB was directed to set a GHG emission limit, based on 1990 levels, to be achieved by 2020. The bill set a timeline for adopting a scoping plan for achieving GHG reductions in a technologically and economically feasible manner. AB 32 also required ARB to adopt rules and regulations in an open public process to achieve the maximum technologically feasible and cost-effective GHG reductions.

On December 11, 2008, ARB adopted the AB 32 Scoping Plan, which set forth the framework for meeting the state's GHG reduction goal set by EO S-3-05. On October 20, 2011, ARB adopted the final cap-and-trade regulation. ARB also approved an adaptive management plan that monitors the progress of reductions and recommends corrective actions if progress is not as planned or there are unintended consequences in other environmental areas (e.g., concentration of local criteria pollutants).

In 2014, ARB adopted an update to the 2008 Scoping Plan, which builds upon the initial Scoping Plan with new strategies and recommendations. The 2008 Scoping Plan and 2014 Scoping Plan Update require that reductions in GHG emissions come from virtually all sectors of the economy and be accomplished from a combination of policies, regulations, market approaches, incentives, and voluntary efforts. These efforts target GHG emission reductions from cars and trucks, electricity production, fuels, and other sources.

The ARB prepared an update to the Scoping Plan designed to reduce GHG emissions 40% below 1990 inventory levels by 2030 (ARB 2017b).

3.6.2.2.3 California Senate Bill 97 and Amendments

Senate Bill (SB) 97, enacted in 2007, directed OPR to develop CEQA Guidelines "for the mitigation of GHG emissions or the effects of GHG emissions." In December 2009, OPR adopted amendments to

Appendix G of the CEQA Guidelines (Environmental Checklist), which created a new resource section for GHG emissions and indicated criteria that may be used to establish the significance of GHG emissions.

3.6.2.2.4 California's Renewables Portfolio Standard

Established in 2002 under SB 1078, accelerated in 2006 under SB 107, and expanded in 2011 under SB 2, California's Renewables Portfolio Standard is an ambitious renewable energy standard. The Renewables Portfolio Standard requires that 33% of total retail sales of electricity be procured from eligible renewable sources by the end of 2020. Renewables Portfolio Standard requirements were conservatively excluded from emission calculations associated with electricity use.

3.6.2.2.5 Senate Bill 1368 (GHG Emissions Standard for Baseload Generation)

SB 1368 was signed into law in September 2006. The law prohibits retail sellers of electricity in California from entering into a long-term financial commitment for baseload generation if the GHG emissions are higher than those from a combined-cycle natural gas power plant.

3.6.2.2.6 Senate Bill 375

The law requires metropolitan planning organizations (MPOs) to incorporate a "sustainable communities strategy" in their regional transportation plans that will achieve GHG emission reduction targets set by ARB. Current targets for the state's largest MPOs call for a 19% reduction in GHG emissions from cars and light trucks from 2005 emissions levels by 2035. SJCOG has adopted a Sustainable Communities Strategy that would reduce on-road GHG emissions by 24.4% by 2020 (compared to the 2005 baseline) and by 23.7% by 2035 (compared to the 2005 baseline; SJCOG 2014).

3.6.2.2.7 State Standards Addressing Vehicle Emissions

AB 1493, enacted on July 22, 2002, required ARB to develop and adopt regulations that reduce GHGs emitted by passenger vehicles and light-duty trucks. ARB estimated that the regulation will reduce climate change emissions from light-duty passenger vehicle fleet by an estimated 18% in 2020 and by 27% in 2030.

3.6.2.2.8 Governor's Executive Order S-01-07 (January 2007) and Low Carbon Fuel Standards (approved April 2009, effective April 2010)

EO S-01-07 was enacted by then-Governor Schwarzenegger on January 18, 2007. The executive order mandated that a statewide goal be established to reduce the carbon intensity of California's transportation fuels by at least 10% by 2020, and that a Low Carbon Fuel Standard (LCFS) for transportation fuels be established for California.

3.6.2.2.9 Senate Bill 350

This law established clean energy, clean air, and GHG reduction goals. The bill increases California's renewable electricity procurement goal from 33% by 2020 to 50% by 2030. In addition, SB 350 requires California to double statewide energy efficiency savings in electricity and natural gas end use by 2030.

3.6.2.3 Regional

3.6.2.3.1 San Joaquin Valley Air Pollution Control District

SJVAPCD adopted the Climate Change Action Plan (CCAP) in August 2008 to assist lead agencies in assessing and reducing the impacts of project-specific GHG emissions on global climate change. The CCAP relies on the use of performance-based standards, otherwise known as Best Performance Standards (BPS), to assess the significance of project-specific GHG emissions on global climate change. Projects implementing BPS are determined to have a less-than-significant impact. Otherwise, demonstration of a 29% reduction in GHG emissions from BAU is required to classify a project's impact as less than significant. In 2009, SJVAPCD adopted its Final Staff Report, *Climate Change Action Plan: Addressing GHG Emissions Impacts under CEQA*. SJVAPCD was not able to determine a specific quantitative level of GHG emissions increase above which a project would have a significant impact on the environment, and below which it would have an insignificant impact. SJVAPCD staff concluded that impacts of project-specific emissions on global climatic change are cumulative in nature, and the significance thereof should be examined in that context. SJVAPCD requires all projects to reduce their GHG emissions, whether through project design elements or mitigation. Projects achieving performance-based standards that have been demonstrated to be BPS would be considered to have a less-than-significant cumulative impact on global climate change (SJVAPCD 2009).

3.6.2.4 Local

3.6.2.4.1 San Joaquin County General Plan

San Joaquin County released its *Draft 2035 General Plan for San Joaquin County* in 2014, which included climate planning and promoting sustainable development patterns (San Joaquin County 2015).

3.6.2.4.2 City of Stockton General Plan

The City updated and adopted its 2040 General Plan on December 4, 2018, which includes new GHG measures, including measures to comply with a 2008 Settlement Agreement with the state and the Sierra Club that requires the City to address GHG reductions including through specific provisions in the General Plan. The General Plan represents a substantial change in the policy framework for future development in Stockton compared to the prior 2035 General Plan. The fundamental shift is from emphasizing growth in "outfill" areas at the periphery of the City to focusing new construction and redevelopment in existing "infill" neighborhoods. This change is reflected in the land use map and the associated map depicting the transportation network required to serve future development, and in the goals, policies, and actions throughout the General Plan. In addition, the 2040 General Plan includes the following policies regarding GHG and climate change, and applicable to the proposed project:

- **Policy TR-3.2:** Require new development and transportation projects to reduce travel demand and GHG emissions, support electric vehicle charging, and accommodate multi-passenger autonomous vehicle travel as much as feasible.
- **Policy CH-5:** Accommodate a changing climate through adaptation, mitigation, and resiliency planning and projects.
  - **Action CH-5.1B:** Maintain and implement the City CAP and update the CAP to include the following:
    - Updated communitywide GHG emissions inventory
    - 2030 GHG emissions reduction target, consistent with SB 32
    - Estimated 2030 GHG emissions reduction benefits of state programs
    - Summary of the City's progress toward the 2020 local GHG emissions reduction target
    - New and/or revised GHG reduction strategies that, when quantified, achieve the 2030 reduction target and continue emission reductions beyond 2030
    - New or updated implementation plan for the CAP
- **Policy CH-5.2:** Expand opportunities for recycling, reuse of materials, and waste reduction.
  - **Action CH-5.2A:** Use recycled materials and products for City projects and operations where economically feasible, and work with recycling contractors to encourage businesses to use recycled products in their manufacturing processes and encourage consumers to purchase recycled products.
  - **Action CH-5.2B:** Continue to require recycling in private and public operations, including construction/demolition debris.

3.6.2.4.3 City of Stockton Climate Action Plan

In 2014, the City approved the CAP, which outlines a program to reduce GHG emissions from both existing and new development within the financial limitations of both the City government and the Stockton community. Consistent with SJVAPCD, the CAP relies on a goal of 29% reduction in GHG emissions from BAU by 2020. As described in the CAP, the City will revisit this plan in the future to examine whether there exist additional options to further reduce GHG emissions, and whether such options might be feasible in improved economic conditions. The CAP relies on numerous voluntary measures for both existing and new development, but also includes several mandatory measures where required by other state or local existing mandates and other City initiatives (City 2014).

3.6.3 Environmental Impacts and Mitigation Measures

3.6.3.1 Baseline

At the time of the NOP for the proposed project, the terminal was fully operational. As discussed in Section 2.2.3, the terminal operated below permitted limits. The terminal handled 880,000 tons of product and generated 18,720 annual truck trips, 117 annual train trips, and nine ship calls, as shown in Table 9. The terminal operated below its permitted capacity of 6,000 tons of cementitious material shipped per day, and 2.628 million tons per year or 18,000 tons per day received via ship or rail. Terminal operations during baseline operations included the use of several pieces of terminal equipment: two front-end loaders, a rail-mounted yard wagon, a sweeper, and a forklift.

3.6.3.2 Thresholds

For purposes of this DEIR, the following thresholds, which are based on Appendix G of the CEQA Guidelines (Environmental Checklist) and SJVAPCD guidance, were used to determine if the proposed project would result in GHG impacts. The proposed project would have a GHG impact if:

- **GHG-1**: The project would generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.
- **GHG-2**: The project would conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

3.6.3.3 Methodology for Determining Impacts

In determining the significance of a project's impacts, the lead agency may consider a project's consistency with the state's long-term climate goals or strategies, provided that substantial evidence supports the agency's analysis of how those goals or strategies address the project's incremental contribution to climate change and its conclusion that the project's incremental contribution is consistent with those plans, goals, or strategies. (CEQA Guidelines Section 15064.4[b][3])

In December 2018, the California Natural Resources Agency clarified several points regarding the method for determining GHG impacts in CEQA documents. CEQA Guidelines, Section 15064.4, includes the following provisions:

- Lead agencies must analyze the GHG emissions of proposed projects. (CEQA Guidelines Section 15064.4[a])
- The focus of the lead agency's analysis should be on the project's effect on climate change, rather than simply focusing on the quantity of emissions and how that quantity of emissions compares to statewide or global emissions. (CEQA Guidelines Section 15064.4[b])
- Lead agencies may rely on plans prepared pursuant to Section 15183.5 (Plans for the Reduction of Greenhouse Gases) in evaluating a project's GHG emissions. (CEQA Guidelines Section 15064.4[b][3])

Based on the above guidance, this analysis analyzes the GHG emissions that would be generated as a result of the proposed project and addresses how potential emissions as well as project design would compare to state, regional, and local plans to address climate change.

3.6.3.4 Impact Analysis

3.6.3.4.1 GHG-1: Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

The lead agency has discretion to select the model or methodology it considers most appropriate to enable decision-makers to intelligently take into account a project's incremental contribution to climate change. (CEQA Guidelines Section 15064.4[c])

SJVAPCD has established GHG thresholds for projects subject to CEQA. For projects implementing SJVAPCD's BPS, quantification of project-specific GHGs is not required (SJVAPCD 2009). SJVAPCD's BPS generally apply to projects with stationary industrial emission sources. Most the proposed project's emissions are from mobile sources; therefore, SJVAPCD's BPS do not apply. SJVAPCD has not established BPS for the wide variety of land use sources that can occur within the San Joaquin Valley. Instead, SJVAPCD recommends determining whether the GHG emissions applied to a project would result in a 29% reduction compared to BAU. However, the BAU approach has been invalidated in the 2015 *Center for Biological Diversity v. California Department of Fish and Wildlife* California Supreme Court decision.

Several California air districts, including BAAQMD, have established a GHG threshold of 1,100 metric tons of CO_2e per year for land use plans and 10,000 metric tons per year for stationary sources. However, the proposed project is neither a land use plan nor a stationary source. The South Coast Air Quality Management District (SCAQMD) has established a threshold of 10,000 metric tons per year of CO_2e emissions per year for industrial projects, including port projects which include a number of industrial emission sources. Construction GHG emissions, amortized over the life of a project, are required to be included in a project's annual GHG emissions totals (SCAQMD 2011). For purposes of this analysis, SCAQMD's industrial project threshold is used to evaluate the significance of the proposed project's GHG emissions. The analysis also considers the proposed project's consistency with applicable provisions of the plans, goals, or strategies identified in Section 3.6.2.

Table 18 shows the total proposed project GHG emissions, as estimated using CalEEMod. Construction emissions would occur between 2020 and 2024. Operational emissions include direct emissions from on-terminal equipment, ships, line-haul locomotives, switching locomotives, and on-road vehicles, as well as indirect emissions from electricity production. Indirect GHG emissions would result from the off-site production of purchased electricity. GHG emission factors associated with electricity consumption were obtained from The Climate Registry (2019). Electricity consumption was provided by Lehigh (Lehigh 2019). Detailed emission estimates are summarized in Appendix E.

Table 18
Proposed Project Construction and Operational Greenhouse Gas Emissions

Source Category	CO_2	CH_4	N_2O	CO_2e
Baseline				
Trucks	1,099	0.00	0.17	1,152
Ships at Berth	224	0.00	0.01	227
Ships Maneuvering and Transit	2,069	0.04	0.10	2,102
Tugboats	54	0.00	0.00	55
Rail	218	0.02	0.01	220
Employee Vehicles	40	0.00	0.00	40
Mobile On-site	73	0.00	0.00	73
Electricity Consumption	677	0.04	0.01	680
Baseline Total	4,453	0.11	0.30	4,549
Proposed Project Year 1				
Trucks	1,634	0.00	0.26	1,714
Ships at Berth	522	0.00	0.03	529
Ships Maneuvering and Transit	4,829	0.10	0.24	4,905
Tugboats	126	0.00	0.01	128
Rail	706	0.06	0.02	713
Employee Vehicles	54	0.00	0.00	55
Mobile On-site	161	0.01	0.00	162
Electricity Consumption	1,262	0.08	0.01	1,266
Year 1 Total	9,293	0.25	0.56	9,472

Source Category	CO_2	CH_4	N_2O	CO_2e
Proposed Project Year 5				
Trucks	2,367	0.00	0.37	2,482
Ships at Berth	484	0.00	0.02	492
Ships Maneuvering and Transit	8,968	0.19	0.44	9,109
Tugboats	233	0.00	0.01	237
Rail	895	0.07	0.02	903
Employee Vehicles	46	0.00	0.00	46
Mobile On-site	288	0.02	0.01	290
Electricity Consumption	2,940	0.18	0.02	2,951
Year 5 Total	16,221	0.47	0.90	16,510
Proposed Project Year 15				
Trucks	2,087	0.00	0.33	2,189
Ships at Berth	596	0.00	0.03	605
Ships Maneuvering and Transit	11,037	0.24	0.54	11,211
Tugboats	1,193	0.01	0.06	1,211
Rail	1,118	0.09	0.03	1,129
Employee Vehicles	38	0.00	0.00	38
Mobile On-site	352	0.02	0.01	355
Electricity Consumption	3,647	0.23	0.03	3,660
Year 15 Total	20,068	0.59	1.02	20,397
Proposed Project Year 1 Increment	4,840	0.14	0.26	4,923
Proposed Project Year 5 Increment	11,768	0.36	0.60	11,961
Proposed Project Year 15 Increment	15,615	0.47	0.72	15,848
Construction				
2020 Construction	510	0.11	0.00	513
2021 Construction	956	0.15	0.01	963
2022 Construction	860	0.21	0.00	865
2023 Construction	567	0.16	0.00	571
2024 Construction	143	0.04	0.00	144
Amortized Annual Construction	**101**	**0.02**	**0.00**	**102**

Notes:
Emissions may not add precisely due to rounding.
Construction emissions were amortized over 30 years.
Total annual GHG emissions are the sum of amortized construction and annual operational emissions.

Impact Determination: As shown in Table 18, the proposed project would result in a net increase of 15,950 metric tons of GHG emission per year over baseline conditions by analysis year 15. Emissions would exceed the industrial threshold of 10,000 metric tons per year and therefore are considered significant.

Mitigation Measures:

- **MM-AQ-1: Construction Truck Idling** (see AQ-2 for more information).
- **MM-AQ-3: Truck Idling Reductions** (see AQ-2 for more information).
- **MM-AQ-4: Use of Clean Trucks** (see AQ-2 for more information).
- **MM-AQ-5: Use of Clean Yard Equipment** (see AQ-2 for more information).

Residual Impact: MM-AQ-1 and MM-AQ-3 through MM-AQ-5 would help to reduce mobile source GHG emissions as well as criteria pollutant emissions; however, as discussed in Section 3.2.3.4.2, because the level of mitigation measures implementation is not known, emission reductions were not quantified. As shown in Table 18, operational emissions are mainly the result of vessel and truck emissions. While truck idling restrictions would reduce emissions slightly, truck emissions are being generated mainly through transit and therefore would not reduce emissions below significance. Use of clean trucks and yard equipment would also reduce emissions. Similar to the reasons presented in air quality, there are currently not feasible measures to reduce ship emissions. Indirect emissions from electricity production also produce a large percentage of emissions. Through state initiatives, these emissions will likely decrease over the life of the project as the grid is powered by a greater percentage of renewable energy sources. However, emissions would continue to be considered significant and unavoidable.

3.6.3.4.2 GHG-2: Would the project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

As discussed above, there are numerous statewide regulations and initiatives related to overall GHG reductions. SJVAPCD's BPS generally apply to projects with stationary industrial emission sources. As shown in Table 18, the majority of the proposed project's GHG emissions are from mobile sources and SJVAPCD's BPS do not apply. Lehigh's stationary source equipment is electric. For the GHG emissions from stationary sources, the CAP relies on a 29% reduction in BAU by 2020. As it is 2020, this standard is no longer applicable, and a new standard has not been developed or adopted. However, the new ship unloader would be significantly more energy efficient than the existing unloader, which is consistent with BPS goals.

The proposed project is subject to future state and local requirements imposed by ARB's 2017 *Climate Change Scoping Plan Update* (ARB 2017b). The *Climate Change Scoping Plan Update* describes how California will reduce its GHG emissions by 40% below 1990 levels by 2030. While the proposed project receives and distributes cementitious material, it does not produce cement, a very heat intensive process which produces a large amount of GHG emissions. The proposed project's emission sources are mobile sources that would be captured under state initiatives such as low carbon energy and fuel standards. On-site stationary sources do not produce direct emissions but would produce secondary emissions through the use of electricity.

The City's 2040 General Plan (City 2018) includes several policies that are applicable to the proposed project, specifically Policy TR-3.2, which requires new development and transportation projects to reduce GHG emissions, and Policy CH-5.2, which expands opportunities for recycling, reuse of materials, and waste reduction.

Impact Determination: While the proposed project facilitates compliance with the LCFS, it does not currently include project-level measures that comply with the City's 2040 General Plan. Impacts would therefore be considered significant.

Mitigation Measures:

- **MM-AQ-1: Construction Truck Idling** (see AQ-2 for more information).
- **MM-AQ-3: Truck Idling Reductions** (see AQ-2 for more information).
- **MM-AQ-4: Use of Clean Trucks** (see AQ-2 for more information).
- **MM-AQ-5: Use of Clean Yard Equipment** (see AQ-2 for more information).
- **MM-GHG-1: Construction Recycling.** Lehigh will require construction contractors to recycle construction and demolition debris where feasible.
- **MM-GHG-2 Waste Reduction.** Lehigh will identify areas for waste reduction, including reductions in single use products in terminal buildings. Lehigh will ensure a minimum of 40% of all waste generated in all on terminal is recycled within 2 years of the effective year of the lease.
- **MM-GHG-3: Energy Audit.** Lehigh will develop a plan for reducing overall energy use at its terminal. The plan will incorporate the following measures at a minimum:
  - Replace less-efficient bulbs with energy-efficient light bulbs, where applicable. Lighting within the interior of buildings on the premises and outdoor high mast terminal lighting will be replaced with LED lighting or a technology with similar energy-saving capabilities within 2 years after the effective date of a new lease
  - Evaluate the applicability of solar on the terminal, both on building and for terminal lighting

Residual Impact: Implementation of MM-GHG-1 through MM-GHG-3 and MM-AQ-1, MM-AQ-3, and MM-AQ-4 would reduce GHG emissions consistent with the City's 2040 General Plan policies. Impacts would be less than significant.

3.7 Hazards and Hazardous Materials

This section describes the known hazards and hazardous material conditions in the project area. The analysis in this section is based in part on information and data available from the California Department of Toxic Substances Control (DTSC) EnviroStor and the State Water Resources Control Board (SWRCB) GeoTracker database websites; regional emergency response plans; federal, state, and local regulations; fire hazard maps; public records for school and airfields; Safety Data Sheets (SDSs); the Lehigh facility Consolidated Emergency Response/Contingency Plan (Lehigh 2019) and Emergency Action Plan for OSHA Operations (Emergency Action Plan; Lehigh 2011); the Lehigh facility California Environmental Reporting System and Hazardous Materials And Wastes Inventory Matrix Report submittals (Lehigh 2020b); and Lehigh's Facility-wide Site Management Program (Lehigh 2020a). For the purposes of the hazards and hazardous materials analysis, the study area is defined as the project site (proposed lease area, laydown areas, Berth 2, and rail trestle development areas) and immediate surroundings.

3.7.1 Environmental Setting

3.7.1.1 Listed Hazardous Material Sites

Surrounding sites potentially containing hazardous materials were identified through a search of the DTSC EnviroStor and SWRCB GeoTracker database websites (DTSC 2019; SWRCB 2019). Within a 1.5-mile radius of the proposed project footprint, the EnviroStor database lists 24 cleanup sites and the GeoTracker database identifies 71 cleanup sites with active, open, or unidentified statuses (with some site occurring in both databases). The GeoTracker database additionally identifies three DTSC hazardous waste sites and three land disposal sites within the 1.5-mile radius. The project site occurs within the Stockton Ordnance Depot military evaluation site; no other EnviroStor or GeoTracker listed sites occur within 1,000 feet of the project site.

3.7.1.1.1 Stockton Ordnance Depot

The former Stockton Ordnance Depot includes 518.7 acres within the Port's East Complex, West Complex, and within a portion of Robert's Island. The East Complex former Stockton Ordnance Depot area includes the project site. The Stockton Ordnance Depot was used for military purposes from 1941 through 1973. No hazards or potential environmental liabilities from past use by the Department of Defense remain based upon records research, site inspections, and removal actions (Vincent 2012). However, the GeoTracker database still identifies the site as under investigation with explosives identified as the potential contaminant of concern.

3.7.1.2 On-site Hazardous Materials

The existing Lehigh facility receives and distributes bulk cementitious materials. Cement is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200). If improperly managed, exposure to cement can result in skin burns and eye damage, and may cause allergic skin reaction, respiratory irritation, or cancer (Lehigh 2018). GGBFS, a cement additive that is also used at the facility, may also cause skin burns, eye damage, cancer, or organ damage if improperly managed (Skyway Cement Company 2015). To avoid these effects, cement and GGBFS are managed according to their respective SDSs. This includes use of protective handling measures such as personal protective equipment; appropriate storage measures including stockpiling in well-ventilated areas with controlled access; implementation of exposure response procedures including immediate medical attention; and spill response procedures including scooping or vacuuming spills to avoid dust production. The facility additionally maintains and implements an Emergency Action Plan (Lehigh 2011) that establishes requirements and procedures needed to protect employees from facility hazards.

In addition to personal hazards, bulk cementitious materials may pose an environmental hazard if accidentally released. Lehigh maintains and implements a facility-specific *Consolidated Emergency Response/Contingency Plan* (Lehigh 2019) that describes emergency containment and cleanup procedures to prevent and address accidental releases. The facility has been designed to minimize accidental releases, including through use of pneumatic systems to convey product, storage in enclosed bunkers, transfer in enclosed truck loading alleys. Lehigh also maintains and implements a Facility-wide Site Management Program that includes operational BMPs, including but not limited to regular sweeping and vacuuming, equipping storm drains with filters, and restricting vehicle movement to designated areas (Lehigh 2020a).

Maintenance and operation of the existing Lehigh terminal additionally requires the use of common materials which may be hazardous if improperly maintained (e.g., lubricating oils, cleaners, equipment fuel). In association with the *Consolidated Emergency Response/Contingency Plan*, Lehigh provides annual California Environmental Reporting System and Hazardous Materials and Wastes Inventory Matrix Report submittals detailing quantities and management of potentially hazardous materials at the facility (Lehigh 2020b).The facility includes a covered Hazardous Materials Shed located east of Bunker 2 (Figure 2) that is used for storage of both hazardous materials and hazardous waste in a covered and contained structure. Some materials are also stored in the facility’s Maintenance Building or within other appropriate areas on site. Table 19 provides the most recent list of potentially hazardous industrial materials used at the facility, including their respective storage and use details (Lehigh 2020b).

Table 19
Lehigh Facility 2020 Hazardous Materials and Wastes Inventory

Common Name	Quantities			Storage Container	Federal Hazard Categories
	Max Daily	Largest Container	Average Daily		
Diesel Exhaust Fluid	60 gallons	55 gallons	35 gallons	Plastic/non-metallic drum	Health Acute Toxicity
Diesel Fuel No. 2	250 gallons	250 gallons	180 gallons	Aboveground tank	Physical Flammable Health Acute Toxicity
Portland Cement Type II-V	50,000 tons	25,000 tons	15,000 tons	Silo	--
Slag Cement	20,000 tons	20,000 tons	10,000 tons	Silo, Other	--
Oxygen	1,128 cubic feet	564 cubic feet	564 cubic feet	Cylinder	Physical Gas Under Pressure Health Acute Toxicity
Acetylene	400 cubic feet	200 cubic feet	200 cubic feet	Cylinder	Radioactive Flammable Physical Gas Under Pressure Health Acute Toxicity
Oils (Gear, Compressor, Hydraulic, Transmission)	100 gallons	55 gallons	60 gallons	Plastic bottle or jug	Physical Flammable Health Acute Toxicity
Lubrication Oil	80 gallons	55 gallons	80 gallons	Steel drum, plastic bottle, or jug	Physical Flammable
Grease Waste	110 gallons	55 gallons	110 gallons	Steel drum	--
Propane	20 gallons	10 gallons	10 gallons	Cylinder	Physical Flammable
Used Oil	110 gallons	55 gallons	110 gallons	Steel drum	Physical Flammable Health Acute Toxicity
Used Oily Debris	55 gallons	55 gallons	40 gallons	Steel drum	Health Acute Toxicity
Motor Oil	110 gallons	55 gallons	110 gallons	Steel drum, plastic bottle, or jug	Physical Flammable Health Acute Toxicity

Common Name	Quantities			Storage Container	Federal Hazard Categories
	Max Daily	Largest Container	Average Daily		
Grease	1,350 pounds	400 pounds	400 pounds	Steel drum, plastic bottle, or jug	--
Hydraulic/Gear Oil	50 gallons	55 gallons	50 gallons	Steel drum	Physical Flammable Health Acute Toxicity

Note:
Source: Lehigh 2020b

The existing wooden rail trestle is supported by creosote-treated wood piles which have the potential to adversely affect water quality. No other potentially hazardous materials are known to be present in facility components planned for removal, although, because of the age of structures, lead paint or asbestos could be present.

3.7.1.3 Emergency Plans

3.7.1.3.1 Regional Municipal Plans

The San Joaquin County Office of Emergency Services (SJCOES) authored the 2019 San Joaquin County Emergency Operations Plan (EOP; SJCOES 2019b), which addresses the County's response to all hazards, including incident management structure, compliance with relevant legal statutes, other relevant guidelines, whole community engagement, continuity of government focus, and critical components of the incident management structure. The EOP includes response protocol specific to hazards and hazardous materials.

3.7.1.3.2 Lehigh Facility Plans

Lehigh maintains and implements a *Consolidated Emergency Response/Contingency Plan* (Lehigh 2019), an Emergency Action Plan (Lehigh 2011), and a Facility-wide Site Management Program (Lehigh 2020a). The *Consolidated Emergency Response/Contingency Plan* identifies response procedures for chemical spills, fires, and earthquakes involving hazardous materials and hazardous wastes. In association with the *Consolidated Emergency Response/Contingency Plan*, Lehigh provides annual California Environmental Reporting System and Hazardous Materials and Wastes Inventory Matrix Report submittals detailing quantities and management of potentially hazardous materials at the facility (Lehigh 2020b). The Emergency Action Plan establishes requirements and procedures needed to protect employees from serious injury, property loss, or loss of life in the event of fires, other emergencies, or major disasters. The Facility-wide Site Management Program includes operational BMPs to prevent accidental release of hazardous materials, including but not limited to regular sweeping and vacuuming, equipping storm drains with filters, and restricting vehicle movement to designated areas.

3.7.1.4 Schools and Airports

There are no schools, airstrips, airports, or other sites potentially sensitive to hazards or hazardous materials within the proposed project vicinity. The nearest school is Washington Elementary School, located approximately one-third mile to the southeast. The closest airport is the Stockton Municipal Airport, located approximately 5 miles southeast of the project site.

3.7.1.5 Wildfire Hazards

The project site is not within any fire hazard severity zones (CAL FIRE 2007). There are no wildlands within the project area, and wildland fires do not pose a risk to the project site.

3.7.2 Applicable Regulations

3.7.2.1 Federal

3.7.2.1.1 Emergency Planning and Community Right-to-Know Act (42 USC 11001 et seq.)

Also known as Title III of the Superfund Amendments and Reauthorization Act, the Emergency Planning and Community Right-to-Know Act (EPCRA) was enacted by Congress as the national legislation on community safety. This law was designated to help local communities protect public health, safety, and the environment from chemical hazards. To implement EPCRA, Congress required each state to appoint a State Emergency Response Commission. These commissions were required to divide their states into Emergency Planning Districts and to name a Local Emergency Planning Committee for each district. EPCRA provides requirements for emergency release notification, chemical inventory reporting, and toxic release inventories for facilities that handle chemicals.

3.7.2.2 State

3.7.2.2.1 Hazardous Material Release Response Plans and Inventory Law (California Health and Safety Code, Division 20, Chapter 6.95)

This state right-to-know law requires businesses to develop a Hazardous Materials Management Plan (HMMP) or a business plan for hazardous materials emergencies if they handle more than 500 pounds, 55 gallons, or 200 cubic feet of hazardous materials. In addition, the business plan must include an inventory of all hazardous materials stored or handled at the facility above these thresholds. This law is designed to reduce the occurrence and severity of hazardous materials releases. The HMMP or business plan must be submitted to the Certified Unified Program Agency (CUPA), in this case, the San Joaquin County Public Health Services, Environmental Health Division (SJCEHD). The state has integrated the federal EPCRA reporting requirements into this law, and once a facility is in compliance with the local administering agency requirements, submittals to other agencies are not required.

3.7.2.2.2 California Health and Safety Code Chapter 13 (Standards Applicable to Transporters of Hazardous Waste) (22 CCR 66263.10–66263.50)

These regulations establish standards that apply to persons transporting hazardous waste within, into, out of, or through the state if the transportation requires a manifest under the California Health and Safety Code (CHSC), Section 25160. "Transporter" means a person engaged in the off-site transportation (or movement) of hazardous waste by air, rail, highway, or water. This hazardous waste regulation applies to carriers transporting hazardous waste when that waste is subject to the manifesting requirements of Chapter 12. In general, transporters of hazardous waste must comply with these requirements and statutory requirements in CHSC, Division 20, Chapter 6.5, Articles 6 and 6.5, as well as the specific U.S. Department of Transportation (DOT) requirements referenced throughout the transporter regulations.

3.7.2.2.3 Occupational Health and Safety, including 29 Code of Federal Regulations

The California Division of Occupational Safety and Health (Cal/OSHA) and OSHA are the agencies responsible for assuring worker safety in the handling and use of chemicals in the workplace. Pursuant to the Occupational Safety and Health Act of 1970, OSHA has adopted numerous regulations pertaining to worker safety, contained in 29 CFR. These regulations set standards for safe workplaces and work practices, including standards relating to hazardous material handling. Cal/OSHA assumes primary responsibility for developing and enforcing state workplace safety regulations. Because California has a federally approved OSHA program, it is required to adopt regulations that are at least as stringent as those found in 29 CFR. Cal/OSHA standards are generally more stringent than federal regulations.

Cal/OSHA regulations concerning the use of hazardous materials in the workplace, as detailed in 8 CCR, include requirements for safety training, availability of safety equipment, accident and illness prevention programs, hazardous substance exposure warnings, and emergency action and fire prevention plan preparation. Cal/OSHA enforces hazard communication program regulations that contain training and information requirements, including procedures for identifying and labeling hazardous substances, communicating hazard information related to hazardous substances and their handling, and preparation of health and safety plans to protect workers and employees at hazardous waste sites. The hazard communication program requires that Material Safety Data Sheets be available to employees and that employee information and training programs be documented.

3.7.2.3 Local

3.7.2.3.1 City of Stockton General Plan

The City updated and adopted its 2040 General Plan (City 2018) on December 4, 2018, which includes the following policies specific to hazardous materials:

- **Policy SAF-2.6.** Minimize the risk to City residents and property associated with the transport, distribution, use, and storage of hazardous materials.
  - **Action SAF-2.6A.** Restrict transport of hazardous materials within the City to routes that have been designated for such transport.
  - **Action SAF-2.6B.** When appropriate, require new development to prepare a hazardous materials inventory and/or prepare Phase I or Phase II hazardous materials studies, including any required cleanup measures.
  - **Action SAF-2.6C.** Educate the public regarding the types of household hazardous wastes and the proper methods of disposal.

3.7.2.3.2 Unified Hazardous Waste and Hazardous Management Regulatory Program (SB 1082, 1993) and San Joaquin County Public Health Services

The Unified Hazardous Waste and Hazardous Management Regulatory Program (SB 1082, 1993) is a state and local effort to consolidate, coordinate, and make consistent existing programs regulating hazardous waste and hazardous materials management. CalEPA adopted implementing regulations for the Unified Program (27 CCR, Division 1, Subdivision 4, Chapter 1) in January 1996. The Unified Program is implemented at the local level by CUPAs.

SJCEHD is the CUPA for all cities and unincorporated areas within San Joaquin County. The concept of a CUPA was created by the California legislature to minimize the number of inspections and different fees for businesses. SJCEHD provides the management and recordkeeping of hazardous materials and underground storage tank sites for San Joaquin County, including the City. Through the Hazardous Materials Program, SJCEHD inspects businesses for compliance with the Hazardous Waste Control Act. Hazardous waste is subject to storage time limits, disposal requirements, and container labeling requirements.

3.7.2.3.3 California Health and Safety Code Section 25500 and San Joaquin County Office of Emergency Services

The responsibilities of SJCOES include effective planning for emergencies, including those related to hazardous material incidents. SJCOES coordinates planning, response to emergencies, improves procedures for incident notification, and provides training and equipment to safety personnel. SJCOES is required by CHSC Section 25500 to: 1) prepare an inventory and information system for the storage and location of hazardous materials in San Joaquin County; 2) oversee the preparation and collection of plans for those businesses that use hazardous substances; 3) prepare area response plans that will incorporate inventory data, training for emergency responses, and evacuation plans; and 4) present an inspection plan and data management plan to the state for approval.

3.7.2.3.4 City of Stockton Fire Department

The City Fire Department provides limited oversight of hazardous materials. The Fire Department is responsible for conducting inspections for code compliance and fire-safe practices, and for the investigation of fire and hazardous materials incidents. The Fire Department regulates explosive and hazardous materials under the Uniform Fire Code, and permits the handling, storage, and use of any explosive or other hazardous material.

3.7.3 Environmental Impacts and Mitigation Measures

3.7.3.1 Baseline

At the time of publication of the NOP for the proposed project, Lehigh operated a bulk cementitious material receiving and distribution terminal at the Port and the remainder of the project site was within highly developed and industrialized areas.

3.7.3.2 Thresholds

For purposes of this DEIR, the following thresholds, which are based on Appendix G of the CEQA Guidelines (Environmental Checklist), were used to determine if the proposed project would result in impacts related to hazards and hazardous materials. The proposed project would have an impact if:

- **HAZ-1:** The project would create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.
- **HAZ-2:** The project would create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.
- **HAZ-3:** The project would emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school.
- **HAZ-4:** The project would be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or the environment.
- **HAZ-5:** The project would be located within an airport land use plan area or, where such a plan has not been adopted, be within 2 miles of a public airport or public use airport, and would result in a safety hazard or excessive noise for people residing or working in the project area.
- **HAZ-6:** The project would impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

- **HAZ-7:** The project would expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires.

3.7.3.3 Methodology for Determining Impacts

Analysis of impacts pertaining to hazards and hazardous materials was based on existing hazardous material conditions recorded on- and off-site; existing and planned emergency action plans; and siting relative to schools, residents, airports, or other sensitive receptors.

3.7.3.4 Impact Analysis

3.7.3.4.1 HAZ-1: Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Proposed project operations would not create any new uses of hazardous materials, although throughput of bulk cementitious materials would increase. Facility infrastructure improvements to increase storage capacity and material throughput have been designed to address and avoid potential release of bulk cementitious materials into the environment. Nonetheless, improper management of potentially hazardous materials could result in impacts to persons and the environment. Existing conditions include operational and management plans to address these types of hazards.

As detailed Section 2, new or replacement facility equipment associated with the proposed project has been designed to ensure proper containment of bulk cementitious materials and avoid hazardous material impacts to persons and the environment. The new unloader would be equipped with a completely enclosed conveyance system. Similar to existing conditions, material unloading and transfer throughout the improved facility would occur either by a new mechanical material handling system leading to the new storage dome or by the existing pneumatic transport system to other existing storage structures to keep the product contained and dry. The concrete dome planned to replace the existing Bunker 7 would be thoroughly modernized to provide improved containment. Upgrades to the truck loading lanes and Bunkers 1 and 2 would also provide improved material containment.

With construction of these design improvements, there remains potential for impacts to persons and the environment from improper management of cement, GGBFS, and common industrial materials (e.g., lubricating oils, cleaners, equipment fuel). This includes potential water quality impacts or other environmental impacts from accidental spills, as well as injury or mortality from improper handling of materials by facility employees. The increase in facility throughput may potentially increase the potential for these hazards. Under existing conditions, these potential hazards are addressed through the *Consolidated Emergency Response/Contingency Plan* (Lehigh 2019), Emergency Action Plan (Lehigh 2011), and Facility-wide Site Management Program (Lehigh 2020a). Annual inventories of potentially hazardous materials are provided via California Environmental Reporting System and Hazardous Materials and Wastes Inventory Matrix Report submittals.

Potentially hazardous building materials may be encountered during demolition and construction, which could be hazardous to the environment or persons if improperly managed. This may include creosote-treated piles, asbestos, or lead paint. Removal of creosote piles could pollute the San Joaquin River, and creosote can be toxic to aquatic organisms. Construction workers can be exposed to lead during the removal, renovation, or demolition of structures painted with lead pigments. Workers may develop a variety of ailments from substantial lead exposure, such as neurological effects, gastrointestinal effects, anemia, and kidney disease. Asbestos exposure can occur during removal, renovation or demolition of asbestos containing materials such as insulation for pipes, floor tiles, and building materials. Breathing asbestos fibers can result in asbestosis (buildup of scar-like tissue in the lungs), loss of lung function, lung cancer, mesothelioma, and even death. These hazards are typically addressed through OSHA regulations, and risk of exposure can be evaluated through pre-construction hazardous material surveys.

Construction activities would involve the use of equipment that contains oil, gas, or hydraulic fluids that could be spilled during normal usage or during refueling. Spilled industrial materials can pose a hazard to construction workers, as well as to the environment, including potentially impacting water quality in the San Joaquin River. These impacts are typically addressed through implementation of construction BMPs, often applied as part of the NPDES permitting process.

Although the facility and project area occur within the Stockton Ordnance Depot military evaluation site, recent investigations and historic site use indicate that this designation would not pose a hazardous material risk during construction and operations. No hazards or potential environmental liabilities from past use by the Department of Defense remain based upon records research, site inspections, and removal actions (Vincent 2012). The majority of the project site has been developed and operated as a bulk cementitious material receiving and distribution terminal for many years, and most ground-disturbing activities would occur in already disturbed areas. Because of these factors, the site’s designation as a military evaluation site is unlikely to result in significant impacts.

Impact Determination: Proposed infrastructure upgrades for increased throughput have been designed to improve material containment during receipt, storage, and transfer which would minimize potential hazardous material impacts to persons and the environment. There remains the potential for impacts to persons and the environment from improper management of potentially hazardous materials during operations, including hazards from cementitious materials and common industrial materials, which existing plans may not adequately address. Construction impacts to persons and the environment could also occur associated with common industrial materials and with hazardous material potentially present in structures to be demolished or renovated. These would constitute potentially significant impacts. Although the site’s designation as a military evaluation site is unlikely to result in hazardous material impacts, the mitigation measures below would further minimize the potential for worker impacts from hazards associated with the site's former use.

Mitigation Measures: The following mitigation measures would be implemented during construction to reduce potential impacts:

- **MM-BIO-2: Obtain and Implement NPDES Construction Stormwater General Permit** (see BIO-1 for more information).
- **MM-BIO-5: Compliance with Permitting Requirements for In-Water Work** (see BIO-1 for more information).
- **MM-GEO-1: Maintain, Update, and Implement Emergency Response Plans** (see GEO-1 for more information).
- **MM-HAZ-1: Maintain, Update, and Implement Facility-wide Site Management Program.** To address potential impacts to persons and the environment from management of cementitious materials and common industrial materials, Lehigh will implement and update as needed the Facility-wide Site Management Program. Updates would address changes in hazards from increased throughput, such as proper management of increased quantities of cementitious materials. The existing and revised Facility-wide Site Management Program would mandate BMPs, including but not limited to regular sweeping and vacuuming, equipping storm drains with filters, and restricting vehicle movement to designated areas.
- **MM-HAZ-2: Minimize Human and Environmental Exposure to Potentially Hazardous Materials During Construction.** Lehigh will complete an asbestos and lead paint investigation prior to construction activities. In the event that asbestos or lead paint are encountered, Lehigh will manage and dispose of such materials per OSHA regulations. Creosote piles will also be properly managed during removal, likely through mandates established during the project permitting process (see MM-BIO-5); this may include measures such as pulling piles as efficiently as possible and storing removed piles outside of the waterbody. Lehigh shall also ensure compliance with OSHA regulations to address potential hazards associated with the site's designation as a military evaluation site, including through measures such as appropriate training of workers and developing contingencies for responding to hazardous material conditions that may be encountered on site.

Residual Impact: Implementation of MM-BIO-2, MM-BIO-5, and MM-HAZ-2 would ensure that potential hazardous material impacts from construction are minimized through implementation of construction BMPs and OSHA regulations. Implementation of MM-GEO-1 and MM-HAZ-1 would ensure that operations occur in a manner that reduces the potential for hazardous material impacts to persons and the environment, through proper material handling and emergency response procedures. With implementation of these mitigation measures, impacts would be less than significant.

3.7.3.4.2 *HAZ-2: Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?*

As described under HAZ-1, the proposed project would result in an increase in throughput of bulk cementitious material, and a commensurate increase in use of common industrial materials. The proposed infrastructure upgrades have been designed to provide improved containment of bulk cementitious materials during receipt, transfer, and storage compared to existing conditions.

Despite these improvements, there remains an inherent potential for hazards from accident conditions at industrial facilities. This includes exposure of persons or the environment to potentially hazardous cementitious materials and common industrial materials. Under existing conditions, these potential hazards are addressed through maintenance and implementation of the facility's *Consolidated Emergency Response/Contingency Plan* (Lehigh 2019) and Emergency Action Plan (Lehigh 2011) which detail procedures for a variety of potential emergencies (including notifications to be made to emergency responders and agencies). The City Fire Department is equipped to provide response in the unlikely event of a site accident, and response plans have been developed for the region.

Impact Determination: Management of bulk cementitious materials and use of common industrial materials has an inherent potential to impact persons or the environment under accident conditions, and existing plans may not adequately address these hazards when considering proposed improvements and increased throughput. This would constitute a potentially significant impact.

Mitigation Measures:

- **MM-GEO-1: Maintain, Update, and Implement Emergency Response Plans** (see GEO-1 for more information).
- **MM-HAZ-1: Maintain, Update, and Implement Facility-wide Site Management Program** (see HAZ-1 for more information).

Residual Impact: Implementation of MM-HAZ-1 would ensure operational conditions that minimize the potential for accidental release of potentially hazardous materials, and MM-GEO-1 would ensure proper response in the event of such an emergency. With implementation of these mitigation measures, impacts would be less than significant.

3.7.3.4.3 *HAZ-3: Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school?*

The nearest school to the project site is the Washington Elementary School, located approximately one-third mile to the southeast. No school is proposed within the 0.25-mile radius of the project site, and given the area's zoning (Port lands), it is unlikely that a school would be constructed within this radius.

Impact Determination: Based on the analysis presented above, the proposed project would result in no impacts related to hazardous material emissions or handling in the vicinity of a school.

Mitigation Measures: None required.

Residual Impact: No impact.

3.7.3.4.4 HAZ-4: Would the project be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

The project site occurs within the 518.7 acre Stockton Ordnance Depot military evaluation site. However, as described under HAZ-1, recent investigations and historic site use indicate that this designation would not pose a hazardous material risk during construction and operations. No hazards or potential environmental liabilities from past use by the Department of Defense remain based upon records research, site inspections, and removal actions (Vincent 2012).

The majority of the project site has been developed and operated as a bulk cementitious material receiving and distribution terminal for many years, and most ground-disturbing activities would occur in already disturbed areas. As demonstrated by the site's history and recent investigations, along with regulations protecting workers, there would be no significant impact related to the site's location within the Stockton Ordnance Depot military evaluation site. In addition, potential hazards from construction in these types of areas are typically addressed through adherence with OSHA, federal, and state regulations developed to protect workers and other receptors from exposure to hazardous materials.

Impact Determination: Based on the analysis presented above, the proposed project would result in less-than-significant impacts related to the project's location on a military evaluation site. The significance and potential for these impacts would be further reduced through implementation of the mitigation measure detailed below.

Mitigation Measures:

- **MM-HAZ-2: Minimize Human and Environmental Exposure to Potentially Hazardous Materials During Construction** (see HAZ-1 for more information).

Residual Impact: Less-than-significant impact.

3.7.3.4.5 HAZ-5: Would the project be located within an airport land use plan area or, where such a plan has not been adopted, be within 2 miles of a public airport or public use airport, and result in a safety hazard or excessive noise for people residing or working in the project area?

The proposed project is not located within an airport land use plan area, and the nearest airport is located 5 miles southeast of the project site.

Impact Determination: Based on the analyses presented above, the proposed project would result in no impacts related to aviation, airports, or public use of airports.

Mitigation Measures: None required.

Residual Impact: No impact.

3.7.3.4.6 HAZ-6: Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

The *San Joaquin Emergency Operations Plan* (SJCOES 2019b) was developed in consideration of activities occurring within industrial areas of the City. The U.S. Coast Guard is responsible for providing maritime accident response. Additionally, the City Fire Department is equipped to respond during an emergency. The proposed project would not interfere with these emergency response plans or services.

Construction would occur within existing developed industrial areas of the Port and would not physically interfere with any emergency response or evacuation pathways. As discussed in Section 3.10.3, the proposed project would have less-than-significant traffic impacts, including effects on emergency response.

The adopted Lehigh *Consolidated Emergency Response/Contingency Plan* (Lehigh 2019), and Emergency Action Plan (Lehigh 2011) currently address emergency response. Left unchanged, these documents may not sufficiently address potential hazards from the proposed project. This may include increases in emergency response need associated with the higher throughput, or changes from construction of proposed improvements.

Impact Determination: The proposed project would not interfere with implementation of any regional response or hazardous material plans, and would not generate significant traffic impacts. Existing facility emergency plans may be inadequate to address the proposed improvements, which would constitute a potentially significant impact.

Mitigation Measures:

- **MM-GEO-1: Maintain, Update, and Implement Emergency Response Plans** (see GEO-1 for more information).

Residual Impact: Implementation of MM-GEO-1 would ensure that facility-specific emergency response plans are revised in consideration of the proposed project. With implementation of this mitigation measure, impacts would be less than significant.

3.7.3.4.7 HAZ-7: Would the project expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?

The project site is not located within any designated fire hazard severity zones, and the site is not susceptible to wildland fire hazards. The facility is located within a heavily industrialized area of the City, and there is no surrounding vegetation that would be susceptible to wildland fires. Construction and operation of the proposed facility would not expose individuals or structures to any wildland fire risks.

Impact Determination: As the proposed project is not within any designated fire hazard severity zones and the site is not susceptible to wildland fire hazards, the proposed project would result in no impacts related to wildland fires.

Mitigation Measures: None required.

Residual Impact: No impact.

3.8 Hydrology/Water Quality

This section describes the known hydrology and water quality conditions in the project area. This analysis is based in part on publicly available flood hazard data from FEMA and local government agencies; hydrology conditions identified in regional and site-specific investigations; Port regulations and approvals pertaining to stormwater systems; and Lehigh facility operational programs pertaining to water quality. For the purposes of the hydrology and water quality analysis, the study area is defined as the project site (proposed lease area, laydown areas, Berth 2, and rail trestle development areas), the facility's stormwater discharge outfall in the San Joaquin River, adjoining San Joaquin River waters, and areas immediately south of the project site that contribute run-on to the Lehigh facility drainage system.

3.8.1 Environmental Setting

3.8.1.1 Surface and Stormwater

The majority of the surfaces within the existing and proposed Lehigh lease area are paved with impermeable asphalt or concrete, with the exception of a small earthen but disturbed area on the eastern perimeter of the lease area. The facility is relatively flat, although the shoreline east of Berth 2 includes sloped riverbanks.

There are eight storm drain inlets within the existing and proposed lease areas. Storm drains are equipped with Revel Environmental Manufacturing (REM) filter inserts and some are surrounded with wattle filters (Filtrexx type). All facility drains discharge through a common pipe into the San Joaquin River. The Lehigh facility also receives run-on from areas to the south of the site. Run-on enters the facility's storm drain system, co-mingles with the facility's stormwater, and discharges at the San Joaquin River stormwater discharge outfall. The discharge outfall occurs adjacent to the Stockton DWSC, which is listed as impaired for the following Total Maximum Daily Load (TMDL)/Section 303(d) list constituents (Lehigh 2015): chlorpyrifos; dichlorodiphenyltrichloroethane; diazinon; dioxin; furan compounds; pesticides; mercury; organic enrichment/low dissolved oxygen; polychlorinated biphenyls; and unknown toxicity.

The Lehigh facility drainage system is part of the Port's Municipal Separate Storm Sewer System (MS4) and is regulated accordingly. Any modifications to the drainage system are required to occur under Port oversight and in compliance with MS4 permit terms.

Cementitious material is caustic and can degrade water quality if released. Therefore, Lehigh implements active and passive control measures to prevent accidental spill or emission of cementitious materials to stormwater or other surface waters. As summarized in Section 3.7, this includes use of pneumatic systems to convey product, storage in enclosed bunkers, transfer in enclosed truck loading alleys, and implementation of BMPs such as regular sweeping and vacuuming, restricting vehicle movement to designated areas, and equipping storm drains with filters (as noted above).

3.8.1.2 Flood Hazards

San Joaquin County maintains Flood Insurance Rate Maps (FIRMs), as required by the Federal Emergency Management Agency (FEMA). These FIRMs indicate the potential of flooding for various locations. The upland portion of the Lehigh facility is located in a "Zone X Other Flood Area," which indicates an area with 0.2% annual chance of flood or an area with 1% annual chance of flood with average depths of less than 1 foot or with drainage areas less than 1 square mile, as well as areas protected by levees from a 1% annual chance of flood (FEMA 2009). The Berth 2 berthing area and rail trestle are located within or above the San Joaquin River, which is within the 100-year flood zone.

Upstream dam failures could cause flooding in the project area, which is within the dam inundation zone of the New Malones, San Luis, Lake McClure, Camanche, and New Hogan dams (SJCOES 2019a). California SB 92 (2017) requires emergency action plans for all dams, except those classified as "low hazard." Tsunamis and seiches are also not considered to be significant threats in the Stockton area (City 2007).

3.8.1.3 Groundwater

The project area occurs within the San Joaquin Valley Groundwater Basin, which is a subsection of the Greater Central Valley Basin. Groundwater in the area is recharged by local precipitation and through percolation from the surrounding surface waters. Groundwater overdraft conditions have existed in the San Joaquin County Basin since the 1920s, although elevations have recovered and stayed relatively constant since 1999 (Stockton Port District 2012).

As noted, the facility largely contains impermeable surfaces, with runoff collected in a system of drain inlets for conveyance and discharge to the San Joaquin River. There is a small undeveloped area on the eastern portion of the proposed lease area which may contain permeable earthen surfaces where minimal percolation into the groundwater table can occur.

3.8.1.4 San Joaquin River

Berth 2 and the rail trestle occur in the San Joaquin River, adjacent to the Stockton DWSC and just west of the San Joaquin River ship turning basin. The Stockton DWSC is a portion of the San Joaquin River, maintained by USACE to a depth of -35 feet MLLW, which begins in San Francisco Bay and terminates in Stockton. It is used as a shipping channel to provide access to the interior of the Central Valley from the open sea for large hauling vessels. The San Joaquin River turning basin is located on the eastern end of the Stockton DWSC, in an area where the river widens, which allows vessels to reverse orientation prior to departure. The shoreline in the project area is developed or armored with rock riprap and berthing infrastructure. The shoreline contains a very small area of riparian vegetation adjacent to the existing wooden trestle, including several small (less than 6 inches in diameter at breast height) walnut trees.

The San Joaquin River channel substrate in the project area contains mud and silt, and water quality is characterized by low dissolved oxygen levels and high water temperatures during the late summer and early fall. Water quality monitoring and elutriate toxicity testing results from past Port maintenance dredging sediment characterization efforts have not indicated toxicity concerns (ERS 2012, 2013; Anchor QEA 2017) for sediments within the project area.

3.8.2 Applicable Regulations

3.8.2.1 Federal

3.8.2.1.1 Clean Water Act

The Clean Water Act (CWA) is the principal statute governing water quality on a national level. The CWA sets water quality standards and regulates discharge of pollutants into the nation's waters. The statute employs a variety of regulatory and non-regulatory tools to reduce pollutant discharges into waterways. It mandates permits for wastewater and stormwater discharges, regulates publicly owned works that treat municipal and industrial wastewater, requires states to establish site-specific water quality standards for navigable bodies of water, and regulates other activities that affect water quality. USEPA has delegated responsibility for implementation of portions of the CWA in California, including water quality control planning and programs, to SWRCB and nine Regional Water Quality Control Boards (RWQCBs).

Important applicable sections of the CWA are as follows:

- Sections 303 and 304 provide for water quality standards, criteria, and guidelines.
- Section 401 requires an applicant for any federal permit that proposes an activity which may result in a discharge to "waters of the United States" to obtain certification from the state that the discharge will comply with other provisions of the Act. Certification is provided by the RWQCB.
- Section 402 establishes the NPDES, a permitting system for the discharge of any pollutant (except for dredge or fill material) into waters of the United States. This permit program is administered by the RWQCB.
- Section 404 establishes a permit program for the discharge of dredge or fill material into waters of the United States. This permit program is administered by USACE.

3.8.2.1.2 Rivers and Harbors Act

The Rivers and Harbors Act of 1899 prohibits discharge of refuse matter into navigable waters or tributaries thereof of the United States without a permit. Permits are also required for any activities that excavate, fill, or alter the course, condition, or capacity of any port, harbor, channel, or other areas covered by the act. Many of these activities are additionally regulated by the CWA. In-water components of the proposed project would obtain approval under the Rivers and Harbors Act through authorization from the USACE, likely via a Standard Individual Permit.

3.8.2.1.3 National Flood Insurance Program

The National Flood Insurance Program, administered by FEMA, requires that local governments covered by federal flood insurance pass and enforce a floodplain management ordinance that specifies minimum requirements for any construction within the 100-year flood zone. FEMA is responsible for preparing maps delineating these areas.

3.8.2.2 State

3.8.2.2.1 Porter-Cologne Water Quality Control Act (Porter-Cologne Act)

The Porter-Cologne Act (Division 7 of the California Water Code) is the primary state regulation that addresses water quality standards. Under the act, SWRCB has the ultimate authority over water rights and water quality policy. The act also established nine RWQCBs to oversee water quality on a day-to-day basis at the regional level. The state and regional boards regulate all pollutant or nuisance discharges that may affect either surface water or groundwater. The study area is under the jurisdiction of the Central Valley RWQCB. Under oversight by USEPA, SWRCB and the Central Valley RWQCB have the responsibility for establishing regulatory standards and objectives for water quality in the Bay; developing TMDLs for impaired waterbodies; and issuing CWA NPDES permits. Approval for project activities subject to the Porter-Cologne Act (i.e., Berth 2 and rail trestle improvements) would be obtained through the water quality certification/ waste discharge requirements issued by the Central Valley RWQCB.

3.8.2.2.2 California Fish and Game Code

FGC 5650 prohibits discharge of harmful materials to waters of the state. It is unlawful to deposit in, permit to pass into, or place where it can pass into California waters, any petroleum, acid, coal or oil tar, lampblack, aniline, asphalt, bitumen, or residuary product of petroleum; any carbonaceous material or substance; any refuse, liquid or solid, from a refinery, gas house, tannery, distillery, chemical works, mill, or factory of any kind; any sawdust, shavings, slabs, or edgings; any factory refuse, lime, or slag; any *cocculus indicus;*[4] or any substance or material deleterious to fish, plant, mammal, or bird life. FGC 5655 requires that parties responsible for polluting waters of the state pay for removal costs and environmental damages.

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[4]*Cocculus indicus* is prohibited based on the practice of grinding up the roots of certain *Cocculus* plants (most commonly Yucca plants) and spread them in the water to "stun" fish for collection.

FGC 1600–1607 require CDFW notification for any activity that could affect the bank or bed of any stream that has value to fish and wildlife. After notification, the CDFW has the responsibility for preparation of a Streambed Alteration Agreement, in consultation with the project proponent. The CDFW does not currently employ a formal definition of watercourses under its jurisdiction. CDFW has jurisdiction over alterations to any channel with a definable bank and bed that is capable of accommodating water flow. Wetlands need not be present to establish CDFW jurisdiction. CDFW jurisdiction generally extends to work conducted within the 100-year floodplain.

3.8.2.3 Local

3.8.2.3.1 Port of Stockton Storm Water Development Standards Plan

The Port's Storm Water Development Standards Plan (DSP) establishes stormwater development standards and review process for Port tenants. The DSP covers new and substantial redevelopments of properties within three subareas to ensure compatibility with the SWRCB-issued MS4 NPDES Permit. The Port's review process under the DSP includes assessment of technical stormwater submittals from project proponents. DSP objectives also include protecting the quality of stormwater runoff and the receiving waters that surround the Port.

3.8.2.3.2 City of Stockton General Plan

The City's 2040 General Plan (City 2018), adopted on December 4, 2018, includes the following policies specific to flood hazards that would apply to the proposed project:

- **Policy SAF-2.3.** Protect the community from potential flood events.
  - **Action SAF-2.3C.** Require new public and private waterfront development to be oriented to waterways and provide setbacks and easements along levees and channels to provide space for levee widening, flood fighting, roadway and maintenance access, open space and trail amenities, and appropriate landscaping.
  - **Action SAF-2.3D.** Prepare and maintain a map of evacuation routes for major flood events.
- **Policy SAF-2.4.** Minimize risks to the community from flooding through appropriate siting and protection of structures and occupants.
  - **Action SAF-2.4D.** Consider the best available flood hazard information and mapping from regional, State, and federal agencies to inform land use and public facilities investment decisions.

3.8.3 Environmental Impacts and Mitigation Measures

3.8.3.1 Baseline

At the time of publication of the NOP for the proposed project, Lehigh operated a bulk cementitious material receiving and distribution terminal at the Port. The terminal included Berth 2 and a rail trestle within the San Joaquin River, and upland components adjacent to the San Joaquin River. The project site was within a highly developed and industrialized area. Lehigh implemented active and passive control measures to address potential hazards associated with the accidental release of bulk cementitious materials and other common industrial materials used at the facility into the water.

3.8.3.2 Thresholds

For purposes of this DEIR, the following thresholds, which are based on Appendix G of the CEQA Guidelines (Environmental Checklist), were used to determine if the proposed project would result in impacts related to hydrology and water quality. The proposed project would have an impact if:

- **HYD-1:** The project would violate water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality.
- **HYD-2:** The project would substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.
- **HYD-3:** The project would substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: i) result in substantial erosion or siltation on- or off site; ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off site; iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or iv) impede or redirect flood flows.
- **HYD-4:** In flood hazard, tsunami, or seiche zones, the project would risk release of pollutants due to project inundation.
- **HYD-5:** The project would conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

3.8.3.3 Impact Analysis

3.8.3.3.1 HYD-1: Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?

Construction activities associated with the proposed project would directly disturb soils within the existing and proposed lease area, including excavation or ground disturbance required for grading and construction of the improvements described in Section 2. In-water work would include the Berth 2 rehabilitation and rail trestle replacement improvements. Both upland and in-water work have the potential to result in water quality degradation, including through erosion or inputs of common industrial pollutants to the waterbody. Removal of creosote-treated piles could also affect water quality resulting in toxicity conditions for aquatic species. These impacts are commonly addressed through adherence to construction BMPs such as erosion controls, designating appropriate staging and fueling areas, requiring equipment inspections and maintenance, which are often required through the NPDES or USACE, RWQCB, and CDFW permitting processes.

Although the proposed project would not substantially alter facility operations or introduce new pollutant sources, throughput of bulk cementitious materials would increase. Cementitious material is caustic and can degrade water quality if released into waters. As noted in Section 3.7, facility infrastructure improvements to increase storage capacity and material throughput have been designed to address and avoid potential release of bulk cementitious materials into the environment. This includes equipping the new unloader with a completely enclosed conveyance system; continuing and expanding use of contained pneumatic transport piping systems; replacing Bunker 7 with a larger and modernized storage dome; and modernizing existing Bunkers 1 and 2 and truck loading lanes.

With construction of these design improvements, there remains potential for impacts to persons and the environment from improper management of cement, GGBFS, and common industrial materials (e.g., lubricating oils, cleaners, equipment fuel). This includes potential water quality impacts or other environmental impacts from accidental spills, as well as injury or mortality from improper handling of materials by facility employees. The increase in facility throughput may potentially increase the potential for these hazards. Under existing conditions, these potential hazards are addressed through the *Consolidated Emergency Response/Contingency Plan* (Lehigh 2019), Emergency Action Plan (Lehigh 2011), and Facility-wide Site Management Program (Lehigh 2020a). Annual inventories of potentially hazardous materials are provided via California Environmental Reporting System and Hazardous Materials and Wastes Inventory Matrix Report submittals.

Impact Determination: Proposed infrastructure upgrades for increased throughput have been designed to improve material containment during receipt, storage, and transfer, which would minimize potential water quality impacts to persons and the environment. There remains the potential for impacts to water quality from improper management of potentially hazardous materials during proposed construction and operations, including hazards from cementitious materials and common industrial materials. These would constitute potentially significant impacts.

Mitigation Measures:

- **MM-BIO-2: Obtain and Implement NPDES Construction Stormwater General Permit** (see BIO-1 for more information).
- **MM-BIO-5: Compliance with Permitting Requirements for In-Water Work** (see BIO-1 for more information).
- **MM-GEO-1: Maintain, Update, and Implement Emergency Response Plans** (see GEO-1 for more information).

- **MM-HAZ-1: Maintain, Update, and Implement Facility-wide Site Management Program** (see HAZ-1 for more information).
- **MM-HAZ-2: Minimize Human and Environmental Exposure to Potentially Hazardous Materials During Construction** (see HAZ-1 for more information).

Residual Impact: Potential construction impacts to water quality associated with project construction would be addressed through implementation of MM-BIO-2, MM-BIO-5, and MM-HAZ-2, which include BMPs such as erosion and spill controls. Implementation of MM-GEO-1 and MM-HAZ-1 would address potential water quality impacts from operations including accidents by establishing appropriate material management and emergency response procedures. With implementation of these mitigation measures, impacts would be less than significant.

3.8.3.3.2 HYD-2: Would the project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

Project improvements would be constructed on existing concrete, asphalt, or compacted earth surfaces with little or no permeability. All stormwater would be treated prior to being discharged off site. Proposed operations would not extract or otherwise use groundwater. Therefore, groundwater supplies or recharge would be unaffected by the proposed project.

Impact Determination: Because the proposed project would not affect groundwater, there would be no impact to groundwater supplies or recharge.

Mitigation Measures: None required.

Residual Impact: No impact.

3.8.3.3.3 HYD-3: Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: i) result in substantial erosion or siltation on- or off site; ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off site; iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or iv) impede or redirect flood flows?

Minor changes to drainage patterns within the proposed lease area would occur as a result of the proposed project, which would not result in substantial erosion or siltation. Site grading may result in minor changes to stormwater flow patterns within the facility, although no change to the storm drain system would be required. There would be little or no increase in stormwater runoff, as proposed improvements would be constructed on existing low- or non-permeable surfaces. Proposed operations would not generate new sources of runoff. Stormwater runoff would continue to be conveyed to the existing discharge outfall in the San Joaquin River.

Under existing conditions, potential erosion or water quality impacts are addressed through the Facility-wide Site Management Program (Lehigh 2020a), which includes measures such as equipping storm drains with REM filters (or similar) and/or wattle filters to provide filtration. With the construction of new facilities and increased throughput under the proposed project, it is possible that the existing plan may not be sufficient to avoid water quality impacts from erosion or industrial material spills.

Erodible surfaces at the existing facility are limited to slopes in the boneyard area, as identified in the 2015 SWPPP/MIP (Lehigh 2015). However, surfaces in this area are compacted, and erosion potential is likely minimal. The existing Facility-wide Site Management Program addresses deposition in this area through regular sweeping, and would also address any erosion hazards. The proposed project would not increase the potential for erosion at the boneyard or elsewhere, and existing BMPs for controlling water quality impacts from erosion would remain in place as needed.

In-water improvements to Berth 2 and the wooden trestle would not alter the course of the San Joaquin River. Project construction and operation would have no effect on flood risk on or off site.

Impact Determination: Proposed grading and drainage improvements would not substantially affect runoff and would not cause substantial erosion or siltation. Construction of expanded facilities and the proposed increase in throughput may create conditions where the existing Facility-wide Site Management Program does not adequately address potential water quality impacts from erosion or polluted runoff. This would constitute a potentially significant impact.

Mitigation Measures:

- **MM-HAZ-1: Maintain, Update, and Implement Facility-wide Site Management Program** (see HAZ-1 for more information).

Residual Impact: MM-HAZ-1 would ensure that the existing operational plan related to runoff and water quality control are updated and implemented to account for the project. With implementation of this measures, impacts would be less than significant.

3.8.3.3.4 HYD-4: Would the project, in flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

Although the project site is within a dam failure zone, dam failure is unlikely, and all California dams with flood potential above low hazard are required to maintain emergency action plans. The proposed project would have no effect on existing dam failure inundation hazards and would not result in increased exposure to these hazards. The proposed project would have no effect on the potential for tsunamis, seiches, or mudflows on or off site. The likelihood of a seismic-induced landslide or mudflow is very low.

Upland improvement would be constructed outside of any 100-year flood hazard areas, and in-water improvements including Berth 2 rehabilitation and rail trestle replacement would not impede or redirect flood flows. In-water improvements would be constructed within the same approximate footprint as existing structures, and would result in a nominal increase in fill associated with installation of new piles. New piles would not substantially impede or redirect flows in any way that would affect flooding.

Impact Determination: Proposed grading and drainage improvements would not substantially affect runoff and would not affect flood risk. Therefore, the proposed project would have less than significant impact related to flood risk. To further minimize potential release of pollutants due to project inundation, the mitigation measure listed below would be implemented.

Mitigation Measures:

- **MM-HAZ-1: Maintain, Update, and Implement Facility-wide Site Management Program** (see HAZ-1 for more information).

Residual Impact: Less-than-significant impact.

3.8.3.3.5 HYD-5: Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

As noted in the preceding responses, the proposed project would have little or no effect on groundwater recharge, and proposed operations wound not extract or otherwise use groundwater. Although the proposed project would entail grading, it would not require any alterations to existing drainage systems.

The Stockton DWSC is listed as impaired for several TMDL/Section 303(d) list constituents, and construction and operation of the proposed project may result in inputs of these pollutants to the waterbody (see HYD-1 for additional detail). However, proposed improvements include modernization of existing facilities which are likely to reduce the risk of water quality impacts, and existing and passive water quality control measures would remain in place.

Impact Determination: The proposed project would have no effect on groundwater. The proposed project may result in water quality impacts to a TMDL/Section 303(d) impaired water during construction or operations, which would constitute a potentially significant impact.

Mitigation Measures:

- **MM-BIO-2: Obtain and Implement NPDES Construction Stormwater General Permit** (see BIO-1 for more information).
- **MM-BIO-5: Compliance with Permitting Requirements for In-Water Work** (see BIO-1 for more information).
- **MM-GEO-1: Maintain, Update, and Implement Emergency Response Plans** (see GEO-1 for more information).
- **MM-HAZ-1: Maintain, Update, and Implement Facility-wide Site Management Program** (see HAZ-1 for more information)
- **MM-HAZ-2: Minimize Human and Environmental Exposure to Potentially Hazardous Materials During Construction** (see HAZ-1 for more information)**.**

Residual Impact: Potential construction impacts to water quality associated with project construction would be addressed through implementation of MM-BIO-2, MM-BIO-5, and MM-HAZ-2, which include BMPs such as erosion and spill controls. Implementation of MM-GEO-1 and MM-HAZ-1 would address potential water quality impacts from operations including accidents by establishing appropriate material management and emergency response procedures. With implementation of these mitigation measures, impacts would be less than significant.

3.9 Noise

This section describes the existing noise and vibration environment of the proposed project and surrounding area and analyzes how the proposed project may affect these characteristics. This section also describes applicable rules and regulations pertaining to noise and vibration. For the purposes of the noise and vibration analysis, the study area is defined as the project site and the surrounding area extending approximately 500 feet south to the nearest sensitive receptors (residential area).

3.9.1 Environmental Setting

3.9.1.1 Fundamentals of Sound and Noise

Sound is what we hear and is defined as the energy of a vibrating object transmitted by pressure waves through a medium, such as air or water, to the human ear. Noise is most simply defined as unwanted sound. The difference between sound and noise depends upon the listener and the circumstances. A given noise may be more or less tolerable depending on the duration exposure, as well as the time of day which the noise occurs. For example, the sound of a distant train horn during the day may be considered background noise but could disrupt sleep at night.

Sound is measured in decibels (dB) and accounts for variations such as frequency and amplitude, using a relative scale adjusted to the human range for hearing (referred to as the A-weighted decibel [dBA]). More specifically, the dBA measures sound reflective of how the average human ear responds to sound; the range of human hearing typically ranges from 0 dBA (the threshold of hearing) to about 140 dBA (the threshold for pain). Acceptable noise levels during the day are higher than during the night, and industrial land use in urban areas will have a higher limit than residential land use in rural areas.

Noise can be generated by both mobile (i.e., cars) and stationary (i.e., operational machinery) sources. Mobile sources typically attenuate at a rate of 3.0 to 4.5 dBA per doubling of distance, depending on the ground surface and obstructions between the noise source and the receiver. Hard and flat surfaces, such as concrete or asphalt, typically have an attenuation rate of 3.0 dBA per doubling of distance. Soft surfaces, such as uneven or vegetated terrain, typically have an attenuation rate of 4.5 dBA per doubling of distance. Noise generated by stationary sources typically attenuates at a rate of 6.0 to 7.5 dBA per doubling of distance.

The community noise equivalent level (CNEL) measures the cumulative 24-hour noise exposure, considering not only the variation of the A-weighted noise level but also the duration and the time of day of the noise. Various state and local agencies have adopted CNEL as the measure of community noise, including the State Department of Aeronautics and the California Commission on Housing and Community Development.

Noise is measured through the use of several measurements, including the following:

- **Equivalent Sound Level (L_{eq})** is the constant noise level that would result in the same total sound energy being produced over a given period. It is useful for representing a varying sound source over time as a single number.
- **Maximum Sound Level (L_{max})** is the maximum sound level.
- **Statistical Sound Levels (L_n, e.g., L_{min}, L_{90}, L_{50}, L_{10})** The percentile-exceeded noise level, designated as L_n, describes the noise level that is met or exceeded by a fluctuating sound level n-percent of a stated time period. For example, the L_{50} is the sound level that is equaled or exceeded for 50% of the time period (equivalent to 30 minutes in an hour) and the L_{10} is the sound level that is equaled or exceeded for 10% of the time period (equivalent to 6 minutes in an hour).
- **Day/Night Average Sound Level (Ldn or DNL)** is the average noise level over a 24-hour period. The noise level measurements between the hours of 10pm and 7am are artificially increased by 10 dB before averaging.

3.9.1.2 Fundamentals of Groundborne Vibration

Groundborne vibration is an oscillatory motion that can be described in terms of displacement, velocity, or acceleration. Each of these measures can be further described in terms of frequency and amplitude. Displacement is the easiest descriptor to understand; it is simply the distance that a vibrating point moves from its static position (i.e., its resting position when the vibration is not present). The velocity describes the instantaneous speed of the movement, and acceleration is the instantaneous rate of change of the speed. Vibrating objects can radiate their energy through the ground upon contact; if the object is large or close enough to an observer, ground vibrations can be perceived. As such, environmental impact analyses typically study vibration as it relates to building damage and human annoyance. However, since ground vibration generated by manmade activities typically attenuates rapidly from the source of vibration, manmade vibration issues are usually confined to short distances, such as 500 feet or less from the source (FHWA 2006a)

Although displacement is fundamentally easier to understand than velocity or acceleration, it is rarely used for describing groundborne vibration, because: 1) human response to groundborne vibration correlates more accurately with velocity or acceleration; 2) the effect on buildings and sensitive equipment is more accurately described using velocity or acceleration; and 3) most transducers used in the measurement of groundborne vibration actually measure either velocity or acceleration. For this study, velocity was the fundamental measure used to evaluate the effects of groundborne vibration.

Vibration consists of rapidly fluctuating motions with an average motion of zero. The peak particle velocity (PPV) is defined as the maximum instantaneous positive or negative peak amplitude of the vibration velocity. The accepted unit for measuring PPV in the United States is inches per second.

3.9.1.3 Study Area Setting

Existing noise in the project area can be attributed to various stationary and mobile sources, including ship traffic, tractor-trailer truck traffic, rail activity, and terminal equipment (Port 2004). Other sources that contribute to the existing noise environment in the general site vicinity include recreational boating along the San Joaquin River (reduced during fall and winter months), landscaping activities (e.g., leaf blowing and lawn mowing), and local and regional roadway traffic on nearby local roads and highways (i.e., I-5 and State Routes 4 [SR-4] and 99 [SR-99]). Noise monitoring previously conducted for the Rough and Ready Development Plan concluded that the equivalent continuous noise level (L_{eq}) on Rough and Ready Island generally ranges between 60 and 84 dBA, with higher levels from short-term increases in noise levels 85 dBA or higher. Noise measurements were also taken on January 9, 2020, in the neighborhoods south of the facility (Table 20).

Table 20
Short-Term Ambient Noise Measurement Data – Along Residential Streets South of Port of Stockton (January 9, 2020)

Measurement Location	Decibels					Observations
	L_{min}	L_{90}	L_{eq}	L_{10}	L_{max}	
Location 1: Located on West Main Street and North Ventura Avenue	56.3	56.7	57.4	57.8	65.4	Closest residence to the Port along Main Street. No auto traffic. Port material handling activity is the most influential noise source (mid-50s dB).
Location 2: Located on South Los Angeles Avenue South of Washington Street	49	49.9	57.8	59	72.4	Residential uses predominate on streets south of Port Road/Harbor Street Light auto traffic (no heavy trucks) on Los Angeles Avenue. When no autos pass, Port material handling activity (i.e., conveyor belts, loading equipment) is just audible (low 50s dB).
Location 3: Located along Washington Street, between Del Norte Street and South Los Angeles Avenue	53.5	54.8	71.5	72.4	87.7	Washington Street is a main access route to the Port. Heavy trucks are the main noise source for the facing residential. Frequent heavy truck passbys with peak noise of 75 to 85 dB.

Noise-sensitive land uses are generally considered to be uses in which noise exposure could result in health-related risks to individuals or places where quiet is an essential element of their intended purpose. Residential dwellings are of primary concern because of the potential for increased and prolonged exposure of individuals to both interior and exterior noise levels. Other land uses, such as parks, historic sites, cemeteries, and other recreation areas, are also considered sensitive to increases in exterior noise levels. Schools, places of worship, hotels, libraries, nursing homes, retirement residences, and other places where low interior noise levels are essential, are also considered noise-sensitive land uses. The nearest sensitive receptor includes a residential area approximately 500 feet south of the southern end of the terminal (where truck gates are located) and 1,300 feet south of where ship operations would occur at Berth 2.

3.9.2 Regulatory Setting

3.9.2.1 Federal

OSHA has established acceptable occupational noise exposure levels (29 CFR 1910.95). These regulations state that employees shall not be exposed to occupational noise levels greater than 90 dB without adequate hearing protection. If occupational noise levels exceed 85 dB, the employer must establish a hearing conservation program as described under 29 CFR 1910.95(c–o). For occupational noise exposure levels greater than 90 dB, the daily period of noise exposure must be decreased from 8 hours, as described under 29 CFR 1910.95(b).

The USEPA Office of Noise Abatement and Control was established to coordinate federal noise control activities and issued the Noise Control Act of 1972 (42 USC 4901 et seq.), establishing programs and guidelines to identify and address the effects of noise on public health and welfare and the environment. USEPA determined in 1981 that subjective issues such as noise would be better addressed at lower levels of government, and responsibilities for regulating noise control policies were transferred to state and local governments in 1982.

3.9.2.2 State

The State of California General Plan Guidelines, published by OPR, provide guidance for the acceptability of projects within areas that are exposed to specific noise levels. For areas zoned for industrial, manufacturing, utilities, and agricultural land uses, the normally acceptable level of community noise exposure is less than 75 CNEL with 70 to 80 CNEL considered conditionally acceptable (OPR 2003). The guidelines also present adjustment factors that may be used to arrive at noise acceptability standards that reflect the noise control goals of the community, the particular community’s sensitivity to noise, and the community’s assessment of the relative importance of noise pollution.

For the protection of fragile, historic, and residential structures from groundborne vibration, Caltrans recommends a threshold of 0.2 inch per second PPV for normal residential buildings and 0.08 inch per second PPV for old or historically significant structures (Caltrans 2004).

3.9.2.3 Local

The City has developed community noise control regulations and standards which are consistent with or exceed the guidelines of the State Office of Noise Control and the standards adopted by the Federal Highway Administration (FHWA), Caltrans, and other government and regulatory agencies (City Municipal Code Title 16, Division 3, Chapter 16.60). Regarding construction, the City prohibits "operating or causing the operation of tools or equipment on private property used in alteration, construction, demolition, drilling, or repair work between the hours of 10:00 PM and 7:00 AM, so that the sound creates a noise disturbance across a residential property line, except for emergency work of public service utilities." State law requires general plans to use the CNEL or the day/night average sound level (L_{dn}) to describe the community noise environment (in dBA) and its effects on the population.

The City's 2040 General Plan (City 2018) establishes goals, policies, and criteria for determining land use compatibility with major noise sources within the community. The 2040 General Plan includes Policy SAF-2.5, which protects the community from health hazards and annoyance associated with excessive noise levels.

Policy SAF-2.5 includes the following standards:

- **Action SAF-2.5A:** Prohibit new commercial, industrial, or other noise-generating land uses adjacent to existing sensitive noise receptors, such as residential uses, schools, health care facilities, libraries, and churches, if noise levels are expected to exceed 70 dBA CNEL when measured at the property line of the noise-sensitive land use.
- **Action SAF-2.5B:** Require projects that would locate noise-sensitive land uses where the projected ambient noise level is greater than the "normally acceptable" noise levels listed in Table 5-1 (included below as Table 21) to conduct an acoustical analysis. (As noted in Table 5-1 of the 2040 General Plan, if existing noise standards are exceeded, a proposed project shall not incrementally increase noise levels by more than 3 dBA.)
- **Action SAF-2.5C:** Require noise produced by commercial uses to not exceed 75 dBA L_{dn}/CNEL at the nearest property line.
- **Action SAF-2.5D:** Grant exceptions to the noise standards for commercial and industrial uses only if a recorded noise easement is conveyed by the affected property owners.
- **Action SAF-2.5E:** Require all new habitable structures to be set back from railroad tracks to protect residents from noise, vibration, and safety impacts.

Table 21
Maximum Allowable Noise Exposure by Land Use Per City of Stockton 2040 General Plan (L_{dn})

Land Use	Noise Level, L_{dn} (dBA)						
	0-55	56-60	61-65	66-70	71-75	75-80	>81
Residential							
Urban Residential Infill							
Hotels, Motels							
Schools, Libraries, Churches, Hospitals, Extended Care Facility							
Auditoriums, Concert Halls, Amphitheaters							
Sports Arenas, Outdoor Spectator Sports							
Playgrounds, Neighborhood Parks							
Golf Courses, Riding Stables, Water Recreation, Cemeteries							
Office Buildings, Business Commercial and Professional							
Mining, Industrial, Manufacturing, Utilities, Agriculture							

Notes:
Source: City 2018.
Normally Acceptable
Conditionally Acceptable
Unacceptable

3.9.3 *Environmental Impacts and Mitigation Measures*

3.9.3.1 Baseline

At the time of the NOP for the proposed project, the terminal was fully operational. As discussed in Section 2.2.3, the terminal operated below permitted limits. The terminal handled 880,000 tons of product and generated 18,720 annual truck trips, 117 annual train trips and nine ship calls. The terminal operated below its permitted capacity of 6,000 tons of cementitious material shipped per day, and 2.628 million tons per year or 18,000 tons per day received via ship or rail. As Table 20 shows, the surrounding noise L_{max} levels in the project area range from 65 to 87 dBA.

3.9.3.2 Thresholds

For purposes of this DEIR, the following thresholds, which are based on Appendix G of the CEQA Guidelines (Environmental Checklist), were used to determine if the proposed project would result in impacts related to noise and vibration. The proposed project would have an impact if:

- **NV-1:** The project would result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.
- **NV-2:** The project would result in generation of excessive groundborne vibration or groundborne noise levels.
- **NV-3:** The project would be located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, be within 2 miles of a public airport or public use airport, and expose people residing or working in the project area to excessive noise levels.

3.9.3.3 Methodology for Determining Impacts

The noise and vibration analysis was performed to determine whether the proposed project would affect existing noise and vibration levels in the vicinity of the project site. Specifically, the proposed project was evaluated to determine if noise and vibration levels would exceed pertinent thresholds for residential and commercial structures and if an acoustical analysis was required. As construction of the proposed project would overlap with site operations, the construction noise analysis included operational sources and residential receptors along truck routes that could also potentially hear construction noise.

Background noise measurements were taken on January 9, 2020, and the closest residential receptors were identified as follows:

- **Location 1: Residential Area located on West Main Street.** This area was selected because it is the closest residential area to the terminal. This area is 500 feet south of the terminal gate, and 1,300 feet south of Berth 2.
- **Location 2: Residential Area located on South Los Angeles (South of Washington Street).** This area was selected because it is located south of Washington Street.
- **Location 3: Residential Area Facing Washington Street (between Del Norte Street and South Los Angeles Avenue).** This area was selected because it is located along Washington Street, which is a major truck route supporting Port trucks.

3.9.3.4 Impact Analysis

3.9.3.4.1 NV-1: Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

The City's noise regulations and standards apply to operations of the proposed project. Specifically, the City's General Plan regulates industrial uses with L_{dn} of 70 dBA and below as "normally acceptable," and between 71 and 80 dBA as "conditionally acceptable" following the incorporation of noise reduction features. Noise levels above 80 dBA are considered unacceptable. The City's noise ordinance also requires that the maximum sound level generated by industrial land uses, or other permitted noise-generating activities within any industrial zoning district, remain below 80 dBA. Previous noise monitoring conducted determined that the existing L_{dn} nearby the project site ranges between 60 to 84 dBA and Table 20 shows the existing daytime L_{max} levels range from 65.5 in the areas closest to the terminal to 87.7 dBA, with L_{eq} values of 57.8 to 71.5 dBA. As shown, existing ambient standards exceed the City's guidance levels.

Noise attenuates with distance from the source. Noise- and vibration-sensitive land uses are locations where people reside or where the presence of unwanted sound could adversely affect the use of the land. Residences, schools, hospitals, and senior care facilities would each be considered noise- and vibration-sensitive and may warrant unique measures for protection from intruding noise. The closest sensitive receptor to the project site, a residential area north of Washington Street, is located approximately 500 feet to the south. As discussed above, two additional residential areas were considered in the analysis to account for the overlap in construction and operations.

Construction activities typically require the use of numerous pieces of noise-generating equipment. These activities would temporarily increase ambient noise levels on an intermittent basis. Noise levels would fluctuate depending on the construction phase, equipment type and duration of use, distance between the noise source and receptor, and presence or absence of noise attenuation barriers. Table 22 presents the typical noise level of proposed construction equipment for the proposed project and the reference noise levels that each equipment type would generate.

Table 22
Proposed Project Construction Equipment by Phase

Major Equipment	Reference Sound Level at 50 feet (dBA)
Phase 1: Upland Improvements	
Dozer	82
Excavator	81
Crane (3)	81
Dump Truck (5)	76
Phase 2: Waterfront Berth 2 Structure	
Dozer	82
Excavator	81
Crane (3)	81
Dump Truck (5)	76
Pile Driver	101
Phase 3: Ship Unloader	
Crane	81
Dump Truck (10)	76
Phase 4: Rail Loadout and Rail Trestle	
Loader	79
Excavator (4)	81
Crane (2)	81
Dump Truck	76
Phase 5: Storage Dome and Material Handling Equipment	
Loader	79
Excavator	81
Crane (2)	81
Dump Truck (4)	76

Note:
Source: *FHWA Roadway Construction Noise Model Users Guide* (FHWA 2006b).

To calculate proposed project construction noise impacts to sensitive receptors in the residential area adjacent to and south of the Port, major construction equipment types/numbers characteristic of each construction phase were input into the FHWA Roadway Construction Noise Model. This model estimates construction noise levels at selected locations around the construction site based on a database of measured equipment noise generation for each equipment type and the application of source-receptor distance acoustical propagation formulas. As shown in Table 23, the maximum noise would occur during Phase 2 of construction and is attributed to pile driving. The modeling indicates the maximum sound level (L_{max}) of combined noise would be 72.4 dBA and the continuous noise level (L_{eq}) would be 65.8 dBA during pile driving both of which exceeds background levels at Location 1. As shown in Table 23, noise from pile driving would attenuate farther from the terminal, but would also exceed background continuous noise level levels at Location 2. Assuming installation of six piles per day, pile driving is expected to take approximately 35 days. As shown, during all other periods of construction, noise would be under measured background rates.

Table 23
Construction Daytime Noise Limits and Exceedances

Sensitive Receptor	RCNM Construction L_{eq}	Measured Background L_{eq}	RCNM Construction L_{max}	Measured Background L_{max}
Phase 1: Upland Improvement				
Location 1: Closest Residential Area	55.4	57.4	55.6	65.4
Location 2: Residential Area South of Washington Street	48.2	57.8	46.9	72.4
Location 3: Residential Area Facing Washington Street	49.9	71.5	48.2	87.7
Phase 2: Waterfront Berth 2 Structure				
Location 1: Closest Residential Area	55.4	57.4	55.6	65.4
During Pile Driving	**65.8**	57.4	**72.3**	65.4
Location 2: Residential Area South of Washington Street	48.2	57.8	46.9	72.4
During Pile Driving	**59.8**	57.8	66.5	72.4
Location 3: Residential Area Facing Washington Street	49.9	71.5	48.2	87.7
During Pile Driving	61.2	71.5	67.8	87.7
Phase 3: Ship Unloader				
Location 1: Closest Residential Area	52.3	57.4	55.6	65.4
Location 2: Residential Area South of Washington Street	42.8	57.8	45.7	72.4
Location 3: Residential Area Facing Washington Street	44.4	71.5	47.1	87.7
Phase 4: Rail Loadout and Rail Trestle				
Location 1: Closest Residential Area	54.7	57.4	55.6	65.4
Location 2: Residential Area South of Washington Street	47.1	57.8	45.9	72.4
Location 3: Residential Area Facing Washington Street	48.6	71.5	47.3	87.7

Sensitive Receptor	RCNM Construction L_{eq}	Measured Background L_{eq}	RCNM Construction L_{max}	Measured Background L_{max}
Phase 5: Storage Dome and Material Handling Equipment				
Location 1: Closest Residential Area	54.7	57.4	55.6	65.4
Location 2: Residential Area South of Washington Street	47.1	57.8	45.9	72.4
Location 3: Residential Area Facing Washington Street	48.6	71.5	47.3	87.7

Notes:
The L_{max} noise limit is representative of the maximum volume permitted by the City for industrial uses.
Per previous noise analyses conducted, the existing day-night noise level (CNEL) near the project site ranges between 60 to 84 dBA (Port 2004). To analyze noise increases conservatively, a baseline of 60 dBA was used as the hourly L_{eq} limit.
Evening and night noise have not been analyzed because construction would not occur during evening hours (7:00 PM to 10:00 PM) or nighttime hours (10:00 PM to 7:00 AM).

Operational sources include trucks, rail, vessels, and terminal equipment. As noted previously, ship operations would occur 1,300 feet from the closest sensitive receptor, with the bulk of internal terminal operations occurring 900 to 1,000 feet away from the closest sensitive receptors. As noise attenuates with distance and shielding, noise from truck gate operations are assumed to affect residential areas the most as truck gates are within 500 feet of the residential receptors. However, as shown in Table 20, the background noise levels with existing Lehigh operations at the project site are lower than residential areas farther from the terminal.

Impact Determination: Noise would exceed background levels during pile driving in Phase 2 of construction. Project pile driving would occur only during daytime periods, not during evenings, or nights. Pile driving is assumed to take 35 days over the 8-month construction period, with six piles driven each day scheduled for pile driving. While pile driving would be relatively temporary over the full construction schedule and would only occur during weekday working hours, impacts are considered significant.

Mitigation Measures: There are no other feasible and available mitigation measures that can be employed to reduce the construction-related noise impacts associated with pile driving.

Residual Impact: As noted in Section 3.3.3, Lehigh would require pile driving activities use soft-start techniques, which would result in initial lower noise levels (in a soft-start method a pile is initially driven with low hammer energy; as the pile is driven farther into the soil, the hammer energy is increased as necessary to achieve soil penetration). However, soft-start techniques are meant more as a warning mechanism for aquatic species and do not offset the full sound of underwater or land-based pile driving. Use of bubble curtains would not achieve land-based noise attenuation because the source of the overwater noise comes from the hammer hitting the top of the pile. There are no other feasible and available mitigation measures that can be employed to reduce the construction-related noise impacts associated with pile driving. Residual impacts would be considered significant and unavoidable.

3.9.3.4.2 NV-2: Would the project result in generation of excessive groundborne vibration or groundborne noise levels?

Unless heavy construction activities are conducted extremely close (within a few feet) to neighboring structures, vibrations from construction activities rarely reach levels that damage structures. Typical vibration levels associated with construction equipment are provided in Table 24. Heavy equipment (e.g., a large bulldozer) generates vibrations levels of 0.089 inch per second PPV at a distance of 25 feet.

Table 24
Vibration Velocities for Construction Equipment

Equipment	PPV at 25 feet (inches/second)
Loaded Trucks	0.076
Jackhammer	0.035
Small Bulldozer/Backhoe	0.003

Note:
Source: FHWA 2006a.

The construction vibration damage criterion for buildings that are extremely susceptible to vibration damage is 0.12 inch per second PPV. This is the strictest PPV vibration threshold established by the Federal Transit Administration (FTA). The nearest building to the construction area would be approximately 50 feet to the north and the typical vibration level from heavy equipment at this distance would be less than 0.035 inch per second PPV, which would not exceed the FTA damage criteria.

Proposed project operations would create some groundborne vibrations due to truck movements. However, the project area is industrial, and any vibrations produced as a result of proposed project operations would be low and infrequent.

Impact Determination: Because the construction-related vibration would not exceed FTA thresholds, the proposed project would result in a less-than-significant impact related to construction vibration. Due to the industrial nature of the area and the anticipated low and infrequent emissions of vibrations, it is expected that the proposed project-related operational vibration would result in a less-than-significant impact.

Mitigation Measures: None required.

Residual Impact: Less-than-significant impact.

3.9.3.4.3 NV-3: Would the project be located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, be within 2 miles of a public airport or public use airport, and expose people residing or working in the project area to excessive noise levels?

There are no public airports located within 2 miles of the project area. The nearest public airport is the Stockton Municipal Airport, located nearly 5 miles southeast from the project site. The project site is not located in the vicinity of a private airstrip.

Impact Determination: Because of the distance of the project site from the nearest public airport or private airstrip, the proposed project would not expose people residing or working in the project area to excessive noise levels. There would be no impact.

Mitigation Measures: None required.

Residual Impact: No impact.

3.10 Transportation

This section describes the existing transportation resources in the project area surrounding the project site and analyzes how the proposed project may affect transportation. This section also describes applicable rules and regulations pertaining to transportation resources. For the purposes of the transportation analysis, the study area is defined as the project site and the surrounding area including roadways, railways, and the Stockton DWSC. During construction, trucks would be used to transport construction equipment to and haul construction waste from the sites. Construction workers and facility personnel would access the project site almost exclusively by personal vehicles. During operation, personal worker vehicles, trucks and rail cars would enter and exit the Lehigh terminal. Ships and barges would access the facility via the existing berth. Public transportation, bicycle use, and pedestrian access to the facility is extremely limited and therefore not addressed.

3.10.1 Environmental Setting

This section discusses the transportation-related context in which the proposed project would be constructed and would operate, including the street and rail network that serves the area; maritime navigation, existing transit service, bicycle, and pedestrian facilities near the project site; and a summary of current conditions.

3.10.1.1 Regional and Local Roadway Network

The Port is served by a number of regional freeways and highways, namely I-5, SR-4, and SR-99, with local roads serving the terminals and wharves. I-5, Fresno Avenue, Center Street, and El Dorado Street serve the major north-south movements of traffic in the proposed project vicinity, and Washington Street, Navy Drive, and Charter Way serve the east-west flow of traffic in the area (Figure 16). Existing roadways are discussed as follows:

- **I-5** provides local, regional, and statewide access to the proposed project. It is an eight-lane freeway with a freeway-to freeway interchange located at the confluence of I-5 and SR-4.
- **SR-4** is an east-west highway. Immediately west of I-5, SR-4 is also called Charter Way, and is an east-west arterial with two lanes. The roadway has four through lanes. Surrounding land uses are mainly industrial, with some commercial uses at major intersections. The second part of SR-4, known as the Crosstown Freeway, begins at Fresno Avenue, has an interchange with I-5, and continues east. This section of SR-4 is a divided freeway with two to four lanes in each direction, plus auxiliary lanes. Caltrans opened the Crosstown Freeway Extension project in 2016, which extended the Crosstown Freeway west from Fresno Avenue to Navy Drive. The extension is elevated and crosses over Fresno Avenue, creating a grade separation that now prohibits highway traffic from entering the Boggs Tract neighborhood at Fresno Avenue.

- **Navy Drive** is a four-lane facility with a partial interchange, which integrates the SR-4 Crosstown Freeway Extension with a direct route into the Port's West Complex that improves traffic flow, decreases idle times, and improves safety.
- **Washington Street** is a two-lane east-west collector and an arterial, which begins in the west at Navy Drive and terminates at the Weber Avenue intersection. Washington Street was previously the major east-west facility through the Port area and the residential area east of the Port. However, following the opening of the Crosstown Freeway Extension, Washington Street from the railroad tracks west is now a private Port road, which will likely be closed to traffic in the near future.
- **Fresno Avenue** is a north-south roadway from north of Washington Street through the residential area south of Charter Way. The facility is two lanes wide. Between Hazelton Avenue and Charter Way, Fresno Avenue is surrounded by mainly industrial land uses.

3.10.1.2 Rail Network

California's freight railroad system consists of Class I railroads (BNSF Railway [BNSF] and UP), which transport freight to and from the state over state lines and Class III railroads, referred to as shortline railroads, which provide local rail movements. Both UP and BNSF lines serve the Port. In northern California, the Martinez Subdivision, Feather River Canyon, and Donner Pass routes serve the ports of Oakland and Stockton, and are owned and dispatched by UP but serve BNSF through trackage right agreements. BNSF operates the Stockton Intermodal Facility on the southeast edge of the City and UP operates a major intermodal facility and other terminal operations in Lathrop, California. Several shortline railroads also operate in Stockton (Figures 17 and 18). CCT, jointly owned by BNSF and UP, operates 52 miles of freight service between Stockton and Lodi and is the shortline operator for the Port. CCT connections are made with BNSF, UP, and the Stockton Terminal and Eastern Railroads, which run from Stockton to Linden (City 2018). The Port provides its own internal railway system. CCT provides all switching and local movements within the Port.

3.10.1.3 Maritime Navigation

The Port is served by the Stockton DWSC within the San Joaquin River, which provides access to the Port from the San Francisco Bay. Vessel traffic in the study area includes commercial shipping and recreational vessels, as well as vessels to support periodic maintenance dredging operations. All commercial deep draft vessels calling on the Port pick up a bar pilot at the offshore sea buoy before entering the San Francisco Bay through the Main Ship Channel.

3.10.1.4 Public Transit

There are no public transit facilities within the Port.

Local Regional Truck Roadways:

- Interstates
- Highways
- Major Streets
- Port Roads
- Other Streets

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Figure 16
Local and Regional Roadways
LeHigh Southwest Stockton Terminal Project
Port of Stockton

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Figure 17
Local and Regional Railways
LeHigh Southwest Stockton Terminal Project
Port of Stockton

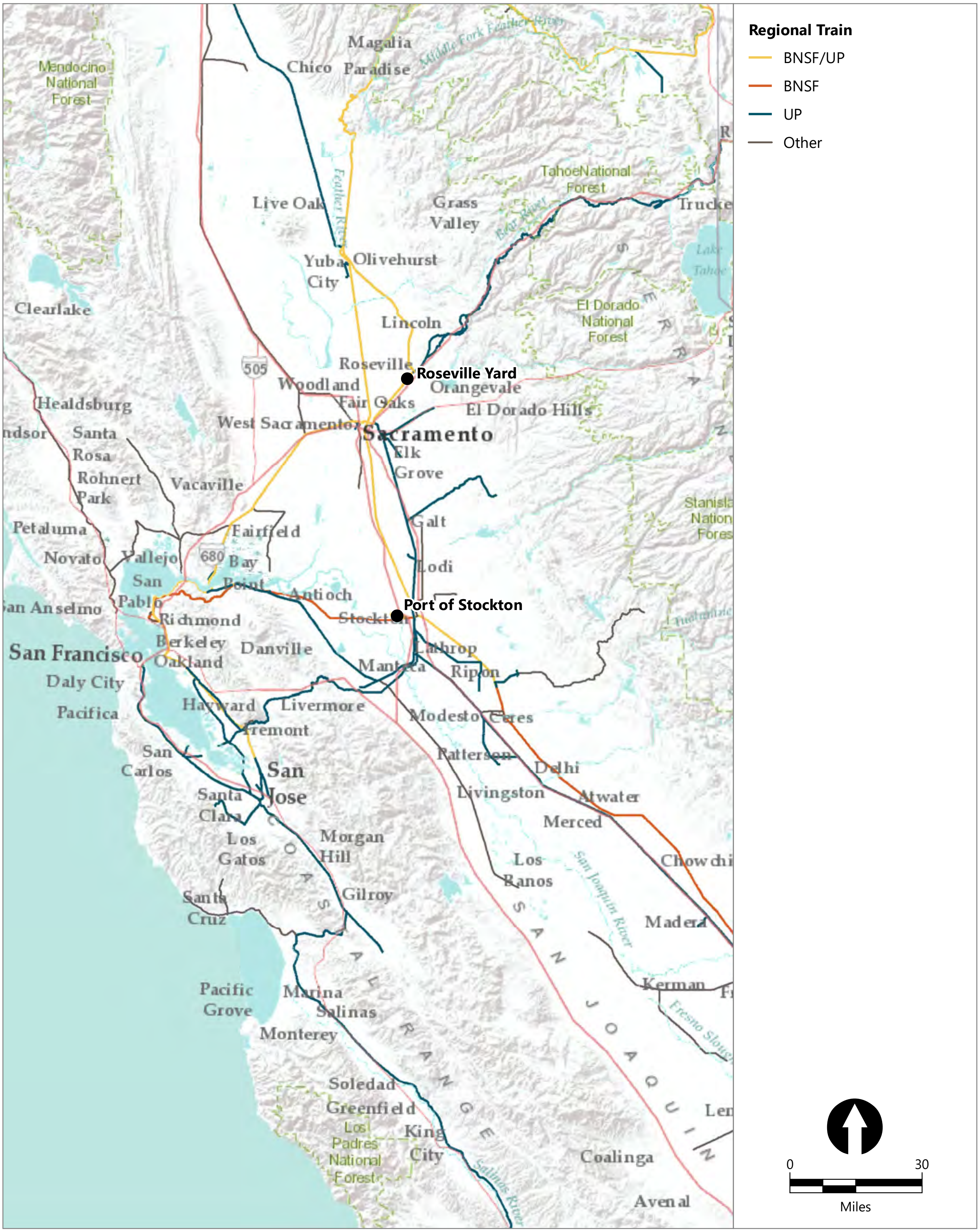

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Figure 18
Regional Railways

LeHigh Southwest Stockton Terminal Project
Port of Stockton

3.10.1.5 Bike and Pedestrian Facilities

Bike and pedestrian facilities are extremely limited within the Port. There are no bike lanes and most roads are private and do not include sidewalks.

3.10.2 Applicable Regulations

3.10.2.1 State

3.10.2.1.1 Caltrans

Traffic analyses in the state of California are guided by policies and standards set at the state level by Caltrans and local jurisdictions. Caltrans policies are applicable to the proposed project and are summarized in Caltrans's *Guide for the Preparation of Traffic Impact Studies*, which provides a summary of goals and policies (Caltrans 2002). Per the Caltrans guidebook, the appropriate level of traffic analysis is determined by the nature of a project, highway conditions, and forecasted traffic. If a project meets the following criteria, this provides a starting point for determining whether a TIS is needed:

- The project would generate over 100 peak-hour trips assigned to a state highway facility.
- The project would generate 50 to 100 peak-hour trips assigned to a state highway facility and affected state highway facilities are experiencing noticeable delay, approaching unstable traffic flow conditions (Level of Service [LOS] C or D).
- The project would generate one to 49 peak-hour trips assigned to a state highway facility, and: 1) affected state highway facilities are experiencing significant delay with unstable or forced traffic flow conditions (LOS E or F); 2) the potential risk for a traffic incident is significantly increased (e.g., congestion related collisions, non-standard sight distance considerations, increase in traffic conflict points); or 3) the project would cause changes in local circulation networks that impact a state highway facility (e.g., direct access to state highway facility, a non-standard highway geometric design).

3.10.2.1.2 Senate Bill 743

SB 743, signed by Governor Brown in 2013, is intended to better align congestion management with statewide goals related to infill development, promotion of public health through active transportation, and reduction of GHG emissions. SB 743 has set the stage for moving away from LOS, which measures delay to motorists, to vehicle miles traveled (VMT) as the metric to evaluate transportation network performance and land use and transportation planning decisions through CEQA. Specifically, SB 743 requires OPR to amend the CEQA Guidelines to provide an alternative to LOS for evaluating transportation impacts.

In December 2018, the California Natural Resources Agency certified and adopted the CEQA Guidelines update package, including the CEQA Guidelines section implementing SB 743. Under the updated CEQA Guidelines, the CEQA analysis must consider the amount and distance of automobile travel attributable to a project. OPR issued a *Technical Advisory on Evaluating Transportation Impacts in CEQA (Technical Advisory*; OPR 2018), which provides general guidance on VMT analyses in the absence of regional guidance and defines automobiles as on-road passenger vehicles, specifically cars and light trucks. Other relevant considerations may include the effects of the project on transit and non-motorized travel. SB 743 also amended congestion management law to allow cities and counties to opt out of LOS standards within certain infill areas. Transportation impacts related to air quality, noise, and safety must still be analyzed under CEQA where appropriate (PRC 21099[b][3]). Under PRC 21099, automobile delay, as described solely by LOS or similar measures of vehicular capacity or traffic congestion, shall not be considered a significant impact on the environment. (*Citizens for Positive Growth & Preservation v. City of Sacramento*). However, because transportation planning is done on a regional level, lead agencies will have a grace period until July 1, 2020, before the VMT metric for analyzing transportation impacts becomes mandatory on a statewide basis. As a result, unless an agency, in this case SJCOG or the City, has already adopted the VMT metric, project EIRs circulated for public review before July 1, 2020, are not required to evaluate transportation impacts based on VMT. (CEQA Guidelines Section 15007[c]: "if a document meets the content requirements in effect when the document is sent out for public review, the document *shall not* need to be revised to conform to any new content requirements in Guideline amendments taking effect before the document is finally approved.") As discussed further in Section 3.10.2.2.1, SJCOG is the regional agency developing VMT guidance for the project area; however, this regional guidance for VMT analysis has not yet been developed.

3.10.2.1.3 California Public Utilities Commission

The California Public Utilities Commission (CPUC) has legal regulatory authority over rail safety within California, including operations and grade crossings throughout the state. However, rail operations under the proposed project not subject to approval or modification by CPUC because no grade crossings would be added or modified.

3.10.2.1.4 California Department of Boating and Waterways

The California Harbors and Navigation Code vests authority with the California Department of Boating and Waterways to regulate matters of navigational safety for the state's boating public. The code establishes laws and regulations governing the equipment and operation of vessels on waters of the state, including within the study area.

3.10.2.2 Regional and Local

3.10.2.2.1 San Joaquin Council of Governments

SJCOG has developed a Regional Transportation Plan (RTP), which guides the region's transportation development over a 20-year period and covers all modes of transportation. The RTP is updated every

3 years to reflect changes in available funding, economic activity, and population, and to incorporate findings from corridor studies and major infrastructure investments. The projects included in the RTP are also assessed as to their effect on air quality because the RTP is used in the SIP to ensure states are meeting federal conformity standards. If a project is included in the RTP, its effect on regional conformity goals has been accounted for. The current 2018 RTP was adopted by the SJCOG Board in June 2018. The City is responsible for coordination with regional transportation plans.

SJCOG has formed a SB 743 Technical Working Group to address shifting from LOS to VMT in local agency and SJCOG CEQA analysis, and adapting related SJCOG programs such as the RTP, if necessary. No draft guidance is available at this time.

3.10.2.2.2 City of Stockton

The City's 2040 General Plan (City 2018) guides the maintenance, design, and operation of transportation, including streets and highways, within the project area. The following goals and policies applicable to the Port and proposed project are provided for transportation:

- **Policy TR-1.1:** Ensure that roadways safely and efficiently accommodate all modes and users, including private, commercial, and transit vehicles, as well as bicycles and pedestrians and vehicles for disabled travelers.
  - **Action TR-1.1A:** Direct truck traffic to designated truck routes that facilitate efficient goods movement and minimize risk to areas with concentrations of sensitive receptors, such as schools, for example by disallowing any new truck routes to pass directly on streets where schools are located, and vulnerable road users, like pedestrians and bicyclists.
  - **Action TR-1.1B:** Maintain and periodically update a schedule for synchronizing traffic signals along arterial streets and freeway interchanges to facilitate the safe and efficient movement of people and goods and to provide signal priority for transit vehicles at intersections.
  - **Action TR-1.1C:** Require roadways in new development areas to be designed with multiple points of access and to address barriers, including waterways and railroads, in order to maximize connectivity for all modes of transportation
  - **Action TR-1.1D:** Update existing Precise Road Plans to reflect the 2040 General Plan, including changes in land use and LOS requirements, and a shift in priority from vehicular travel to travel by all modes through complete streets.
- **Policy TR-1.2:** Enhance the use and convenience of rail service for both passenger and freight movement.
  - **Action TR-1.2C:** Provide grade separations at railroad crossings on arterial streets where feasible to ensure public safety and minimize traffic delay.

- **Policy TR-1.3:** Facilitate expanded port and airport operations, service, and development as travel and goods movement assets to the community and sources of employment growth.

As noted above, SB 743 requires moving from LOS to VMT as the metric to evaluate transportation network performance and land use and transportation planning decisions, with investments oriented toward reducing VMT. The 2040 General Plan (City 2018) includes the following policies related to integrating SB 743 into future planning:

- **Policy TR-4.1:** Utilize LOS information to aid understanding of potential major increases to vehicle delay at key signalized intersections.
  - **Action TR-4.1A:** Strive for LOS D or better for both daily roadway segment and peak-hour intersection operations, except when doing so would conflict with other land use, environmental, or economic development priorities, and with the following additional exceptions:
    - In the Greater Downtown, strive for LOS E or better, but LOS F may be acceptable after consideration of physical or environmental constraints and other City goals and policies.
    - Roadway segments determined to be operating at deficient LOS by SJCOG in the Regional Congestion Management Program (RCMP)
    - Accept worse than adopted-standard LOS at intersections where widening the intersection would reduce bicycle and pedestrian safety and/or increase pedestrian crossing times such that they would create longer traffic delays due to signal timing.
  - **Action TR-4.1B:** Amend the City's Transportation Impact Analysis Guidelines to reflect the updated LOS goals under Action TR-4.1.A and to refine the threshold at which a project needs to evaluate LOS impacts.
- **Policy TR-4.2:** Replace LOS with: 1) VMT per capita; and 2) impacts to non-automobile travel modes, as the metrics to analyze impacts related to land use proposals under CEQA, in accordance with SB 743.
  - **Action TR-4.2A:** To evaluate the effects of new development and determine mitigation measures and impact fees, require projects to evaluate per capita VMT and impacts to transit, bicycle, and pedestrian modes.
  - **Action TR-4.2B:** Amend the City's Transportation Impact Analysis Guidelines to include alternative travel metrics and screening criteria.
- **Policy TR-4.3:** Use the threshold recommended by OPR for determining whether VMT impacts associated with land uses are considered significant under state environmental analysis requirements.
  - **Action TR-4.3A:** Amend the City's Transportation Impact Analysis Guidelines to: 1) establish a threshold of 15% below baseline VMT per capita to determine a

significant transportation impact under CEQA; and 2) identify screening criteria that will streamline certain types of development and/or development in certain areas by not requiring a VMT analysis.

While the policies call for amending the City's Transportation Impact Analysis (TIA) Guidelines, new guidelines from the City are not yet available. In the absence of new TIA Guidelines or SB 743 guidance, the proposed project would be required to adhere to the City's existing transportation policies (City 2003). The City requires traffic impact analyses for projects generating 100 or more vehicle trips during the AM or PM peak hours. LOS is used by transportation planners and engineers as the standard measure for determining traffic congestion on roadways and intersections. Because the project area is within the City's jurisdiction, it is subject to LOS standards used by the City. The City identifies the minimum acceptable operations criteria for roadway segments and signalized intersections to be LOS D.

3.10.3 Environmental Impacts and Mitigation Measures

3.10.3.1 Baseline

At the time of publication of the NOP for the proposed project, the terminal handled 800,000 tons of product and generated 18,720 annual truck trips, 117 annual train trips, and nine ship calls, as shown in Table 9.

3.10.3.2 Thresholds

For purposes of this DEIR, the following thresholds, which are based on Appendix G of the CEQA Guidelines (Environmental Checklist), were used to determine whether the proposed project would result in impacts to traffic and transportation resources. The proposed project would have an impact if:

- **TT-1:** The project would conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.
- **TT-2:** The project would conflict or be inconsistent with CEQA Guidelines Section 15064.3(b).
- **TT-3:** The project would substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).
- **TT-4:** The project would result in inadequate emergency access.

3.10.3.3 Methodology for Determining Impacts

Because the project area is within the jurisdiction of the City, the proposed project is subject to LOS standards used by the City. The City identifies the minimum acceptable operations criteria for roadway segments and signalized intersections to be LOS D (City 2003).

On-road construction trips would be restricted to worker vehicle trips (15 per day) and periodic limited deliveries of construction equipment to the terminal. Operational mode shifts are presented in Table 25. As shown, the proposed project would result in increased truck trips, train trips, and ship calls per year as compared to baseline conditions.

Table 25
Operational Mode Shifts

	Baseline	Year 1	Year 5	Year 15	Max Increment (Year 15 minus Baseline)
Truck Shipping[1]	18,720	20,806	35,185	39,722	21,002
Truck Receiving	0	900	1,852	2,778	2,778
Rail Cars	587	1,905	3,810	4,762	--
Rail Trips	117[2]	190[3]	190[3]	238[3]	121
Ships Calls	9	21	39	48	39
Barges Calls	0	0	0	40	40

Notes:

4. Trucks are expressed as one-way moves
5. Assumes an average of five to seven cars per train in baseline and 20 cars per train by analysis year 5
6. Maximum of one ship or barge at berth per day

Trucks would enter the facility at the truck gates at Port Road A/Harbor Street, and would travel from the terminal to Navy Drive via North Port Road 13 to West Washington Street. Most trucks would travel south on Navy Drive to connect to the Crosstown Freeway Extension (SR-4) to access the freeway system. A smaller amount of trucks may travel north on McCloy Avenue to connect to the Port of Stockton Expressway (Figure 16). Truck travel is a mixture of local deliveries (within 10 miles) and regional deliveries (80 miles). Operations at the terminal generally see approximately 80% of the daily truck calls within the first 5 shipping hours of the day (5 AM to 10 AM), with the balance of truck calls spread through the day. The average truck trip is 30 miles under existing operations and would grow to 40 miles as a result of the proposed project because deliveries to the Bay Area would be expected to increase. Rail deliveries would be made by manifest cars. The Roseville yard would be the collection and staging point for manifest trains to and from the Port. Currently, the terminal receives an average of five cars per train. When the rail loadout upgrade is complete, the terminal would be able to receive up to 20 cars per train. Vessels origins are international, with one ship able to berth at a time. Barges may be used to transport product to the Bay Area by analysis year 15.

3.10.3.4 Impact Analysis

3.10.3.4.1 TT-1: Would the project conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?

The City's TIA Guidelines require the preparation of a TIA for any project estimated to generate more than 100 new AM or PM peak-hour trips. The City's TIA Guidelines provide a process that can be used to determine whether a project meets the thresholds needed for a TIA. The City's TIA Guidelines also provide background assumptions specific to regional conditions. For example, peak morning periods in the City are 7:00 AM to 9:00 AM and the peak afternoon periods are 4:00 PM to 6:00 PM for. The process was used to determine whether a TIA was needed.

Construction. Except for the initial movement of construction equipment to the site at the start of construction and eventual movement from the site at the end of construction, construction of the proposed project would not affect roads or other transportation corridors. There would be approximately 10 truck trips per day during the initial phases to haul away debris and import clean fill and construction material. Even assuming all 10 trucks were during peak period, construction-related traffic would remain under the threshold of 100 trips during peak hours, defined as the peak hour of the 2-hour morning peak period (7:00 AM and 9:00 AM) and evening peak period (4:00 PM to 6:00 PM).

Operations. Based on the existing and proposed project operations, estimates of net-new annual, daily, and peak-hour project vehicle trip generation were developed using a standard net vehicle trip generation table based on the Institute of Transportation Engineers (ITE) Trip Generation Manual. The table considers the movement of traffic associated with the proposed project at the maximum year, and uses background traffic data.

Table 26 presents the net vehicle trip generation table for the proposed project. The table standardizes all types of vehicles into passenger car equivalents to account for the difference in size and acceleration rates between cars and heavy-duty trucks. Each truck is counted as two passenger vehicles. The table allows for a determination of the number of additional trips attributed to the proposed project in the peak hours. Based on recent traffic counts at the Port, the highest traffic in peak periods is from 8:00 AM to 9:00 AM. As shown in Table 26, the proposed project would result in 93 daily calls (trucks and vehicles) at maximum build-out. These calls would equate to 370 passenger car equivalencies. During peak morning hours, there would be 57 new passenger car equivalent trips. During afternoon peak hours, there would be 73 new passenger car equivalent trips. Therefore, the proposed project is expected to generate fewer than 100 net-new vehicle trips in either the morning or evening peak hour, even considering the passenger car equivalents for heavy-duty truck trips.

Table 26
Project Net Vehicle Trip Generation Estimates Maximum Year (Year 15)

<table>
<tr><th rowspan="4">Trip Type</th><th rowspan="4">Quantity (short tons)</th><th colspan="2" rowspan="2">Calls[1]</th><th colspan="7">Trip Generation[2,3,4,5]</th></tr>
<tr><th rowspan="3">Daily Trips</th><th colspan="6">Peak Hour</th></tr>
<tr><th rowspan="2">Annual</th><th rowspan="2">Daily</th><th colspan="3">AM</th><th colspan="3">PM</th></tr>
<tr><th>Enter</th><th>Exit</th><th>Total</th><th>Enter</th><th>Exit</th><th>Total</th></tr>
<tr><td>Truck Shipping</td><td>567,068</td><td>21,002</td><td>81</td><td>162</td><td rowspan="2">13</td><td rowspan="2">15</td><td rowspan="2">28</td><td rowspan="2">19</td><td rowspan="2">17</td><td rowspan="2">36</td></tr>
<tr><td>Truck Receiving</td><td>75,000</td><td>2,778</td><td>11</td><td>22</td></tr>
<tr><td>Terminal Workers</td><td>1</td><td></td><td>1</td><td>2</td><td>1</td><td>--</td><td>1</td><td>--</td><td>1</td><td>1</td></tr>
<tr><td colspan="3">Total Daily Vehicle Calls
(Passenger Cars plus Trucks)</td><td>93</td><td>--</td><td>--</td><td>--</td><td>--</td><td>--</td><td>--</td><td>--</td></tr>
<tr><td colspan="4">Total Vehicle Trips[2]
(Each Vehicle Makes 2 Daily Trips: 1 Entering and 1 Exiting)</td><td>186</td><td>14</td><td>15</td><td>29</td><td>19</td><td>18</td><td>37</td></tr>
<tr><td colspan="4">Passenger Car Equivalents[6]
(1 Truck Equals 2 Passenger Cars)</td><td>370</td><td>27</td><td>30</td><td>**57**</td><td>38</td><td>35</td><td>**73**</td></tr>
</table>

Notes:
7. Calls are number of trucks or cars that call on a terminal a year and per day.
8. Trip generation represents number of trips. Each truck call would generate two trips, one in and one out of the terminal.
9. Per Lehigh, 80% of daily truck volume occurs in the first 5 shipping hours daily (5:00 AM to 10:00 AM) with the balance spread throughout the day.
10. Vehicle classification counts at the Port were used to estimate the share of truck traffic during the first 5 hours that will occur during the AM peak period (between 7:00 AM and 9:00 AM). Based on the classification counts (National Data & Surveying Services, counts taken December 18, 2019 [NDS 2019]), 19% will occur from 8:00 AM to 9:00 AM (the highest traffic hour of the peak period). To be conservative, the remaining 20% were assumed to occur in the peak hour.
11. Entering/exiting distribution based on the ITE Trip Generation Manual (10th Edition) (ITE 2017) land use Intermodal Truck Terminal (Land Use Code 030): AM: Entering = 47%; Exiting = 53%; PM: Entering = 52%; Exiting = 48%
12. Passenger car equivalents – Each truck is assumed as two passenger vehicles to account for the travel behavior of large trucks.

As noted in Section 3.10.1, Caltrans also provides guidance for determining whether a project requires a TIS. The Caltrans methodology is based on the new peak-hour trips on a state highway and would be triggered if:

- The project would generate over 100 peak-hour trips assigned to a state highway facility.
- The project would generate 50 to 100 peak-hour trips assigned to a state highway facility and affected state highway facilities are experiencing noticeable delay, approaching unstable traffic flow conditions (LOS C or D).
- The project would generate one to 49 peak-hour trips assigned to a state highway facility, and: 1) affected state highway facilities are experiencing significant delay with unstable or forced traffic flow conditions (LOS E or F); 2) the potential risk for a traffic incident is significantly increased (e.g., congestion related collisions, non-standard sight distance considerations, increase in traffic conflict points); or 3) the project would cause changes in

local circulation networks that impact a state highway facility (e.g., direct access to state highway facility, a non-standard highway geometric design).

As noted above, the truck trips would travel on local Port roads with the majority using I-5 and SR-4 to access regional destinations by way of six access ramps, four serving northbound and southbound I-5 and two serving eastbound and westbound SR-4. A review of Google Maps midweek (typical Wednesday) traffic flow during the AM and PM peak hours shows that neither I-5 or SR-4 freeway-to-freeway ramp connections experience slow or forced traffic flow conditions in the Port area (Google Maps 2019). Therefore, the affected highways do not operate at LOS E or F. In addition, the proposed project will not change cause changes in local circulation networks that impact a state highway facility, and there are no identified areas of increased risk for a traffic incidents.

The distribution of truck trips would be a function of regional construction activity and subject to market demand for bulk cementitious material. As such, the distribution would not be fixed and would change over time. As shown in Table 26, the highest peak hour would generate 37 vehicle trips (73 passenger car equivalents). Conservatively assuming equal distribution to the six access ramps, this would equate to three vehicle trips (six passenger car equivalents) using each ramp, which would be under applicable Caltrans guidance levels. Therefore, a TIS is not required.

Impact Determination: With a maximum of 10 trips per day, construction-related traffic would remain under the threshold of 100 trips during peak hours, defined as the peak morning period of 7:00 AM to 9:00 AM and the peak afternoon period of 4:00 PM to 6:00 PM.

As shown in Table 26, the proposed project would result in 93 daily calls (heavy-duty trucks and passenger vehicles) at maximum build-out. During peak morning hours, there would be 57 new passenger car equivalent trips. During afternoon peak hours, there would be 73 new passenger car equivalent trips. Therefore, for both construction and operation, the proposed project is expected to generate fewer than 100 net-new vehicle trips in either the morning or evening peak hour, even considering the passenger car equivalents for truck trips during operations. No further traffic analysis is required. Impacts would be considered less than significant.

Mitigation Measures: None required.

Residual Impact: Less-than-significant impact.

3.10.3.4.2 TT-2: Would the project conflict or be inconsistent with CEQA Guidelines Section 15064.3 (b)?

CEQA Guidelines Section 15064.3(b) describes specific considerations for evaluating a project's transportation impacts and notes that VMT is the most appropriate measure of transportation impacts consistent with SB 743. As discussed in Section 3.10.2.1, SB 743 creates a process to change the way that transportation impacts are analyzed under CEQA and requires OPR to amend the CEQA Guidelines to provide an alternative to LOS for evaluating transportation impacts. CEQA Guidelines Section 15064.3 defines VMT as the amount and distance of automobile travel, specifically for cars and light trucks, attributable to a project. (OPR Technical Advisory, p. 4. [OPR 2018])

As of January 1, 2019, vehicle LOS is no longer to be used as a measure of transportation impact for land use projects and land use plans, although lead agencies have been granted a grace period until July 1, 2020, to implement these changes. SJCOG is the regional agency developing VMT guidance for the project area, but it has not yet been developed guidance or a methodology. As discussed in Section 3.10.2.1.2, if such guidance is not available, project EIRs circulated for public review before July 1, 2020, are not required to evaluate transportation impacts based on a VMT metric. (CEQA Guidelines Section 15007(c): "if a document meets the content requirements in effect when the document is sent out for public review, the document *shall not* need to be revised to conform to any new content requirements in Guideline amendments taking effect before the document is finally approved").

Impact Determination: An assessment of the proposed project's impacts on VMT is not required because the DEIR was circulated prior to July 1, 2020, and SJCOG has not issued regional VMT guidance. Therefore, impacts were assessed against applicable guidance from Caltrans and the City as discussed under Impact TT-1 in Section 3.10.3.4.1, which found impacts to be less than significant.

Mitigation Measures: None required.

Residual Impact: Less-than-significant impact.

3.10.3.4.3 TT-3: Would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Washington Street, Navy Drive, SR-4, and Harbor Street all provide primary access to the project site from the interstate highway system and are all designated to accommodate trucks carrying industrial products. Added truck traffic would be limited to the routes designed and designated to accommodate commercial trucks carrying heavy loads. The proposed project is not expected to substantially increase hazards as described in Section 3.7.3. Trucks would travel on dedicated truck routes and comply with Caltrans and DOT regulations.

Impact Determination: The proposed project does not include any modifications to the existing transportation network and is consistent with overall uses at the Port. Therefore, there would be no impact.

Mitigation Measures: None required.

Residual Impact: No impact.

3.10.3.4.4 TT-4: Would the project result in inadequate emergency access?

All vehicular access to and from the project site would be provided from Harbor Street, which connects to both Washington Street through multiple connections and then to Navy Drive, such that if one route was blocked, there are alternate routes to access the site. While truck trips would increase as part of the proposed project, the trucks can be accommodated within the larger Port network which is designed for Port and industrial operations. The Port has developed an emergency response plan to address emergency needs Port-wide and maintains its own Police Department, which is responsible for providing security protection of Port tenants on a 24-hour basis. Additionally, the closest fire station to the project site is approximately 3.5 miles to the east of the site at 110 West Sonora Street. There are two additional fire stations located at 3499 Manthey Road and 1501 Picardy Drive, approximately 4 miles south and northeast of the project site, respectively.

Impact Determination: Because the proposed project is not expected to increase the need for emergency services or block any emergency access routes, the proposed project is expected to have no impact related to inadequate emergency access.

Mitigation Measures: None required.

Residual Impact: No impact.

3.11 Tribal Cultural Resources

This section details the existing tribal cultural resources within the study area and the relevant federal, state, and local regulations and policies. The information presented in this section is largely based on tribal consultation to date, as well as information from the cultural resources evaluation in Section 3.3.

Tribal cultural resources are defined in PRC 21074 as follows:

1. A site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is listed or eligible for listing in the CRHR, or in a local register of historical resources as defined in PRC 5020.1(k); or
2. A resource determined by the lead agency to be significant pursuant, after considering the significance of the resource to a California Native American tribe.

For the purposes of this analysis, the study area is defined as the project site (the Lehigh terminal and Berth 2).

3.11.1 Environmental Setting

As noted in Section 3.3.1.1, the project area is in the traditional territory of the Yokuts tribe and may also have been used or settled by Plains Miwok and Wintun peoples. Two Native American tribes have requested to be contacted regarding projects at the Port: the Buena Vista Rancheria of Miwok Indians and the Wilton Rancheria. Under AB 52, NAHC must also be consulted.

The Port provided the NOP to NAHC in October 2019, and also sent a separate letter requesting a search of the Sacred Lands File in October 2019. NAHC sent the Port a letter in November 2019 acknowledging receipt of the NOP and describing the AB 52 process. The Port sent letters notifying the Buena Vista Rancheria of Miwok Indians and the Wilton Rancheria of the proposed project in October 2019. No response has been received to date.

3.11.2 Applicable Regulations

3.11.2.1 State

3.11.2.1.1 Assembly Bill 52

AB 52, enacted in 2016, establishes a formal role for California Native American tribes in the CEQA process and promotes the involvement of California Native American tribes in the decision-making process when it comes to identifying and developing mitigation for impacts to resources of importance to their culture. AB 52 requires consideration of tribal cultural resources, which are defined as a property, landscape, or object which is of cultural value to a tribe and is eligible for the

CRHR or a local historic register (or is determined by the lead agency to be a tribal cultural resource). Under the updated guidelines, tribes must be notified of a project when it is initiated, and can request consultation within 30 days, after which the lead agency must begin consultation within 30 days of the request.

3.11.3 Environmental Impacts and Mitigation Measures

3.11.3.1 Baseline

At the time of the NOP for the proposed project, the terminal was fully operational. The terminal handled 880,000 tons of product and generated 18,720 annual truck trips, 117 annual train trips and nine ship calls. The terminal operated below its permitted capacity of 6,000 tons of cementitious material per day (or 2.628 million tons per year received via ship or rail).

3.11.3.2 Thresholds

For purposes of this DEIR, the following thresholds, which are based on Appendix G of the CEQA Guidelines (Environmental Checklist), were used to determine whether the proposed project would result in impacts on tribal cultural resources. The proposed project would have an impact on tribal cultural resources, if:

- **TCR-1:** The project would cause a substantial adverse change in the significance of a tribal cultural resource, defined in PRC 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is
  - Listed or eligible for listing in the CRHR, or in a local register of historical resources as defined in PRC 5020.1(k), or
  - A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth PRC 5024.1(c).

3.11.3.3 Methodology for Determining Impacts

The CEQA Guidelines define a substantial adverse change in the significance of a tribal cultural resource as a significant effect on the environment. A substantial adverse change to tribal cultural resources is defined to include physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of the resource (its eligibility for the CRHR or local preservation registers) would be materially impaired (CEQA Guidelines Section 15064.5[b][1]).

3.11.3.4 Impact Analysis

3.11.3.4.1 TCR-1: The project would cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074.

Impact Determination:

There are no known sites, features, places, or cultural landscapes that are listed or eligible for listing in the CRHR, or in a local register of historical resources as defined in PRC 5020.1(k), or a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in PRC 5024.1(c) in the project area. Native American tribes and NAHC have been consulted per AB 52, and no unknown tribal cultural resources have been identified. As described in Section 3.3.4, the proposed project would be built in fill, possibly extending into native sediments that have low potential for archaeological materials or human remains. While the potential is low, native sediments may contain a previously unrecorded archaeological sites or human remains could be tribal cultural resources. Therefore, because the proposed project includes disturbance of soil through direct removal, if archaeological materials or remains are present in previously undisturbed native sediments, they could potentially be disturbed during construction. If archaeological materials or human remains are encountered during construction, impacts could be considered potentially significant.

Mitigation Measures:

- **MM-CHR-2: Stop Work in the Area If Prehistoric or Historical Archaeological Resources Are Encountered.**

Residual Impact: Less-than-significant impact.

4 Cumulative Impacts

4.1 Requirements for Cumulative Impact Analysis

CEQA requires that EIRs analyze cumulative impacts. As defined in Section 15355 of the CEQA Guidelines, a cumulative impact consists of an impact that is created as a result of the combination of a project evaluated in an EIR together with other past, present, and reasonably foreseeable future projects causing related impacts in the vicinity of the proposed project. CEQA Guidelines Section 15130 requires that an EIR discuss cumulative impacts of a project when the project's incremental effect is "cumulatively considerable." The following definition of cumulatively considerable is provided in CEQA Guidelines Section 15065(a)(3):

> "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.

According to CEQA Guidelines Section 15130(b):

> [t]he discussion of cumulative impacts shall reflect the severity of the impacts and their likelihood of occurrence, but the discussion need not provide as great detail as is provided for the effects attributable to the project alone. The discussion should be guided by standards of practicality and reasonableness, and should focus on the cumulative impact to which the identified other projects contribute rather than the attributes of other projects which do not contribute to the cumulative impact.

Where a lead agency is examining a project with an incremental effect that is not "cumulatively considerable," a lead agency need not consider that effect significant, but must briefly describe its basis for concluding that the incremental effect is not cumulatively considerable. Cumulative impact assessments are not required for impacts that do not result in part from a project evaluated in an EIR. Therefore, the cumulative impact analysis in this section focuses on whether the impacts of the proposed project are cumulatively considerable within the context of impacts caused by other past, present, or future projects. The cumulative impact scenario considers other projects proposed within the area defined for each resource that have the potential to contribute to cumulatively considerable impacts.

According to CEQA Guidelines Section 15130(b):

> Factors to consider when determining whether to include a related project should include the nature of each environmental resource being examined, the location of the project and its type. Location may be important, for example, when water quality impacts are at issue since projects outside the watershed would probably not contribute to a cumulative effect. Project type may be important, for example, when the impact is specialized, such as a particular air pollutant or mode of traffic.

In preparing the cumulative impact analysis, related projects that have been or may be constructed in the geographic scope of the proposed project were reviewed and evaluated. Using guidance provided in CEQA Guidelines Section 15130, past projects related to the development of the Port and present and future projects that have similar potential for impacts and are located in the same geographical area as the proposed project were identified. Section 4.1.1 includes a discussion of past projects that have shaped the Port and Table 27 presents a list of present and probable future projects considered for their related impacts. In consideration of these projects, cumulative impact analyses for each environmental issue potentially affected by the proposed project are presented herein. For several resource areas, this cumulative impact analysis also included projected future growth as a factor.

4.1.1 Projects Considered Under Cumulative Analysis

Consistent with CEQA Guidelines, the cumulative impact scenario considers other projects proposed within the geographic scope defined for each resource that have the potential to contribute to cumulatively considerable impacts. Impacts were identified using the list methodology. Resource areas were analyzed using a list of closely related projects that have been or would be constructed in the cumulative geographic scope. The list of related projects is provided in Section 4.1.1.2. In addition to using the list methodology, for resource areas where background growth projections could be incorporated, the cumulative analysis also considered projections included in the City's 2040 General Plan and other regional planning documents. For example, traffic projections contained in the RTP were considered in the traffic analysis.

4.1.1.1 Past History of the Port

This section describes the past projects that have contributed to the development of the Port and surrounding area. These projects have collectively established the general project area as a working port and transportation hub. Collectively, the projects contribute to the baseline conditions present in the project area, Port, and surrounding area, including air quality attainment status and cultural significance.

The City has been a hub of trade since the early 1800s when the gold rush spurred the movement of goods and materials from the coast inland by boat on the San Joaquin River and later rail. Following the gold rush, trade continued to support area agriculture. By the early 1900s, the City was a major industrial and transportation center, supporting flour mills, wagon factories, iron foundries, and shipyards. In 1930, dredging of the San Joaquin River began to increase navigational depths and create a navigation channel to support larger vessels (City 2018). In 1933, the Port opened as the first inland seaport in California. The first dock and transit shed were constructed at the Port in the 1930s followed by the unified rail. The Port officially opened in 1933 with the arrival of a cargo ship carrying 75,000 tons of lumber from the Pacific Northwest. The first on-dock rail operation started in 1934 and the first petroleum container was constructed at the Port during the same year. Deepening of the navigation channel to -35 feet MLLW began in 1935 (Port 2017). Large portions of the Port were commissioned by the U.S. Navy and became part of the Stockton Ordnance Depot during World War II. Many of the paved roads and rail spurs at the Port were constructed during this period. In 1956, the Department of Defense began the process of conveying the property to the Port, which was completed in 1967. Rough and Ready Island, an area to the west of the Port, remained U.S. Navy property, with active operations ongoing through the 1990s.

Containerization of cargo started in the late 1950s when the Matson Navigation Company's ship *Hawaiian Merchant* carried 20 containers from Alameda, California to Honolulu, Hawaii. The Port strategically elected not to pursue containerization in the 1960s, establishing itself as one of the largest dry/break-bulk and liquid bulk ports on the west coast. The Port continued to modernize through the mid and late 1900s to support bulk shipments, including replacing older timber wharves with concrete wharves, expanding warehouse facilities, and constructing more rail facilities. Today, the Port supports warehouse storage and handling facilities for both dry and liquid bulk materials, facilities, and equipment to handle break-bulk a cargoes by land or sea. Over time, the Port has continued to grow, adding land and terminals. The most recent acquisition was Rough and Ready Island from the U.S. Navy in 2000.

The area surrounding the Port has also grown. Since the 1940s, there have been major commercial and residential developments, and industrial growth, mostly to the north of the Port. The transportation network, especially highways, has consequently grown to accommodate growth in residential, agricultural, and energy sectors (City 2018).

4.1.1.2 Present and Future Projects

As shown in Table 27 and Figure 19, a total of 22 present or reasonably foreseeable future related projects (approved or proposed) were identified within the general vicinity of the proposed project that could contribute to cumulative impacts. These projects were selected because they are located in the Port or are located in the immediate project area (generally within the City) through which proposed project mobile sources (i.e., trucks and vessels) would be likely to travel (including roadways in the area). Projects on the list were analyzed to determine whether they may have the potential to result in related impacts to those of the proposed project (e.g., air quality impacts from the use of construction equipment or new sources of combustion) when considered in conjunction with the proposed project. The cumulative geographic scope differs by resource and sometimes for impacts within a resource; related projects may contribute to a cumulative risk in one resource area but not in another. Cumulative regions of influence are documented in Section 4.2.

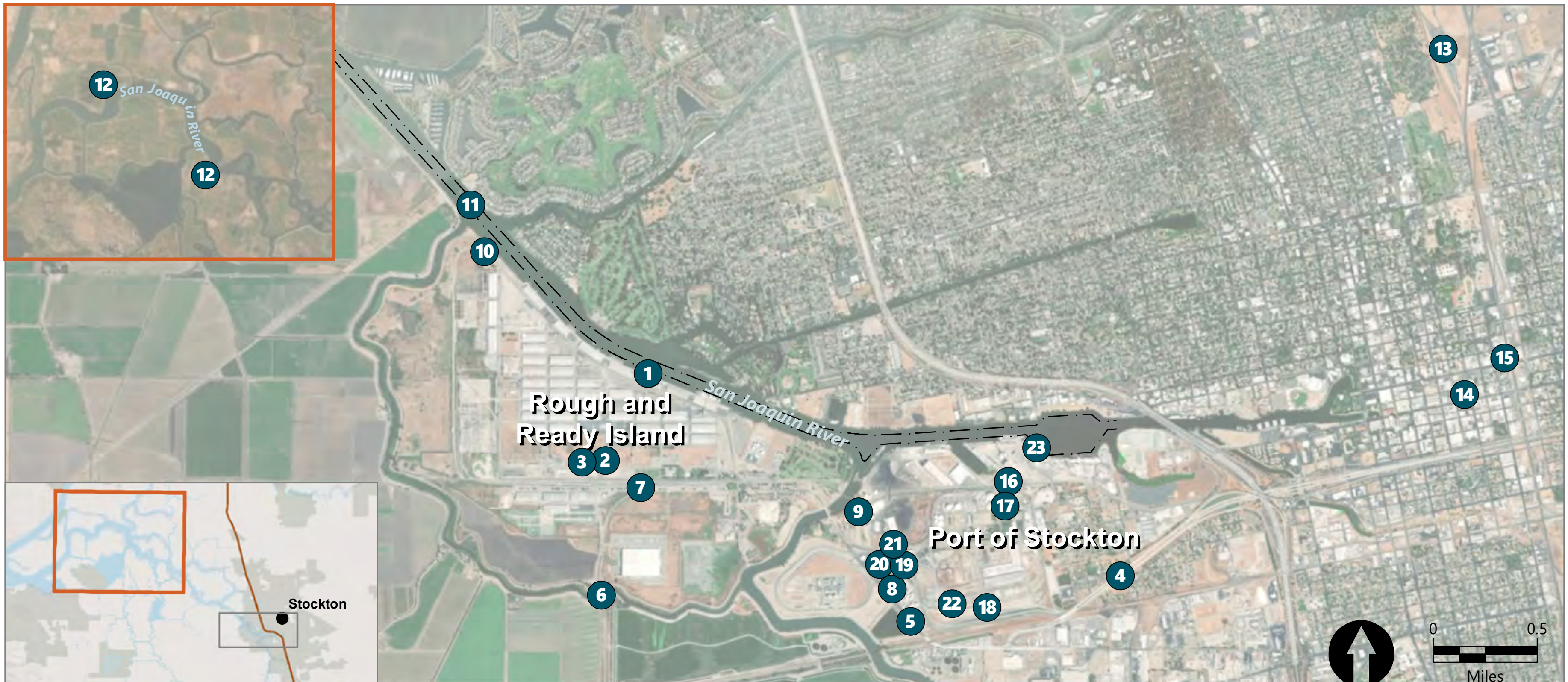
Table 27
Related Present and Future Projects Considered in the Cumulative Impact Analysis

Reference No.	Project Name	Location	Project Description	Project Status
1	Port of Stockton West Complex Development Plan: Marine Terminal Development	Port of Stockton	Marine terminal-related development associated with the Port's West Complex	In progress
2	Port of Stockton West Complex Development Plan: Commercial and Industrial Park Development	Port of Stockton	Upland commercial development associated with the Port's West Complex	In progress
3	Port of Stockton West Complex Development Plan: Infrastructure Improvements	Port of Stockton	Industrial development associated with the Port's West Complex	In progress
4	State Route 4 Crosstown Freeway Ramp Extension	City of Stockton	Extension of existing ramps with 1 mile of elevated structure. Minor widening and realignment of Navy Drive between Fresno Avenue and BNSF underpass	Complete
5	Navy Drive Widening	Port of Stockton	Widening Navy Drive to accommodate traffic changes from SR-4 Crosstown Freeway Ramp Extension Project	Complete
6	Daggett Road Grade Separation	Port of Stockton	Construction of a new bridge over the BNSF railroad tracks on Daggett Road (now known as the Port of Stockton Expressway)	Complete
7	McCloy Avenue Extension	Port of Stockton	Extension of McCloy Avenue on the Port's West Complex	Complete
8	Targa Stockton Terminal	Port of Stockton	Construction and operation of a tank farm/terminal facility on	In progress

Reference No.	Project Name	Location	Project Description	Project Status
			approximately 19 acres within the rail circle that encompasses the Pacific Ethanol production facility, use of Berth 9 at the Port, and an existing public right of way for a product pipeline for transferring fuels	
9	SATCO Marine Terminal	Port of Stockton	Construction and operation of a sulfuric acid facility on the East Complex	In progress
10	Nautilus Data Technology Data Storage Facility	Port of Stockton	Construction and operation of a waterborne data center facility at the West Complex	In progress
11	San Francisco Bay to Stockton (John F. Baldwin and Stockton Ship Channels) Navigation Improvement	Stockton Deep Water Ship Channel	Deepening the Stockton DWSC by 5 to 7 feet to improve maritime commerce efficiencies	Planning underway
12	Twitchell and Mandeville Island Dredged Material Placement Sites	Port of Stockton	Construction and operation of new dredge material placement sites for maintenance dredged sediment	Complete
13	ACE Rail Maintenance Facility Improvements	San Joaquin Regional Rail Commission	Installation of Wayside Power at the ACE Rail Maintenance Facility to reduce idling time for the diesel locomotives, thereby reducing emissions and noise nuisance concerns raised by nearby sensitive receptors	Complete
14	Open Window Master Development Plan	City of Stockton	Master Development Plan for downtown Stockton	Planning underway
15	Miner Avenue Complete Streets Road Plan	City of Stockton	Project consists of a lane reduction from four to two lanes and the addition of Class II bicycle lanes throughout the project area and other traffic improvements	In progress
16	Contanda Port Road A Facility Expansion	Port of Stockton	Project consists of expanding an existing liquid bulk terminal by	IS/MND issued; in progress

Reference No.	Project Name	Location	Project Description	Project Status
			removing 14 existing ASTs and replacing them with five new ASTs of greater capacity	
17	Contanda Renewable Diesel Bulk Liquid Terminal Development	Port of Stockton	Project consists of the development of a new renewable diesel bulk liquid terminal at the Port. As part of the project, 16 ASTs of varying capacity would be built at a vacant parcel at the Port. Project would come into the Port via vessels and rail and leave via truck	EIR certified; in permitting stage
18	Eco-Energy Liquid Bulk Receiving Terminal Development	Port of Stockton	Project consists of construction and operation of a 10-acre liquid bulk receiving terminal, which would be operated only using unit trains (replacing existing manifest train movements at NuStar). A pipeline would connect the Eco-Energy Liquid Bulk Receiving Terminal with the NuStar terminal	EIR certified; in permitting stage
19	NuStar Ethanol Infrastructure Upgrades	Port of Stockton	Project consists of on-terminal infrastructure upgrades to accommodate Eco-Energy supplied ethanol	In progress; permit required from SJVAPCD but no Port approval required
20	NuStar Domestic Renewable Diesel	Port of Stockton	Project consists of on-terminal infrastructure upgrades to accommodate domestic renewable diesel deliveries	In progress; permit required from SJVAPCD but no Port approval required
21	NuStar Marine Oil Terminal Engineering and Maintenance Standards (MOTEMS) Development and Vessel Service	Port of Stockton	Project consists of dock upgrades to comply with MOTEMS standards and support a new vessel service for renewable diesel deliveries	EIR certified; in permitting stage

Reference No.	Project Name	Location	Project Description	Project Status
22	CVAG Bulk Whole Cottonseed Transloading Facility	Port of Stockton	Project consists of a new transloading facility to receive whole cottonseed by rail and transport it out by truck	In progress; IS/MND prepared
23	Proposed Project			



1. Port of Stockton West Complex Development Plan: Marine Terminal Development
2. Port of Stockton West Complex Development Plan: Commercial and Industrial Park Development
3. Port of Stockton West Complex Development Plan: Infrastructure Improvements
4. State Route 4 Crosstown Freeway Expansion Project
5. Navy Drive Widening Project
6. Daggett Road Grade Seperation Project
7. McCloy Avenue Extention Project
8. Targa Stockton Terminal Project
9. SATCO Marine Terminal
10. Nautilus Data Technology Data Storage Facility
11. San Francisco Bay to Stockton (John F. Baldwin and Stockton Ship Channels) Navigation Improvement Project
12. Twitchell and Mandeville Island Dredge Material Placement Sites
13. ACE Rail Maintenance Facility Improvements
14. Open Window Master Development Plan
15. Miner Avenue Complete Streets Road Plan Project
16. Contanda Port Road A Facility Expansion
17. Contanda Renewable Diesel Bulk Liquid Terminal Development Project
18. Eco-Energy Liquid Bulk Receiving Terminal Development
19. NuStar Ethanol Infrastructure Upgrades
20. NuStar Domestic Renewable Diesel
21. NuStar Marine Oil Terminal Engineering and Maintenance Standards (MOTEMS)
22. CVAG Bulk Whole Cottonseed Transloading Facility
23. Proposed Project/Lehigh Southwest Stockton Terminal Project

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Figure 19
Cumulative Projects
Draft Environmental Impact Report
Lehigh Southwest Stockton Terminal Project

4.2 Analysis of Cumulative Impacts

The proposed project, in conjunction with other past, present, and reasonably foreseeable future related projects, has the potential to result in significant cumulative impacts when its independent impacts and the impacts of related projects combine to create impacts greater than those of the proposed project alone. The proposed project would not contribute to cumulative impacts related to those environmental resource areas on which it would have no impact, including all issues associated with aesthetics, agricultural and forestry resources, energy, hydrology and water quality, land use and planning, mineral resources, population and housing, public services, recreation, utilities and services, and wildfire. Rationale for this determination is summarized in Section 4.2.1. The cumulative impact evaluation subsequently presented in Section 4.2.2 is therefore focused on the same resources evaluated in Section 3: air quality, biological resources, cultural resources, geology and soils, GHG emissions, hazards and hazardous materials, noise, transportation, and tribal cultural resources.

4.2.1 Cumulative Impacts for Unaffected Environmental Resource Areas

4.2.1.1 Agricultural and Forestry Resources

The project site does not include any farmlands or forestry resources. The proposed project would have no impact on farmlands or forest lands, which precludes the proposed project from cumulatively contributing to an impact on these resources.

4.2.1.2 Energy

The proposed project would not require any unusual or excessive construction equipment or practices compared to projects of similar type and size. Construction and operations would comply with standard BMPs such as equipment idling restrictions and maintaining equipment according to manufacturers' specifications. The proposed project would not waste or unnecessarily consume energy resources or conflict with renewable energy or energy efficiency plans. The proposed project includes an expansion of existing operation. However, because the new ship unloader and enclosed conveyors would be more energy efficient, the energy demand per unit of cargo would decrease. For these reasons, the proposed project would result in no impacts on energy, which precludes the proposed project from cumulatively contributing to an impact on this resource.

4.2.1.3 Land Use and Planning

The project site is zoned for industrial uses and does not include any residences, hospitals, schools, convalescent facilities, or other features that would constitute an established community. The proposed project is consistent with all applicable and established zoning regulations and requirements and would have no impacts related to land use, which precludes the proposed project from cumulatively contributing to an impact on this resource. For these reasons, the proposed project would result in no impacts to land use and planning, which precludes the proposed project from cumulatively contributing to an impact on these resources.

4.2.1.4 Mineral Resources

There are no mineral resources within the project site, and extraction of mineral resources within San Joaquin County is focused in the southwestern portion of the County in the vicinity of the San Joaquin River. The project site is within an MRZ-1 classified area, which indicates that "adequate information indicates that no significant mineral deposits are present, or it is judged that little likelihood exists for their presence" (City 2007). Therefore, the proposed project would have no impact related to mineral resources, which precludes the proposed project from cumulatively contributing to an impact on this resource.

4.2.1.5 Population and Housing

There are no housing units within the project site, and the zoning precludes construction of any housing. No new homes, businesses, or road extensions would occur as part of the proposed project. Therefore, the proposed project would result in no impacts pertaining to population and housing, which precludes the proposed project from cumulatively contributing to an impact on these resources.

4.2.1.6 Public Services

The proposed project would not result in the need for additional public services or facilities, including fire or police protection, schools, or parks, beyond those currently available in the project area. The project area is adequately served by the City Fire Department, City Police Department, and Port Police. In addition, the proposed project would include construction and operation of an on-site fire protection system operated and maintained by Port and Lehigh employees. Any minor increases in demand would be accommodated by these existing service providers. The proposed project would result in no impact to fire protection, police, schools, parks, or other public facilities, which precludes the proposed project from cumulatively contributing to an impact on these resources.

4.2.1.7 Recreation

The proposed project does not include construction or expansion of any recreational facilities and would not result in increased demand or other effects to recreational facilities. The proposed project would result in no impacts related to recreation, which precludes the proposed project from cumulatively contributing to an impact on this resource.

4.2.1.8 Utilities

The existing terminal and dock include water connections to meet facility demand. Terminal and dock redevelopment may require new connections to existing utilities for proposed improvements. No other construction or expansion of any existing utility facilities would be required. The proposed project would not result in increased water supply, wastewater treatment, or solid waste management demands. For these reasons, the proposed project would result in no impacts related to utilities, which precludes the proposed project from cumulatively contributing to an impact on this resource.

4.2.1.9 Wildfire

The project site is located in an area that is industrialized, generally flat, and contains very limited vegetation, which is not considered at a significant risk of wildlife. The proposed project would not impair emergency response plans, require the installation of infrastructure that could exacerbate wildfire risk, or expose people to significant risks. Therefore, the proposed project would result in no impacts related to wildfire, which precludes the proposed project from cumulatively contributing to an impact on this resource.

4.2.2 Cumulative Impacts for Affected Environmental Resource Areas

4.2.2.1 Aesthetics

The geographic scope of the cumulative aesthetics analysis consists of the project site and the immediate vicinity at the Port. Projects that have the potential to result in impacts to scenic vistas, scenic resources, visual quality and view blockage, and nighttime illumination and glare have the potential to contribute to cumulative impacts on aesthetics resources. These include projects that result in the loss of scenic resources or the introduction of contrasting features that could degrade the visual character of the project area. There are no identified scenic highways or vantage points in the project area from which the project could be seen, and the project area is located in an area identified as industrial both currently and in future plans.

4.2.2.1.1 Cumulative Impact Analysis

As discussed in Section 3.1, the proposed project would have less-than-significant impacts to aesthetics resources. In general, because the proposed project would not be visible from or block views of any identified scenic vista or scenic highway, it would not contribute to such cumulative impacts. The proposed project would be similar in character to existing conditions and surrounding industrial Port projects.

The projects in Table 27 of relevance to the cumulative impact analysis for aesthetics are those that contribute to the overall industrial nature of the surrounding area. Most the projects listed in Table 27 are industrial sites, most of which are within Port property. As mentioned, the proposed project would be consistent with the visual character of the study area. Therefore, there would be no cumulative impact to scenic vistas from implementing the proposed project. The project site as well as the projects listed in Table 27 are not located along or visible from a scenic highway; therefore, they would not cumulatively affect scenic resources along a scenic highway. Finally, any development project would be reviewed for potential impacts to day or nighttime views and would be required to address any potential impacts with mitigation. Because the proposed project would not create a new source of substantial light or glare, there would be no associated impacts to day or nighttime views in the project area, which precludes the proposed project from cumulatively impacting light and glare and day and nighttime views.

4.2.2.1.2 Conclusion

Based on these analyses, it is concluded that the proposed project and projects listed in Table 27 would not have cumulatively considerable impacts on aesthetics.

4.2.2.2 Air Quality

The geographic scope of the cumulative air quality analysis is the SJVAB. The proposed project would contribute air emissions from construction and operational activities. As discussed in Section 3.2.1, the SJVAB is an "extreme" nonattainment area for 8-hour O_3 under the NAAQS. Under the CAAQS, the SJVAB is presently in nonattainment for O_3, PM_{10}, and $PM_{2.5}$. Therefore, projects emitting O_3, PM_{10}, and $PM_{2.5}$, along with O_3 precursors such as NO_X, would contribute to non-attainment levels and subsequent adverse air quality effects. As discussed in Section 3.2, SJVAPCD has developed plans to address PM_{10}, $PM_{2.5}$, and O_3 emissions in the region. The most recent plans include development of emission thresholds such as used in this analysis and region wide programs to reduce emissions. The plan also acknowledges that reducing mobile source emissions, including from cars, trucks, aircraft and farm vehicles, are critical to attaining the standard but are not under the direct authority of SJVAPCD. The proposed project-specific air emissions were found to exceed SJVAPCD significance thresholds, and because of the existing air quality violations in the basin, the proposed project has the potential to contribute to cumulative impacts when considered in conjunction with other related projects resulting in such emissions.

4.2.2.2.1 Cumulative Impact Analysis

Criteria Air Pollutants. Construction and operational emissions are the source of impacts related to air quality. Each of the projects listed in Table 27 would occur within the SJVAB and include emissions from construction or operations. Therefore, air quality impacts from all of the projects in Table 27 were considered in terms of their cumulative impacts. Projects listed in Table 27 have been or would be required to perform their own analyses of associated air quality impacts, including development of mitigation measures to address significant impacts, if necessary.

Several of the projects listed in Table 27 include or have included the construction and operation of industrial facilities within the Port, including Projects 1 through 3, 5 through 11, and 16 through 22. Emissions from these projects would be generated from construction equipment and activities, as well as from stationary and mobile source operational emissions. Several of the project construction schedules, including for Projects 2, 3, 9, 10, and 16 through 21, would likely overlap with that of the proposed project. Projects 1 through 3, 8 through 11, 13, and 16 through 22 include truck, rail, and/or ship movements that would result in mobile source emissions and/or result in emissions from on-terminal equipment. Emissions from these projects combined with the proposed project would emit O_3, PM_{10}, and $PM_{2.5}$, along with O_3 precursors such as NO_X, and contribute to non-attainment levels and subsequent adverse air quality effects.

Health Risk. Because the NAAQS and CAAQS are health-based standards and air quality in the San Joaquin Valley routinely violates the state and federal standards, ambient air quality in the valley already puts sensitive receptors at risk. The San Joaquin Valley also has some of the highest PM concentrations in the state. For example, health surveys reported in 2001 show a 24% higher prevalence of asthma in children in the San Joaquin Valley than in the rest of the state and a 19% higher prevalence for adults (ARB 2015). Similar to the discussion on criteria pollutants, related projects in Table 27 resulting in new or expanded sources of air emissions would combine with emissions from the proposed project and could potentially contribute to existing health risks in the region.

Unlike air quality standards that measure mass emissions within a region, an HRA considers the specific effects of criteria pollutants and air toxic on the closest sensitive receptors. As discussed in Section 3.2.3, as an individual project, construction and operation of the proposed project would not expose sensitive receptors to substantial pollutant concentrations; therefore, a project-specific HRA was not completed. However, when combined with other nearby projects generating emissions, specifically DPM, from mobile sources on the same transportation corridors, the proposed project's emissions may contribute to cumulative health risk. Projects 1 through 3, 8 through 11, 13, and 16 through 22 in Table 27 would all occur in the same general area as the proposed project and would generate new rail, truck, and/or vessel calls or on-terminal equipment emissions that may affect the same sensitive receptors.

4.2.2.2.2 Conclusion

While the proposed project's emissions would not exceed thresholds, its implementation combined with other related past, present, or probable future projects, would result in substantial combined cumulative adverse effects related to air quality and health risk, and impacts would be considered cumulatively significant. This cumulative impact would primarily result from the combined O_3, (including O_3 precursors such as NO_X), PM_{10}, and $PM_{2.5}$ emissions from related projects, including Projects 1 through 3, 8 through 11, 13, and 16 through 22 in Table 27, combined with those of the proposed project. Cumulative health risks would primarily result from DPM emissions.

While some emissions contributing to cumulative risk are generated by on-terminal stationary sources in the project area, the majority of emissions from Projects 1 through 3, 8 through 11, 13, and 16 through 22 in Table 27 and the proposed project would originate from non-road construction equipment and mobile sources. Construction equipment is regulated by ARB through a comprehensive program aimed at accelerating the turnover of the oldest equipment to newer, cleaner models. Because construction is directly contracted by the project owner/operator, additional mitigation can be written into construction contracts. As discussed in Section 3.1.3, mobile sources, however, are often not directly controlled by the project owner/operator at the Port but contracted through third parties, making direct control through mitigation complicated. For example, rail movements are controlled almost exclusively by the two mainline locomotive companies (BNSF and UP). Vessels are often foreign flagged and/or part of a tramp fleet, where individual vessels may only call at an individual port once per year. While trucks are also contracted by terminal operators, trucking companies and owner/operators are more numerous and operate within a more local market presenting more opportunities for choice. Therefore, mitigation is generally focused on construction equipment and trucks. However, because the area is in non-attainment and the effects of MM-AQ-1, MM-AQ-3, and MM-AQ-4 may be limited, impacts are considered cumulatively significant.

4.2.2.3 Biological Resources

The geographic scope of the cumulative biological resources analysis consists of the project site and areas in close proximity that may be affected by the proposed project's construction or operations. Past, present, and reasonably foreseeable future development that could contribute to significant cumulative impacts on terrestrial resources are those projects that involve land disturbance, such as grading, paving, landscaping, and construction of infrastructure. Marine organisms could be affected by activities in the water, such as dredging, filling, wharf demolition and construction, vessel traffic, and runoff from pollutants.

4.2.2.3.1 Cumulative Impact Analysis

As discussed in Section 4.1, the San Joaquin River has been dredged regularly since the 1930s, and Projects 1, 10, and 11 in Table 27 include in-water components or changes to vessel activity within the San Joaquin River. However, as discussed in Section 3.3.3, there would be no impacts from the proposed project on aquatic biological resources. The Port's docks are not within any nursery sites for special-status fish species, and the ship movements, which are a regular part of the existing conditions on the river, would not impede species migration within the San Joaquin River or other waters. Therefore, the proposed project would not contribute to any cumulative impacts on aquatic resources.

The proposed project also includes upland construction. While the terminal is completely developed, the adjacent San Joaquin River shoreline does include some mature trees across the channel and downstream from the project site, which may provide suitable nesting habitat for MBTA-protected bird species. Ground-nesting birds protected by the MBTA may also be present within or near the immediate project footprint. Riverbank areas adjacent to the rail trestle may provide suitable basking habitat to the aquatic western pond turtle. Of the projects listed in Table 27, Projects 16 and 17 would occur within the immediate project area and would also include construction activities that have the potential to affect special-status species. Through the SJMSCP, SJCOG is able to ensure that approved projects avoid impacts on nesting birds. Implementation of mitigation measure MM-BIO-1 would ensure that the proposed project's impacts on special-status species remain less than significant by either obtaining coverage under the SJMSCP or conducting nesting bird surveys consistent with CDFW's standard requirements. Therefore, there would be no cumulative contribution to impacts on terrestrial biological resources.

4.2.2.3.1 Conclusion

Based on these analyses, it is concluded that the proposed project and projects listed in Table 27 would not have cumulatively considerable impacts on biological resources.

4.2.2.4 Cultural and Historic Resources

The geographic scope of the cumulative cultural and historic resources analysis consists of the project site and the immediate vicinity at the Port. Projects on land that have the potential to modify or demolish structures that are more than 50 years old have the potential to contribute to cumulative impacts on historic architectural resources. Projects that include excavation that may disturb native fill may disturb, damage, or degrade listed, eligible, or otherwise unique or important archaeological resource.

4.2.2.4.1 Cumulative Impact Analysis

As discussed in Section 3.3, while alluvial processes have likely erased most early archaeological sites, the Delta has probably been occupied since the late Pleistocene/early Holocene, beginning around 11,000 years ago. The earliest documented sites in the region date to about 9,000 years ago and are thought to have been mobile communities focused on hunting and fishing. There is evidence of industrial and land development in the immediate vicinity of the project site since at least the early 1900s, which intensified through the mid to late twentieth century. Based on these conditions, archaeological and historical resources have the potential to be present in the Port.

The proposed project includes excavation into native soils. If archaeological materials or human remains are present in previously undisturbed native sediments, they could potentially be disturbed during construction. Although much of the area has been previously disturbed, construction activities (i.e., excavation, dredging, and land filling) associated with present and future Port projects, including Projects 1 through 3, 5, 8 through 11, 18, and 21, would also include excavation into native soils and could also disturb archaeological resources or human remains.

The proposed project requires implementing "provisions for historical or unique archaeological resources accidentally discovered during construction" (MM-CHR-1). At a minimum, any construction associated with the projects listed in Table 27 that include excavation would also proceed in adherence with these guidelines, in addition to federal, state, and local regulations designed to address cultural resource impacts potentially arising from construction.

As discussed in Section 3.4, the rail trestle is an NRHP- and CRHR-eligible resource. It would be demolished by the proposed project. Mitigation measures will be developed through Section 106 of the NHPA, a process that will be led by USACE and requires consultation with SHPO, Native American tribes, and other interested parties. However, because the property would be removed, there would be a significant and unavoidable impact. Because historic resources associated with early rail infrastructure are finite and non-renewable, and other Port development projects have also resulted in demolition of similar historical resources, demolition constitutes a cumulatively considerable impact.

4.2.2.4.2 Conclusion

Based on these analyses, it is concluded that the proposed project and projects listed in Table 27 would have cumulatively considerable impacts on cultural and historic resources.

4.2.2.5 Geology and Soils

The geographic scope of the cumulative geology and soils resources analysis is limited to the project site and immediate surroundings because the project site does not contain any substantial topographic features or notable geologic conditions that could expand geology and soil effects beyond this area.

4.2.2.5.1 Cumulative Impact Analysis

Of the projects listed in Table 27, Projects 4, 16, 17, and 18 would all occur in close proximity to the geographic scope of proposed project, and would similarly be affected by a geological event. The proposed project would construct improvements that would be subject to ground shaking, as is common for the region. In consideration of design standards relating to seismic hazards, and plans addressing earthquake hazards, potential impacts associated with siting in a seismically active region would be less than significant. There would be no other impacts from the proposed project related to geology or soils. Similar to the proposed project, these projects would be constructed in adherence with applicable design standards relating to seismic hazards.

4.2.2.5.2 Conclusion

Based on these analyses, it is concluded that the proposed project and projects listed in Table 27 would not have cumulatively considerable impacts related to geology and soils.

4.2.2.6 Greenhouse Gas Emissions

The geographic scope of the cumulative GHG emissions analysis in this DEIR is California, because the state has established target statewide GHG reductions. As discussed further in Section 3.6, the state has established a comprehensive goal to reduce GHG to 80% below the 1990 level by 2050, which includes emission reduction targets from all sectors enacted by a series of regulations and programs. The state's plan also requires local communities to develop CAPs.

4.2.2.6.1 Cumulative Impact Analysis

Global surface temperatures have trended higher over the past century, due to the generation of GHG emissions from human activities. Some observed changes include shrinking glaciers, thawing permafrost, and shifts in plant and animal ranges. Emissions of GHGs contributing to global climate change are attributable to human activities associated with manufacturing, utilities, energy extraction, transportation, agriculture, and residential uses. Therefore, the proposed project, all past projects, and all present and future related projects in Table 27 that maintain or increase mass GHG emissions contribute to global climate change.

4.2.2.6.2 Conclusion

Each of the projects listed in Table 27 would occur within California and emit GHG emissions from construction and operations. Emissions would come largely from mobile source combustion, and electricity use. Because of the nature of GHGs, impacts from these projects would be additive. The projects listed in Table 27 would be required to perform their own analysis of associated GHG impacts, including development of mitigation measures to address these impacts, if required.

As discussed in Section 3.6.3, there would be limited mitigation options to reduce such emissions. Mitigation measures MM-AQ-1, MM-AQ-3, MM-AQ-4, and MM-AQ-5 would be implemented as part of the proposed project and would help reduce GHG emissions and criteria pollutant emissions by controlling unnecessary idling and promoting the use of newer, more efficient trucks. Implementation of MM-GHG-1, MM-GHG-2, and MM-GHG-3 would help reduce waste and increase energy efficiency.

In addition, the proposed project, as well as other reasonably foreseeable future projects, including those in Table 27, would be subject to future requirements imposed by ARB's 2017 *Climate Change Scoping Plan Update* (ARB 2017b). The *Climate Change Scoping Plan Update* describes how California will reduce its GHG emissions by 40% below 1990 levels by 2030, and all of the projects in Table 27 are subject to statewide initiatives. For example, low carbon fuels are becoming more available because of the LCFS. Statewide programs to incentivize electric cars, trucks, and equipment, along with initiatives to promote renewable energy standards which will decarbonize the electricity grid will reduce emissions.

However, until such requirements are implemented and mandated at a project level it is assumed that cumulative GHG emissions would be cumulatively considerable.

4.2.2.7 Hazards and Hazardous Materials

The geographic scope of the cumulative hazards and hazardous materials analysis consists of the project site, soil and groundwater in the immediate area, and rail and roadways that would be affected in the event of an accidental release of hazardous materials during transport.

4.2.2.7.1 Cumulative Impact Assessment

The proposed project includes increased throughput of bulk cementitious materials, which may be hazardous to persons or the environment if improperly managed. Proposed improvements to accommodate increased throughput have been designed to address this potential hazard by improving material containment during receipt, storage, and transfer. The project site is located in an area designated as an open military evaluation site, although recent Department of Defense documentation states that there are no hazards or potential environmental liabilities from past use (Vincent 2012). With implementation and maintenance of existing operation and response plans pertaining to hazardous materials, and adherence to NPDES construction requirements and general construction BMPs, the proposed project would not result in significant hazards or hazardous material impacts.

Several of the projects listed in Table 27, particularly the projects in close proximity to the proposed project with proposed industrial uses, including Projects 8, 9, and 16 through 21, may similarly include the use, transport, and disposal of hazardous materials or occur on or near listed hazardous material sites. Other projects that may include ground disturbance on or near listed hazardous material sites include Projects 4, 5, 16, and 17. For these projects, potential impacts from hazardous materials on site would likely be localized, and any transport or disposal of materials would occur per federal, state, and local regulations. Because the likelihood of accidental upset during transport of hazardous materials is relatively low, it is unlikely that there would be simultaneous accident events from shipping, and cumulative effects are not anticipated.

4.2.2.7.2 Conclusion

Based on these analyses, it is concluded that the proposed project and projects listed in Table 27 would not have cumulatively considerable impacts related to hazards and hazardous materials.

4.2.2.8 Hydrology and Water Quality

The geographic scope of the cumulative hydrology and water quality analysis consists of the project site, adjoining San Joaquin River waters, and areas immediately south of the project site that contribute run-on to the Lehigh facility drainage system.

4.2.2.8.1 Cumulative Impact Assessment

The proposed project would increase throughput of cementitious materials which if improperly managed could degrade water quality. Construction has the potential to adversely affect water quality if improperly managed. Proposed facility improvements are designed to provide improved containment of cementitious materials. Implementation and maintenance of existing spill control measures, adherence to NPDES and other permitting requirements, and compliance with the Port's MS4 permit terms and DSP, would further ensure that the proposed project would result in less-than-significant impacts related to water quality standards.

Several of the projects listed in Table 27, particularly the projects in close proximity to the proposed project with proposed industrial uses, including Projects 8, 9, and 16 through 22, may similarly use materials or entail construction that could adversely affect water quality if improperly managed. Other projects on the Port's East Complex that could affect water quality during construction include Projects 4, 5, 16, and 17. These projects may also entail minor alterations to existing drainage systems. Similar to the proposed project, each of these projects would occur in adherence with NPDES and other permitting requirements, and compliance with the Port's MS4 permit terms and DSP (as applicable). Because of these requirements, significant cumulative hydrology and water quality impacts are not anticipated.

4.2.2.8.2 Conclusion

Based on these analyses, it is concluded that the proposed project and projects listed in Table 27 would not have cumulatively considerable impacts related to hydrology and water quality.

4.2.2.9 Noise

The geographic scope of the cumulative noise analysis includes the project site and surrounding industrial area, as well as sensitive receptors that may be affected by construction equipment and proposed facility operation. The cumulative noise analysis relies in part on community noise standards included in the 2040 General Plan.

4.2.2.9.1 Cumulative Impact Assessment

The nearest residences to the project site are located approximately 1,300 feet to the south of Berth 2 and 500 feet south of the truck gates at the terminal, and the closest school (Washington Elementary) is approximately one-third mile to the southeast. The nearest park is Boggs Tract Park, approximately 0.5 mile to the east. Noise levels generated by the proposed project construction and operations would be within the conditionally acceptable range for residential uses. Consistent with the City's ordinance, construction would not occur between the hours of 10:00 PM and 7:00 AM. Heavy equipment vibration from construction would not exceed the FTA damage criteria, and proposed project operations would not generate any new sources of vibration.

Construction noises from the projects listed in Table 27, including the projects likely to have overlapping construction schedules (Projects 2, 3, 9, 10, and 16 through 21) with the proposed project, could result in short-term cumulative noise impacts from construction activities. However, Projects 9 and 16 through 22 are located approximately 1,000 to 5,000 feet from the project site and Projects 2, 3, and 10 are located over 10,000 feet away from the project site. Based on the way noise attenuates, it would likely affect different receptors than the proposed project.

Operational noise would combine with other projects listed in Table 27. However, the overall operational noise stemming from the projects in Table 27 would be intermittent during product deliveries or distribution and consistent with overall Port industrial conditions and land uses. Based on previous noise analyses, Port noise levels are within the City's acceptable ambient noise levels for the area as identified in the 2040 General Plan. Because operations would be consistent with existing Port uses and would occur within areas zoned industrial, noise levels are not expected to cumulatively affect sensitive land uses.

4.2.2.9.2 Conclusion

Based on these analyses, it is concluded that the proposed project and projects listed in Table 27 would not have cumulatively considerable impacts related to noise.

4.2.2.10 Traffic and Transportation

The geographic scope for cumulative impacts on transportation and traffic includes existing transportation resources in the area surrounding the project site, consisting of roads, highways, and rail lines. As discussed in Section 3.10, aspects of a traffic analysis are by nature a cumulative issue. Traffic can be caused by poor infrastructure design or by short-term construction, but is also caused by the mass accumulation of vehicles on a roadway during peak travel hours. Like the analysis in Section 3.10, the cumulative analysis considers regional traffic plans and projections.

4.2.2.10.1 Cumulative Impact Assessment

The projects listed in Table 27 include a mix of industrial and infrastructure projects. Projects 3 through 7 include congestion relief projects that provide wider roads, bridge overpasses, and intersection improvements affecting roadways into and through the Port and adjacent areas, to reduce impacts on local road networks. Project 15 includes upgrades to the local rail network. Each of these projects may contribute to short-term traffic during construction but in the long-term would increase the operational capacity of Port roads and infrastructure thereby reducing traffic levels.

Development projects listed in Table 27, including Projects 1 through 3, 8 through 11, and 16 through 22, would contribute additional vehicles to the roadway and could contribute to traffic within the general Stockton area. Any development projects would be reviewed for impacts related to transportation and traffic using the same guidance from the City's TIA Guidelines, which takes into account regional conditions and would be required to address any potential impacts with mitigation. Because the proposed project is expected to generate significantly less than 100 net-new vehicle trips in either the morning or evening peak hour, even considering the passenger car equivalents for truck trips during operations, the proposed project would not significantly contribute to cumulative traffic impacts.

Because the number of construction workers is relatively low and public transportation access is limited at the site, the proposed project is not expected to increase public transit use and impacts would be less than significant. All of the projects listed in Table 27 would occur in areas with similarly low levels of public transportation service and are therefore not anticipated to have high demand for public transportation services. Any development projects would be reviewed for impacts related to public transportation services and would be required to address any potential impacts with mitigation. Because the proposed project does not include construction or operations that would affect alternative transportation plans, policies, or programs, there would be no impact on these resources, which precludes the proposed project from cumulatively contributing impacts to these resources.

4.2.2.10.2 Conclusion

Based on these analyses, it is concluded that the proposed project and projects listed in Table 27 would not have cumulatively considerable impacts related to traffic and transportation.

4.2.2.11 Tribal Cultural Resources

The geographic scope of the cumulative tribal cultural resources analysis consists of the project site and the immediate vicinity at the Port.

4.2.2.11.1 Cumulative Impact Analysis

No tribal cultural resources as defined in PRC 5020.1(k) have been identified in the proposed project area. No tribal cultural resources have been identified at the Port during CEQA review of any of the projects listed in Table 27.

The proposed project includes excavation into native soils; therefore, if archaeological materials or human remains are present in previously undisturbed native sediments, they could potentially be disturbed during construction. Although much of the area has been previously disturbed, construction activities (i.e., excavation, dredging, and land filling) associated with present and future Port projects, including Projects 1 through 3, 5, 8 through 11, 18, and 21, would also include excavation into native soils and could also disturb archaeological resources or human remains. These could also be considered tribal cultural resources.

The proposed project requires implementing "provisions for historical or unique archaeological resources accidentally discovered during construction" (MM-CHR-1). At a minimum, any construction associated with the projects listed in Table 27 that include excavation would also proceed in adherence with these guidelines, in addition to federal, state, and local regulations designed to address cultural resource impacts potentially arising from construction.

4.2.2.11.2 Conclusion

Based on these analyses, it is concluded that the proposed project and projects listed in Table 27 would not have cumulatively considerable impacts on tribal cultural resources.

5 Other Required Analyses

5.1 Unavoidable Significant Impacts

As required by CEQA Guidelines Section 15126.2(b), an EIR must describe any significant impacts that cannot be avoided, including those impacts that can be mitigated but not reduced to a less-than-significant level. Sections 3 and 4 of this DEIR describe the potential environmental impacts of the proposed project and recommend mitigation measures to reduce impacts, where feasible. As presented in Section 3, construction and operation of the proposed project would result in exceedances of air quality, cultural resources, GHG, and noise thresholds. These impacts are considered significant and unavoidable.

5.2 Significant Irreversible Environmental Changes

Pursuant to Section 15126.2(c) of the CEQA Guidelines, an EIR must consider any significant irreversible environmental changes that would be caused by the proposed project should it be implemented. Section 15126.2(c) of the CEQA Guidelines states the following:

> Uses of nonrenewable resources during the initial and continued phases of the project may be irreversible since a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as a highway improvement which provides access to a previously inaccessible area) generally commit future generations to similar uses. Also, irreversible damage can result from environmental accidents associated with the project. Irretrievable commitments of resources should be evaluated to assure that such current consumption is justified.

The proposed project would require the use of non-renewable resources, such as water, aggregate, cementitious materials, fossil fuels, and non-renewable construction materials. Resources that are committed irreversibly and irretrievably are those that would be used by a project on a long-term or permanent basis. Resources committed to the proposed project include water, aggregate, cementitious materials, fossil fuels, and non-renewable construction materials. Fossil fuels and energy would be consumed during construction activities. Fossil fuels, in the form of diesel oil and gasoline, would be used to power construction equipment and vehicles. The use of these energy resources would be irretrievable and irreversible. Non-recoverable materials and energy would be used during construction activities; the amounts consumed would be accommodated by existing supplies. Although the increase in the amount of materials and energy used would be limited and readily accommodated, these resources would nevertheless be unavailable for other uses.

5.3 Growth-Inducing Impacts

The CEQA Guidelines require an EIR to discuss the ways in which a proposed project could foster economic or population growth, or the construction of additional housing or facilities, either directly or indirectly, in the surrounding environment. This discussion includes an analysis of whether the proposed project would remove obstacles to population growth or trigger the construction of new community services facilities that could cause significant environmental effects. Specifically, Section 15126.2(d) of the CEQA Guidelines states the following:

> Discuss the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects which would remove obstacles to population growth (a major expansion of a wastewater treatment plant might, for example, allow for more construction in service areas). Increases in the population may tax existing community service facilities, requiring construction of new facilities that could cause significant environmental effects. Also discuss the characteristic of some projects which may encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively. It must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment.

5.3.1 Direct Impacts

A project would directly induce growth if it would directly foster economic or population growth or the construction of new housing in the surrounding environment. The proposed project would result in a net increase in cementitious material throughput, which would result in additional vessel, truck, and rail calls, as outlined in Section 2.4. The proposed project would not result in direct economic growth outside of that analyzed as part of the proposed project description and subsequent impact analyses. The proposed project would not result in a population increase or in new housing.

5.3.2 Indirect Impacts

A project would indirectly induce growth if it would foster economic or population-expanding activities that would lead to further development by taxing existing facilities and eventually requiring the construction of new facilities. The proposed project would not result in indirect economic growth outside of that analyzed as part of the proposed project description and subsequent impact analyses. The proposed project would not result in expanding populations, tax existing facilities, or require new facilities to be constructed.

6 Alternatives

CEQA requires that an EIR present a range of reasonable alternatives to the proposed project. Alternatives were developed based on comments received during public scoping, as well as Port staff consideration. Through the alternatives analysis process, the proposed project and one other alternative were found to meet most of the objectives. In addition, CEQA requires an EIR to consider the No Project Alternative.

The following two alternatives to the proposed project were carried forward for impact analysis in this DEIR:

- Alternative 1: No Project Alternative
- Alternative 2: Reduced Project

6.1 Requirements to Analyze Alternatives

CEQA Guidelines Section 15126.6 specifically requires that an EIR present a range of reasonable alternatives to a proposed project, or to the location of a project, that could feasibly attain most of the basic project objectives, but would avoid or substantially lessen any significant effects of a project. Pursuant to CEQA Guidelines Section 15126.6(e)(2), an EIR must also include an analysis of a No Project Alternative. The No Project Alternative analyzes what would be expected to occur if the proposed project were not approved. CEQA Guidelines Section 15126.6 also requires an evaluation of the comparative merits of the alternatives. An EIR is not required to consider alternatives that are infeasible. Pursuant to CEQA Guidelines Section 15126.6 (f)(1), "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, and whether the proponent can reasonably acquire, control, or otherwise have access to the alternative site (or the site is already owned by the proponent)." Although these factors do not present a strict limit on the scope of reasonable alternatives to be considered, they help establish the context against which "the rule of reason" is measured when determining an appropriate range of alternatives sufficient to establish and foster meaningful public participation and informed decision-making.

The following sections describe the alternatives considered to reduce impacts. The alternatives analysis only addresses resource areas for which the proposed project could cause potentially significant environmental impacts. The following resource areas were found to have no impact in the NOP/IS developed for the proposed project and therefore are not considered in the analysis: agriculture and forestry resources, energy, land use and planning, mineral resources, population and housing, public services, recreation, utilities, and wildfire.

6.1.1 Alternative 1: No Project Alternative

The No Project Alternative analyzes what would be expected to occur if the proposed project were not approved. Pursuant to CEQA Guidelines Section 15126.6(e)(2), the No Project Alternative shall "discuss the existing conditions at the time the NOP is published, or if no NOP is published, at the time the environmental analysis is commenced, as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services."

Under this alternative, no new developments would be constructed at the Lehigh terminal; therefore, the facility would continue to operate as described in Section 2.2.1 to its maximum permitted throughput levels of 2.682 million tons received per year. Under permitted limits, the existing terminal can handle any combination of a maximum of approximately 200 trucks per day or 18 rail cars per day. Under the No Project Alternative, it is assumed that the existing unloader and other facility infrastructure would also remain in use. As discussed in Section 2.2.1, the unloader is efficient and limits the terminal's throughput. Because the terminal would not be improved, the facility is not expected to operate under the maximum permit limits under the No Project Alternative. The existing ship unloader's horizontal arm is too short to reach effectively across the ship's hold, and therefore unloading operations would continue to be inefficient and ships would berth longer, which could lead to fewer ship calls. However, throughput could be higher than the 2018 baseline year. It is assumed that market demand may result in the same levels of cementitious material being shipped through the region; however, it is unknown where the material would be shipped to and distributed from. Therefore, a regional analysis is speculative at this time.

6.1.1.1 Aesthetics

The No Project Alternative would have no impact on aesthetics because there would be no construction or new equipment associated with the No Project Alternative. Operations would remain relatively the same and consistent with the general aesthetic of the area.

6.1.1.2 Air Quality

Air quality impacts resulting from implementation of the No Project Alternative have not been quantified; however, the No Project Alternative does not include any construction or new operations associated with the proposed project. While throughput levels may increase over baseline levels part of the No Project Alternative, as described in Section 6.1.1, throughput levels would be effectively limited by the existing unloader and would be less than the proposed project. Therefore, emissions would be less than presented in Section 3.2.3. Regional emissions may continue to increase under the No Project Alternative because the cementitious material would likely be shipped to the region through an alternative facility. However, no such facility has been identified and therefore an analysis is speculative. Therefore, while air quality impacts of the No Project Alternative would likely increase over baseline emissions, such emission would be much less than the proposed project and impacts to air quality would be considered less than significant.

6.1.1.3 Biological Resources

The No Project Alternative would have no impact on biological resources because there would be no in-water or upland construction. Existing operations would continue at the terminal. While throughput levels may increase over baseline, such operations would not impact biological resources.

6.1.1.4 Cultural and Historic Resources

The No Project Alternative would have no impact on cultural and historic resources because there would be no construction or new operations associated with the No Project Alternative.

6.1.1.5 Geology and Soils

The No Project Alternative would have no impact on geology and soils because there would be no construction or new operations associated with the No Project Alternative.

6.1.1.6 Greenhouse Gas Emissions

GHG impacts resulting from implementation of the No Project Alternative have not been quantified; however, the No Project Alternative does not include any construction and operations would be less than under the proposed project. While throughout levels may increase over baseline levels part of the No Project Alternative, as described in Section 6.1.1, throughput levels would be effectively limited by the existing unloader and would be less than the proposed project. The existing unloader is less efficient than the new unloader and therefore would use more energy per unit unloading event. However, the actual unloading would be less under the No Project Alternative than the proposed project; therefore, total GHG emissions would be less. Regional GHG emissions may continue to increase under the No Project Alternative because the cementitious material would likely be shipped to the region through an alternative facility. However, no such facility has been identified; therefore, an analysis is speculative. Therefore, while GHG emissions under the No Project Alternative would likely increase over baseline emissions, such emissions would be much less than the proposed project and impacts to climate change would be considered less than significant.

6.1.1.7 Hazards and Hazardous Materials

There would be no construction or new operations associated with the No Project Alternative. As discussed, throughput would increase over baseline levels but would likely not reach permit limits as the existing unloader would remain inefficient. While increases in throughput could increase exposure to cementitious material, existing safety and dust controls would reduce this potential and impacts would be considered less than significant.

6.1.1.8 Hydrology and Water Quality

The No Project Alternative would have no impact on hydrology and water quality because there would be no construction or new operations associated with the No Project Alternative.

6.1.1.9 Noise and Vibration

There would be no construction under the No Project Alternative and operations would be less than the proposed project. As described previously, operations would likely increase over baseline under the No Project Alternative, but would be much less than expected under the proposed project. Noise levels would likely remain relatively unchanged (maybe nominally higher than baseline) under the No Project Alternative as equipment would remain the same. Therefore, impacts are considered less than significant.

6.1.1.10 Transportation

There would be no construction under the No Project Alternative and operations would be less than the proposed project. As described previously, operations would likely increase over baseline under the No Project Alternative, but would be much less than expected under the proposed project. Daily traffic levels could increase as compared to baseline conditions under the No Project Alternative; however, throughput would be limited by the efficiency of the existing unloader. Therefore, impacts are considered less than significant.

6.1.1.11 Tribal Cultural Resources

The No Project Alternative would have no impact on tribal cultural resources because there would be no construction or new operations associated with the No Project Alternative.

6.1.2 Alternative 2: Reduced Project Alternative

The Reduced Project Alternative would consist of the same construction and operational components as the proposed project, with the exception of the wooden rail trestle replacement. Under the Reduced Project Alternative, replacement of the rail trestle bridge would not occur, which would reduce the overall area available for loaded rail cars, and accordingly reduce the maximum throughput expected at the terminal as shown in Table 28. Like the proposed project, the Reduced Project Alternative would require new permits from SJVAPCD to support the new unloader and volume increases if Lehigh sought to exceed existing throughput limitations. Similar to what was described under the No Project Alternative, cementitious material deliveries would likely increase to the region based on demand, but distribution locations are unknown at this time.

Table 28
Reduced Project Alternative Throughput as Compared to the Proposed Project

	Baseline (2018)		Maximum Throughput of Reduced Project Alternative		Maximum Throughput of Proposed Project	
	Tons	**Annual Activity**	**Tons**	**Annual Activity**	**Tons**	**Annual Activity**
Throughput (cement/slag volumes)	883,793	--	2,785,000	--	3,345,000	--
Truck Shipping[1]	505,432	18,720	950,000	35,185	1,072,500	39,722
Truck Receiving		0	50,000	1,852	75,000	2,778
Rail Cars	61,663	587	400,000	3,810	500,000	4,762
Rail Trips		117[2]		190[3]		238[3]
Ships Calls	316,698	9	1,385,000	39	1,697,500	48
Barges Calls	0	0	0	0	200,000	40

Notes:
1. Truck calls are expressed in one-way moves
2. Assumes an average of five cars per train
3. Assumes an average of 20 cars per train

6.1.2.1 Aesthetics

Under the Reduced Project Alternative, there would be less construction than under the proposed project. Equipment associated with the No Project Alternative would be the same. Operations would remain relatively the same as under the proposed project and consistent with the general aesthetic character of the area. Accordingly, the Reduced Project Alternative would have a less-than-significant impact on aesthetics.

6.1.2.2 Air Quality

Because construction activities under the Reduced Project Alternative would be reduced as compared to the proposed project, construction emissions would be less than those of the proposed project. Operationally, reducing throughput would reduce vessel, train, and truck trips, which would reduce emissions. Mitigation measures MM-AQ-1 through MM-AQ-4 would likely apply to the Reduced Project Alternative. As shown in Table 28, throughput would be similar to proposed project levels in analysis year 5. As shown in Table 12, emissions exceed annual thresholds in analysis year 5; therefore, emissions would also be considered significant and unavoidable for the Reduced Project Alternative.

6.1.2.3 Biological Resources

Because in-water construction would still occur under the No Project Alternative and upland construction would remain generally the same as the proposed project, potential impacts to biological resources under the Reduced Project Alternative would be similar to those of the proposed project. Mitigation measures MM-BIO-1 through MM-BIO-5 would likely apply to the Reduced Project Alternative, which would be expected to reduce impacts to less-than-significant levels. Similar to the proposed project, there would be no impacts to biological resources associated with operations.

6.1.2.4 Cultural and Historic Resources

The Reduced Project Alternative would not include removal of the rail trestle; therefore, construction would not result in a significant impact (as compared to the proposed project), as no NRHP- or CRHR-eligible resource would be demolished. Mitigation measure MM-CHR-2 would likely apply to the Reduced Project Alternative. All other potential cultural and archaeological impacts of the Reduced Project Alternative would be expected to be unchanged from those of the proposed project and less than significant.

6.1.2.5 Geology and Soils

Construction would remain the same for the Reduced Project Alternative as the proposed project, except for the removal of the rail trestle, and operations would occur at a slightly reduced level. Potential impacts to geology and soils from the Reduced Project Alternative would be generally similar to those of the proposed project. Mitigation measures MM-GEO-1, MM-GEO-2, and MM-BIO-2 would likely apply to the Reduced Project Alternative. Impacts would be expected to be less than significant.

6.1.2.6 GHG Emissions

Because construction would be reduced as compared to the proposed project, construction emissions under the Reduced Project Alternative would be less than those of the proposed project. Operationally, reducing throughput would reduce vessel, train, and truck trips, which would reduce emissions. Mitigation measures MM-AQ-1 through MM-AQ-4 and MM-GHG-1 through MM-GHG-3 would likely apply to the Reduced Project Alternative. As shown in Table 28, throughput would be similar to proposed project levels in analysis year 5. As shown in Table 18, emissions would exceed 10,000 metric tons a year in analysis year 5. Accordingly, emissions would also be considered significant and unavoidable for the Reduced Project Alternative.

6.1.2.7 Hazards and Hazardous Materials

Construction would remain the same for the Reduced Project Alternative as the proposed project, except for the removal of the rail trestle. Operations would occur at a slightly reduced level. Potential impacts to hazards and hazardous materials would be similar to the proposed project. Mitigation measures MM-BIO-2, MM-BIO-5, MM-GEO-1, MM-HAZ-1, and MM-HAZ-2 would likely apply to the Reduced Project Alternative. Impacts would be expected to be less than significant.

6.1.2.8 Hydrology and Water Quality

Construction would remain the same for the Reduced Project Alternative as the proposed project, except for the removal of the rail trestle, and operations would occur at a slightly reduced level. Potential impacts to hydrology and water quality from the Reduced Project Alternative would be generally similar to those of the proposed project. Mitigation measures MM-BIO-2, MM-BIO-5, MM-GEO-1, MM-HAZ-1, and MM-HAZ-2 would likely apply to the Reduced Project Alternative. Impacts would be expected to be less than significant.

6.1.2.9 Noise and Vibration

Because construction would be reduced as compared to the proposed project, noise levels from construction would be expected to be slightly reduced. Pile driving would still occur under the Reduced Project Alternative; therefore, impacts would remain significant and unavoidable during construction. Operations would be slightly reduced as compared to the proposed project; therefore, impacts would be expected to be slightly less than the proposed project in the long term.

6.1.2.10 Transportation

Because construction activities associated with the Reduced Project Alternative would be slightly less than the proposed project, impacts on transportation from construction would be expected to be reduced. While throughout would increase over baseline (albeit reduced as compared to the proposed project), trips would remain below the 100 net-new peak-hour trips. Impacts would be expected to be less than significant.

6.1.2.11 Tribal Cultural Resources

Construction would remain the same for the Reduced Project Alternative as the proposed project, except for the removal of the rail trestle. Operations would occur at a slightly reduced level. Potential impacts to hazards and hazardous materials would be similar to the proposed project. Mitigation measure MM-CHR-2 would likely apply to the Reduced Project Alternative Impacts would be expected to be less than significant.

6.2 Comparison of Alternatives

Table 29 provides a summary comparison of the potential impacts after implementation of mitigation measures resulting from the proposed project and alternatives relative to the topics analyzed in this DEIR. As shown, the proposed project would result in greater impacts than the No Project Alternative or Reduced Project Alternative.

Table 29
Comparison of Potential Impacts from Proposed Project and Alternatives (with Incorporation of Mitigation)

Resource	Proposed Project	Alternative 1: No Project Alternative	Alternative 2: Reduced Project Alternative
Aesthetics	Less-than-Significant Impact	No Impact	Less-than-Significant Impact
Air Quality	Significant and Unavoidable Impact	Less-than-Significant Impact	Significant and Unavoidable Impact
Biological Resources	Less-than-Significant Impact	No Impact	Less-than-Significant Impact
Cultural Resources	Significant and Unavoidable Impact	No Impact	Less-than-Significant Impact
Geology and Soils	Less-than-Significant Impact	No Impact	Less-than-Significant Impact
GHG Emissions	Significant and Unavoidable Impact	Less-than-Significant Impact	Significant and Unavoidable Impact
Hazards and Hazardous Materials	Less-than-Significant Impact	Less-than-Significant Impact	Less-than-Significant Impact
Hydrology and Water Quality	Less-than-Significant Impact	No Impact	Less-than-Significant Impact
Noise	Significant and Unavoidable Impact	Less-than-Significant Impact	Significant and Unavoidable Impact
Transportation	Less-than-Significant Impact	Less-than-Significant Impact	Less-than-Significant Impact
Tribal Cultural Resources	Less-than-Significant Impact	No Impact	Less-than-Significant Impact

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Appendix A
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Appendix B
Notice of Preparation/Initial Study

October 2019
Lehigh Southwest Stockton Terminal Project

Notice of Preparation and Initial Study

Prepared for
Port of Stockton
2201 West Washington Street
Stockton, California 95203

Prepared by
Anchor QEA, LLC
130 Battery Street, Suite 400
San Francisco, California 94111

Project Number: 160377-01.11

To: **All Agencies, Interested Parties, and Individuals**

Subject: **Notice of Preparation of an Environmental Impact Report**

Notice is being given that the Port of Stockton will be preparing an Environmental Impact Report (EIR) for the following project:

Lehigh Southwest Stockton Terminal Project

We transmit this Notice of Preparation (NOP) for review in accordance with the California Environmental Quality Act Guidelines, Article 7, Sections 15086 and 15087; and California Public Resources Code Section 21153. The project description, location, and potential environmental effects are contained in the attached materials. A copy of the Initial Study is included with the NOP. Please submit your comments, concerns, suggestions for mitigation measures and alternatives, and any other pertinent information that may enable us to prepare a comprehensive and meaningful EIR for the project.

Please submit your comments to Jason Cashman, Port of Stockton Environmental and Regulatory Affairs Manager, by email to jcashman@stocktonport.com or by mail to the following address:

Jason Cashman
Environmental and Regulatory Affairs Manager
Port of Stockton
2201 West Washington Street
Stockton, California 95203

Comment letters must be postmarked by November 23, 2019. If you have any questions, please contact Mr. Cashman by email or postal mail (above) or by phone at 209-946-0246.

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ABBREVIATIONS

AB	Assembly Bill
ARB	California Air Resources Board
BMP	best management practice
Cal Water	California Water Service Company
CAP	Climate Action Plan
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
City	City of Stockton
DEIR	Draft Environmental Impact Report
DWT	tons deadweight
EFH	essential fish habitat
EIR	Environmental Impact Report
GHG	greenhouse gases
IS	Initial Study
MGD	million gallons per day
MLLW	mean lower low water
MRZ	Mineral Resource Zone
NAHC	Native American Heritage Commission
NOP	Notice of Preparation
NPDES	National Pollutant Discharge Elimination System
PG&E	Pacific Gas and Electric Company
Port	Port of Stockton
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SJVAPCD	San Joaquin Valley Air Pollution Control District

1 Project Overview

This Notice of Preparation (NOP) has been prepared to inform responsible and trustee agencies, public agencies, and the public that the Port of Stockton (Port), as the Lead Agency under the California Environmental Quality Act (CEQA), has independently determined that there are potential significant environmental impacts associated with the proposed Lehigh Southwest Stockton Terminal Project (hereafter referred to as the proposed project) and preparation of an Environmental Impact Report (EIR) is required. The project site is located at 205 Port Road 1 and at Berth 2 at the Port in Stockton, California (Figures 1 and 2). The proposed project involves redeveloping the existing bulk cementitious material receiving and distribution terminal to improve operationally efficiency. As part of the proposed project, Berth 2 would be rehabilitated to support a new ship unloader with a greater reach and that has the capacity to service longer and wider vessels. In addition, the proposed project includes a lease modification to increase the terminal's leasehold from 6.24 to 8.08 acres.

1.1 Environmental Setting

1.1.1 Regional Setting

The proposed project is located within the City of Stockton's (City's) urban core, which is characterized by a mix of heavy industrial uses with limited landscape features, older residential neighborhoods, neighborhood commercial shopping centers, and a variety of other commercial and industrial parcels. In the area surrounding the project site, the Port leases property for a variety of industrial uses, characterized by the presence of storage tanks, maritime terminals, cementitious materials storage structures, grain silos, railroad facilities, large storage buildings, and stockpiles of various commodities. The City's *2040 General Plan* (City 2018) designates the project site for industrial use, and the zoning classification of the project site and surrounding parcels is Port Area (PT), Industrial General (IG), or Unzoned (UNZ).

1.1.2 Project Setting

The terminal is located in the northeast corner of the Port at 205 Port Road 1. The 6.24-acre terminal is bound by the San Joaquin River, Harbor Street, Port Road 1 and Port Road 2, north of Washington Street. Existing rail facilities are located on current leased property, Berth 2, and just north of Port Road B between Berth 2 and Port Road 4. The existing dock structure is an approximately 540-foot-long concrete dock. The dock is comprised of nearly 1,000 timber piles that support concrete beams and a concrete sub-deck, with above water line columns and beams supporting the existing rails and main platform deck, as well as a ship unloader. The existing dock and ship unloader were originally designed to handle 35,000 tons deadweight (DWT) vessels. The existing bulk cementitious materials storage facility consists of seven concrete walled and steel or timber roofed storage bunkers, as well as one bolted steel tank associated with rail loadout. The existing facility also includes two truck loading stations, each with two lanes (for a total of four truck loading lanes). The site also contains abandoned fertilizer material handling equipment.

1.2 Project Background

From its terminal at the Port, Lehigh receives, stores, and ships cementitious construction materials (including cement and ground granulated blast furnace slag cement, with fly ash identified as a future commodity) to the local Stockton area and regional Northern California building industry. Cementitious material is received via ship, rail, or truck at the terminal, unloaded, and then stored at the terminal before being shipped to the local and regional market by truck and rail. The current berth capacity and channel depth is designed to handle 35,000 DWT vessels. The existing ship unloader is nearing the end of its useful life and is in need of replacement. Because of a change in the size of vessels available in the world's shipping fleet, Lehigh has been chartering longer and wider vessels; thus, the existing ship unloader's horizontal arm is too short to reach effectively across the ship's hold. The proposed new ship unloader would be supplied with a longer arm for greater reach, allowing operations at a higher capacity, thereby minimizing the possibility of dust emissions, reducing berthing time, and allowing greater dock utilization. Because a new unloader would be significantly heavier, the existing rail support beams and narrow rail gauge would not be adequate. In addition, the existing dock structure was constructed in the 1930s and was not constructed to current seismic design. In order to accommodate the replacement ship unloader, the structure would be rehabilitated. Upland improvements to the storage, rail, and truck systems are also proposed to handle cementitious material more efficiently.

1.3 Project Objectives

Pursuant to the CEQA Guidelines and 14 California Code of Regulations (CCR) 15124, a "statement of the objectives sought by the proposed project" must be provided as part of the project description in an EIR. The proposed project's goal is to upgrade an existing dock at the Port in order to handle a heavier replacement unloader and improve rail and truck loading/unloading systems in anticipation of increased future cementitious materials supply and market demand.

To accomplish this goal, the following key project objectives need to be accomplished:

- Upgrade the existing Berth 2 to meet seismic standards and to allow larger vessels to safely berth at the dock.
- Increase the availability of cementitious material to provide a supply of critical building materials to the region and Bay Area.
- Receive, store, and ship cementitious material in a manner that promotes safe and efficient handling while ensuring environmental protection and controls.
- Update and renew the lease with the Port consistent with the proposed project.

1.4 California Environmental Quality Act Baseline

Section 15125 of the CEQA Guidelines requires that an EIR include a description of the physical environmental conditions in the vicinity of the proposed project as they exist at the time the NOP is published, or if no NOP is published, at the time the environmental analysis is commenced, from both a local and regional perspective. These environmental conditions are referred to as the environmental setting. Further, Section 15125(a) of the CEQA Guidelines states that "the environmental setting normally constitutes the baseline physical conditions by which a Lead Agency determines whether an impact is significant." The CEQA baseline is the set of conditions that prevailed at the time this NOP is circulated.

Per Section 15125, the following is a description of current conditions at the Lehigh terminal. Because activity at a terminal can vary month to month over the course of a year due to normal market forces, throughput activity is generally calculated over the preceding 12 months or a calendar year, whichever is more indicative of normal operations. Lehigh currently operates a cementitious materials receiving and distribution terminal. Per the terminal's existing Permit to Operate (Facility Number N-153), issued by San Joaquin Valley Air Pollution Control District (SJVAPCD), the combined permitted truck and rail shipping capacity is 6,000 tons of cementitious materials per day, and the facility is permitted to receive 2.628 million tons per year via ship or rail. Under permitted limits, the terminal can handle any combination of a maximum of approximately 200 trucks per day or 18 rail cars per day. The existing operation received approximately 20 bulk cargo vessel calls in 2018.

1.5 Project Elements and Operations

1.5.1 Construction

Construction is anticipated to occur over a period of 18 months, with work occurring concurrently at the two locations. Staging of materials and construction equipment would be coordinated with the Port to minimize disruptions to existing Port operations and would generally be limited to areas within the Lehigh terminal or directly adjacent space near Berths 3 and 4. In-water work would occur within the annual window of construction of July 1 through November 30.

1.5.1.1 Berth 2 Rehabilitation

Berth 2 would be upgraded with new pilings, new concrete support beams, new gantry rails, a new ship fendering system and new stowage mast, and structural rehabilitation of the base dock structure. This construction process is anticipated to take approximately 4 to 5 months when working around ship schedules while respecting the in-water work window.

The current plan for installing a new ship unloader gantry crane rail support system requires cutting slots in the existing deck. Approximately 144 piles would be driven inside the slots. Berth 2 rehabilitation would also include repairs for structural integrity, including repair of damage to existing concrete columns, spalled concrete on beams, and to the underside of the deck. A new ship berth shock absorption fender system would be installed to protect the dock structure during ship mooring and berthing. Approximately twenty 14-inch square precast concrete piles would be driven at the dock face for attachment of this replacement ship fendering system.

Based on a preliminary evaluation of the most recent hydrographic survey, some minor maintenance dredging may be required along the face and at the south end of Berth 2. The amount of dredging is anticipated to be less than 500 cubic yards and is anticipated to be conducted under the Port’s existing permits for annual dock maintenance dredging.

1.5.1.2 Ship Unloader Replacement

The existing ship unloader would be replaced with a new ship unloader inclusive of a completely enclosed conveying system. The ship unloader components would be delivered to the site by ship from various international locations in large pre-assembled parts and multiple shipping containers. A designated area of the dock would be used for assembling the unloader upon the new gantry rails. The existing open area of the previous Berth 3 warehouse, directly adjacent to Berth 2, would be used for staging the parts and containers. The new ship unloader would be installed on the newly installed gantry rail along the dock parallel to the berth face. The assembly process would require approximately 4 to 5 months before the new ship unloader is deemed operational.

1.5.1.3 Rail Trestle Replacement

The existing wooden rail support trestle, which spans between the land and the end of the existing concrete dock, would be dismantled. An approximately 180-foot portion of the existing wooden trestle has deteriorated and, accordingly, its load-bearing capacity has been reduced. Therefore, only empty rail cars can travel or be stored on the trestle. In order to accommodate full rail cars, the existing wooden trestle would be replaced with a new structural bridge capable of supporting full cars and the engine. The new structural bridge would be similar in construction to that proposed for the primary dock structure handling the new ship unloader. Construction activities would include removing the wooden trestle and piling to the mudline, driving approximately 30 new piles, and installing concrete beams, track, and access walkways on each side.

1.5.1.4 Barge Loading Equipment Installation

Barge loading equipment installation would take place to allow for future barge loading of cementitious material for water-based shipping. Specific designs for this proposed project element have not yet been completed.

1.5.1.5 Dome Construction, Truck Loading Station Modifications, and Existing Bunker Dust Collector Upgrades

Bunker 7, which has an existing capacity of 8,000 metric tons, would be replaced with a concrete storage dome to more efficiently handle Portland cement or other cementitious materials. The new storage dome dimensions are approximately 120 feet in diameter by 132 feet tall, compared to the existing bunker, which is 130 feet in diameter by 58 feet tall. The new storage dome would have a storage capacity of 40,000 metric tons and include air pollution control devices. The dome would be constructed on a foundation supported by pre-cast concrete piles.

Bunkers 5 and 6 and the new dome would transfer reclaimed cement to Truck Loading Lanes 3 and 4. The existing single scales at Truck Loading Lanes 3 and 4 would be replaced with a new split-deck scale so that each tank of a dual tank trailer can be weighted and loaded separately. Truck Loading Lanes 1 and 2, which currently receive reclaimed cementitious material from Bunkers 1 and 2, would also be upgraded with a new dual truck loading spout system and a split-deck scale. This upgrade would be similar to what exists for Truck Loading Lanes 3 and 4, but specific designs for these elements have not been completed. All equipment would be enclosed and operated on a negative pressure basis using existing and new dust filter systems.

The dome structure would require approximately 9 to 10 months to complete. During the dock, ship unloader, and dome installations, a separate contractor would install material handling equipment and access platforms. All material handling equipment would be enclosed and automated. The installation of associated dust filters and their associated foundations and structural supports would require approximately 6 months, but would mostly occur concurrently with construction of the other systems.

1.5.1.6 Fertilizer Material Handling Equipment Removal

Some demolition of existing equipment and structures would be required to install and operate the proposed equipment modifications to the terminal. The primary components to be demolished would be related to the original installation and purpose of the terminal (handling fertilizer products). When the facility was converted to handle cementitious materials in 1996, all of the fertilizer material handling equipment was taken out of service but left in place. This equipment would be removed as part of the proposed project because its position would hinder installation of the new enclosed equipment, as well as truck and rail car movement.

1.5.2 Operations

Once the bulk cargo vessel is secured at the berth, the new enclosed and self-contained mechanical ship unloader would unload the vessel, possibly entailing movements up to 20 times during the unloading operation. The unloading, receiving, and distribution system would be designed to meet an unloading capacity of 1,650 metric tons per hour and would not exceed the unloader's permitted receiving rate. A new elevated conveyor would transfer cementitious materials to the enclosed cargo material handling systems for distribution to any of seven of the eight storage structures.

Cementitious materials would then be delivered via an air gravity conveyor system to either of two existing truck loading stations (Lanes 3 and 4). In addition, this new material handling system would transfer Portland cement or other cementitious materials from the dome to existing Bunkers 5 and 6 as overflow storage. Rail cars would be loaded by an enclosed system from the new rail loading tanks.

As shown in Table 1, the proposed project would result in a net increase in cementitious material throughput, which would result in additional vessel, truck, and rail calls. The proposed project's expected maximum throughput, as compared to existing levels, is presented in Table 1. Throughput numbers will be refined through development of the Draft EIR (DEIR).

Table 1
Expected Maximum Proposed Project Throughput Compared to Existing Levels (Annual)

	Baseline (2018)		Project Year 10 (Expected Maximum)	
	Mode (annual moves)	Tons of Product	Mode (annual moves)	Tons of Product
Truck[1]	16,730	459,484	42,000	1,100,000
Rail Cars	534	56,057	4,700	500,000
Rail Trips[2]	27	--	300	--
Ships Calls	20	287,907	50	1,700,000
Barges Calls	0	0	40	200,000
Total Tons	--	803,448	--	3,500,000

Notes:

1. Truck calls are expressed in one-way moves.
2. Assumes an average of 20 cars per train
3. Current throughput permitted by the SJVAPCD is 2,628,000 tons per day receiving into and 6,000 tons per day shipping out of the terminal.

As shown in Table 1, the terminal would also be designed to service barges in the future along with vessels.

1.6 Proposed Alternatives

According to Section 15126.6 of the CEQA Guidelines, an EIR need only examine in detail those alternatives that could feasibly meet most of the basic objectives of the proposed project. The purpose of the proposed project is to modify and rehabilitate an existing bulk cementitious material receiving and distribution terminal. The following alternatives are currently being considered for further analysis in the DEIR.

1.6.1 No Project Alternative

The No Project Alternative, which is required by CEQA, represents what would reasonably be expected to occur in the foreseeable future if the proposed project were not approved. Under this alternative, no new developments would be constructed at Berth 2; therefore, there would be no change to operations.

1.6.2 Reduced Project Alternative

The Reduced Project Alternative would consist of the same construction and operational components as the proposed project, with the exception of the wooden rail trestle replacement. Under the Reduced Project Alternative, replacement of the rail trestle bridge would not occur, which would reduce the overall area available for loaded rail cars, and accordingly reduce the maximum throughput expected at the terminal as compared to the proposed project. Since rail capacity would be reduced, this alternative may rely more on trucks for operations, which has the potential to create more truck traffic in comparison with the proposed project.

1.7 Anticipated Project Approvals and Permits

Projects or actions undertaken by the lead agency (in this case, the Port), may require subsequent oversight, approvals, or permits from other public agencies. Other such agencies are referred to as responsible agencies and trustee agencies. Pursuant to CEQA Guidelines Sections 15381 and 15386, as amended, responsible and trustee agencies are defined as follows:

- A **responsible agency** is a public agency that proposes to carry out or approve a project for which a lead agency is preparing or has prepared an EIR or Negative Declaration. For the purposes of CEQA, the term "responsible agency" includes all public agencies other than the lead agency that have discretionary approval authority over a project (CEQA Guidelines Section 15381; see Table 2).
- A **trustee agency** is a state agency having jurisdiction by law over natural resources affected by a project that are held in trust for the people of the state of California (CEQA Guidelines Section 15386). Trustee agencies have jurisdiction over natural resources held in trust for the people of California but do not have a legal authority over approving or carrying out a project. CEQA Guidelines Section 15386 designates only the following four agencies as potential trustee agencies for projects subject to CEQA:
  - California Department of Fish and Wildlife (CDFW), regarding fish and wildlife, native plants designated as rare or endangered, game refuges, and ecological reserves
  - California State Lands Commission (CSLC), regarding state-owned "sovereign" lands, such as the beds of navigable waters and state school lands
  - California Department of Parks and Recreation, regarding units of the state park system

– University of California, regarding sites within the Natural Land and Water Reserves System

Table 2 summarizes the expected relevant regulatory agencies, their expected jurisdiction (i.e., trustee or responsible agency), and their statutory authority as related to the proposed project. The jurisdiction of these agencies will be confirmed through scoping and subsequent coordination.

Table 2
Regulatory Agencies and Authority

Regulatory Agency	Jurisdiction	Statutory Authority/Implementing Regulations
U.S. Army Corps of Engineers	Responsible Agency	Reviews and authorizes in-water work under the Clean Water Act and Rivers and Harbors Act. The proposed project is expected to require permits under these regulations.
CSLC	Trustee Agency	Reviews dredging and placement of structures on state tidelands. Docks 2 and 3 are located in historic upland areas even though they are now in tideland areas. The lands would likely not be subject to the Public Trust Doctrine.
CDFW	Trustee Agency	Reviews and submits recommendations in accordance with CEQA. Reviews and authorizes in-water work and work in riparian areas under the California Fish and Game Code. The proposed project is expected to require a Streambed Alteration Agreement.
Central Valley Regional Water Quality Control Board (RWQCB)	Responsible agency	Permitting authority for water quality, including point and non-point source discharges. Reviews projects for authorization under the Porter-Cologne Water Quality Control Act and Clean Water Act Sections 401 and 402. The proposed project is expected to require a 401 Water Quality Certification and coverage under existing General Orders for stormwater generated at the site during construction.
Office of Historic Preservation	Responsible agency	Consults with federal lead agencies under Section 106 of the National Historic Preservation Act regarding impacts on cultural resources that are either listed, or eligible for listing, on the National Register of Historic Places. The proposed project may require Section 106 consultation with the State Historic Preservation Officer.
San Joaquin Valley Air Pollution Control District (SJVAPCD)	Responsible agency	Review authority under the California Clean Air Act and responsibility for implementing federal and state regulations at the local level and permitting stationary sources of air pollution. The proposed project is expected to require a demolition permit and an air permit modification.
San Joaquin County Department of Environmental Health	Responsible agency	Regulates the handling, disposal, generation of, and cleanup from, accidental spills of hazardous waste, on-site petroleum storage, and drilling activities.

Regulatory Agency	Jurisdiction	Statutory Authority/Implementing Regulations
San Joaquin Council of Governments	Responsible agency	Reviews and approves projects obtaining coverage under the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan.
City of Stockton Building Department	Responsible agency	Reviews and approves of mechanical, electrical, demolition, and building permits, which are expected to be required for the proposed project.
Stockton Fire Department	Responsible agency	Reviews and approves of fire protection systems.

1.7.1.1 Assembly Bill 52

Assembly Bill (AB) 52 became effective on July 1, 2015, requiring lead agencies to consider the effects of projects on tribal cultural resources and to conduct notification and consultation with federally and non-federally recognized Native American tribes and Native American Heritage Commission (NAHC) early in the environmental review process. Two Native American tribes, the Buena Vista Tribe of Miwok (Me-Wuk) Indians and the Wilton Rancheria Tribe, have requested consultation on CEQA documentation for projects at the Port. The Port initiated consultation with the two tribes and requested a search of NAHC's Sacred Lands Information File in October 2019.

1.8 Initial Study

An Initial Study based on the CEQA Appendix G Environmental Checklist was completed and is attached for review in Section 2. As detailed in Section 2, the proposed project has the potential to result in significant environmental impacts to the following resource areas: aesthetics, air quality, biological resources, cultural resources, geology and soils, greenhouse gas (GHG) emissions, hazards and hazardous materials, hydrology and water quality, noise, transportation, and tribal cultural resources.

Any resource area that was found to have at least one impact that is potentially significant as indicated by the checklist will be included for full analysis in the DEIR.

2 Environmental Factors Potentially Affected

The environmental factors checked below would be potentially affected by the proposed project, involving at least one impact that is potentially significant as indicated by the checklist.

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

2.1 Determination

On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

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

☒ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

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

2.2 Aesthetics

	Except as provided in Public Resources Code Section 21099, would the project:	Potentially Significant Impact	Less Than Significant Impact After Mitigation	Less Than Significant Impact	No Impact
a.	Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☒
b.	Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings along a scenic highway?	☐	☐	☐	☒
c.	Substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☒	☐	☐	☐
d.	Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?	☒	☐	☐	☐

2.2.1 Discussion

The proposed project is located within the City's urban core, which is characterized by a mix of heavy industrial uses with limited landscape features, older residential neighborhoods, neighborhood commercial shopping centers, and a variety of other commercial and industrial parcels. In the area surrounding the project site, the Port leases property for a variety of industrial uses, characterized by the presence of storage tanks, maritime terminals, cementitious material storage structures and grain silos, railroad facilities, large storage buildings, and stockpiles of various commodities. Local regional land uses that affect the visual character include residential infill (the closest residential areas are located 500 feet to the south of the project site), industrial/commercial facilities (south, west, and east of the project site), and Central California Traction Company rail lines and right of way (south of the project site). The proposed project would not affect any rock outcroppings or historic buildings. There are no scenic vistas or designated state scenic highways within the project area, and the proposed project is consistent with the visual character of the study area (industrial port uses). While the proposed project is expected to be similar to baseline conditions, the proposed project includes dock and upland construction or improvements that would be visible and could potentially alter the existing visual character or quality of public views of the site and surroundings. Therefore, the DEIR will include a full analysis of the proposed project's potential aesthetics impacts.

2.3 Agricultural/Forestry Resources

Would the project:		Potentially Significant Impact	Less Than Significant Impact After Mitigation	Less Than Significant Impact	No Impact
a.	Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b.	Conflict with existing zoning for agricultural use or conflict with a Williamson Act contract?	☐	☐	☐	☒
c.	Conflict with existing zoning for, or cause rezoning of forest land (as defined in Public Resources Code Section 12220[g]), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104[g])?	☐	☐	☐	☒
d.	Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e.	Involve other changes in the existing environment that, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

2.3.1 Discussion

The City's 2040 General Plan designates the project site for industrial use, and the zoning classification of the project site and surrounding parcels is Port or Industrial, General (City 2018). Neither the project site nor the immediate surrounding areas currently support agricultural use or forestry resources. There are no timberland zoned properties within San Joaquin County as of 2001 (Stockton Port District 2012); the nearest forest area is the Stanislaus Forest, which is more than 50 miles away. All property surrounding the project site has been developed or planned for industrial or urban land uses. The project area is zoned for non-agricultural uses, which precludes the lease area from qualifying for Williamson Act contracts.

2.3.2 Impact Evaluation

A: Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

No Impact. The proposed project would not result in the conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use. Therefore, there would be no impact, and this issue will not be addressed further in the DEIR.

B: Would the project conflict with existing zoning for agricultural use or conflict with a Williamson Act contract?

No Impact. No farmland exists in the project area. The project area and surrounding areas are zoned as Port or Industrial, General, and are not subject to a Williamson Act contract. Therefore, there would be no impact, and this issue will not be addressed further in the DEIR.

C: Would the project conflict with existing zoning for, or cause rezoning of forest land (as defined in Public Resources Code Section 12220[g]), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104[g])?

No Impact. The proposed project would not conflict with or change any zoning or use of forest land, timberland, or timberland zoned Timberland Production. Therefore, there would be no impact, and this issue will not be addressed further in the DEIR.

D: Would the project result in the loss of forest land or conversion of forest land to non-forest use?

No Impact. The proposed project would not result in the conversion of forest land or timberland to non-forest use. Therefore, there would be no impact, and this issue will not be addressed further in the DEIR.

E: Would the project involve other changes in the existing environment that, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?

No Impact. No forest or farmlands exist in the vicinity of the project area. Therefore, there would be no impact, and this issue will not be addressed further in the DEIR.

2.4 Air Quality

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

2.4.1 Discussion

The proposed project would occur in the northern portion of the San Joaquin Valley Air Basin, which is managed by the SJVAPCD. The SJVAPCD is responsible for implementing federal and state regulations at the local level, permitting stationary sources of air pollution, and developing the local elements of the State Implementation Plan. The proposed project would include construction activities and operational increases in trucks, rail, and vessel calls and would therefore result in increased emissions of criteria air pollutants relative to baseline conditions. The closest sensitive receptor to the terminal is a residential area located approximately 500 feet to the south. Emissions associated with construction and operations have the potential to exceed applicable thresholds, conflict with an applicable air quality plan, or expose sensitive receptors to substantial pollutant concentrations. Therefore, the DEIR will include a full analysis of the proposed project's potential air quality impacts.

2.5 Biological Resources

	Would the project:	Potentially Significant Impact	Less Than Significant Impact After Mitigation	Less Than Significant Impact	No Impact
a.	Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☒	☐	☐	☐
b.	Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☒	☐	☐	☐
c.	Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marshes, vernal pools, coastal wetlands, etc.) through direct removal, filling, hydrological interruption, or other means?	☒	☐	☐	☐
d.	Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☒	☐	☐	☐
e.	Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☒	☐	☐	☐
f.	Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☒	☐	☐	☐

2.5.1 Discussion

The project site's developed condition and location within a highly industrialized area precludes the presence of most special-status species, although several special-status bird and fish species may have a very low to low potential for occurrence in or around the project site. This includes Swainson's hawk (*Buteo swainsoni*; California Endangered Species Act threatened) and white-tailed kite *(Elanus leucurus*; CDFW fully protected). The project site may also provide suitable nesting habitat for Migratory Bird Treaty Act-protected bird species. Other species potentially present in the project area (specifically within the San Joaquin River) were identified based on critical habitat and essential fish habitat (EFH) designations (50 Code of Federal Regulations 226; NOAA 2009). San Joaquin River waters in which in-water work would occur and increased vessel calls that would be accommodated as a result of the proposed project are within designated critical habitat for delta smelt (*Hypomesus transpacificus*), Central Valley steelhead (*Oncorhynchus mykiss irideus*), and green sturgeon (*Acipenser medirostris*). San Joaquin River waters in the project area are also considered EFH for Pacific salmon and may provide habitat to Central Valley fall-run and late fall-run Chinook salmon (*Oncorhynchus tshawytscha*; NMFS 2019; CDFW 2019). State-threatened longfin smelt (*Spirinchus thaleichthys*) may also inhabit San Joaquin River waters. While there are no known areas of wetlands, there are small pockets of vegetation along the shoreline that would be surveyed to ensure any wetlands are identified. While the project area is largely developed and devoid of potential habitat for special-status species, because trees and undeveloped (but disturbed) portions of the project area may provide habitat to special-status species, the DEIR will evaluate the potential for the proposed project to impact biological resources, including special-status species, habitats, communities, or wetlands; or to conflict with biological resource goals and policies from the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan.

2.6 Cultural Resources

Would the project:		Potentially Significant Impact	Less Than Significant Impact After Mitigation	Less Than Significant Impact	No Impact
a.	Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?	☒	☐	☐	☐
b.	Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	☒	☐	☐	☐
c.	Disturb any human remains, including those interred outside of formal cemeteries?	☒	☐	☐	☐

2.6.1 Discussion

Cultural resources are defined as archaeological sites, elements of the historic built environment (e.g., buildings, structures, bridges, or other built features), and places of traditional cultural importance that meet one of the following criteria (14 CCR 15064.5):

- Listed in or eligible for listing in the California Register of Historical Resources
- Listed in a local preservation register
- Identified as significant in a historical resource survey (unless the preponderance of evidence demonstrates that it is not historically or culturally significant)
- Determined to be significant by the CEQA lead agency, provided the determination is supported by substantial evidence considering the whole record

The proposed project includes dismantling the existing wooden rail support trestle, which, based on age, has the potential to be a historical structure. In addition, the proposed project includes ground disturbance along the dock for equipment supports and beneath the proposed dome, as well as at -37 feet mean lower low water (MLLW) within the dock area, all of which may uncover native sediments that have the potential to contain intact archaeological resources. Therefore, the DEIR will evaluate whether the proposed project would cause a substantial adverse change in the significance of an archaeological or historical resource or disturb human remains.

2.7 Energy

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

2.7.1 Discussion

Senate Bill (SB) SX1-2 requires the state of California to produce 33% of its electricity from renewable sources by December 31, 2020; SB 350 requires that the state product 50% of its electricity from renewable sources by December 31, 2030; and SB 100 requires that the state produce all electricity from renewable sources by 2045. Local policies pertaining to energy include Stockton General Plan Policy LU-5.4B, which requires all new development, including major rehabilitation, renovation, and redevelopment, to incorporate feasible and appropriate energy conservation practices.

In order to comply with SB SX1-2 and SB 350 standards, the Port has developed and implemented a *Renewable Portfolio Standard Procurement Plan* (Port 2016). In the plan's most recent iteration, the Port determined the most efficient and cost-effective approach to meeting these standards is through continued purchase of sufficient state-approved renewable energy products from the active California market. For the compliance period from 2021 through 2030, the Port will determine and implement the most cost-effective options for complying with newly codified laws (Port 2016).

As of July 2019, the Port additionally offers its tenants financial incentives for the installation of high-efficiency equipment or systems. Incentives are paid on the energy savings and permanent peak demand reduction above and beyond baseline energy performance, which include state-mandated codes, federal-mandated codes, industry-accepted performance standards, or other baseline energy performance standards (Port 2019).

The existing Lehigh terminal obtains energy from local providers, including electricity from the Pacific Gas and Electric Company (PG&E).

2.7.2 Impact Evaluation

A: Would the project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

No Impact. Proposed project construction would involve equipment that consumes fossil fuels; however, the proposed project would not require any unusual or excessive construction equipment or practices compared to projects of similar type and size. In addition, the proposed project would comply with standard best management practices (BMPs) such as equipment idling restrictions and maintaining equipment according to manufacturers' specifications. As such, construction of the proposed project would not result in wasteful, inefficient, or unnecessary consumption of energy.

The proposed project includes an expansion of existing operations but would not result in the storage of any products not currently allowed under Lehigh's existing lease. Operations within the facility itself, specifically the new more efficient ship unloader and pneumatic distribution system, would result in a decreased energy demand of up to 25% even with the projected increases in throughput. Therefore, there would be no impact, and this issue will not be addressed further in the DEIR.

B: Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

No Impact. Lehigh would employ standard BMPs during construction, and facility operations would occur in compliance with federal, state, and local regulations pertaining to emissions and efficiency. These measures would ensure that consumption of fossil fuels associated occur in compliance with existing plans and regulations.

Continued implementation of the Port's *Renewable Portfolio Standard Procurement Plan* (Port 2016) would ensure that the proposed project does not conflict with state regulations pertaining to renewable energy. As noted, the Port currently operates in compliance with 2020 standards and plans will be developed to ensure compliance with 2030 standards. The Port will continue to offer its tenants financial incentives for the installation of high-efficiency equipment or systems consistent with local policies for energy efficiency. Therefore, there would be no impact, and this issue will not be addressed further in the DEIR.

2.8 Geology/Soils

	Would the project:	Potentially Significant Impact	Less Than Significant Impact After Mitigation	Less Than Significant Impact	No Impact
a.	Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
	Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☒	☐	☐	☐
	Strong seismic ground shaking?	☒	☐	☐	☐
	Seismic-related ground failure, including liquefaction?	☒	☐	☐	☐
	Landslides?	☒	☐	☐	☐
b.	Result in substantial soil erosion or the loss of topsoil?	☐	☐	☐	☒
c.	Be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project and potentially result in an on-site or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☒	☐	☐	☐
d.	Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☒	☐	☐	☐
e.	Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems in areas where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒
f.	Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☒	☐	☐	☐

2.8.1 Discussion

The proposed project would be served by the municipal sewage system and would not require the use of septic tanks or alternative wastewater disposal systems or affect any such systems. The project site is paved and therefore would not result in soil erosion or the loss of topsoil. However, the project area is located within a seismically active region susceptible to ground shaking, liquefaction, and settlement, where adverse effects from seismic activity or site-specific vulnerability to seismic-related hazards may pose a risk of loss, injury, or death. Therefore, the DEIR will fully evaluate the potential for the proposed project to cause substantial adverse effects associated with rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure, and landslides.

2.9 Greenhouse Gas Emissions

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

2.9.1 Discussion

The California Global Warming Solutions Act of 2006, widely known as AB 32, required the California Air Resources Board (ARB) to develop and enforce regulations for the reporting and verification of statewide GHG emissions. On December 11, 2008, ARB adopted the AB 32 Scoping Plan, which set forth the framework for meeting the state's GHG reduction goal. In 2014, ARB adopted an update to the 2008 Scoping Plan, which builds upon the initial Scoping Plan with new strategies and recommendations. The 2008 Scoping Plan and 2014 Scoping Plan Update require that reductions in GHG emissions come from virtually all sectors of the economy and be accomplished from a combination of policies, regulations, market approaches, incentives, and voluntary efforts. In 2014, the City approved the Climate Action Plan (CAP), which outlines a program to reduce GHG emissions from both existing and new development within the financial limitations of both the City government and the Stockton community. Consistent with SJVAPCD policies, the CAP relies on a goal of 29% reduction in GHG emissions from business-as-usual by 2020. As described in the CAP, the City will revisit this plan in the future to examine whether there exist additional options to further reduce GHG emissions, and whether such options might be feasible in improved economic conditions. GHG emissions would be released from combustion sources associated with the proposed project during both construction and operation. Therefore, the DEIR will fully evaluate the potential for the proposed project to generate GHG emissions that could have a significant impact on the environment. The DEIR will also analyze compliance with applicable state, regional, and local GHG reduction plans.

2.10 Hazards and Hazardous Materials

	Would the project:	Potentially Significant Impact	Less Than Significant Impact After Mitigation	Less Than Significant Impact	No Impact
a.	Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☒	☐	☐	☐
b.	Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☒	☐	☐	☐
c.	Emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school?	☐	☐	☐	☒
d.	Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e.	Be located within an airport land use plan area or, where such a plan has not been adopted, be within 2 miles of a public airport or public use airport, and result in a safety hazard or excessive noise for people residing or working in the project area?	☐	☐	☐	☒
f.	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☒	☐	☐	☐
g.	Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	☒	☐	☐	☐

2.10.1 Discussion

The project site is not included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. Surrounding sites potentially containing hazardous materials were identified through a search of the DTSC EnviroStor and the State Water Resources Control Board GeoTracker database websites (DTSC 2019; SWRCB 2019). Within a 2-mile radius of the proposed project footprint, the EnviroStor database lists 33 cleanup sites and the GeoTracker database identifies 48 cleanup sites with active, open, or unidentified statuses (with some sites occurring in both databases). There are no schools, airstrips, airports, or other sites potentially sensitive to hazards or hazardous materials within the proposed project vicinity. The nearest school is Washington Elementary School, located approximately 0.4 mile to the southeast of the project site.

The closest airport is the Stockton Municipal Airport, located approximately 5 miles southeast of the project site. However, because the proposed project would receive, store, and distribute Portland cement or other cementitious materials and use hazardous materials (e.g., oils, concrete, etc.) as part of constructing the proposed project, there is potential for hazards and hazardous materials-related impacts on the environment. Therefore, the DEIR will fully evaluate whether the proposed project would create a significant hazard to the public or environment through the routine transport of hazardous materials as well as the use of hazardous materials during construction.

2.11 Hydrology/Water Quality

	Would the project:	Potentially Significant Impact	Less Than Significant Impact After Mitigation	Less Than Significant Impact	No Impact
a.	Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☒	☐	☐	☐
b.	Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☐	☒
c.	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:	☐	☐	☐	☒
	i) result in a substantial erosion or siltation on- or off-site?	☐	☐	☐	☒
	ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite?	☐	☐	☐	☒
	iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☐	☒
	iv) impede or redirect flood flows?	☐	☐	☐	☒
d.	In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☒	☐	☐	☐
e.	Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☒	☐	☐	☐

2.11.1 Discussion

The proposed project would include a number of BMPs to prevent impacts to water quality during construction. Construction stormwater requirements would be regulated under the National Pollutant Discharge Elimination System (NPDES) program, as administered by the Central Valley Regional Water Quality Control Board (RWQCB). The proposed project design would comply with the Port's *Storm Water Development Standards Plan* (Port 2009). Installation of new infrastructure improvements is anticipated to have no appreciable effect on groundwater recharge. The project area is within the dam inundation zone for several dams, and levee systems protect the project site from inundation. There is a low probability for failure of existing dams and levees, and existing inspection and response plans are in place to address these hazards. The proposed project would not exacerbate risks related to flood hazards, and seismic upgrades would minimize the potential for release of pollutants under the proposed project. However, because the proposed project would result in pile driving in water, overwater work, and potentially dredging, it would have the potential to alter water quality conditions. Therefore, the DEIR will evaluate the potential for the proposed project to impact hydrology and water quality.

2.12 Land Use/Planning

	Would the project:	Potentially Significant Impact	Less Than Significant Impact After Mitigation	Less Than Significant Impact	No Impact
a.	Physically divide an established community?	☐	☐	☐	☒
b.	Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒

2.12.1 Discussion

The City's 2040 General Plan designates the project site for industrial use, and the zoning classification of the project site and surrounding parcels is Port or Industrial, General (City 2018). There is no housing within or adjacent to the project site.

2.12.2 Impact Evaluation

A: Would the project physically divide an established community?

No Impact. The project site is zoned for industrial use and does not include any residences, hospitals, schools, convalescent facilities, or other features that would constitute an established community. The proposed project is an industrial use, which is consistent with the current zoning. Therefore, there would be no impact, and this issue will not be addressed further in the DEIR.

B: Would the project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

No Impact. Dock and upland improvements are consistent with the project site's existing zoning and use. Accordingly, the proposed project would be consistent with applicable land use plans and policies. Therefore, there would be no impact, and this issue will not be addressed further in the DEIR.

2.13 Mineral Resources

Would the project:		Potentially Significant Impact	Less Than Significant Impact After Mitigation	Less Than Significant Impact	No Impact
a.	Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b.	Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☐	☒

2.13.1 Discussion

Important extractive resources in San Joaquin County include sand, gravel, natural gas, peat soil, placer gold, and silver. Extraction of these minerals is focused in the southwestern portion of San Joaquin County in the vicinity of the San Joaquin River (Stockton Port District 2013). The project area is classified as a Mineral Resource Zone-1 (MRZ-1; Smith and Clinkenbeard 2012), which indicates that adequate information indicates that no significant mineral deposits are present or it is judged that little likelihood exists for their presence. The project site does not contain any known mineral resources, including any rock, sand, or gravel resources.

2.13.2 Impact Evaluation

A: Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

No Impact. Due to the proposed project's location in an MRZ-1, continued development of the area would not limit access to any known mineral resources. As a result, the proposed project would neither interfere with any existing extraction operations nor reduce the availability of any known mineral resources. Therefore, there would be no impact, and this issue will not be addressed further in the DEIR.

B: Would the project result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?

No Impact. The proposed project area does not include a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan. Therefore, there would be no impact, and this issue will not be addressed further in the DEIR.

2.14 Noise

	Would the project result in:	Potentially Significant Impact	Less Than Significant Impact After Mitigation	Less Than Significant Impact	No Impact
a.	Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☒	☐	☐	☐
b.	Generation of excessive groundborne vibration or groundborne noise levels?	☒	☐	☐	☐
c.	For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

2.14.1 Discussion

The proposed project would be located neither within the vicinity of a private airstrip or an airport land use plan area, nor within 2 miles of a public airport or public use airport and therefore would not expose people residing or working in the proposed project area to excessive noise levels in such areas. Construction activities for the proposed project would require the use of numerous pieces of noise-generating equipment and equipment that could cause excess noise and vibration. Increases in operations also have the potential to increase noise levels. These activities would temporarily increase ambient noise levels and vibration levels on an intermittent basis. Therefore, the DEIR will fully evaluate the potential impacts from noise and vibration associated with the proposed project.

2.15 Population/Housing

Would the project:		Potentially Significant Impact	Less Than Significant Impact After Mitigation	Less Than Significant Impact	No Impact
a.	Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b.	Displace a substantial number of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

2.15.1 Discussion

The City's 2040 General Plan designates the project site for industrial use, and the zoning classification of the project site and surrounding parcels is Port or Industrial, General (City 2018). There is no housing within the proposed project area.

The project site is near the Port's West Complex, and significant growth of the Port's West Complex is anticipated, as analyzed in the *Port of Stockton West Complex Development Plan Final Environmental Impact Report* (Port 2004). Growth at the Port's West Complex is expected to increase direct employment opportunities; however, this increase in employment is not expected to result in a significant need for additional housing in the area because of the large number of workers that already reside within and the relatively high rate of unemployment for the Stockton-Lodi Metropolitan Statistical Area (10.1% for 2017) compared to the state of California (7.7% for 2017) and the United States (6.6% for 2017; Port 2004; American Census Bureau 2017).

2.15.2 Impact Evaluation

A: Would the project induce substantial unplanned population growth in an area, either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure)?

No Impact. No new homes would be constructed as part of the proposed project. The proposed project would not induce population growth. Therefore, the proposed project would have no impact, and this issue will not be addressed further in the DEIR.

B: Would the project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

No Impact. There are no housing units in the immediate project area and all work would occur on the existing terminal with all operations occurring on existing roadways, waterways and railways with existing capacity to accommodate increased movements. The proposed project would have no effect on existing residential areas, and the site's zoning precludes the potential for future housing developments. Therefore, the proposed project would have no impact, and this issue will not be addressed further in the DEIR.

2.16 Public Services

Would the project:		Potentially Significant Impact	Less Than Significant Impact After Mitigation	Less Than Significant Impact	No Impact
a.	Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities or a need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the following public services:				
	Fire protection?	☐	☐	☐	☒
	Police protection?	☐	☐	☐	☒
	Schools?	☐	☐	☐	☒
	Parks?	☐	☐	☐	☒
	Other public facilities?	☐	☐	☐	☒

2.16.1 Discussion

Fire Protection. The City's Fire Department provides fire protection to the City and contiguous areas, including the proposed project area. The department has 12 fire stations, and each fire station has one fire engine. The response time goal for the department is to provide service within 4 minutes of notification 90% of the time. Generally, service can be provided in this timeframe to areas within 1.5 miles of a fire station (Stockton Port District 2015). The fire stations that serve the project area are Fire Stations 2 and 6 at 110 West Sonora Street and 1501 Picardy Drive respectively. Fire Stations 2 and 6 are approximately 1.5 miles and 0.7 mile away from the project site, respectively.

Police Protection. The Port maintains an independent sworn police force to provide Port security. In addition, the City's Police Department provides police protection services throughout the City limits (56 square miles). The Port police force patrols on a 24-hour basis and is currently served by 13 staff. A minimum of three officers are on duty during a given 24-hour period, with one officer in charge of communications and two on patrol. The Port police currently have plans to increase their police force by three sworn officers. The Port patrol maintains mutual aid agreements with the City Police Department, the San Joaquin Sheriff's Department, and the California Highway Patrol in the event that backup services are needed. The current City Police Department officer to citizen ratio is about 1 to 693, with an emergency response time between 3 and 5 minutes depending on time of day, location, and the number of requests for services (Stockton Port District 2015).

Schools. The Stockton Unified School District includes seven trustee areas served by four high schools, six middle schools, 32 elementary schools, and several other miscellaneous schools. Several institutions of higher education are located within the Stockton area, including the University of the Pacific; California State University, Stanislaus's Stockton campus; San Joaquin Delta College;

Humphrey's College and School of Law; and an assortment of vocational training schools (Stockton Port District 2015). Washington Elementary School, which is closest to the project site, is located approximately 0.4 mile to the southeast.

Parks. The City's 2040 General Plan designates the project site for industrial use, and the zoning classification of the project site and surrounding parcels is Port or Industrial, General (City 2018). The nearest parks to the proposed project area are Boggs Tract Park and Victory Park, located approximately 0.5 mile to the south and 0.6 mile to the north, respectively.

2.16.2 Impact Evaluation

A: Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities or a need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the following public services: 1) fire protection; 2) police protection; 3) schools; 4) parks; or 5) other public facilities?

No Impact. The proposed project would not result in increased demand on any existing facilities or services, including fire protection, police, schools, or parks. The proposed project area is adequately served by the City Fire Department, City Police Department, and Port police. There would be no impact to fire protection, police, schools, parks, or other public facilities; therefore, this issue will not be addressed further in the DEIR.

2.17 Recreation

	Would the project:	Potentially Significant Impact	Less Than Significant Impact After Mitigation	Less Than Significant Impact	No Impact
a.	Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b.	Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	☐	☐	☐	☒

2.17.1 Discussion

The City operates and maintains a total of 66 parks that range in size from 2 to 64 acres (City 2019a). Recreational activities can also be found on the waterways in the region, which include the Sacramento-San Joaquin Delta; natural rivers and creeks; and artificial canals, channels, sloughs, and ditches. There are limited park resources within the immediate proposed project area, likely due to the industrial zoning. Nearby parks include Boggs Tract Park and Victory Park, located approximately 0.5 mile to the south and 0.6 mile to the north, respectively. In addition, the San Joaquin River to the north of the project area is used for recreational boating purposes (Stockton Port District 2013).

2.17.2 Impact Evaluation

A: Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

No Impact. Neither construction nor operation of the proposed project would increase the use of existing neighborhood and regional parks or other recreational facilities. Therefore, there would be no impact, and this issue will not be addressed further in the DEIR.

B: Would the project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?

No Impact. The proposed project does not include construction or expansion of any recreational facilities and would not result in increased demand or other effects to recreational facilities. Therefore, the proposed project would result in no impact to recreation, and this issue will not be addressed further in the DEIR.

2.18 Transportation

Would the project:		Potentially Significant Impact	Less Than Significant Impact After Mitigation	Less Than Significant Impact	No Impact
a.	Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☒	☐	☐	☐
b.	Conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)?	☒	☐	☐	☐
c.	Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
d.	Result in inadequate emergency access?	☐	☐	☐	☒

2.18.1 Discussion

The proposed project is not expected to result in inadequate emergency response. The Port has developed an emergency response plan to address emergency needs Port-wide, and the Port maintains its own police department, which is responsible for providing security protection of Port tenants on a 24-hour basis. While the proposed project would not increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment) because it would not include any roadway modifications, the proposed project would result in increased truck and rail trips as compared to baseline conditions. Therefore, the DEIR will fully evaluate the proposed project’s potential impacts on transportation resources.

2.19 Tribal Cultural Resources

Would the project:		Potentially Significant Impact	Less Than Significant Impact After Mitigation	Less Than Significant Impact	No Impact
a.	Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:	☒	☐	☐	☐
	i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k)?	☒	☐	☐	☐
	ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1? In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☒	☐	☐	☐

2.19.1 Discussion

The proposed project includes ground disturbance up to 80 feet below the surface along the dock and beneath the proposed dome, as well as 40 feet below the sediment within the dock. Native sediments may contain intact archaeological resources that are also tribal cultural resources. Therefore, the DEIR will evaluate the proposed project's potential impacts on tribal cultural resources.

2.20 Utilities/Service Systems

	Would the project:	Potentially Significant Impact	Less Than Significant Impact After Mitigation	Less Than Significant Impact	No Impact
a.	Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☐	☒
b.	Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?	☐	☐	☐	☒
c.	Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
d.	Generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☐	☒
e.	Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☐	☒

2.20.1 Discussion

Stormwater Drainage. Stormwater from the project site is currently conveyed to the Port's stormwater drainage system, which ultimately conveys stormwater to the retention basin adjacent to Navy Drive. The existing stormwater drainage system at the Lehigh terminal includes 10 grated inlets and pipes. The grated inlets are protected with filtration inserts, gravel, jute netting, or comparable filtration devices.

Water Supply. Water service providers in the Stockton metropolitan area include the Stockton Municipal Utilities Department and the California Water Service Company (Cal Water; City 2018). Approximately 25% of the City's water supply originates from groundwater wells, with the remaining water supply from treated surface water supplied by the Stockton East Water District (City 2019b). The Delta Water Supply Project was recently completed to provide the City with a reliable water supply to meet both current and future water needs (City 2019b). Cal Water provides domestic water in the area. Non-potable water obtained directly from the San Joaquin River is used for most non-domestic Port development needs.

Wastewater Infrastructure. The Stockton Regional Wastewater Control Facility (located just off State Route 4 on both sides of the San Joaquin River) provides secondary and tertiary treatment of municipal wastewater throughout the City. The Stockton Regional Wastewater Control Facility is a 55 million gallons per day (MGD) tertiary treatment facility. The facility serves the City and outlying San Joaquin County areas and currently processes an average of 33 MGD (City 2019b).

Solid Waste. Solid waste within the City (and Port) is transported and disposed of primarily in the privately owned Forward Landfill and San Joaquin County-owned Foothill Sanitary Landfill and North County Landfill and Recycling. The most recently reported landfill capacity and acceptable waste types for these facilities are listed in Table 3.

Table 3
Project Vicinity Landfills

Landfill	Landfill Capacity	Waste Type
Forward Landfill	Unit 1: 22,100,000 cubic yards (reported December 31, 2012)	Agricultural, asbestos, friable, ash, construction/demolition, contaminated soil, green materials, industrial, mixed municipal, sludge (biosolids), tires, and shreds
Foothill Sanitary Landfill	125,000,000 cubic yards (reported June 10, 2010)	Agricultural, construction/demolition, dead animals, industrial, mixed municipal, tires, wood waste
North County Landfill and Recycling	35,400,000 cubic yards (reported December 31, 2009)	Construction/demolition, industrial, mixed municipal, tires, other designated, agricultural, metals, wood waste

Note:
Source: CalRecycle 2019

Electrical and Gas Services. PG&E services the project area with overhead electrical distribution lines.

2.20.2 Impact Evaluation

A: Would the project require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?

No Impact. The existing terminal and dock include water connections to meet facility demand. Terminal and dock redevelopment may require new connections to existing utilities for proposed improvements. None of these utility connections or minor improvements would require the construction or expansion of existing utility facilities. Therefore, there would be no impact, and this issue will not be addressed further in the DEIR.

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

No Impact. As previously described, new water connections may be required for operation of the facility improvements. Proposed project construction and operations are not anticipated to generate significant water demand. Therefore, the proposed project would have no impact pertaining to water supply entitlements, and this issue will not be addressed further in the DEIR.

C: Would the project result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

No Impact. The proposed improvements would not generate new or additional sources of wastewater. Existing operations do not generate wastewater. Therefore, the proposed project would have no impact pertaining to wastewater, and this issue will not be addressed further in the DEIR.

D: Would the project generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

No Impact. The proposed project would require excavation and demolition which would generate solid waste. However, the landfills in the area have adequate capacity to meet the region's need and are authorized to accept waste materials that may be generated during construction of the proposed project. Therefore, there would be no impact related to landfill capacities, and this issue will not be addressed further in the DEIR.

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

No Impact. The proposed project would be constructed within the parameters of applicable federal, state, and local solid waste regulations. As described, area landfills are authorized to accept the types of waste potentially generated by proposed project construction and operation. Therefore, there would be no impact, and this issue will not be addressed further in the DEIR.

2.21 Wildfire

If located in or near state responsibility areas or lands classified as very high fire hazard severity areas, would the project:		Potentially Significant Impact	Less Than Significant Impact After Mitigation	Less Than Significant Impact	No Impact
a.	Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
b.	Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☐	☒
c.	Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☐	☒
d.	Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	☒

2.21.1 Discussion

According to the Fire Hazard Severity Zone Maps, the proposed project area, as well as other communities within San Joaquin County, is not located within one of the zones that present a moderate to very high fire hazard severity risk, and therefore is generally considered to have lower wildfire risk (Cal Fire 2019).

The Lehigh terminal commonly handles flammable materials as part of its operations. As previously described, there are emergency response plans already in place and fire response services already adequately serving the facility.

2.21.2 Impact Evaluation

A: Would the project substantially impair an adopted emergency response plan or emergency evacuation plan?

No Impact. The proposed project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. Therefore, there would be no impact, and this issue will not be addressed further in the DEIR.

B: Would the project, due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

No Impact. The risk of wildfire is related to a variety of parameters, including fuel loading (vegetation), fire weather (winds, temperatures, humidity levels, and fuel moisture contents) and topography. For instance, steep slopes can contribute to fire hazard by intensifying the effects of wind and making fire suppression difficult (Estes et al. 2017). Fuels such as grass are highly flammable (Estes et al. 2017). The project site is located in an area that is industrialized, generally flat, and contains very limited vegetation, which is not considered at a significant risk of wildfire. Therefore, there would be no impact, and this issue will not be addressed further in the DEIR.

C: Would the project require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?

No Impact. The proposed project involves installing new switchboards, new switchgear, and new transformers. While these infrastructures may exacerbate fire risks, their construction and operation would occur according to regulations and according to facility specific operational plans. Existing fire response services adequately serve the terminal. Therefore, there would be no impact, and this issue will not be addressed further in the DEIR.

D: Would the project expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

No Impact. The proposed project would not result in downstream flooding or landslides as a result of changes in runoff, post-fire slope instability, or drainage. Because the site is essentially flat and located in an existing urbanized area of the City, downstream landslides would not occur nor expose people or structures to significant risks. Therefore, there would be no impact, and this issue will not be addressed further in the DEIR.

2.22 Mandatory Findings of Significance

Would the project:		Potentially Significant Impact	Less Than Significant Impact After Mitigation	Less Than Significant Impact	No Impact
a.	Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?	☒	☐	☐	☐
b.	Does the project have impacts that are individually limited but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	☒	☐	☐	☐
c.	Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	☒	☐	☐	☐

2.22.1 Discussion

As described in preceding sections, the proposed project could have the potential to result in potentially significant impacts on the environment. Therefore, the DEIR will evaluate whether the proposed project has the potential to substantially degrade the quality of the environment, both at a project level and cumulatively. The proposed project could result in adverse impacts on human beings through environmental impacts, either directly or indirectly. Therefore, the DEIR will evaluate whether the proposed project would cause direct or indirect adverse effects on human beings and will include a full analysis of Mandatory Findings of Significance.

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Figures

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Figure 1
Vicinity Map
Lehigh Southwest Stockton Terminal Project
Port of Stockton

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ANCHOR QEA

Figure 2
Existing Site Plan
Lehigh Southwest Stockton Terminal Project
Port of Stockton

Appendix C
Comments Received on the Notice of Preparation/Initial Study

Public Comments

This appendix provides a summary of public comments received during scoping. The Port of Stockton considers public participation an integral part of the environmental process, and public involvement and outreach was a chief component of development of the Draft Environmental Impact Report (DEIR) development. Public participation ensures that there is two-way communication between the public and decision-makers and that public concerns and input are considered in the final decision. The process of public participation assumes that the public have the right to know about the activities of public agencies and to participate in those activities if they so choose. It also assumes that agencies can benefit from public input and thereby make better decisions.

The following nine comment letters were received during the public comment periods for the Notice of Preparation:

- California Air Resources Board
- California Department of Transportation, Office of Metropolitan Planning
- Central Valley Flood Protection Board
- Native American Heritage Commission
- San Joaquin Valley Air Pollution Control District
- San Joaquin Council of Governments
- Central Valley Regional Water Quality Control Board
- Environmental Justice 58 of Café Coop
- Sierra Club, Delta-Sierra Group

Copies of comment letters received are included in the following pages. All comments were considered in preparation of the DEIR.

CALIFORNIA
AIR RESOURCES BOARD

Mary D. Nichols, Chair
Jared Blumenfeld, CalEPA Secretary
Gavin Newsom, Governor

January 10, 2020

RECEIVED

JAN 16 2020

PORT OF STOCKTON
ENVIRONMENTAL DEPARTMENT

Mr. Jason Cashman
Environmental and Regulatory Affairs Manager
Port of Stockton
2201 West Washington Street
Stockton, California 95203

Dear Mr. Cashman:

Thank you for providing California Air Resources Board (CARB) staff the opportunity to comment on the Notice of Preparation (NOP) for the Lehigh Southwest Stockton Terminal Project (Project) Draft Environmental Impact Report (DEIR), State Clearinghouse No. 2019100510. The Project involves redeveloping the existing bulk cementitious material receiving and distribution terminal (berth 2) to support larger bulk marine vessels. If approved, the number of bulk vessels calling to the terminal would increase from 20 in the baseline year of 2018 to an expected maximum of 50 per year, and the number of barges would increase from zero to 40. Annual truck calls would increase from the 2018 baseline of 16,730 to an expected maximum of 42,000, annual rail cars would increase from 534 to an expected maximum of 4,700, and annual rail trips would increase from 27 to 300. The Project is located in the City of Stockton, California, and the Port of Stockton (Port) is the lead agency for California Environmental Quality Act (CEQA) purposes. Given the substantial net increase in traffic at the terminal, CARB staff urges the Port and applicant to adequately analyze and mitigate the Project's potential impact on air quality and public health in the DEIR.

CARB staff is concerned about the air pollution and health risk impacts that may result from the Project. If the throughput maximum occurs on a regular basis, the Project would result in more than doubling of the number of bulk marine vessels, heavy-duty trucks, and trains visiting the Project site over existing conditions. This net increase in activity could negatively impact local air quality by the health-harming emissions, including particulate matter, toxic air contaminants, and diesel emissions generated during the construction and operation of the Project. These emissions also contribute to regional air pollution by emitting precursors that lead to the formation of secondary air pollutants, like ozone, and contribute to an increase in greenhouse gas (GHG) emissions.

There are residences, schools and senior centers located near the Project. The communities near the Project are surrounded by existing emission sources, which include warehouses, other industrial uses, and vehicular traffic along Interstate 5 (I-5) and the Ort J. Lofthus/Crosstown Freeway. Due to the Project's proximity to residences, schools and senior centers already disproportionately burdened by multiple sources of pollution, CARB staff is concerned with the potential cumulative health impacts associated with the buildout of the Project.

I. Statutory Considerations

Addressing the disproportionate impacts that air pollution has on disadvantaged communities is a pressing concern across the State, as evidenced by statutory requirements compelling California's public agencies to target these communities for clean air investment, pollution mitigation, and environmental regulation. The following three pieces of legislation need to be considered, and included in the DEIR, when developing a project like this, in the Stockton community.

Senate Bill 535 (De León, 2012)

Senate Bill 535 (De León, Chapter 830, 2012)[1] recognizes the potential vulnerability of low-income and disadvantaged communities to poor air quality, and requires funds to be spent to benefit disadvantaged communities. The California Environmental Protection Agency (CalEPA) is charged with the duty to identify disadvantaged communities. CalEPA bases its identification of these communities on geographic, socioeconomic, public health, and environmental hazard criteria (Health and Safety Code, section 39711, subsection (a)). In this capacity, CalEPA currently defines a disadvantaged community, from an environmental hazard and socioeconomic standpoint, as a community that scores within the top 25 percent of the census tracts, as analyzed by the California Communities Environmental Health Screening Tool Version 3.0 (CalEnviroScreen).[2] According to CalEnviroScreen, Stockton communities near the Project score within the top 1 percent of California census tracts. Therefore, CARB urges the Port to ensure that the Project does not adversely impact neighboring disadvantaged communities.

Senate Bill 1000 (Leyva, 2016)

Senate Bill 1000 (SB 1000) (Leyva, Chapter 587, Statutes of 2016)[3] amended the Planning and Zoning Law. SB 1000 requires local governments that have identified

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[1] Senate Bill 535, De León, K., Chapter 800, Statutes of 2012, modified the California Health and Safety Code, adding § 39711, § 39713, § 39715, § 39721and § 39723.

[2] "CalEnviroScreen 3.0." Oehha.ca.gov, California Office of Environmental Health Hazard Assessment, June 2018, oehha.ca.gov/calenviroscreen/report/calenviroscreen-30.

[3] Senate Bill 1000, Leyva, S., Chapter 587, Statutes of 2016, amended the California Health and Safety Code, § 65302.

disadvantaged communities to incorporate the addition of an environmental justice element into their general plans upon the adoption or next revision of two or more elements concurrently on or after January 1, 2018. SB 1000 requires environmental justice elements to identify objectives and policies to reduce the unique or compounded health risks in disadvantaged communities. Generally, environmental justice elements will include policies to reduce the community's exposure to pollution through air quality improvement. SB 1000 affirms the need to integrate environmental justice principles into the planning process to prioritize improvements and programs that address the needs of disadvantaged communities, such as the Stockton communities surrounding the Project site. Since the City of Stockton has not yet adopted an environmental justice element, it is imperative that the Port consult with the City to determine how it can best integrate air quality elements into its Project that reduce local disadvantaged communities' exposure to the Project's pollutants. This will ensure that the Port is acting in a manner consistent with the City's efforts in developing policies for its environmental justice element.

Assembly Bill 617 (Garcia, 2017)

The State of California has emphasized protecting local communities from the harmful effects of air pollution through the passage of Assembly Bill 617 (AB 617) (Garcia, Chapter 136, Statutes of 2017).[4] AB 617 requires new community-focused and community-driven action to reduce air pollution and improve public health in communities that experience disproportionate burdens from exposure to air pollutants. In response to AB 617, CARB established the Community Air Protection Program with the goal of reducing exposure in communities heavily impacted by air pollution. This Project falls within the boundaries of the Southwest Stockton community, which is one of three statewide communities chosen for inclusion in the second year of the Community Air Protection Program.

Southwest Stockton was selected for both community air monitoring and the development of an emissions reduction program due to its high cumulative exposure burden, the presence of a significant number of sensitive populations (children, elderly, and individuals with pre-existing conditions), and the socioeconomic challenges experienced by its residents. The average overall CalEnviroScreen score for the Southwest Stockton community is in the top 1 percent, indicating that the area is home to some of the most vulnerable neighborhoods in the State. The air pollution levels in Southwest Stockton routinely exceed State and federal air quality standards,

[4] Assembly Bill 617, Garcia, C., Chapter 136, Statutes of 2017, modified the California Health and Safety Code, amending § 40920.6, § 42400, and § 42402, and adding § 39607.1, § 40920.8, § 42411, § 42705.5, and § 44391.2.

and the community was also prioritized by the San Joaquin Valley's AB 617 Environmental Justice Steering Committee.[5]

Health-harming emissions, including particulate matter, toxic air contaminants, and diesel emissions generated during the construction and operation of the Project may negatively impact the community, which is already disproportionately impacted by air pollution from existing freight facilities and other stationary sources of air pollution. Part of the AB 617 process requires CARB and the San Joaquin Valley Air Pollution Control District (SJVAPCD) to create a highly-resolved inventory of air pollution sources within this community. CARB will be more than happy to share this community emissions inventory with the Port of Stockton to aid in the EIR process.

The Health Risk Assessment (HRA) prepared in support of the Project should be based on the latest Office of Environmental Health Hazard Assessment (OEHHA) guidance (2015 Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments).[6] The HRA should evaluate and present the existing baseline (current conditions), future baseline (full build-out year, without the Project), and future year with the Project. The health risks modeled under both the existing and the future baselines should reflect all applicable federal, State, and local rules and regulations. By evaluating health risks using both baselines, the public and city planners will have a complete understanding of the potential health impacts that would result from the Project. CARB staff is more than willing to share any inventory, air quality, or regulatory data that may assist during the HRA process.

In addition to the health risk associated with operations, construction health risks should be included in the air quality section of the DEIR and the Project's HRA. Construction of the Project would result in short-term emissions from the use of both on-road and off-road diesel equipment. OEHHA's guidance recommends assessing cancer risks for construction projects lasting longer than two months. Since construction would very likely occur over a period lasting longer than two months, the HRA prepared for the Project should include health risks for existing residences near the Project site during construction.

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[5] California Air Resources Board (2018). 2018 Community Recommendations Staff Report. Sacramento, California: Community Air Protection Program. https://ww2.arb.ca.gov/resources/documents/2018-community-recommendations-staff-report

[6] Office of Environmental Health Hazard Assessment (OEHHA). Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments. February 2015. Accessed at: https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf

II. The DEIR Should Include Mitigation Measures to Protect Nearby Disadvantaged Communities

To reduce the exposure of emissions in disadvantaged communities already disproportionally impacted by air pollution, the final design of industrial uses proposed under the Project should include all existing and emerging zero-emission technologies to minimize exposure to all neighboring communities, as well as the GHGs that contribute to climate change. CARB encourages the Port to implement the measures listed in Attachment A of this comment letter. During the Project's development, the Port should engage with CARB, SJVAPCD, and community residents to address community concerns and mitigate air quality and GHG impacts.

III. Mobile Source Air Pollutant Emissions Should be Estimated Using CARB's Latest Emission Factor Model (EMFAC)

Project-related air pollutant emissions from mobile sources should be modeled using CARB's latest Emission Factor Model (EMFAC2017).[7] One of the many updates made to EMFAC included an update to the model's heavy-duty emission rates and idling emission factors, which results in higher PM emissions as compared to EMFAC2014. Since EMFAC2017 generally shows higher emissions of particulate matter from trucks than EMFAC2014, the Project's mobile source NO_x and diesel PM emissions are likely underestimated. CARB staff urges the Port and applicant to model and report the Project's air pollution emissions from mobile sources using emission factors found in CARB's latest EMFAC2017.

CARB staff appreciates the opportunity to comment on the NOP for the Project and can provide assistance on zero-emission technologies and emission reduction strategies, as needed. Please include CARB on your State Clearinghouse list of selected State agencies that will receive the DEIR as part of the comment period. If

[7] ww3.arb.ca.gov. (2018). *Home | EMFAC2017 Web Database*. [online] Available at: https://www.arb.ca.gov/emfac/2017/ [Accessed 17 December. 2019].

you have questions, please contact Skott Wall of CARB's Community Air Protection Program at (916) 323-0787 or Skott.Wall@arb.ca.gov.

Sincerely,

Karen Magliano

Karen Magliano, Director
Office of Community Air Protection

Attachment

cc: Dillon Delvo
Executive Director
Little Manila Rising
P.O. Box 1356
Stockton, California 95201

Jonathan Pruitt
Environmental Justice Program Coordinator
Catholic Charities of the Diocese of Stockton
1106 North El Dorado Street
Stockton, California 95202

Mariah Looney
Campaign Coordinator
Restore the Delta
42 North Sutter Street, Suite 306
Stockton, California 95202

Patia Siong
San Joaquin Valley Air Pollution Control District
1990 E. Gettysburg Ave.
Fresno, CA 93726

State Clearinghouse
P.O. Box 3044
Sacramento, California 95812

ATTACHMENT A

Recommended Air Pollution Emission Reduction Measures for Seaports

California Air Resources Board (CARB) staff recommends developers and government planners use all existing and emerging zero to near-zero emission technologies during project construction and operation to minimize public exposure to air pollution. Below are some measures, currently recommend by CARB staff, specific to seaport projects. These recommendations are subject to change as new zero-emission technologies become available.

Recommended Construction Measures

1. Ensure the cleanest possible construction practices and equipment are used. This includes eliminating the idling of diesel-powered equipment and providing the necessary infrastructure (e.g., electrical hookups) to support zero and near-zero equipment and tools.[1]

2. Implement, and plan accordingly for, the necessary infrastructure to support the zero and near-zero emission technology vehicles and equipment that will be operating onsite. Necessary infrastructure may include the physical (e.g., needed footprint), energy, and fueling infrastructure for construction equipment, onsite vehicles and equipment, and medium-heavy and heavy-heavy duty trucks.[2]

3. In construction contracts, include language that requires all off-road diesel-powered equipment used during construction to be equipped with Tier 4 or cleaner engines, except for specialized construction equipment in which Tier 4 engines are not available. In place of Tier 4 engines, off-road equipment can incorporate retrofits such that emission reductions achieved equal or exceed that of a Tier 4 engine.

4. In construction contracts, include language that requires all off-road equipment with a power rating below 19 kilowatts (e.g., plate compactors, pressure washers) used during project construction be battery powered.

5. In construction contracts, include language that requires all heavy-duty trucks entering the construction site, during the grading and building construction

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[1] ww3.arb.ca.gov. (2019). *Home | The Off-Road Zone*. [online] Available at: https://ww3.arb.ca.gov/msprog/offroadzone/offroadzone.htm [Accessed 27 Nov. 2019].

[2] ww2.arb.ca.gov. (2019). *CARB announces more than $200 million in new funding for clean freight transportation | California Air Resources Board*. [online] Available at: https://ww2.arb.ca.gov/news/carb-announces-more-200-million-new-funding-clean-freight-transportation [Accessed 27 Nov. 2019].

phases be model year 2014 or later. All heavy-duty haul trucks should also meet CARB's lowest optional low-NO_x standard starting in the year 2022.[3]

6. In construction contracts, include language that requires all construction equipment and fleets to be in compliance with all current air quality regulations. CARB staff is available to assist in implementing this recommendation.

Recommended Operation Measures

1. Include contractual language in tenant lease agreements that requires all cargo handling equipment be zero-emission and the terminal has sufficient infrastructure to such equipment.

2. Include contractual language in tenant lease agreements requiring all terminals be shore power capable.

3. Include contractual language in tenant lease agreements requiring all cargo and bulk container marine vessels accessing the terminal be shore power capable.

4. Include contractual language in tenant lease agreements that requires future tenants to exclusively use zero-emission light and medium-duty delivery trucks and vans.

5. Include contractual language in tenant lease agreements that requires all heavy-duty trucks entering or on the project site to be model year 2014 or later, expedite a transition to zero-emission vehicles, and be fully zero-emission beginning in 2030.

6. Include contractual language in tenant lease agreements that requires the tenant be in, and monitor compliance with, all current air quality regulations for on-road trucks including CARB's Heavy-Duty (Tractor-Trailer) Greenhouse Gas Regulation,[4] Periodic Smoke Inspection Program (PSIP),[5] and the Statewide Truck and Bus Regulation.[6]

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[3] In 2013, CARB adopted optional low-NO_x emission standards for on-road heavy-duty engines. CARB staff encourages engine manufacturers to introduce new technologies to reduce NO_x emissions below the current mandatory on-road heavy-duty diesel engine emission standards for model years 2010 and later. CARB's optional low-NO_x emission standard is available at https://www.arb.ca.gov/msprog/onroad/optionnox/optionnox.htm.

[4] In December 2008, CARB adopted a regulation to reduce greenhouse gas emissions by improving the fuel efficiency of heavy-duty tractors that pull 53-foot or longer box-type trailers. The regulation applies primarily to owners of 53-foot or longer box-type trailers, including both dry-van and refrigerated-van trailers, and owners of the heavy-duty tractors that pull them on California highways. CARB's Heavy-Duty (Tractor-Trailer) Greenhouse Gas Regulation is available at: https://www.arb.ca.gov/cc/hdghg/hdghg.htm.

[5] The PSIP program requires that diesel and bus fleet owners conduct annual smoke opacity inspections of their vehicles and repair those with excessive smoke emissions to ensure compliance. CARB's PSIP program is available at: https://www.arb.ca.gov/enf/hdvip/hdvip.htm.

[6] The regulation requires newer heavier trucks and buses must meet particulate matter filter requirements beginning January 1, 2012. Lighter and older heavier trucks replaced starting January 1, 2015. By January 1, 2023, nearly all trucks and buses will need to have 2010 model year engines or equivalent. CARB's Statewide Truck and Bus Regulation is available at: https://www.arb.ca.gov/msprog/onrdiesel/onrdiesel.htm.

November 11, 2019

Jason Cashman
Environmental and Regulatory Affairs Manager
Port of Stockton
2201 West Washington Street
Stockton, California 95203

RE: Lehigh Southwest Stockton Terminal Project

Dear Mr. Cashman,

In having learned of the Notice of Preparation and Initial Study regarding the Lehigh Southwest Stockton Terminal Project, we the undersigned, respectfully request information on the Port of Stockton's plan for notifying and engaging the community within the Census Tract: 6077000801 according to CalEnviroScreen (https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-30), as well as to interested stakeholders.

The Notice does not contain any such plans for community notification and engagement, and no such plans have yet been seen.

According to the Notice, the project potentially will affect and have impacts on twelve (12) environmental factors. These factors are of potential concern to the surrounding communities, especially in relation to environmental justice, and as such we request further information from the Port of Stockton on how the community and other relevant/interested stakeholders could be impacted and what mitigations are planned, or what adaptations are developed to avoid impacts.

Please reach out to Yolanda Park, Director of Environmental Justice 58 to discuss the Port of Stockton's plan for notifying and engaging the community. We are also available to provide more information, and/or for collaboration efforts, as we would be open to partnership inclusive of our partners in community outreach and more. You can reach Mrs. Park at ypark@cafecoop.org or 209-229-2698.

Sincerely,

Yolanda Park, Director
Environmental Justice 58 of Café Coop

Esperanza Vielma, Executive Director
Environmental Justice Coalition for Water

Reverend Earl W. Koteen
Sunflower Alliance

Nayamin Martinez, MPH, Director
Central California Environmental Justice Network

Genevieve Gale, Executive Director
Central Valley Air Quality Coalition

Susan Stephenson, Executive Director
CA Interfaith Power and Light

Kevin Hamilton, RRT, Chief Executive Officer
Central California Asthma Collaborative

Veronica Tovar, Program Manager
Environmental Justice Program, Catholic Charities

Tom Helme, Executive Director
Valley Improvement Projects

Jerilyn Lopez Mendoza, Senior Policy Advocate
Coalition for Clean Air

Cc:
Karen Magliano, Division Cheif, Office of Community Air Protection, California Air Resources Board
Jon Klassen, Director of Air Quality Science and Planning, San Joaquin Valley Air Pollution Control District
Suma Peesapati, Asst. General Counsel for Enforcement, Office of the Secretary

DEPARTMENT OF TRANSPORTATION
P.O. BOX 2048 STOCKTON, CA 95201
(1976 E. CHARTER WAY/1976 E. DR. MARTIN
LUTHER KING JR. BLVD. 95205)
TTY: California Relay Service (800) 735-2929
PHONE (209) 941-1921
FAX (209) 948-7194

Making Conservation
a California Way of Life.

November 6, 2019

10-SJ-5-PM 027.431
Lehigh Southwest Stockton Terminal Project
Port of Stockton
SCH# 2019100510

Jason Cashman
Stockton, Port of
2201 West Washington Street
Stockton, CA 95203

Dear Mr. Cashman:

The California Department of Transportation appreciates the opportunity to review the Notice of Preparation and Initial Study for a Draft Environmental Impact Report for the Lehigh Southwest Stockton Terminal Project. The project includes redeveloping the existing bulk cementitious material receiving and distribution terminal to improve operational efficiency. This will result in an increase of truck calls from 16,730 per year to 42,000. The Department has the following comments:

- A Traffic Impact Study (TIS) will be required to determine this proposed project's near-term and long-term impacts to State facilities – both existing and proposed – and to propose appropriate mitigation measures and funding responsibility. The Traffic Impact Study should be done in accordance with the Caltrans "Guide for the Preparation of Traffic Impact Studies", December 2002 edition. The TIS must include Trip Generation Figures showing how vehicle trips from this project will impact State facilities. This study and accompanying electronic files must be submitted to Caltrans for review prior to project approval.

- The applicant must work with the City of Stockton and Caltrans to get STAA Terminal Access signage from the intersection of State Route 4 and Navy Drive to the Port of Stockton. In addition, a 24/7 turnaround location must be provided at the end of the Terminal Route, within the Port. Information regarding signage for STAA Terminal Access can be found at the following: https://dot.ca.gov/programs/traffic-operations/legal-truck-access/ta-process.

If you have any questions or would like to discuss our comments in more detail, please contact Nicholas Fung at (209) 948-7190 or myself at (209) 941-1921.

Sincerely,

TOM DUMAS, CHIEF
OFFICE OF METROPOLITAN PLANNING

STATE OF CALIFORNIA – CALIFORNIA NATURAL RESOURCES AGENCY GAVIN NEWSOM, GOVERNOR

CENTRAL VALLEY FLOOD PROTECTION BOARD
3310 El Camino Ave., Ste. 170
SACRAMENTO, CA 95821
(916) 574-0609 FAX: (916) 574-0682

November 5, 2019

Mr. Jason Cashman
Port of Stockton
2201 West Washington Street
Stockton, California 95203

Subject: Lehigh Southwest Stockton Terminal Project, Notice of Preparation, SCH No. 2019100510

Location: San Joaquin County

Dear Mr. Cashman,

Central Valley Flood Protection Board (Board) staff has reviewed the subject document and provides the following comments:

The proposed project is within the San Joaquin River, a regulated stream under Board jurisdiction, and may require a Board permit prior to construction.

The Board's jurisdiction covers the entire Central Valley including all tributaries and distributaries of the Sacramento and San Joaquin Rivers, and the Tulare and Buena Vista basins south of the San Joaquin River.

Under authorities granted by California Water Code and Public Resources Code statutes, the Board enforces its Title 23, California Code of Regulations (Title 23) for the construction, maintenance, and protection of adopted plans of flood control, including the federal-State facilities of the State Plan of Flood Control, regulated streams, and designated floodways.

Pursuant to Title 23, Section 6 a Board permit is required prior to working within the Board's jurisdiction for the placement, construction, reconstruction, removal, or abandonment of any landscaping, culvert, bridge, conduit, fence, projection, fill, embankment, building, structure, obstruction, encroachment, excavation, the planting, or removal of vegetation, and any repair or maintenance that involves cutting into the levee.

Permits may also be required to bring existing works that predate permitting into compliance with Title 23, or where it is necessary to establish the conditions normally imposed by permitting. The circumstances include those where responsibility for the works has not been clearly established or ownership and use have been revised.

Other federal (including U.S. Army Corps of Engineers Section 10 and 404 regulatory permits), State and local agency permits may be required and are the applicant's responsibility to obtain.

Board permit applications and Title 23 regulations are available on our website at http://www.cvfpb.ca.gov/. Maps of the Board's jurisdiction are also available from the California Department of Water Resources website at http://gis.bam.water.ca.gov/bam/.

Encroachment permit applications received on or after July 1, 2019 are subject to fees, additional information is available on the Board's website at http://cvfpb.ca.gov/fees-2019/.

Please contact James Herota at (916) 574-0651, or via email at James.Herota@CVFlood.ca.gov if you have any questions.

Sincerely,

Andrea Buckley

Andrea Buckley
Environmental Services and Land Management Branch Chief

cc: Office of Planning and Research
P.O. Box 3044, Room 113
Sacramento, CA 95812-3044

Central Valley Regional Water Quality Control Board

22 November 2019

Jason Cashman
Port of Stockton
2201 West Washington Street
Stockton, CA 95203

CERTIFIED MAIL
7019 0700 0002 0111 5862

COMMENTS TO REQUEST FOR REVIEW FOR THE NOTICE OF PREPARATION FOR THE DRAFT ENVIRONMENTAL IMPACT REPORT, LEHIGH SOUTHWEST STOCKTON TERMINAL PROJECT, SCH#2019100510, SAN JOAQUIN COUNTY

Pursuant to the State Clearinghouse's 25 October 2019 request, the Central Valley Regional Water Quality Control Board (Central Valley Water Board) has reviewed the *Request for Review for the Notice of Preparation for the Draft Environmental Impact Report* for the Lehigh Southwest Stockton Terminal Project, located in San Joaquin County.

Our agency is delegated with the responsibility of protecting the quality of surface and groundwaters of the state; therefore our comments will address concerns surrounding those issues.

I. Regulatory Setting

Basin Plan

The Central Valley Water Board is required to formulate and adopt Basin Plans for all areas within the Central Valley region under Section 13240 of the Porter-Cologne Water Quality Control Act. Each Basin Plan must contain water quality objectives to ensure the reasonable protection of beneficial uses, as well as a program of implementation for achieving water quality objectives with the Basin Plans. Federal regulations require each state to adopt water quality standards to protect the public health or welfare, enhance the quality of water and serve the purposes of the Clean Water Act. In California, the beneficial uses, water quality objectives, and the Antidegradation Policy are the State's water quality standards. Water quality standards are also contained in the National Toxics Rule, 40 CFR Section 131.36, and the California Toxics Rule, 40 CFR Section 131.38.

The Basin Plan is subject to modification as necessary, considering applicable laws, policies, technologies, water quality conditions and priorities. The original Basin Plans were adopted in 1975, and have been updated and revised periodically as required, using Basin Plan amendments. Once the Central Valley Water Board has adopted a Basin Plan amendment in noticed public hearings, it must be approved by the State Water Resources Control Board (State Water Board), Office of Administrative Law (OAL) and in some cases, the United States Environmental Protection Agency (USEPA). Basin Plan amendments only become effective after they have been approved by the OAL and in some cases, the USEPA. Every three (3) years, a review of the Basin Plan is completed that assesses the appropriateness of existing standards and evaluates and prioritizes Basin Planning issues. For more information on the *Water Quality Control Plan for the Sacramento and San Joaquin River Basins*, please visit our website: http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/

Total Maximum Daily Load – Mercury

Dredging activities and activities that reuse dredge material in the Delta should minimize increases in methyl and total mercury discharges to Delta waterways. Central Valley Water Board staff recommends employing management practices during and after dredging activities to minimize sediment releases into the water column. Further, ensure that under normal operational circumstances, including during wet weather, dredged and excavated material reused at upland sites, including the tops and dry-side of levees, is protected from erosion into open waters.

Please discuss how dredged materials will be handled.

- If dredge material disposal sites are utilized to settle out solids and return waters are discharged into the adjacent surface water, methylmercury concentrations in return flows should be equal to or less than concentrations in the receiving water. Considerations such as vegetation management and return water residence time may minimize the methylmercury concentration in the return water flows. Helpful information on this subject may be found in a report produced by the U.S. Army Corp of Engineers, entitled Methylmercury Summary Report, Sacramento and Stockton Deep Water Ship Channels, Operation and Maintenance Dredging, May 2019.
- If dredge material is reused at aquatic locations, such as wetland and riparian habitat restoration sites, the reuse should not add mercury-enriched sediment to the site or result in a net increase of methylmercury discharges from the reuse site.

The use of vibratory pile driving may increase turbidity within the waterbody that contains mercury. Central Valley Water Board staff recommends discussing best management practices and/or avoidance and minimization measures such as dewatering or implementing turbidity curtains, if possible, to reduce the potential of creating suspended solids from pile driving.

Total Maximum Daily Load – Dissolved Oxygen

Central Valley Water Board staff appreciates that the Notice of Preparation identifies potential impacts to water quality and states that the Draft Environmental Impact Report will evaluate the potential for the proposed project to impact hydrology and water quality. The activities identified in the NOP have the potential to impact dissolved oxygen conditions in the Deepwater Ship Channel.

Pursuant to the Control Program for Factors Contributing to Oxygen Demanding Substances in the Stockton Deepwater Ship Channel (DWSC) (Regional Water Board Resolution No. R5-2005-0005) the Central Valley Water Board will require any project that requires a Clean Water Act Section 401 Water Quality Certification from the Central Valley Water Board, and that has the potential to impact dissolved oxygen conditions in the DWSC, to evaluate and fully mitigate those impacts.

The Environmental Impact Report should also evaluate the project's potential impacts and/if there are any impacts mitigations, related to the other pollutants listed as impairing the Deepwater Ship Channel, which include chlorpyrifos, DDT, Diazinon, Dioxin, Furan Compounds, Group A Pesticides, Invasive Species, PCBs, Temperature and Toxicity. Notably DDT, Dioxin, Furan Compounds, Group A pesticides and PCBs are persistent hydrophobic pollutants which could be mobilized by disturbances in the channel.

Antidegradation Considerations

All wastewater discharges must comply with the Antidegradation Policy (State Water Board Resolution 68-16) and the Antidegradation Implementation Policy contained in the Basin Plan. The Antidegradation Implementation Policy is available on page 74 at:
https://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/sacsjr_201805.pdf

In part it states:

> *Any discharge of waste to high quality waters must apply best practicable treatment or control not only to prevent a condition of pollution or nuisance from occurring, but also to maintain the highest water quality possible consistent with the maximum benefit to the people of the State.*
>
> *This information must be presented as an analysis of the impacts and potential impacts of the discharge on water quality, as measured by background concentrations and applicable water quality objectives.*

The antidegradation analysis is a mandatory element in the National Pollutant Discharge Elimination System and land discharge Waste Discharge Requirements (WDRs) permitting processes. The environmental review document should evaluate potential impacts to both surface and groundwater quality.

II. Permitting Requirements

Industrial Storm Water General Permit

Storm water discharges associated with industrial sites must comply with the regulations contained in the Industrial Storm Water General Permit Order No. 2014-0057-DWQ. For more information on the Industrial Storm Water General Permit, visit the Central Valley Water Board website at:

http://www.waterboards.ca.gov/centralvalley/water_issues/storm_water/industrial_general_permits/index.shtml

Clean Water Act Section 404 Permit

If the project will involve the discharge of dredged or fill material in navigable waters or wetlands, a permit pursuant to Section 404 of the Clean Water Act may be needed from the United States Army Corps of Engineers (USACE). If a Section 404 permit is required by the USACE, the Central Valley Water Board will review the permit application to ensure that discharge will not violate water quality standards. If the project requires surface water drainage realignment, the applicant is advised to contact the Department of Fish and Game for information on Streambed Alteration Permit requirements. If you have any questions regarding the Clean Water Act Section 404 permits, please contact the Regulatory Division of the Sacramento District of USACE at (916) 557-5250.

Clean Water Act Section 401 Permit – Water Quality Certification

If an USACE permit (e.g., Non-Reporting Nationwide Permit, Nationwide Permit, Letter of Permission, Individual Permit, Regional General Permit, Programmatic General Permit), or any other federal permit (e.g., Section 10 of the Rivers and Harbors Act or Section 9 from the United States Coast Guard), is required for this project due to the disturbance of waters of the United States (such as streams and wetlands), then a Water Quality Certification must be obtained from the Central Valley Water Board prior to initiation of project activities. There are no waivers for 401 Water Quality Certifications. For more information on the Water Quality Certification, visit the Central Valley Water Board website at:
https://www.waterboards.ca.gov/centralvalley/water_issues/water_quality_certification/

Waste Discharge Requirements – Discharges to Waters of the State

If USACE determines that only non-jurisdictional waters of the State (i.e., "non-federal" waters of the State) are present in the proposed project area, the proposed project may require a Waste Discharge Requirement (WDR) permit to be issued by Central Valley Water Board. Under the California Porter-Cologne Water Quality Control Act, discharges to all waters of the State, including all wetlands and other waters of the State including, but not limited to, isolated wetlands, are subject to State regulation. For more information on the Waste Discharges to Surface Water NPDES Program and WDR processes, visit the Central Valley Water Board website at:https://www.waterboards.ca.gov/centralvalley/water_issues/waste_to_surface_water/

Projects involving excavation or fill activities impacting less than 0.2 acre or 400 linear feet of non-jurisdictional waters of the state and projects involving dredging activities impacting less than 50 cubic yards of non-jurisdictional waters of the state may be eligible for coverage under the State Water Resources Control Board Water Quality Order No. 2004-0004-DWQ (General Order 2004-0004). For more information on the General Order 2004-0004, visit the State Water Resources Control Board website at:

https://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2004/wqo/wqo2004-0004.pdf

Waste Discharge Requirements – Discharges to Land

Pursuant to the State Board's Onsite Wastewater Treatment Systems Policy, the regulation of the septic system may be regulated under the local agency's management program.

For more information on waste discharges to land, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/water_issues/waste_to_land/index.shtml

Dewatering Permit

If the proposed project includes construction or groundwater dewatering to be discharged to land, the proponent may apply for coverage under State Water Board General Water Quality Order (Low Risk General Order) 2003-0003 or the Central Valley Water Board's Waiver of Report of Waste Discharge and Waste Discharge Requirements (Low Risk Waiver) R5-2013-0145. Small temporary construction dewatering projects are projects that discharge groundwater to land from excavation activities or dewatering of underground utility vaults. Dischargers seeking coverage under the General Order or Waiver must file a Notice of Intent with the Central Valley Water Board prior to beginning discharge.

For more information regarding the Low Risk General Order and the application process, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2003/wqo/wqo2003-0003.pdf

For more information regarding the Low Risk Waiver and the application process, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/waivers/r5-2013-0145_res.pdf

Limited Threat General NPDES Permit

If the proposed project includes construction dewatering and it is necessary to discharge the groundwater to waters of the United States, the proposed project will require coverage under a National Pollutant Discharge Elimination System (NPDES) permit. Dewatering discharges are typically considered a low or limited threat to water quality and may be covered under the General Order for *Limited Threat Discharges to Surface Water* (Limited Threat General Order). A complete Notice of Intent must be submitted to the Central Valley Water Board to obtain coverage under the Limited Threat General Order. For more information regarding the Limited Threat General Order and the application process, visit the Central Valley Water Board website at:
https://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2016-0076-01.pdf

NPDES Permit

If the proposed project discharges waste that could affect the quality of surface waters of the State, other than into a community sewer system, the proposed project will require coverage under a National Pollutant Discharge Elimination System (NPDES) permit. A complete Report of Waste Discharge must be submitted with the Central Valley Water Board to obtain a NPDES Permit. For more information regarding the NPDES Permit and the application process, visit the Central Valley Water Board website at: https://www.waterboards.ca.gov/centralvalley/help/permit/

If you have questions regarding these comments, please contact me at (916) 464-4812 or Jordan.Hensley@waterboards.ca.gov.

Original Signed By

Jordan Hensley
Environmental Scientist

cc: State Clearinghouse unit, Governor’s Office of Planning and Research, Sacramento (via email)

STATE OF CALIFORNIA GAVIN NEWSOM, Governor

NATIVE AMERICAN HERITAGE COMMISSION
Cultural and Environmental Department
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691 Phone: (916) 373-3710
Email: nahc@nahc.ca.gov
Website: http://www.nahc.ca.gov

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PORT OF STOCKTON
ENVIRONMENTAL DEPARTMENT

November 1, 2019

Jason Cashman
Stockton, Port of
2201 West Washington Street
Stockton, CA 95203

RE: SCH# 2019100510, Lehigh Southwest Stockton Terminal Project, San Joaquin County

Dear Mr. Cashman:

The Native American Heritage Commission (NAHC) has received the Notice of Preparation (NOP), Draft Environmental Impact Report (DEIR) or Early Consultation for the project referenced above. The California Environmental Quality Act (CEQA) (Pub. Resources Code §21000 et seq.), specifically Public Resources Code §21084.1, states that a project that may cause a substantial adverse change in the significance of a historical resource, is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.1; Cal. Code Regs., tit.14, §15064.5 (b) (CEQA Guidelines §15064.5 (b)). If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, an Environmental Impact Report (EIR) shall be prepared. (Pub. Resources Code §21080 (d); Cal. Code Regs., tit. 14, § 5064 subd.(a)(1) (CEQA Guidelines §15064 (a)(1)). In order to determine whether a project will cause a substantial adverse change in the significance of a historical resource, a lead agency will need to determine whether there are historical resources within the area of potential effect (APE).

CEQA was amended significantly in 2014. Assembly Bill 52 (Gatto, Chapter 532, Statutes of 2014) (AB 52) amended CEQA to create a separate category of cultural resources, "tribal cultural resources" (Pub. Resources Code §21074) and provides that a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment. (Pub. Resources Code §21084.2). Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource. (Pub. Resources Code §21084.3 (a)). **AB 52 applies to any project for which a notice of preparation, a notice of negative declaration, or a mitigated negative declaration is filed on or after July 1, 2015.** If your project involves the adoption of or amendment to a general plan or a specific plan, or the designation or proposed designation of open space, on or after March 1, 2005, it may also be subject to Senate Bill 18 (Burton, Chapter 905, Statutes of 2004) (SB 18). **Both SB 18 and AB 52 have tribal consultation requirements**. If your project is also subject to the federal National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA), the tribal consultation requirements of Section 106 of the National Historic Preservation Act of 1966 (154 U.S.C. 300101, 36 C.F.R. §800 et seq.) may also apply.

The NAHC recommends consultation with California Native American tribes that are traditionally and culturally affiliated with the geographic area of your proposed project as early as possible in order to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources. Below is a brief summary of portions of AB 52 and SB 18 as well as the NAHC's recommendations for conducting cultural resources assessments.

Consult your legal counsel about compliance with AB 52 and SB 18 as well as compliance with any other applicable laws.

AB 52

AB 52 has added to CEQA the additional requirements listed below, along with many other requirements:

1. Fourteen Day Period to Provide Notice of Completion of an Application/Decision to Undertake a Project: Within fourteen (14) days of determining that an application for a project is complete or of a decision by a public agency to undertake a project, a lead agency shall provide formal notification to a designated contact of, or tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, to be accomplished by at least one written notice that includes:
   a. A brief description of the project.
   b. The lead agency contact information.
   c. Notification that the California Native American tribe has 30 days to request consultation. (Pub. Resources Code §21080.3.1 (d)).
   d. A "California Native American tribe" is defined as a Native American tribe located in California that is on the contact list maintained by the NAHC for the purposes of Chapter 905 of Statutes of 2004 (SB 18). (Pub. Resources Code §21073).

2. Begin Consultation Within 30 Days of Receiving a Tribe's Request for Consultation and Before Releasing a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report: A lead agency shall begin the consultation process within 30 days of receiving a request for consultation from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project. (Pub. Resources Code §21080.3.1, subds. (d) and (e)) and prior to the release of a negative declaration, mitigated negative declaration or Environmental Impact Report. (Pub. Resources Code §21080.3.1(b)).
   a. For purposes of AB 52, "consultation shall have the same meaning as provided in Gov. Code §65352.4 (SB 18). (Pub. Resources Code §21080.3.1 (b)).

3. Mandatory Topics of Consultation If Requested by a Tribe: The following topics of consultation, if a tribe requests to discuss them, are mandatory topics of consultation:
   a. Alternatives to the project.
   b. Recommended mitigation measures.
   c. Significant effects. (Pub. Resources Code §21080.3.2 (a)).

4. Discretionary Topics of Consultation: The following topics are discretionary topics of consultation:
   a. Type of environmental review necessary.
   b. Significance of the tribal cultural resources.
   c. Significance of the project's impacts on tribal cultural resources.
   d. If necessary, project alternatives or appropriate measures for preservation or mitigation that the tribe may recommend to the lead agency. (Pub. Resources Code §21080.3.2 (a)).

5. Confidentiality of Information Submitted by a Tribe During the Environmental Review Process: With some exceptions, any information, including but not limited to, the location, description, and use of tribal cultural resources submitted by a California Native American tribe during the environmental review process shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public, consistent with Government Code §6254 (r) and §6254.10. Any information submitted by a California Native American tribe during the consultation or environmental review process shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public. (Pub. Resources Code §21082.3 (c)(1)).

6. Discussion of Impacts to Tribal Cultural Resources in the Environmental Document: If a project may have a significant impact on a tribal cultural resource, the lead agency's environmental document shall discuss both of the following:
   a. Whether the proposed project has a significant impact on an identified tribal cultural resource.
   b. Whether feasible alternatives or mitigation measures, including those measures that may be agreed to pursuant to Public Resources Code §21082.3, subdivision (a), avoid or substantially lessen the impact on the identified tribal cultural resource. (Pub. Resources Code §21082.3 (b)).

7. Conclusion of Consultation: Consultation with a tribe shall be considered concluded when either of the following occurs:
   a. The parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or
   b. A party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached. (Pub. Resources Code §21080.3.2 (b)).

8. Recommending Mitigation Measures Agreed Upon in Consultation in the Environmental Document: Any mitigation measures agreed upon in the consultation conducted pursuant to Public Resources Code §21080.3.2 shall be recommended for inclusion in the environmental document and in an adopted mitigation monitoring and reporting program, if determined to avoid or lessen the impact pursuant to Public Resources Code §21082.3, subdivision (b), paragraph 2, and shall be fully enforceable. (Pub. Resources Code §21082.3 (a)).

9. Required Consideration of Feasible Mitigation: If mitigation measures recommended by the staff of the lead agency as a result of the consultation process are not included in the environmental document or if there are no agreed upon mitigation measures at the conclusion of consultation, or if consultation does not occur, and if substantial evidence demonstrates that a project will cause a significant effect to a tribal cultural resource, the lead agency shall consider feasible mitigation pursuant to Public Resources Code §21084.3 (b). (Pub. Resources Code §21082.3 (e)).

10. Examples of Mitigation Measures That, If Feasible, May Be Considered to Avoid or Minimize Significant Adverse Impacts to Tribal Cultural Resources:
    a. Avoidance and preservation of the resources in place, including, but not limited to:
       i. Planning and construction to avoid the resources and protect the cultural and natural context.
       ii. Planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.
    b. Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:
       i. Protecting the cultural character and integrity of the resource.
       ii. Protecting the traditional use of the resource.
       iii. Protecting the confidentiality of the resource.
    c. Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.
    d. Protecting the resource. (Pub. Resource Code §21084.3 (b)).
    e. Please note that a federally recognized California Native American tribe or a non-federally recognized California Native American tribe that is on the contact list maintained by the NAHC to protect a California prehistoric, archaeological, cultural, spiritual, or ceremonial place may acquire and hold conservation easements if the conservation easement is voluntarily conveyed. (Civ. Code §815.3 (c)).
    f. Please note that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated. (Pub. Resources Code §5097.991).

11. Prerequisites for Certifying an Environmental Impact Report or Adopting a Mitigated Negative Declaration or Negative Declaration with a Significant Impact on an Identified Tribal Cultural Resource: An Environmental Impact Report may not be certified, nor may a mitigated negative declaration or a negative declaration be adopted unless one of the following occurs:
    a. The consultation process between the tribes and the lead agency has occurred as provided in Public Resources Code §21080.3.1 and §21080.3.2 and concluded pursuant to Public Resources Code §21080.3.2.
    b. The tribe that requested consultation failed to provide comments to the lead agency or otherwise failed to engage in the consultation process.
    c. The lead agency provided notice of the project to the tribe in compliance with Public Resources Code §21080.3.1 (d) and the tribe failed to request consultation within 30 days. (Pub. Resources Code §21082.3 (d)).

The NAHC's PowerPoint presentation titled, "Tribal Consultation Under AB 52: Requirements and Best Practices" may be found online at: http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation_CalEPAPDF.pdf

SB 18

SB 18 applies to local governments and requires local governments to contact, provide notice to, refer plans to, and consult with tribes prior to the adoption or amendment of a general plan or a specific plan, or the designation of open space. (Gov. Code §65352.3). Local governments should consult the Governor's Office of Planning and Research's "Tribal Consultation Guidelines," which can be found online at: https://www.opr.ca.gov/docs/09_14_05_Updated_Guidelines_922.pdf.

Some of SB 18's provisions include:

1. Tribal Consultation: If a local government considers a proposal to adopt or amend a general plan or a specific plan, or to designate open space it is required to contact the appropriate tribes identified by the NAHC by requesting a "Tribal Consultation List." If a tribe, once contacted, requests consultation the local government must consult with the tribe on the plan proposal. **A tribe has 90 days from the date of receipt of notification to request consultation unless a shorter timeframe has been agreed to by the tribe.** (Gov. Code §65352.3 (a)(2)).
2. No Statutory Time Limit on SB 18 Tribal Consultation. There is no statutory time limit on SB 18 tribal consultation.
3. Confidentiality: Consistent with the guidelines developed and adopted by the Office of Planning and Research pursuant to Gov. Code §65040.2, the city or county shall protect the confidentiality of the information concerning the specific identity, location, character, and use of places, features and objects described in Public Resources Code §5097.9 and §5097.993 that are within the city's or county's jurisdiction. (Gov. Code §65352.3 (b)).
4. Conclusion of SB 18 Tribal Consultation: Consultation should be concluded at the point in which:
    a. The parties to the consultation come to a mutual agreement concerning the appropriate measures for preservation or mitigation; or
    b. Either the local government or the tribe, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached concerning the appropriate measures of preservation or mitigation. (Tribal Consultation Guidelines, Governor's Office of Planning and Research (2005) at p. 18).

Agencies should be aware that neither AB 52 nor SB 18 precludes agencies from initiating tribal consultation with tribes that are traditionally and culturally affiliated with their jurisdictions before the timeframes provided in AB 52 and SB 18. For that reason, we urge you to continue to request Native American Tribal Contact Lists and "Sacred Lands File" searches from the NAHC. The request forms can be found online at: http://nahc.ca.gov/resources/forms/

NAHC Recommendations for Cultural Resources Assessments

To adequately assess the existence and significance of tribal cultural resources and plan for avoidance, preservation in place, or barring both, mitigation of project-related impacts to tribal cultural resources, the NAHC recommends the following actions:

1. Contact the appropriate regional California Historical Research Information System (CHRIS) Center (http://ohp.parks.ca.gov/?page_id=1068) for an archaeological records search. The records search will determine:
    a. If part or all of the APE has been previously surveyed for cultural resources.
    b. If any known cultural resources have already been recorded on or adjacent to the APE.
    c. If the probability is low, moderate, or high that cultural resources are located in the APE.
    d. If a survey is required to determine whether previously unrecorded cultural resources are present.

2. If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
    a. The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum and not be made available for public disclosure.
    b. The final written report should be submitted within 3 months after work has been completed to the appropriate regional CHRIS center.

3. Contact the NAHC for:
   a. A Sacred Lands File search. Remember that tribes do not always record their sacred sites in the Sacred Lands File, nor are they required to do so. A Sacred Lands File search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with the geographic area of the project's APE.
   b. A Native American Tribal Consultation List of appropriate tribes for consultation concerning the project site and to assist in planning for avoidance, preservation in place, or, failing both, mitigation measures.

4. Remember that the lack of surface evidence of archaeological resources (including tribal cultural resources) does not preclude their subsurface existence.
   a. Lead agencies should include in their mitigation and monitoring reporting program plan provisions for the identification and evaluation of inadvertently discovered archaeological resources per Cal. Code Regs., tit. 14, §15064.5(f) (CEQA Guidelines §15064.5(f)). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources should monitor all ground-disturbing activities.
   b. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the disposition of recovered cultural items that are not burial associated in consultation with culturally affiliated Native Americans.
   c. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the treatment and disposition of inadvertently discovered Native American human remains. Health and Safety Code §7050.5, Public Resources Code §5097.98, and Cal. Code Regs., tit. 14, §15064.5, subdivisions (d) and (e) (CEQA Guidelines §15064.5, subds. (d) and (e)) address the processes to be followed in the event of an inadvertent discovery of any Native American human remains and associated grave goods in a location other than a dedicated cemetery.

If you have any questions or need additional information, please contact me at my email address: Andrew.Green@nahc.ca.gov.

Sincerely,

Andrew Green

Andrew Green
Staff Services Analyst

cc: State Clearinghouse

Sierra Club
Delta Sierra Group

Delta-Sierra Group
Mother Lode Chapter
P.O. Box 9258
Stockton CA 95208

November 22, 2019

Jason Cashman
Port of Stockton Environmental and Regulatory Affairs Manager
Port of Stockton
2201 West Washington Street
Stockton, California 95203

Via email to jcashman@stocktonport.com

Re: The October 2019 Lehigh Southwest Stockton Terminal Project Notice of Preparation and Initial Study

The Delta Sierra Group has reviewed the October 2019 Lehigh Southwest Stockton Terminal Project Notice of Preparation and Initial Study and has the following comments for your consideration as the Draft Environmental Impact Report (DEIR) is being prepared.

The adoption of the City of Stockton Envision 2040 General Plan increased outreach efforts at the urging of community organizations. As a city we have recognized that certain members of our community do not have the same level of services and accommodations, Boggs Tract is one of those communities. Boggs Tract is the residential area adjacent to the Port of Stockton. This Notice of Preparation and Initial Study was found on a state clearinghouse website[1] not on the Port's website (see attachment). A workshop should be held to hear the concerns of the community before the DEIR is prepared and briefing notices provided so that the community can be informed and knowledgeable when reviewing the DEIR.

The Lehigh Southwest Stockton Terminal is located at 205 Port Road 1, Berth 2. The proposed project includes an upgraded dock, new ship unloader with greater reach to service longer and wider vessels, as well as a lease modification to increase the leasehold from 6.24 to 8.08 acres with larger storage facilities. The current facility was reportedly converted in 1996 to handle cementitious materials and the abandoned fertilizer handling equipment left on site. Is the location of the fertilizer handling equipment the source of the additional acreage? The figures within the Notice of Preparation and Initial Study are shown below:

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[1] https://ceqanet.opr.ca.gov/2019100510/2 - accessed 11.16.19

The location of the additional acreage was not shown on the map. Please provide an updated map showing the location of the additional acreage and the site's current use. The environmental setting stated that there are commodities stockpiled on site at the Port but did not describe the commodities nor the sizes of the stockpiles. Please provide a summary of the volumes and types of materials stored at the Port in stockpiles.

The description of existing dock and unloader facilities stated that the existing dock and ship unloader were originally designed to handle 35,000 tons deadweight (DWT) vessels as was the existing berth capacity and channel depth. The typical dimensions of these vessels were not described. A 1991 tanker stability study[2] described a typical tanker as having dimensions of length 638 feet, berth 89 feet, and depth 46.75 feet. Please describe the size of the larger and wider vessels that Lehigh charters. Also, please describe how the existing channel depths will be redesigned to handle these larger vessels and how the project's necessity for deeper channel depths will affect the benefit/cost ratio for the deepening of the navigation channels to Stockton.

The tonnage of cement, ground granulated blast furnace slag waste from the steel industry, and fly ash from the burning of coal is expected to increase greatly as described in Table 1 from the Initial Study (below). The statement regarding future commodity status was not clear, was the reference to slag or fly ash? Please describe any health hazards associated with the transport, storage, and distribution of these waste materials as well as fully disclose the air quality monitoring performed by Port of Stockton staff. Please also describe the relative proportions of cement, ground granulated blast furnace slag cement with fly ash that are handled currently and what is the proposed proportions of these cementitious materials.

Lehigh's current operations of cementitious material receiving and distributing were described on an annual basis because "activity at a terminal can vary month to month over the course of a year due to normal market forces, throughput activity is generally calculated over the preceding 12 months or a calendar year." The terminal's existing Permit to Operate (Facility Number N-153), issued by San Joaquin Valley Air Pollution Control District (SJVAPCD) was not referenced nor was it located on either Lehigh's website: https://www.lehighhanson.com/home or the SJVAPCD's website: https://www.valleyair.org/Home.htm. Please provide a copy of the permit as it was referenced in the Initial Study. The Initial Study stated that the current permit for the existing terminal operations allow for a truck and rail shipping capacity of 6,000 tons of cementitious materials per day, any combination of a maximum of approximately 200 trucks per day or 18 rail cars per day, and that the facility is permitted to receive 2.628 million tons per year via ship or rail. The existing operation received approximately 20 bulk cargo vessel calls in 2018. The unit "tons" was used when

[2] https://www.nap.edu/read/1621/chapter/13 accessed 11.11.19

describing product, but the term "metric ton" was used when describing the increased storage planned as part of the proposed project. Please use one unit of measure to describe tonnage.

Table 1
Expected Maximum Proposed Project Throughput Compared to Existing Levels (Annual)

	Baseline (2018)		Project Year 10 (Expected Maximum)	
	Mode (annual moves)	Tons of Product	Mode (annual moves)	Tons of Product
Truck[1]	16,730	459,484	42,000	1,100,000
Rail Cars	534	56,057	4,700	500,000
Rail Trips[2]	27	--	300	--
Ships Calls	20	287,907	50	1,700,000
Barges Calls	0	0	40	200,000
Total Tons	--	803,448	--	3,500,000

Notes:
1. Truck calls are expressed in one-way moves.
2. Assumes an average of 20 cars per train
3. Current throughput permitted by the SJVAPCD is 2,628,000 tons per day receiving into and 6,000 tons per day shipping out of the terminal.

The installation of the new dock is expected to require dredging of less than 500 cubic yards which is allowed under the Port's existing permit. Please provide a copy of the Port's dredging permit. The depth of excavation to accommodate the dock and bunker construction is stated to include ground disturbances up to 80 feet below the surface along the dock and beneath the proposed dome, as well as 40 feet below the sediment within the dock area. Native sediments may contain intact archaeological resources that are also tribal cultural resources.

No additional stormwater impacts were proposed, yet additional areas will be paved. Please describe the stormwater plan for the proposed facilities and provide a copy of the Port's stormwater management plan and permit.

The project includes the installation of a new bunker to store cementitious materials replacing existing bunker 7. Below is a comparison of the two structures:

Bunker	Existing Bunker 7	New Bunker
Diameter- feet	130	120
Height - feet	58	132
Capacity – Metric Tons	8,000	40,000

When performing the analysis of potential aesthetic impacts please make sure that all directions are evaluated.

The Initial Study stated that in 2016 the Port has developed and implemented a *Renewable Portfolio Standard Procurement Plan*. "In the plan's most recent iteration, the Port determined the most efficient and cost-effective approach to meeting these standards is through continued purchase of sufficient state-approved renewable energy products from the active California market." Yet the Initial Study stated that the terminal is served by Pacific Gas and Electric. Some years ago, the Port of Stockton built a transmission voltage substation on the Pacific Gas and Electric system in an effort to lower the price of electricity to the Port. The Port of Stockton resells the electricity purchased thru the substation to Port tenants. Please describe more fully the source of energy for the energy that flows through the Port of Stockton and that will supply Lehigh.

The Port of Stockton has the smallest Publicly Owned Utility in the State of California. The Port announced a mobile power source[3]:

> The port of Stockton will be the first in the state to use a so-called "mobile power station," made by a company called Dannar. The company's website shows the power stations, on wheels, can be used to move heavy items themselves and can also charge other clean-energy vehicles using it battery storage. The high-tech help comes a few years after an old coal power plant at the Port of Stockton also switched to renewable fuel. Now there is another new power supply.

Please describe how the Port will be meeting renewable energy goals with the proposed increased operations as well as the City of Stockton's Climate Action Plan 29% reduction by 2020. Please also provide a copy of the Port's *Renewable Portfolio Standard Procurement Plan 2016 Update*.

Hazards associated with increased truck and rail transport of cementitious materials in addition to air quality concerns such as those associated with the safe movement of bicycles and pedestrian in the Port area should be addressed. Also, hazards associated with spills as well an anticipated truck and rail accidents should be based on actual port data, California Highway Patrol data, and/or other regional transportation data sources.

Thank you for considering our comments on the October 2019 Lehigh Southwest Stockton Terminal Project Notice of Preparation and Initial Study. We look forward to obtaining and reviewing the additional information requested. The Delta Sierra Group welcomes opportunities to discuss the Port of Stockton's public outreach efforts related to this project and to the Port of Stockton's public information dissemination.

Sincerely,

Mary Elizabeth M.S., R.E.H.S.
Delta-Sierra Group Conservation Chair
Sierra Club

Attachment: Port CEQA website 11.11.19

[3] https://www.portofstockton.com/port-of-stockton-rolling-out-power-on-wheels

CEQA DOCUMENTS

The Port of Stockton is committed to environmental stewardship and enhancement of the Delta and surrounding communities. The Port is currently unveiling and implementing a program that identifies opportunities the Port could engage to enhance the Delta. The Delta provides drinking water for two-thirds of the state of California and acts as a habitat for more than 70 fish species and abundant wildlife. The Delta provides a key resting or wintering spot along the Pacific Flyway for migrating bird species. The Port understands the importance of maintaining this delicate environment and providing a habitat for wildlife within an ever-growing population.

The Port of Stockton is committed to improving the region's quality of life by balancing environmental enhancement with the economic benefits of Port activity. This commitment is reflected in the Port's Delta Environmental Enhancement Program which aims to enhance air quality, water quality, and wildlife habitats in the Delta and surrounding communities.

Documents:

Cyber security technology consolidation-enhancement remediation NOE 2015-9-22

Sanguinetti property NOE 2015-9-22

San Joaquin International Gateway Project NOE 3-17-14

Calamco NOE 12-18-13

Forward Command Post NOE 8-20-13

Dock 14-15 2013 NOE 6-26-13

Dock 4-11 2013 NOE 6-17-13

Endicott:

Endicott NOD 2-4-14

Endicott IS-MND Draft 10-15-2013

S J C O G, Inc.

555 East Weber Avenue • Stockton, CA 95202 • (209) 235-0600 • FAX (209) 235-0438

San Joaquin County Multi-Species Habitat Conservation & Open Space Plan (SJMSCP)

SJMSCP RESPONSE TO LOCAL JURISDICTION (RTLJ)
ADVISORY AGENCY NOTICE TO SJCOG, Inc.

To: Jason Cashman, Port of Stockton, Environmental & Regulatory Affairs Manager

From: Laurel Boyd, SJCOG, Inc.

Date: November 20, 2019

-Local Jurisdiction Project Title: NOP/IS for Lehigh Southwest Stockton Terminal Project

Assessor Parcel Number(s): 145-020-04

Local Jurisdiction Project Number: N/A

Total Acres to be converted from Open Space Use: Unknown

Habitat Types to be Disturbed: Urban Habitat Land

Species Impact Findings: Findings to be determined by SJMSCP biologist.

Dear Mr. Cashman:

SJCOG, Inc. has reviewed the project referral for the Notice of Preparation/Initial Study for the Lehigh Southwest Stockton Terminal Project. The project consists of upgrading Berth 2 with new pilings, new concrete support beams, new gantry rails, a new ship fendering system and new stowage mast, and structural rehabilitation of the base dock structure.

The current plan for installing a new ship unloader gantry crane rail support system requires cutting slots in the existing deck. Approximately 144 piles would be driven inside the slots. Berth 2 rehabilitation would also include repairs for structural integrity, including repair of damage to existing concrete columns, spalled concrete on beams, and to the underside of the deck. A new ship berth shock absorption fender system would be installed to protect the dock structure during ship mooring and berthing. Approximately twenty 14-inch square precast concrete piles would be driven at the dock face for attachment of this replacement ship fendering system.

The existing ship unloader would be replaced with a new ship unloader inclusive of a completely enclosed conveying system. The ship unloader components would be delivered to the site by ship from various international locations in large pre-assembled parts and multiple shipping containers. A designated area of the dock would be used for assembling the unloader upon the new gantry rails. The existing open area of the previous Berth 3 warehouse, directly adjacent to Berth 2, would be used for staging the parts and containers. The new ship unloader would be installed on the newly installed gantry rail along the dock parallel to the berth face. The assembly process would require approximately 4 to 5 months before the new ship unloader is deemed operational.

The existing wooden rail support trestle, which spans between the land and the end of the existing concrete dock, would be dismantled. An approximately 180-foot portion of the existing wooden trestle has deteriorated and, accordingly, its load-bearing capacity has been reduced. Therefore, only empty rail cars can travel or be stored on the trestle. In order to accommodate full rail cars, the existing wooden trestle would be replaced with a new structural bridge capable of supporting full cars and the engine. The new structural bridge would be similar in construction to that proposed for the primary dock structure handling the new ship unloader. Construction activities would include removing the wooden trestle and piling to the mudline, driving approximately 30 new piles, and installing concrete beams, track, and access walkways on each side.

Bunker 7, which has an existing capacity of 8,000 metric tons, would be replaced with a concrete storage dome to more efficiently handle Portland cement or other cementitious materials. The new storage dome dimensions are approximately 120 feet in diameter by 132 feet tall, compared to the existing bunker, which is 130 feet in diameter by 58 feet tall. The new storage dome would have a storage capacity of 40,000 metric tons and include air pollution control devices. The dome would be constructed on a foundation supported by pre-cast concrete piles.

Bunkers 5 and 6 and the new dome would transfer reclaimed cement to Truck Loading Lanes 3 and 4. The existing single scales at Truck Loading Lanes 3 and 4 would be replaced with a new split-deck scale so that each tank of a dual tank trailer can be weighted and loaded separately. Truck Loading Lanes 1 and 2, which currently receive reclaimed cementitious material from Bunkers 1 and 2, would also be upgraded with a new dual truck loading spout system and a split-deck scale. This upgrade would be similar to what exists for Truck Loading Lanes 3 and 4, but specific designs for these elements have not been completed. All equipment would be enclosed and operated on a negative pressure basis using existing and new dust filter systems.

The dome structure would require approximately 9 to 10 months to complete. During the dock, ship unloader, and dome installations, a separate contractor would install material handling equipment and access platforms. All material handling equipment would be enclosed and automated. The installation of associated dust filters and their associated foundations and structural supports would require approximately 6 months, but would mostly occur concurrently with construction of the other systems.

The City of Stockton is a signatory to San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (SJMSCP). Participation in the SJMSCP satisfies requirements of both the state and federal endangered species acts, and ensures that the impacts are mitigated below a level of significance in compliance with the California Environmental Quality Act (CEQA). The LOCAL JURISDICTION retains responsibility for ensuring that the appropriate Incidental Take Minimization Measure are properly implemented and monitored and that appropriate fees are paid in compliance with the SJMSCP. Although participation in the SJMSCP is voluntary, Local Jurisdiction/Lead Agencies should be aware that if project applicants choose against participating in the SJMSCP, they will be required to provide alternative mitigation in an amount and kind equal to that provided in the SJMSCP.

This Project is subject to the SJMSCP. This can be up to a 30 day process and it is recommended that the project applicant contact SJMSCP staff as early as possible. It is also recommended that the project applicant obtain an information package. http://www.sjcog.org

Please contact SJMSCP staff regarding completing the following steps to satisfy SJMSCP requirements:

- Schedule a SJMSCP Biologist to perform a pre-construction survey ***prior to any ground disturbance***
- SJMSCP Incidental take Minimization Measures and mitigation requirement:

1. Incidental Take Minimization Measures (ITMMs) will be issued to the project and must be signed by the project applicant prior to any ground disturbance but no later than six (6) months from receipt of the ITMMs. If ITMMs are not signed within six months, the applicant must reapply for SJMSCP Coverage. Upon receipt of signed ITMMs from project applicant, SJCOG, Inc. staff will sign the ITMMs. This is the effective date of the ITMMs.
2. Under no circumstance shall ground disturbance occur without compliance and satisfaction of the ITMMs.
3. Upon issuance of fully executed ITMMs and prior to any ground disturbance, the project applicant must:
   a. Post a bond for payment of the applicable SJMSCP fee covering the entirety of the project acreage being covered (the bond should be valid for no longer than a 6 month period); or
   b. Pay the appropriate SJMSCP fee for the entirety of the project acreage being covered; or
   c. Dedicate land in-lieu of fees, either as conservation easements or fee title; or
   d. Purchase approved mitigation bank credits.
4. Within 6 months from the effective date of the ITMMs or issuance of a building permit, whichever occurs first, the project applicant must:
   a. Pay the appropriate SJMSCP for the entirety of the project acreage being covered; or
   b. Dedicate land in-lieu of fees, either as conservation easements or fee title; or
   c. Purchase approved mitigation bank credits.

Failure to satisfy the obligations of the mitigation fee shall subject the bond to be called.

- Receive your Certificate of Payment and release the required permit

It should be noted that if this project has any potential impacts to waters of the United States [pursuant to Section 404 Clean Water Act], it would require the project to seek voluntary coverage through the unmapped process under the SJMSCP which could take up to 90 days. It may be prudent to obtain a preliminary wetlands map from a qualified consultant. If waters of the United States are confirmed on the project site, the Corps and the Regional Water Quality Control Board (RWQCB) would have regulatory authority over those mapped areas [pursuant to Section 404 and 401 of the Clean Water Act respectively] and permits would be required from each of these resource agencies prior to grading the project site.

If you have any questions, please call (209) 235-0600.

SJCOG, Inc.

S J C O G, Inc.

San Joaquin County Multi-Species Habitat Conservation & Open Space Plan

555 East Weber Avenue • Stockton, CA 95202 • (209) 235-0600 • FAX (209) 235-0438

SJMSCP HOLD

TO: Local Jurisdiction: Community Development Department, Planning Department, Building Department, Engineering Department, Survey Department, Transportation Department, Other: ___________

FROM: Laurel Boyd, SJCOG, Inc.

DO NOT AUTHORIZE SITE DISTURBANCE
DO NOT ISSUE A BUILDING PERMIT
DO NOT ISSUE ___________ FOR THIS PROJECT

The landowner/developer for this site has requested coverage pursuant to the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (SJMSCP). In accordance with that agreement, the Applicant has agreed to:

1) SJMSCP Incidental Take Minimization Measures and mitigation requirement:

   1. Incidental Take Minimization Measures (ITMMs) will be issued to the project and must be signed by the project applicant prior to any ground disturbance but no later than six (6) months from receipt of the ITMMs. If ITMMs are not signed within six months, the applicant must reapply for SJMSCP Coverage. Upon receipt of signed ITMMs from project applicant, SJCOG, Inc. staff will sign the ITMMs. This is the effective date of the ITMMs.
   2. Under no circumstance shall ground disturbance occur without compliance and satisfaction of the ITMMs.
   3. Upon issuance of fully executed ITMMs and prior to any ground disturbance, the project applicant must:
      a. Post a bond for payment of the applicable SJMSCP fee covering the entirety of the project acreage being covered (the bond should be valid for no longer than a 6 month period); or
      b. Pay the appropriate SJMSCP fee for the entirety of the project acreage being covered; or
      c. Dedicate land in-lieu of fees, either as conservation easements or fee title; or
      d. Purchase approved mitigation bank credits.
   4. Within 6 months from the effective date of the ITMMs or issuance of a building permit, whichever occurs first, the project applicant must:
      a. Pay the appropriate SJMSCP for the entirety of the project acreage being covered; or
      b. Dedicate land in-lieu of fees, either as conservation easements or fee title; or
      c. Purchase approved mitigation bank credits.

      Failure to satisfy the obligations of the mitigation fee shall subject the bond to be called.

Project Title: Notice of Preparation/Initial Study for the Lehigh Southwest Stockton Terminal Project

Assessor Parcel #s: 145-020-04

T _______, R______, Section(s): _____

Local Jurisdiction Contact: Jason Cashman

The LOCAL JURISDICTION retains responsibility for ensuring that the appropriate Incidental Take Minimization Measures are properly implemented and monitored and that appropriate fees are paid in compliance with the SJMSCP.

NOV 15 2019

Jason Cashman
Port of Stockton
Environmental and Regulatory Affairs
2201 West Washington Street
Stockton, CA, 95203

Project: Notice of Preparation/Initial Study for Lehigh Southwest Stockton Terminal Project

District CEQA Reference No: 20191267

Dear Mr. Cashman:

The San Joaquin Valley Unified Air Pollution Control District (District) has reviewed the Notice of Preparation (NOP) for the Lehigh Southwest Stockton Terminal Project. The proposed project consists of mining and processing of a hard rock deposit at the rate of redeveloping the existing bulk cementitious material receiving and distribution terminal to improve operationally efficiency. As part of the proposed project, Berth 2 would be rehabilitated to support a new ship unloader with a greater reach and that has the capacity to service longer and wider vessels. In addition, the proposed project includes a lease modification to increase the terminal's leasehold from 6.24 to 8.08 acres. (Project). The District offers the following comments:

Emissions Analysis

1) At the federal level for the National Ambient Air Quality Standards (NAAQS), the District is currently designated as extreme nonattainment for the 8-hour ozone standards; nonattainment for the PM2.5 standards; and attainment for the 1-Hour ozone, PM10 and CO standards. At the state level, the District is currently designated as nonattainment for the 8-hour ozone, PM10, and PM2.5 California Ambient Air Quality Standards (CAAQS). The District recommends that the Air Quality section of an Environmental Impact Report (EIR) include a discussion of the following impacts:

   a) **Criteria Pollutants:** Project related criteria pollutant emissions should be identified and quantified. The discussion should include existing and post-project emissions.

Northern Region
4800 Enterprise Way
Modesto, CA 95356-8718
Tel: (209) 557-6400 FAX: (209) 557-6475

Central Region (Main Office)
1990 E. Gettysburg Avenue
Fresno, CA 93726-0244
Tel: (559) 230-6000 FAX: (559) 230-6061

Southern Region
34946 Flyover Court
Bakersfield, CA 93308-9725
Tel: 661-392-5500 FAX: 661-392-5585

www.valleyair.org www.healthyairliving.com

i) Construction Emissions: Construction emissions are short-term emissions and should be evaluated separately from operational emissions. For reference, the District's annual criteria thresholds of significance for construction are: 100 tons per year of carbon monoxide (CO), 10 tons per year of oxides of nitrogen (NOx), 10 tons per year of reactive organic gases (ROG), 27 tons per year of oxides of sulfur (SOx), 15 tons per year of particulate matter of 10 microns or less in size (PM10), or 15 tons per year of particulate matter of 2.5 microns or less in size (PM2.5).

- *Recommended Measure:* To reduce impacts from construction related exhaust emissions, the District recommends the cleanest reasonably available off-road construction fleets, as set forth in §2423 of Title 13 of the California Code of Regulations, and Part 89 of Title 40 Code of Federal Regulations.

ii) Operational Emissions: Permitted (stationary sources) and non-permitted (mobile sources) sources should be analyzed separately. For reference, the annual criteria thresholds of significance for operation of permitted and non-permitted sources each are: 100 tons per year of carbon monoxide (CO), 10 tons per year of oxides of nitrogen (NOx), 10 tons per year of reactive organic gases (ROG), 27 tons per year of oxides of sulfur (SOx), 15 tons per year of particulate matter of 10 microns or less in size (PM10), or 15 tons per year of particulate matter of 2.5 microns or less in size (PM2.5).

- *Recommended Measure:* Project related impacts on air quality can be reduced through incorporation of design elements, for example, that increase energy efficiency, reduce vehicle miles traveled, and reduce operational related emissions.

iii) Recommended Model: Project related criteria pollutant emissions from construction and operation non-permitted (limited to equipment not subject to District permits) should be identified and quantified. Emissions analysis should be performed using CalEEMod (**Cal**ifornia **E**mission **E**stimator **Mod**el), which uses the most recent approved version of relevant Air Resources Board (ARB) emissions models and emission factors. CalEEMod is available to the public and can be downloaded from the CalEEMod website at: www.caleemod.com.

iv) The proposed Project could have a significant impact on regional air quality. As such, the District recommends the EIR also include a discussion on the feasibility of implementing a Voluntary Emission Reduction Agreement (VERA) for this project. A VERA is a mitigation measure by which the project proponent provides pound-for-pound mitigation of emissions increases through a process that develops, funds, and implements emission reduction projects, with the District serving a role of administrator of the emissions reduction projects and verifier of the successful mitigation effort. To implement a VERA, the project proponent and the District enter into a contractual agreement in which the project proponent agrees to mitigate project specific emissions by providing funds for the District's incentives programs). The funds are disbursed by the District in the form of grants for projects that achieve emission reductions. Thus, project-specific regional impacts on air quality can be fully mitigated. Types of emission reduction projects that have been funded in the past include electrification of stationary internal combustion engines (such as agricultural irrigation pumps), replacing old heavy-duty trucks with new, cleaner, more efficient heavy-duty trucks, and replacement of old farm tractors.

In implementing a VERA, the District verifies the actual emission reductions that have been achieved as a result of completed grant contracts, monitors the emission reduction projects, and ensures the enforceability of achieved reductions. After the project is mitigated, the District certifies to the lead agency that the mitigation is completed, providing the lead agency with an enforceable mitigation measure demonstrating that project-specific regional emissions have been mitigated to less than significant. To assist the Lead Agency and project proponent in ensuring that the environmental document is compliant with CEQA, the District recommends the environmental document includes an assessment of the feasibility of implementing a VERA.

b) **Nuisance Odors:** The Project should be evaluated to determine the likelihood that the Project would result in nuisance odors. Nuisance orders are subjective, thus the District has not established thresholds of significance for nuisance odors. Nuisance odors may be assessed qualitatively taking into consideration of Project design elements and proximity to off-site receptors that potentially would be exposed objectionable odors.

c) **Health Risk Screening/Assessment:** A Health Risk Screening/Assessment identifies potential Toxic Air Contaminants (TAC's) impact on surrounding sensitive receptors such as hospitals, daycare centers, schools, work-sites, and residences. TAC's are air pollutants identified by the Office of Environmental Health Hazard Assessment/California Air Resources Board (OEHHA/CARB) (https://www.arb.ca.gov/toxics/healthval/healthval.htm) that pose a present or potential hazard to human health. A common source of TACs can be attributed to diesel exhaust emitted from both mobile and stationary sources.

The District recommends the Project be evaluated for potential health impacts to surrounding receptors (on-site and off-site) resulting from operational and multi-year construction TAC emissions.

i) The District recommends conducting a screening analysis that includes all sources of emissions. A screening analysis is used to identify projects which may have a significant health impact. A prioritization, using CAPCOA's updated methodology, is the recommended screening method. A prioritization score of 10 or greater is considered to be significant and a refined Health Risk Assessment (HRA) should be performed. For your convenience, the District's prioritization calculator can be found at: http:www.valleyair.org/busind/pto/emission_factors/Criteria/Toxics/Utilities/PRIORITIZATION%20RMR%202016.XLS.

ii) The District recommends a refined HRA for projects that result in a prioritization score of 10 or greater. Prior to performing an HRA, it is recommended that the Project proponent contact the District to review the proposed modeling protocol. The Project would be considered to have a significant health risk if the HRA demonstrates that the Project related health impacts would exceed the Districts significance threshold of 20 in a million for carcinogenic risk and 1.0 for the Acute and Chronic Hazard Indices, and would trigger all feasible mitigation measures. The District recommends that Projects that result in a significant health risk not be approved.

For HRA submittals, please provide the following information electronically to the District for review:

- HRA AERMOD model files
- HARP2 files
- Summary of emissions source locations, emissions rates, and emission factor calculations and methodology.

More information on toxic emission factors, prioritizations and HRAs can be obtained by:

- E-Mailing inquiries to: hramodeler@valleyair.org; or
- The District can be contacted at (559) 230-6000 for assistance; or
- Visiting the Districts website (Modeling Guidance) at: http://www.valleyair.org/busind/pto/Tox_Resources/AirQualityMonitoring.htm.

d) **Ambient Air Quality Analysis:** An ambient air quality analysis (AAQA) uses air dispersion modeling to determine if emissions increases from a project will cause or contribute to a violation of the ambient air quality standards. The District recommends that an AAQA be performed for the Project if emissions exceed 100 pounds per day of any pollutant.

If an AAQA is performed, the analysis should include emissions from both Project specific permitted and non-permitted equipment and activities. The District recommends consultation with District staff to determine the appropriate model and input data to use in the analysis. Specific information for assessing significance, including screening tools and modeling guidance is available online at the District's website www.valleyair.org/ceqa.

2) In addition to the discussions on potential impacts identified above, the District recommends the EIR also include the following discussions:

   a) A discussion of the methodology, model assumptions, inputs and results used in characterizing the Project's impact on air quality. To comply with CEQA requirements for full disclosure, the District recommends that the modeling outputs be provided as appendices to the EIR. The District further recommends that the District be provided with an electronic copy of all input and output files for all modeling.

   b) A discussion of the components and phases of the Project and the associated emission projections, including ongoing emissions from each previous phase.

   c) A discussion of Project design elements and mitigation measures, including characterization of the effectiveness of each mitigation measure incorporated into the Project.

      i) The following policies/mitigation measures are recommended to reduce or mitigate impacts from criteria pollutant emissions:

         (1) Use of off-road construction fleets that can achieve fleet average emissions equal to or less than the Tier III emission standards, as set forth in §2423 of Title 13 of the California Code of Regulations, and Part 89 of Title 40 Code of Federal Regulations. Therefore, the District recommends incorporating, as a condition of Project approval, a requirement that off-road construction equipment used on site be the cleanest reasonably available as set forth in state and federal regulations.

         (2) For projects exceeding the applicability thresholds identified in Section 2.0 of District Rule 9510, a condition of Project approval requiring

demonstration of compliance with Rule 9510, prior to the issuance of grading and/or building permits.

(3) For projects subject to District permitting requirements, demonstration of compliance with District Rule 2201, such as a copy of the Authority to Construct (ATC), before issuance of the first building permit, be made a condition of project approval.

ii) The following policies/mitigation measures are recommended to mitigate potential health impacts of individual projects:

(1) Development projects resulting in toxic air contaminant emissions will be located an adequate distance from residential areas and other sensitive receptors in accordance to ARB's *Air Quality and Land Use Handbook: A Community Health Perspective.*

(2) A health risk screening and/or assessment will be performed to assess potential risks to sensitive receptors for the following projects:

(3) Projects whose proposed locations are within the established buffer distances identified in ARB's handbook;

(4) Projects whose land uses are not specifically identified in ARB's handbook (such as shopping centers), but there is sufficient information to reasonably conclude that sensitive receptors would be exposed to significant sources of toxic air contaminants; and

(5) Projects that would otherwise appear to be exempt from CEQA requirements, but there is sufficient information to reasonably conclude that sensitive receptors would be exposed to significant sources of toxic air contaminants, such as industrial use projects allowed by right.

d) A discussion of whether the Project would result in a cumulatively considerable net increase of any criteria pollutant or precursor for which the San Joaquin Valley Air Basin is in non-attainment. More information on the District's attainment status can be found online by visiting the District's website at: http://valleyair.org/aqinfo/attainment.htm.

e) As required by the recent decision in *Sierra Club v. County of Fresno* (2018) 6 Cal.4th 502, a reasonable effort to discuss relevant specifics regarding the connection between potential adverse air quality impacts from the Project with the likely nature and magnitude of potential health impacts. If the potential health impacts from the Project cannot be specifically correlated, explain what is known and why, given scientific constraints, potential health impacts cannot be translated.

District Rules and Regulations

3) The proposed Project may be subject to District rules and regulations, including: Regulation VIII (Fugitive PM10 Prohibitions), Rule 4102 (Nuisance), and Rule 4641 (Cutback, Slow Cure, and Emulsified Asphalt, Paving and Maintenance Operations). In the event an existing building will be renovated, partially demolished or removed, the Project may be subject to District Rule 4002 (National Emission Standards for Hazardous Air Pollutants).

4) This Project will be subject to District Rule 2010 (Permits Required) and Rule 2201 (New and Modified Stationary Source Review) and will require District permits. Prior to construction, the Project proponent should submit to the District an application for an Authority to Construct (ATC). For further information or assistance, the project proponent may contact the District's Small Business Assistance (SBA) Office at (209) 557-6446.

5) Per District Rule 9510 (Indirect Source Review) section 4.4.3, a development project on a facility whose primary functions are subject to District Rule 2201 or District Rule 2010 are exempt from the requirements of the rule. The District has reviewed the information provided and has determined that the primary functions of this Project are subject to District Rule 2201 (New and Modified Stationary Source Review Rule) or District Rule 2010 (Permits Required). As a result, District 9510 requirements and related fees do not apply to the Project referenced above.

   Therefore, the project proponent is required to obtain a District Authority to Construct prior to installation of equipment that controls or may emit air contaminants, including but not limited to emergency internal combustion engines, boilers, and baghouses. For more information please visit http://www.valleyair.org/busind/pto/ptoforms/1ptoformidx.htm or contact the District's Small Business Assistance.

6) The Project may be subject to District Rule 9410 (Employer Based Trip Reduction) if the Project would result in employment of 100 or more "eligible" employees. District Rule 9410 requires employers with 100 or more "eligible" employees at a worksite to establish an Employer Trip Reduction Implementation Plan (eTRIP) that encourages employees to reduce single-occupancy vehicle trips, thus reducing pollutant emissions associated with work commutes. Under an eTRIP plan, employers have the flexibility to select the options that work best for their worksites and their employees. Information about how District Rule 9410 can be found online at:

www.valleyair.org/tripreduction.htm. For additional information, you can contact the District by phone at 559-230-6000 or by e-mail at etrip@valleyair.org

7) The above list of rules is neither exhaustive nor exclusive. To identify other District rules or regulations that apply to this Project or to obtain information about District permit requirements, the applicant is strongly encouraged to contact the District's Small Business Assistance (SBA) Office at (209) 557-6446. Current District rules can be found online at the District's website at: www.valleyair.org/rules/1ruleslist.htm.

The District recommends that a copy of the District's comments be provided to the Project proponent. If you have any questions or require further information, please call Eric McLaughlin at (559) 230-5808.

Sincerely,

Arnaud Marjollet
Director of Permit Services

for

Robert Gilles
Program Manager

AM: em

Appendix D
National Register of Historic Places Recommendations of Eligibility and Project Effects

PAR ENVIRONMENTAL SERVICES, INC.
Cultural Resource Management ■ Biology ■ Environmental Planning
ESTABLISHED 1982

November 26, 2019

Barbara Bundy
Anchor QEA
130 Battery Street , Suite 400
San Francisco, CA 94111

Re: Port of Stockton East Complex Berth 2 and Belt Line Railroad Trestle (PAR Reference # 19-0016)

Dear Barbara:

PAR Environmental Services is pleased to provide the attached DPR 523 forms and evaluations for the Port of Stockton's Berth 2 and Belt Line Railroad resources. The evaluations and Finding of Effect were prepared by Mary L. Maniery (M.A., 40 years of experience, meets Secretary of Interior Standards in History, Architectural History, and Historical Archaeology as a Principal) and Geordon Taylor (B.A., 3 years of experience). We recommend Berth 2 as ineligible for inclusion to the National Register of Historic Places as an individual property, but it would likely be considered a contributing element to a Port of Stockton Historic District, should one be defined in the future. We believe that the Belt Line Railroad trestle meets Criteria A and C and recommend that it is eligible for inclusion in the NRHP both as an individual property and as a contributing element of a Port of Stockton Historic District, should one be defined at a future date.

According to 36 CFR 800.16(i) an "effect" is defined as an alteration to the characteristics of an historic property that qualify the property for inclusion on the NRHP. 36 CFR 800.5(d)(1) and (2) identifies two classes of permissible results for an assessment of effects. These are "No adverse effect" (where there is either no historic property within the APE, or no effect to historic properties that are present) and "Adverse effect" (where there are properties within the APE that will be affected adversely by the project).

Section 36 CFR 800.5(a)(1) sets out the criteria that demonstrate when an adverse effect will occur, and Section 36 CFR 800.5(a)(2) lists seven examples of adverse effects: 1) Physical destruction of or damage to all or part of the property; 2) Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation, and provision of handicapped access that is not consistent with the Secretary if the Interior's Standards for the Treatment of Historic Properties and applicable guidelines; 3) Removal of a property from its historic location; 4) Change in the character of a property's use or physical features within the property's setting that contribute to its historic significance; 5) Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features; 6) Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance; and 7) Transfer, lease or sale of property out of Federal ownership and control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance. In all cases, adverse project effects either directly or indirectly diminish the integrity of the property's location, design, setting, materials, workmanship, feeling or association or, in the case of a change in ownership, may expose the property to such effects at a later time.

Port of Stockton East Berth 2

Berth 2 is recommended as ineligible as an individual property for inclusion in the National Register of Historic Places under any criteria (see attached DPR 523 form for a formal evaluation). However, the Port of Stockton played an important role in the development of California's transportation history and the berth would likely be considered a contributing element of a potential Port of Stockton East district, should one be developed in the future. It retains the feeling and association with the Port of Stockton, as well as its original setting, location, and design within the larger framework of the Port of Stockton.

The proposed project aims to stabilize Berth 2 and add structural upgrades to meet current seismic and building codes. According to EDG, Inc., the engineering firm undertaking the upgrade project, there will be no change to the existing berth structure's size or shape and no existing piles will be removed; however portions of the deck will be removed to allow for upgrades and replaced with concrete in-kind. Approximately 150 to 200 concrete piles will be added and new concrete support beams will be installed in tandem with existing beams. No existing piling will be removed. The support beams are not visible as they are under the berth and submerged in water. Following construction, the only visually dissimilar upgrade is a new shock absorption ship fender.

Finding of Effect

This undertaking will not alter, directly or indirectly, any of the characteristics of the Berth that contribute to a larger Port of Stockton district, nor would it diminish the integrity of the Port's location, design, setting, materials, workmanship, feeling, or association. After the project is complete the berth will retain the appearance that it has today, with only minor visible changes (i.e., addition of a ship fender). It would still be considered a contributing element to a larger district, if one is defined in the future. Therefore, the project would not have an adverse effect on Berth 2.

Belt Line Railroad and Trestle

The train trestle is part of the Belt Line Railroad, which was installed along with the construction of the original eastern port complex in 1932 and represents one of the first examples of on-berth rail services in California. The Belt Line Railroad connected the Port to three transcontinental routes and was a crucial element in the success of the Port. As such, the Belt Line Railroad and its trestle are important in transportation history and meet Criterion A. The on-berth design was uncommon for ports built in the first half of the 20th century and the railroad and trestle represent a type of engineering design that was unusual in 1932. Therefore, the railroad and its trestle meet Criterion C. It does not meet Criteria B and D (see attached DPR 523 form for a formal evaluation).

Although the trestle is deteriorated, it retains its feeling and association with the Belt Line Railroad and with Port of Stockton. It is in its original location and retains the Port's setting. Its design, materials, and workmanship are evident, as demonstrated by the dates of 1927 and 1929 stamped into metal components of the 1932 trestle. It retains integrity and is recommended as individually eligible for inclusion in the National Register under Criterion A for its role in transportation history and Criterion C as an early example of an on-berth railroad and trestle system designed and built for maritime shipping efforts. It would also be considered a contributor to a larger Port of Stockton district, should one be defined in the future.

Finding of Effect

The wooden trestle has been de-rated by port authorities due to its deteriorated condition. Only empty rail cars are currently allowed to travel over the trestle. There are signs of shearing damage along the rail and, according to Berth 2 employees, several supporting posts in the bents have rotted away below the waterline. The original wooden trestle and piles are too deteriorated to preserve. Since the trestle was built in 1932, the maximum weight and size of railcars has increased. In order to allow for full and optimal operation, including the movement of loaded cars and engines up to E60 in size, and because of seismic concerns, the trestle requires replacement. The proposed project would demolish the wooden trestle and remove or cut off the original piling. In order to support the proposed loads of engines and cars, the new structural bridge cannot be constructed of wood. Instead, it will consist of 28 new 18-inch-octagonal precast concrete piles placed in two rows of 14 piles each; above waterline concrete support beams; new track and a new access walkway. No dredging, bank stabilization, or bank removal will occur. The remainder of the Belt Line Railroad will remain unchanged.

The removal of the original wooden trestle and replacement with a new concrete structure would result in a loss of integrity of materials, workmanship, design of the original wood structure and the feeling of an historic wood trestle associated with the original on-berth railroad. The new trestle will be in the same location and will retain its association with the Belt Line Railroad and the Port of Stockton. The removal of the trestle is considered an adverse effect and would result in the loss of the character-defining traits found in a wooden trestle, adversely affecting to 36 CFR 800.5[a](1), PAR recommends a "Finding of Adverse Effect" for this project.

Treatment Recommendations

The trestle is recommended as eligible for the role it played in transportation history (Criterion A) and its association with an on-berth railroad (Criterion C). In order to treat the loss of the trestle the following recommendations are offered.

Criterion A

The Port of Stockton is in the process of upgrading and revising their website. Currently the website has a short history of the construction and use of the Port in the 1930s. The website provides a vehicle for presenting the history and importance of the trestle within the context of the Belt Line Railroad and the Port of Stockton. There are several episodes that would be considered important to inform the public on the importance of the trestle and railroad. First, a history of the railroad in the 1930s, including its design (and uniqueness of the on-berth system at the time); need for a trestle to bridge the gap between land and the berths; construction (including engineering, funding); and opening is important. Second, the history should include the importance of the Belt Line Railroad during World War II and the role it played in the decision-making process of the United States Navy in establishing a base at Rough and Ready Island. The role of the Port after the War, growth into the fourth largest Port in California, and the second largest inland Port in the west should also be examined. A copy of the history should be provided to the San Joaquin County Historical Society for inclusion in their research files.

Criterion C

In order to capture the engineering design of the trestle in relationship to the Belt Line Railroad and the Port of Stockton, documentation following the Historic American Engineering Record standards is recommended. This HAER-like documentation includes photography and engineering plans, as well as detailed physical descriptions, plans, and profiles. The photography should include both detailed views of the trestle construction, as well as overviews of the setting, and the relationship with the Belt Line Railroad, Port of Stockton, and berths. The documentation should be filed at the San Joaquin County Historical Society, Central California Information Center, State Office of Historic Preservation, and posted on the Port of Stockton web page.

Thank you for the opportunity to continue our research at the Port of Stockton. Please let me know if you need additional information or have any comments.

Sincerely,
PAR Environmental Services, Inc.

Mary L. Maniery

Mary L. Maniery,
President

cc: Katie Chamberlain, Anchor

Attachments: DPR 523 Forms for Berth 2, Belt Line Railroad Trestle

P.O. Box 160756 ■ Sacramento, California 95816-0756 ■ (916) 739-8356 ■ FAX (916) 739-0626
http://www.PARenvironmental.com

State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # P –
HRI#
Trinomial CA –
NRHP Status Code 3D

Other Listings
Review Code Reviewer Date

Page 1 of 7 ***Resource Name or #: (Assigned by recorder)** Port of Stockton East Berth 2

P1. Other Identifier: Port of Stockton Eastern Complex

***P2. Location:** ☒ Not for Publication ☐ Unrestricted *a. County San Joaquin

***b. USGS 7.5' Quad** Stockton West; **Date:** 1968 PR 1987 **Unsectioned** **T** 1 **N R** 6 **E S**; ¼ of ¼ ; MDM

c. Address N/A **City** Stockton **Zip** N/A

d. UTM: Northwest terminus: **Zone** 10 ; 647486 **mE/** 4201816 **mN NAD**

Southeast terminus: **Zone** 10 ; 647619 **mE/** 4201731 **mN NAD**

e. Other Locational Data: From Stockton, California, travel 0.8 miles west on West Weber Avenue. Turn left on West Washington Street and travel 0.6 miles to the port entry gate. A Transportation Worker Identification Credential (TWIC) card and/or TWIC escort is required for access. From the port entry gate, turn right onto Port Road 2 and travel approximately 600 feet to the visitor parking area. From the parking area, the berth is accessed via ATV operated by the berth authority. Berth 2 spans the northwest and southeast UTM coordinates above.

***P3a. Description:** This resource consists of a large commercial port berth in the eastern complex of the Port of Stockton. Berth 2 spans approximately 525 feet, trending northwest to southeast along the eastern side of the eastern port complex. Berth 2 is approximately 50 feet wide and 20 feet high from the waterline, and appears to be entirely constructed from cement. The 922 piles on which it rests are the original wooden piles and measure between 14 and 17 inches in diameter. Railroad and gantry rails run the length of Berth 2 and follow the entire outline of the complex. The railroad rails are part of the Belt Line Railroad, which was constructed along the berth in 1932. The berth has several moorings and large tires alongside the edge to buffer docking ships. There are several large metal plates that cover the cracking or sinking concrete deck. See BSO and continuation for additional details.

***P3b. Resource Attributes: (List attributes and codes)** HP 11. Engineering Structure

***P4. Resources Present:** ☐ Building ☒ Structure ☐ Object ☐ Site ☐ District ☐ Element of District ☐ Other (Isolates, etc.)

P5a. Photograph or Drawing:

P5b. Description of Photo: Overview of Berth 2
View: Southeast; Date: 09/26/19
Acc. #: 19-0016-2304

***P6. Date Constructed/Age and Sources:** ☒ Historic ☐Prehistoric ☐Both
1932 (Port of Stockton 2015)

***P7. Owner and Address:**
Port of Stockton
2201 West Washington Street
Stockton, CA 95203

***P8. Recorded by:**
Geordon A. Taylor
PAR Environmental Services, Inc.
1906 21st St
Sacramento, CA 95811

***P9. Date Recorded:** 09/26/19

***P10. Survey Type: (Describe)**
Intensive Reconnaissance

***P11. Report Citation:**

***Attachments:** ☐ NONE ☒ Location Map ☐ Sketch Map ☒ Continuation Sheet ☒ Building, Structure and Object Record ☐ Archaeological Record ☐ District Record ☐ Linear Feature Record ☐ Milling Station Record ☐ Rock Art Record ☐ Artifact Record ☐ Photograph Record ☐ Other (List)

BUILDING, STRUCTURE, AND OBJECT RECORD

B1. Historic Name: Unknown
B2. Common Name: Berth 2; Port of Stockton Eastern Complex
B3. Original Use: Commercial/ Industrial Maritime Port B4. Present Use: Commercial/ Industrial Maritime Port
***B5. Architectural Style:** Berth
***B6. Construction History:** (Construction date, alterations, and date of alterations) Berth 2, along with the rest of the Port of Stockton was constructed in 1932. No structural alterations are known to have occurred to Berth 2; however, routine maintenance, such as concrete patching, has occurred within the last few years. Other alterations have occurred since the opening of the port, such as equipment upgrades and newer warehouses; however, these are adjacent to the berth.
***B7. Moved?** ☒ No ☐Yes ☐Unknown **Date:** N/A **Original Location:** N/A
***B8. Related Features:** A trestle, located at the southeastern end of the berth, connects the Berth's on-berth rail service to the primary rail network. This trestle and rail is part of the Belt Line Railroad, which trends around the perimeter of the Port of Stockton East Complex and northwest/southeast through the middle of Berth 2.
B9a. Architect: Unknown b. Builder Unknown
***B10. Significance: Theme** Commercial Development **Area** Stockton/San Joaquin County
Period of Significance 1932-Present **Property Type** Maritime port **Applicable Criteria** A
(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity).

As early as the 1870s residents of the Delta were campaigning for an inland port to accommodate shipments of imports and exports from the inland area of California to San Francisco and beyond. Favorable engineering reports prepared by the City of Stockton engineer, Walter Hogan, backed by the Army Engineer Colonel U.S. Grant III provided the impetus for implementing the plans. The citizens of Stockton approved a $3,000,000 bond in 1924 to cover their share of the cost. The State of California put up $419,000, and the federal government committed $2,230,000 in 1927 to pay for the Port (Port of Stockton 2015).

The primary cost came from creating a Deep Water Channel leading from San Francisco to Stockton. On order to accommodate the large ships, the channel was planned to extend 50 miles. The river was widened to 300 feet and a variety of dredges, including clamshell, chain bucket ladder, dragline, and hydraulic dredges got to work straightening out the river route and deepening the channel to 26 feet to accommodate the larger ships. Numerous Delta islands, including Tinsley, Fen, Headreach, and Tule, were cut through to allow passage of the channel (Port of Stockton 2015).

Dredging began in 1930 and was overseen by the U.S. Army Corps of Engineers. The Port of Stockton was officially opened in 1933 with the arrival of the SS Daisy Gray and 75,000 tons of lumber. One noteworthy feature of the Port was the installation of an on-Berth railroad to accommodate movement of goods from the Port to market. The Belt Line Railroad was installed along with the construction of the original eastern port complex in 1932 and represents one of the first examples of on-Berth rail services in California (Port of Stockton 2015). The Belt Line Railroad connected three transcontinental lines, and was completed by then Stockton mayor, Con Franke, who drove the last spike in 1932 (Port of Stockton 2002).

Beginning in 1942 and reaching an apex in 1944, the Port of Stockton and neighboring Rough and Ready Island were used by the U.S. Navy as part of the World War II effort in the Pacific Theatre (Port of Stockton 2002). Rough and Ready Island, merely 1,000 yards from the Port of Stockton, represented an ideal inland location for a Naval supply depot, primarily because it was naturally better protected due to its distance from the western coastline and also provided rail access to other Navy depots such as those at Oakland and San Diego, California (Kennedy and Pomeroy 1998). The Navy retained the use of Rough and Ready Island through the Korean War during the 1950s; however, the Navy's influence on the island was significantly less by the end of the 1960's, as the Navy leased the majority of its warehouses (Kennedy et al. 1998). Through the years the Deep Water Channel was dredged and deepened to its current depth of 35 feet in order to accommodate the Naval fleet and subsequent tankers that rely on the Port. In 2010, the Port of Stockton came under complete control of Rough and Ready Island (Port of Stockton 2010).

Today, the Port is the farthest inland port in California and the second largest inland seaport in the United States after Oregon's Port of Portland (Southern California Association of Governments 2018). Despite being 75 miles from open sea, Stockton ranked fourth among Californian ports in 2017 with 360,000 tons of breakbulk shipments. Stockton's big appeals are its location in California's Central Valley, proximity to major rail and highway networks, and pick-up/drop-off wait times for truckers that average two minutes or less at the gate. The Port of Stockton and its Belt Line Railroad are still in heavy use, with the latest available annual report recording the transfer of 4.7 million tons of cargo and taking in 268 ships in 2017 (Port of Stockton 2018).

Evaluation

California has 11 major ports stretching from San Diego to Humboldt Bay; nine of these are along the coast. The Port of Stockton is one of only two inland ports in California and is the earliest port of its kind in the state (Port of West Sacramento opened in 1963; Port of Stockton in 1933). The Port of Stockton opened up the inland agricultural areas of California for export and import and led to increasing development of the region. In addition, as the only inland Port in California during World War II, the Port was important in wartime Naval mission, providing an inland safe haven for repairs and training, when compared to the vulnerable Bay Area facilities of Mare Island, Hunters Point, Alameda and southern California bases at San Diego and Los Angeles. While the Port clearly is important in California history under Criterion A, Berth 2 is one of 14 berths at the Port. While it contributes to the importance of the Port and is contemporary with its construction and age, it is not individually important under Criterion A for its role in local history. The Berth is not associated with a person or company important in local or state history and does not meet Criterion B. The design is common for ports built in the first half of the 20th century and the Berth is not an outstanding example of a berth in design or workmanship and does not meet Criterion C. The Berth is placed in a dredged river channel that has been maintained and deepened through the years and has no associated archaeological deposits. Its scientific importance is not outstanding and it does not meet Criterion D.

There is evidence of sink holes opening along Berth 2. These have either been patched with cement or covered with thick metal plates. This is likely due to the failure of the underlying wooden piles that support the structure

In summary, the Berth is recommended as ineligible as an individual property for inclusion in the National Register of Historic Places under any criteria. However, the Port of Stockton played an important role in the development of California's transportation history and the Berth would likely be considered a contributing element of a potential Port of Stockton East district, should one be developed in the future. It retains the feeling and association with the Port of Stockton, as well as its original setting, location, and design within the larger framework of the Port of Stockton.

B11. Additional Resource Attributes: (List attributes and codes) None

***B12. References:**

Kennedy, John H., Douglas Pomeroy, John E. King, Karen E. Frye, Terry B. Witherspoon, David Batts, John Bock, Amy Cordle, Kris E. Kolassa, Robert Sculley, Randolph Varney, Tom Whitehead, Joe Holland, Sheryl Onopchenko, Eleanor Tiglao, Richard Grassetti, Steve Mikesell, Mary L. Maniery, and Cindy Baker

1998 Navy Property Transfer Environmental Assessment. Rough and Ready Island Stockton, California. On file, US Navy, Southwest Division, San Diego, CA.

Port of Stockton

2002 Port of Stockton California 2002 Annual Report 70th Anniversary Edition. Accessed electronically at https://www.portofstockton.com/port-of-stockton-annual-report-archive on Oct 1, 2019.

2010 Port of Stockton California 2010 Annual Report. Accessed electronically at https://www.portofstockton.com/port-of-stockton-annual-report-archive on Oct 1, 2019.

2015 Electronic document. Accessed at https://www.portofstockton.com/port-of-stocktons-history-by-decade-1930s, Oct 1, 2019.

2018 Port of Stockton California 85 Years of Innovation. Accessed electronically at http://online.anyflip.com/vzeli/wklm/mobile/index.html on Oct 1, 2019.

San Joaquin Magazine
n.d. History of the Stockton Delta. Accessed 10/08/2019 at https://sanjoaquinmagazine.com/2015/05/history-of-the-stockton-delta-2/

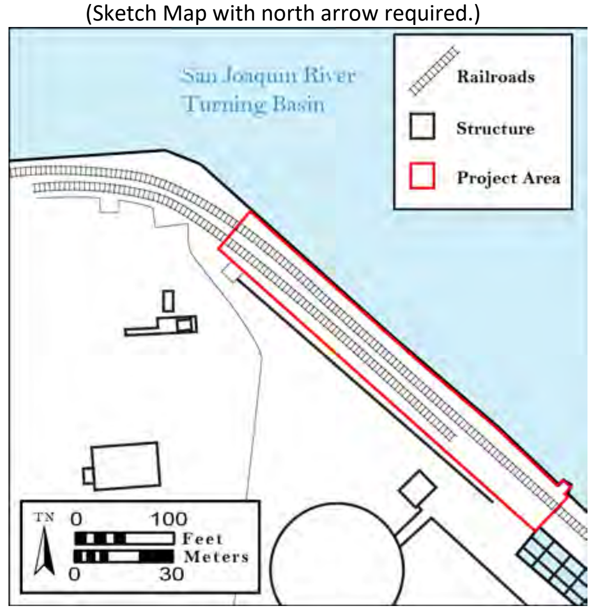
Southern California Association of Governments (SCAG)
2018 Regional Transportation Plan and Sustainable Communities Strategy. Accessed electronically at https://www.sjcog.org/DocumentCenter/View/3731/Final-RTP-2018---Chapter-6-?bidId= on Oct 1, 2019.

B13. Remarks: None

***B14. Evaluator:** Mary L. Maniery/ Geordon A. Taylor
PAR Environmental Services, Inc.
1906 21st Street
Sacramento, CA 95816
Date of Evaluation: 10/08/19

(This space reserved for official comments.)

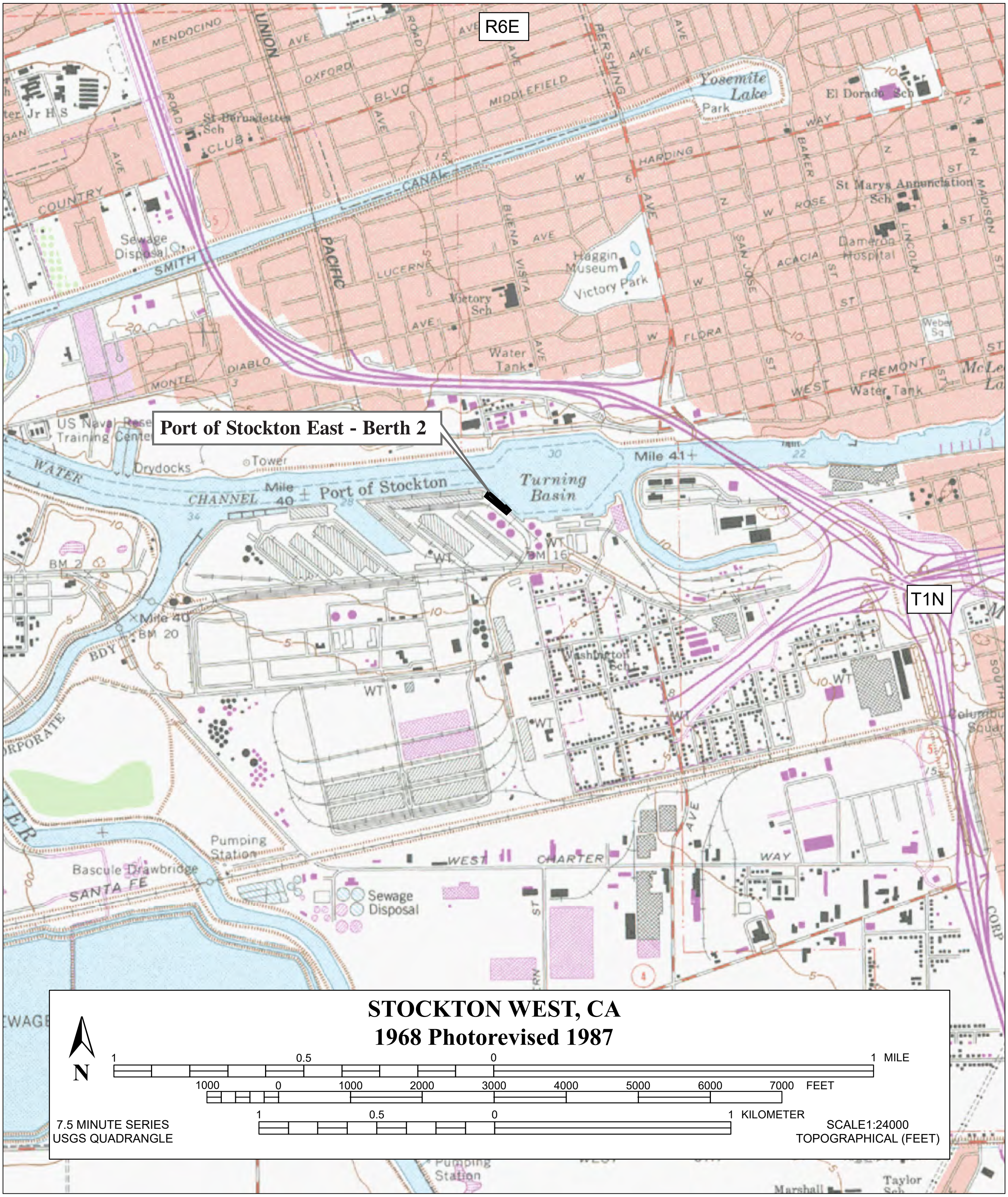
(Sketch Map with north arrow required.)



State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
LOCATION MAP

Primary # ______
HRI # ______
Trinomial ______

Page 5 **of** 7 ***Resource Name or # (Assigned By Recorder)** Port of Stockton East - Berth 2
Map Name Stockton West 7.5 min ***Scale** 1:24000 ***Date of Map** 1968 Photorevised 1987



Photos (continued):

Overview of Berth 2 at Port of Stockton Eastern Complex; View: Southeast; Date: 09/26/19; Acc. #: 19-0016-2305

Wooden support piles at the northeast corner of Berth 2; View: Detail; Date: 0926/19; Acc. #: 19-0016-2302

Photos (continued):

Berth 2 mooring; View: Detail: Date: 09/26/19; Acc. #: 19-0016-2301

Metal plate covering a sink-hole in Berth 2; View: West; Date: 09/26/19; Acc. #: 19-0016-2300

State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # P –
HRI#
Trinomial CA –
NRHP Status Code

Other Listings
Review Code | Reviewer | Date

 ***Resource Name or #: (Assigned by recorder)** Port of Stockton East Belt Line Rail Trestle

P1. Other Identifier:

***P2. Location:** ☒ Not for Publication ☐ Unrestricted *a. County San Joaquin

***b. USGS 7.5' Quad** Stockton West; **Date:** 1968 PR 1987 **Unsectioned** **T** 1**N R** 6 **E S**; ¼ of ¼ ; MDM

c. Address N/A **City** Stockton **Zip**

d. UTM: Northwest terminus: **Zone** 10 **;** 647619 **mE/** 4201731 **mN NAD**

Southeast terminus: **Zone** 10 **;** 647681 **mE/** 4201677 **mN NAD**

e. Other Locational Data: From Stockton, California, travel 0.8 miles west on West Weber Avenue. Turn left on West Washington Street and travel 0.6 miles to the port entry gate. A Transportation Worker Identification Credential (TWIC) card and/or TWIC escort is required for access. From the port entry gate, turn right onto Port Road 2 and travel approximately 600 feet to the visitor parking area. From the parking area, the berth is accessed via ATV operated by the berth authority. Berth 2 and the rail trestle span the east and west UTM coordinates above.

***P3a. Description:** This resource consists of a wooden rail trestle in the eastern complex of the Port of Stockton. The trestle is of wooden construction and spans approximately 181 feet, trending northwest to southeast along the eastern side of the eastern port complex and at the southeastern end of berth 2. See the Continuation and Linear Feature Record for additional details.

***P3b. Resource Attributes: (List attributes and codes)** HP11. Engineering Structure; HP19. Bridge

***P4. Resources Present:** ☐ Building ☒ Structure ☐ Object ☐ Site ☐ District ☐ Element of District ☐ Other (Isolates, etc.)

P5a. Photograph or Drawing:

P5b. Description of Photo: Overview of Port of Stockton East Belt Line Rail Trestle
View: Southeast; Date: 09/26/19
Acc. #: 19-0016-2304

***P6. Date Constructed/Age and Sources:** ☒ Historic ☐Prehistoric ☐Both
ca. 1927-1932 (observed date on railroad track; Port of Stockton 2015)

***P7. Owner and Address:**
Port of Stockton
2201 West Washington Street
Stockton, CA 95203

***P8. Recorded by:**
Geordon A. Taylor
PAR Environmental Services, Inc.
1906 21st St
Sacramento, CA 95811

***P9. Date Recorded:** 09/26/19

***P10. Survey Type: (Describe)**
Intensive Reconnaissance

***P11. Report Citation:** None.

***Attachments:** ☐ NONE ☒ Location Map ☐ Sketch Map ☒ Continuation Sheet ☒ Building, Structure and Object Record ☐ Archaeological Record ☐ District Record ☒ Linear Feature Record ☐ Milling Station Record ☐ Rock Art Record ☐ Artifact Record ☐ Photograph Record ☐ Other:

BUILDING, STRUCTURE, AND OBJECT RECORD

B1. Historic Name: Unknown
B2. Common Name: Unknown
B3. Original Use: Railroad trestle bridge B4. Present Use: Railroad trestle bridge
***B5. Architectural Style:** Early 20th Century American Movement; Commercial Style
***B6. Construction History:** (Construction date, alterations, and date of alterations) The railroad trestle was completed along with the rest of the Port of Stockton in 1932. No structural alterations are known to have occurred to the trestle; however, some alterations and/or maintenance to the wooden walkway have occurred in the last few decades according to berth employees.
***B7. Moved?** ☒ No ☐Yes ☐Unknown **Date:** N/A **Original Location:** N/A
***B8. Related Features:** Berth 2 of the Port of Stockton Eastern Complex is directly north of the trestle. The rail trestle provides Berth 2 with on-berth rail access.
B9a. Architect: Unknown b. Builder Unknown
***B10. Significance: Theme** Transportation, Commerce **Area** Stockton/San Joaquin County
Period of Significance 1932-1970 **Property Type** Bridge **Applicable Criteria** A, C
(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity).

As early as the 1870s residents of the Delta were campaigning for an inland port to accommodate shipments of imports and exports from the inland area of California to San Francisco and beyond. Favorable engineering reports prepared by the City of Stockton engineer, Walter Hogan, backed by the Army Engineer Colonel U.S. Grant III provided the impetus for implementing the plans. The citizens of Stockton approved a $3,000,000 bond in 1924 to cover their share of the cost. The State of California put up $419,000, and the federal government committed $2,230,000 in 1927 to pay for the Port (Port of Stockton 2015). Dredging began in 1930 and was overseen by the U.S. Army Corps of Engineers. The Port of Stockton was officially opened in 1933 with the arrival of the SS Daisy Gray and 75,000 tons of lumber.

One noteworthy feature of the Port was the installation of an on-berth railroad to accommodate movement of goods from the Port to market. The rail trestle is part of the Belt Line Railroad, which was installed along with the construction of the original eastern port complex in 1932 and represents one of the first examples of on-berth rail services in California (Port of Stockton 2015). The Belt Line Railroad connected three transcontinental lines (Southern Pacific, Union Pacific, and Burlington Northern-Santa Fe railroads). The City of Stockton worked hard to reach an operating and financial agreement with the three transcontinental railroad companies but recognized that a reliable transportation mode was crucial to the success of the Port. The use of on-berth tracks eliminated an additional step in off-loading and on-loading ships, as cargo could be shipped direct to and from the ships by rail. The railroad was completed by then Stockton Mayor and City Engineer, Con Franke, who drove the last spike in 1932 (Port of Stockton 2002, 2015).

Beginning in 1942 and reaching an apex in 1944, the Port of Stockton and neighboring Rough and Ready Island were used by the U.S. Navy as part of the World War II effort in the Pacific Theatre (Port of Stockton 2002). Rough and Ready Island, merely 1,000 yards from the Port of Stockton, represented an ideal inland location for a Naval supply depot, primarily because it was naturally better protected due to its distance from the western coastline and also provided rail access to other Navy depots such as those at Oakland and San Diego, California (Kennedy and Pomeroy 1998). The Navy retained the use of Rough and Ready Island through the Korean War during the 1950s; however, the Navy's influence on the island was significantly less by the end of the 1960's, as the Navy leased the majority of its warehouses (Kennedy et al. 1998). Through the years the Deep Water Channel was dredged and deepened to its current depth of 35 feet in order to accommodate the Naval fleet and subsequent tankers that rely on the Port. In 2010, the Port of Stockton came under complete control of Rough and Ready Island (Port of Stockton 2010).

Today, the Port is the farthest inland port in California and the second largest inland seaport in the United States after Oregon's Port of Portland (Southern California Association of Governments 2018). Despite being 75 miles from open sea, Stockton ranked fourth among Californian ports in 2017 with 360,000 tons of breakbulk shipments. Stockton's big appeals are its location in California's Central Valley, proximity to major rail and highway networks, and pick-up/drop-off wait times for truckers that average two minutes or less at the gate. The Port of Stockton and its Belt Line Railroad are still in heavy use, with the latest available annual report recording the transfer of 4.7 million tons of cargo and taking in 268 ships in 2017 (Port of Stockton 2018).

Evaluation

California has 11 major ports stretching from San Diego to Humboldt Bay; nine of these are along the coast. The Port of Stockton is one of only two inland ports in California and is the earliest port of its kind in the state (Port of West Sacramento opened in 1963; Port of Stockton in 1933) and until recently was one of the only Ports with an on-berth railroad. The Port of Stockton opened up the inland agricultural areas of California for export and import and led to increasing development of the region. In addition, as the only inland Port in California during World War II, the Port was important in wartime Naval mission, providing an inland safe haven for repairs and training, when compared to the vulnerable Bay Area facilities of Mare Island, Hunters Point, Alameda and southern California bases at San Diego and Los Angeles. One of the reasons Rough and Ready Island (now Port of Stockton West) was chosen by the Navy is because of the access to the Belt Line Railroad and ease of transportation between the Alameda Naval Station in Oakland and the Stockton facility. San Joaquin County contributed war time supplies and food to the world during the war years and the railroad was a key factor in this supply chain (San Joaquin Magazine n.d.).

The Belt Line Railroad connected the Port to three transcontinental routes and was a crucial element in the success of the Port. One of the benefits of the on-berth rail system was to eliminate the need for loading and unloading freight from the rail to trucks to the ships. The rail parallels the berth and facilities movement of cargo direct from the ship to rail. As the only trestle on the railroad, the trestle bridges a gap between berths and allows for access by rail to berths two through six. As such, the Belt Line Railroad and its trestle are important in local transportation history and meet Criterion A.

The railroad is not associated with a person or company important in local or state history and does not meet Criterion B. The on-berth design was uncommon for ports built in the first half of the 20th century and the railroad and trestle represent a type of engineering design that was unusual in 1932. Therefore, the railroad and its trestle meet Criterion C. The trestle has no associated archaeological deposits and its scientific importance is captured through existing plans and it does not meet Criterion D.

The wooden trestle has been derated by port authorities due to its deteriorated condition. Only empty rail cars are currently allowed to travel over the trestle. There are signs of shearing damage along the rail and, according to Berth 2 employees, several supporting posts in the bents have rotted away below the waterline; these were unobserved as the water line obscured them. Despite its deteriorated state, the trestle retains its feeling and association with the Belt Line Railroad and with Port of Stockton. It is in its original location and retains the Port setting. While the trestle has undergone maintenance and minor modifications circa 1980 and 1998, its design, materials, and workmanship are still evident, as demonstrated by the dates of 1927 and 1929 stamped into metal components of the rail along the trestle. It retains integrity and is recommended as eligible for inclusion in the National Register under Criterion A for its role in transportation history and Criterion C as an early example of an on-berth railroad system designed and built for maritime shipping efforts.

The period of significance for the Belt Line Railroad and its trestle begins in 1932, when construction of the route was completed, and extends to 1970, when other ports in California began adding the on-berth railroad systems to their facilities. The railroad is eligible at a state level for its association with the first inland port built in California, its role during World War II Navy use, and its on-berth design.

In addition, the Port of Stockton played an important role in the development of California's transportation history and the railroad and its trestle would likely be considered a contributing element of a potential Port of Stockton East district, should one be developed in the future. It retains the feeling and association with the Port of Stockton, as well as its original setting, location, design, materials and workmanship within the larger framework of the Port of Stockton.

B11. Additional Resource Attributes: (List attributes and codes) None

***B12. References:**

Kennedy, John H., Douglas Pomeroy, John E. King, Karen E. Frye, Terry B. Witherspoon, David Batts, John Bock, Amy Cordle, Kris E. Kolassa, Robert Sculley, Randolph Varney, Tom Whitehead, Joe Holland, Sheryl Onopchenko, Eleanor Tiglao, Richard Grassetti, Steve Mikesell, Mary L. Maniery, and Cindy Baker

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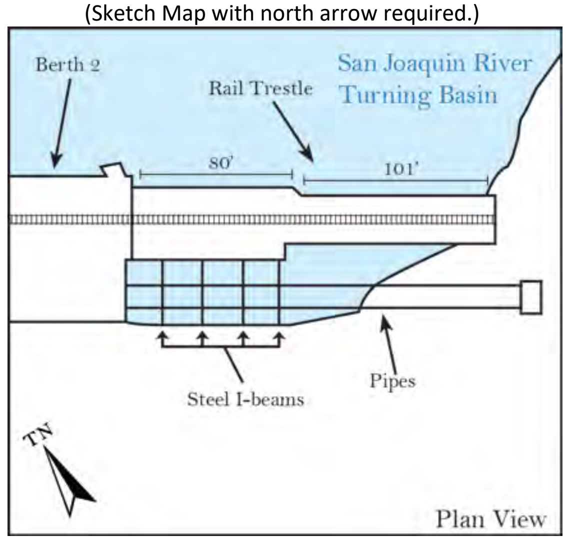
n.d. History of the Stockton Delta. Accessed 10/08/2019 at https://sanjoaquinmagazine.com/2015/05/history-of-the-stockton-delta-2/

Southern California Association of Governments (SCAG)
2018 Regional Transportation Plan and Sustainable Communities Strategy. Accessed electronically at https://www.sjcog.org/DocumentCenter/View/3731/Final-RTP-2018---Chapter-6-?bidId= on Oct 1, 2019.

B13. Remarks: Structural rehabilitation is necessary to continue normal port operation.

***B14. Evaluator:** Mary L. Maniery/ Geordon A. Taylor
PAR Environmental Services, Inc.
1906 21st Street
Sacramento, CA 95816
Date of Evaluation: 10/08/19

(Sketch Map with north arrow required.)

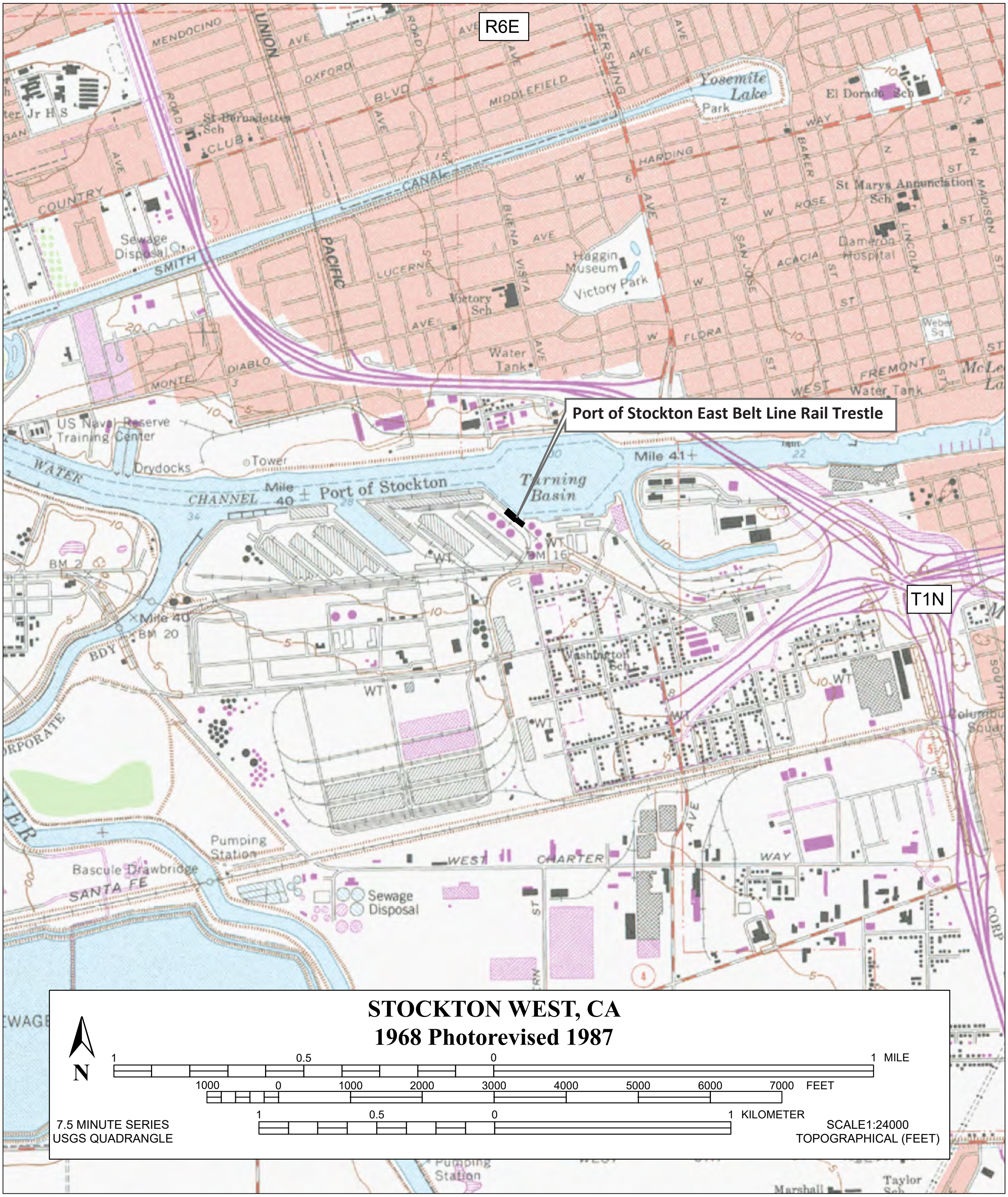


(This space reserved for official comments.)

State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
LOCATION MAP

Primary #
HRI #
Trinomial

Page 5 of 10 *Resource Name or # (Assigned By Recorder) Port of Stockton East Belt Line Rail Trestle
Map Name Stockton West 7.5 min *Scale 1:24000 *Date of Map 1968 Photorevised 1987



DPR 523J (1/95) *Required Information

*Resource Name or #: (Assigned by recorder) Port of Stockton East Belt Line Rail Trestle

L1. Historic and/or Common Name: Unknown

L2a. Portion Described: ☒Entire Resource ☒ Segment ☐Point Observation **Designation:**

b. Location of point or segment: Northwest terminus: Zone 10 ; 647619 mE/ 4201731 mN NAD
Southeast terminus: Zone 10 ; 647681 mE/ 4201677 mN NAD

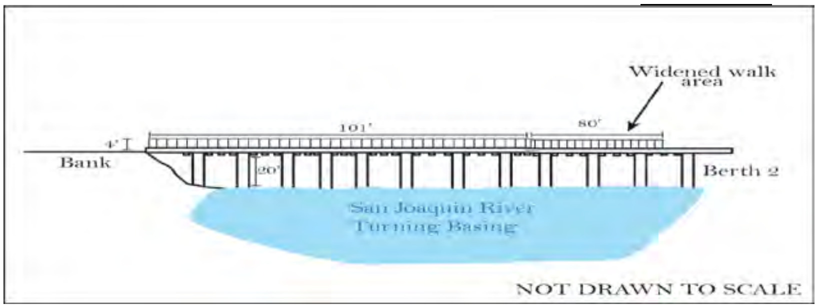
L3. Description: The single track trestle measures approximately 181 feet east/west, 35 feet north/south, and about 20 feet tall from the waterline. The construction of the trestle consists mainly of wood. There are approximately ten bents, each with at least five wooden, circular piles measuring approximately 18 inches in diameter and crossed at least once with a 2" x 6" sway brace. An additional 15 piles are placed in the slope of the bank. The wooden caps consist of 6"x 4" beams that span about 20 feet and span perpendicular to the rail alignment and number three between each bent. The walkway along either side of the railroad measures four feet wide and is composed of pressure-treated 2" x 6" lumber. There are two eight-inch-diameter pipes that are affixed to the railing along the east side of the walkway. These appear to be for an industrial purpose related to the commercial berth and are not a structural component of the trestle. The walkway widens to create a platform at the northwestern end of the trestle and provides walking access to Berth 2. The platform and walkway are constructed with identical materials. The platform widens to about 40 feet, including the rail alignment. The entire structure is surrounded by a simple four-foot-tall wooden railing composed of 4" x 4" inch pressure treated lumber posts, 2" x 6" "L" shaped caps, and 2" x 4" inch foot boards. The cap and footboards are secured to the posts by 1" diameter bolts. The rail alignment trends through the center of the trestle and is a standard gauge rail width. A fishplate along the rail has a date stamp of 1927, while the rail itself has a date stamp of 1929.

L4. Dimensions:

a. Top Width ~35 feet
b. Bottom Width N/A
c. Height or Depth ~20 feet
d. Length of Segment ~181 feet

L5. Associated Resources:

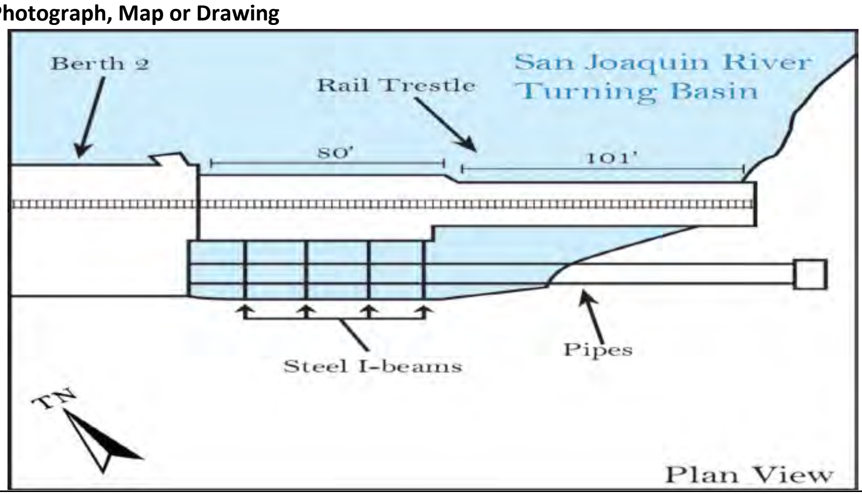
L4e. Sketch of Cross-Section (Include scale) **Facing:** W



L6. Setting: This resource is located in the Turning Basin of the Port of Stockton Deep Water Channel and along the eastern side of the eastern complex of the Port of Stockton. The complex is a commercial port with several textile warehouses, ship loading cranes and heavy machinery.

L7. Integrity Considerations: The wooden trestle has been derated by port authorities due to its deteriorated condition. Only empty rail cars are currently allowed to travel over the trestle. There are signs of shearing damage along the rail and, according to Berth 2 employees, several supporting posts in the bents have rotted away below the waterline; these were unobserved as the water line obscured them. Additionally, the trestle does not meet current seismic design standards. Temporary steel I-beams now aid its support.

L8a. Photograph, Map or Drawing



L8b. Description of Photo, Map or Drawing (View, scale, etc.)
See Primary Record and Continuation.

L9. Remarks: This resource is likely to be destroyed by natural forces and has lost its ability to perform its original function.

L10. Form Prepared by:
Geordon A. Taylor
PAR Environmental Services, Inc.
1906 21st St. Sacramento, CA 95811

L11. Date 09/26/19

Photos (Continued):

Underside of trestle; View: East; Date: 09/26/19; Acc. #: 19-0016-2285

Completion of the Belt Line Railroad by Mayor Con Franke (segment of the railroad is unidentified); Date: 1932: View: Unknown; Courtesy: Port of Stockton

State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
CONTINUATION SHEET

Primary # P –
HRI#
Trinomial CA –

Page 8 **of** 10 ***Resource Name or #:** (Assigned by recorder) Port of Stockton East Belt Line Rail Trestle
***Recorded by:** PAR Environmental Services, Inc. ***Date** 09/26/19 ☒Continuation ☐Update

Photos (Continued):

Overview of trestle; View: North; Date: 09/26/19; Acc. #: 19-0016-2288

Shearing damage along the western side of the trestle rail; View; North; Date 09/26/19; Acc. #: 19-0016-2295

Berth 2 and rail trestle junction; View: East; Date: 09/26/19; Acc. #: 19-0016-2280

State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
CONTINUATION SHEET

Primary # P –
HRI#
Trinomial CA –

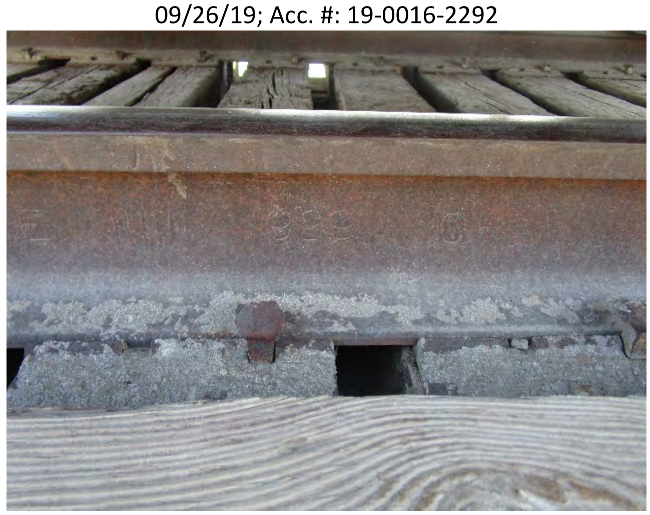
Page 9 **of** 10 ***Resource Name or #:** (Assigned by recorder) Port of Stockton East Belt Line Rail Trestle
***Recorded by:** PAR Environmental Services, Inc. ***Date** 09/26/19 ☒Continuation ☐Update

Photos (Continued):


Fishplate with 1927 date stamp; View: East; Date: 09/26/19; Acc. #: 19-0016-2291


Fishplate with 1927 date stamp; View: Detail; Date: 09/26/19; Acc. #: 19-0016-2292


Rail section with 1929 date stamp; View: East; Date: 09/26/19; Acc. #: 19-0016-2293


Rail section with 1929 date stamp; View: Detail; Date: 09/26/19; Acc. #: 19-0016-2294

Photos (Continued):

Port of Stockton East; View: East; Date: circa 1930; Courtesy: Port of Stockton

Port of Stockton East; View: East; Date: 2002; Courtesy: Port of Stockton

Appendix E
Air Quality and Greenhouse Gas Emissions

Appendix E. Air Quality and Greenhouse Gas Emissions Methodology and Calculation Tables

A detailed description of the Proposed Project is presented in the DEIR. In summary, the Proposed Project would redevelop the existing bulk cementitious material receiving and distribution terminal to improve operationally efficiency. As part of the proposed project, Berth 2 would be rehabilitated to support a new electric ship unloader with a greater capacity and reach to more efficiently service wider vessels. A portion of an existing rail trestle with limited weight bearing capacity would be replaced so that the trestle could accommodate full rail cars and an engine. Upland improvements to the storage, rail, and truck systems are also proposed to handle cementitious material more efficiently and at greater capacity.

This analysis quantified emissions associated with the CEQA Baseline in 2018, Analysis Year 1 in 2021, Analysis Year 5 in 2026, and Analysis Year 15 in 2036. Proposed Project impacts were assessed by quantifying the increment between each Analysis Year and the CEQA Baseline and comparing that increment to CEQA thresholds developed by the San Joaquin Air Pollution Control District (SJVAPCD), the Bay Area Air Quality Management District (BAAQMD), and the Sacramento Metro Air Pollution Control District (SMAPCD).

This section describes the methodology and key assumptions used to calculate air quality and greenhouse gas (GHG) emissions for the Proposed Project. Construction impact and calculation tables are presented in Appendix E1. Operation impact and calculation tables are presented in Appendix E2. The methodologies used to quantify emissions associated with construction and operation are presented below. Health risk is discussed qualitatively below.

Construction Emissions Methodology

Construction emissions would result from diesel-fueled construction equipment, marine vessels, and on-road vehicles, all of which emit criteria pollutants, diesel particulate (DPM), and GHGs. Land-based construction emissions for the Proposed Project were calculated using CalEEMod software, version 2016.3.2, which is approved by the SJVAPCD for construction projects (CalEEMod 2016). The construction schedule and equipment utilization, which form the basis for the emission calculations, are summarized in Appendix E1 as part of the CalEEMod output.

In addition to land-based construction sources, one ocean-going vessel (OGV) would deliver a new ship unloader during Phase III of construction. It would take up to 5 days to unload the new equipment, during which time the vessel would berth at the terminal. Two tugboats would assist the marine delivery vessel to and from berth. In addition, emissions associated with one tugboat were quantified during Phases II and IV to bring and take away a floating derrick barge. Since CalEEMod does not quantify marine source emissions, emissions associated the marine delivery vessel and tugboats were calculated outside of CalEEMod and added to the land-based emissions.

Operational Emissions

The Proposed Project would result in emissions of criteria pollutants, DPM, fugitive dust, and GHGs during operation. The following methodologies and key assumptions were used to quantify emissions and determine impacts.

On-Road Trucks

Diesel-fueled trucks would be used to transport product to the facility (receiving) and from the facility (shipping). Truck trips would result in criteria pollutant, DPM, GHG, and road dust emissions. The Proposed Project would result in an increase of up to 23,780 annual one-way trips above the CEQA Baseline by Analysis Year 15. This increase reflects both shipping and receiving of product. All truck trips would originate and end within approximately 40 miles of the Proposed Project, within the SJVAPCD. Truck activity and transit distances were provided by Lehigh and are detailed in Appendix E2. Exhaust, brake wear and tire wear emission factors reflect existing USEPA on-road engine standards per California Air Resources Board's (CARB) On-Road EMFAC Database (CARB 2017a). Entrained road dust emissions were quantified per CARB's methodology for entrained road dust (CARB 2016). Emissions were calculated by multiplying truck activity by the emission factors.

Ocean Going Vessels

OGVs would be used to transport product to the facility (receiving) from international locations and would result in criteria pollutant, DPM, and GHG emissions. Since OGVs would pass through both the SJVAPCD and the BAAQMD, emissions were quantified in each district.

The Proposed Project would result in an increase of up to 39 new annual ship calls above the CEQA Baseline by Analysis Year 15. Although the number of OGV calls is expected to increase, the hoteling time of each OGV at berth would be reduced from 4 days to 2 days in Analysis Year 5 and remain unchanged for future analysis years. This reduction in hoteling time would be realized once the proposed new ship unloader is installed, increasing the efficiency of the unloading process. Since hoteling time is directly related to OGV emissions at berth, the decrease in hoteling time would serve to attenuate the impacts of increased OGV calls. OGV activity and anticipated hoteling time were based on project requirements and are detailed in Appendix E2.

Vessel engine characteristics, speed, and transit distance in each transit zone (i.e. the harbor, the San Joaquin River, the San Francisco Bay, and the ocean) were based on similar vessels operating at the Port of Stockton. Emission factors for OGV propulsion engines, auxiliary engines, and auxiliary boilers were obtained from emission inventories at other ports for similar vessels (POLB 2018). OGV emissions at berth and in each transit zone were quantified by multiplying OGV activity, the engine energy demand, and the emission factor. Criteria pollutant emissions were quantified for OGV activity at berth and during transit from the Port through the San Francisco Bay. GHG emissions were quantified for OGV activity at the berth and during transit from the Port to the California state boundary. Engine characteristics, emission factors, and transit times are detail in Appendix E2.

Tugboats

Two tugboats would assist each OGV during maneuvering in the harbor and during transit from the Rough and Ready Island to the berth. In Analysis Year 15, up to 40 barges would also be used to ship product from the facility to locations in the San Francisco Bay. Since barges are not self-propelled, one tugboat would be necessary to push each barge during transit. Tugboats are diesel-fueled and would generate criteria pollutant, DPM, and GHG emissions. Tugboats assisting OGVs would operate within the SJVAPCD. Tugboats assisting barges would pass through both the SJVAPCD and the BAAQMD.

Tugboat calculations reflect typical tugboats operating at the Port of Stockton. Information regarding tugboat engines and model years was obtained from tugboat details for Brusco tugboats operating at the Port. Tugboat emission factors reflect USEPA standards and are based on the tugboat engine model year and Tier as detailed in Appendix E2. Tugboat engine load factors were obtained from the California Air Resources Board (CARB 2011). Tugboat emissions were quantified by multiplying the emission factors by the tugboat engine energy demand, which is based on activity, engine characteristics, and engine load factors. Appendix E2 details tugboat engine characteristics, activity, and energy demand used in the calculations.

Rail

Locomotives would be used to transport product via rail cars from the facility (shipping). Rail activity would include operation of line-haul and switcher trains. Union Pacific (UP) line-haul trains would provide long-distance freight transportation. Central California Traction Company's (CCT), the switcher operator at the Port, switcher trains would be used to assemble/disassemble line-haul trains and provide short transport to the UP line-haul connection. Both line-haul and switcher locomotives are diesel-fueled and would result in criteria pollutant, DPM, and GHG emissions. The Proposed Project would result in an increase of product being shipped via rail and in an increase in the number of rail cars per train, resulting in an increase of up to 121 annual on-way train trips above the CEQA baseline by Analysis Year 15.

Line-haul trains would transport the product from the Port of Stockton to Union Pacific Railroad's J.R. Davis Yard in Roseville, California; line-haul locomotive emissions were therefore calculated within the SJVAPCD and the SMAPCD. Switcher locomotives would operate within or near the Port of Stockton, in the SJVAPCD; switcher emissions were therefore calculated within the SJVAPCD.

Line-haul locomotive emissions were calculated based on locomotive fuel use and locomotive emission factors. Fuel use was determined based on the number and weight of filled rail cars needed to transport product, the number and weight of locomotives needed to transport the required rail cars, rail transit distance, and a fuel consumption factor reported by CARB for line-haul locomotives (CARB 2017b). Line-haul locomotive emission factors for each engine tier were obtained by calculating an average of the USEPA line-haul emission factors weighted by CARB's line-haul engine tier distribution for each Analysis Year (CARB 2017b).

Switcher locomotive emissions were calculated based on locomotive fuel use and locomotive emission factors. Fuel use was calculated based on the number of switcher locomotives required for a switch, an average number of switching events, and average switching time based on past Port documents and confirmed by Lehigh. Switcher locomotive emission factors reflect USEPA short-haul distance locomotive emission factors for each engine tier (CARB 2017c), weighted by the CCT's switcher engine distribution (CCT 2018).

Worker Vehicles

Worker vehicles result in criteria pollutant and GHG emissions. The number of workers is anticipated to increase by 5 above the CEQA baseline. It was assumed that all worker vehicle emissions would occur within the SJVAPCD. Emissions were quantified using CARB's On-Road EMFAC Database (CARB 2017a).

Conveying/Loading

Particulate emissions would result from on-site, enclosed conveying of received product from trucks and OGVs and loading of product onto trucks, rail, and barges for shipment. All conveying and loading equipment would be powered by electric motors and as such would not generate emissions associated with fuel combustion. Particulate emissions were and will continue to be controlled with air quality control systems permitted by the SJVAPCD. Particulate emissions were quantified based on receiving (conveying) and shipping (loading) activity in each analysis year and on emission factors stipulated in the facility's SJVAPCD air quality permits for conveying and loading activities (SJVAPCD 2019). Activity and emission factors are detailed in Appendix E2.

On-site Mobile Sources

On-site mobile sources include a shuttle wagon used to push/pull rail cars through the rail car loading station, front-end loaders used in OGV cleanup and inside storage bunkers, forklifts, a sweeper, and a manlift. The forklifts, sweeper and, manlift activity would not change due to the Proposed Project and their emissions were not quantified. The shuttle wagon and front-end loaders activity would increase with the Proposed Project. The shuttle wagon and front-end loaders are diesel-fueled equipment and as such would generate criteria pollutant, DPM, and GHG emissions. Although the front-end loaders would be used to handle product, their activity would not result in additional fugitive dust emissions. Fugitive dust emissions resulting from front-end loaders operating within enclosed bunkers would be controlled by the SJVAPCD permitted air control systems discussed under the Conveying/Loading source category above. Front-end loaders operating during OGV clean-up would operate inside 50-foot deep OGV holds; the depth of the holds would preclude fugitive dust emissions from being released outside of the hold.

Electricity Consumption

Indirect GHG emissions would result from the offsite production of purchased electricity. GHG emission factors associated with electricity consumption were obtained from The Climate Registry (TCR 2019). Electricity consumption was provided by Lehigh (Lehigh 2019).

Health Risk

Impacts to sensitive receptors are typically evaluated in terms of exposure to toxic air contaminants (TAC). CARB classifies DMP as a TAC and uses PM10 emissions from diesel exhaust as a surrogate for DPM. Health effects from carcinogenic TACs are described in terms of individual cancer risk, which is based on a 30-year lifetime exposure to TACs.

Proposed Project construction activities would result in temporary DPM emissions, from the combustion of diesel fuel in off-road construction equipment engines and on-road trucks, of less than 0.2 tons per year. The Proposed Project construction period of approximately 1260 days, spread over 5 years, would be much less than the 30 years typically used for risk determination. These emissions would be comparable to other recent Port of Stockton projects (i.e., Contanda EIR) for which cancer risk was quantified to be below the SJVAQPCD's threshold of 20 in a million.

Operation of the Proposed Project would result in incremental DPM emissions from trucks, OGVs, rail, and other diesel-fueled equipment of less than 0.2 tons per year. These emissions would be substantially less than other recent Port of Stockton projects (i.e., Contanda EIR) for which cancer risk was quantified to be below the SJVAQPCD's threshold of 20 in a million.

Finally, CARB has determined that TAC impacts are localized in nature and that exposure from TACs decline by approximately 70 percent at 500 feet from the emissions source (CARB 2005). The nearest sensitive receptors are residences located more than 1000 feet south of the project site.

References

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POLB 2018. Port of Long Beach Air Emissions Inventory - 2018. September 2019. Last accessed December 2019: http://www.polb.com/environment/air/emissions.asp.

SJVAPCD 2019. San Joaquin Valley Air Pollution Control District. Permit and Permit application. Lehigh Stockton ATC Application 2019-1216 Final.pdf.

TCR 2019. The Climate Registry. 2019 Climate Registry Default Emission Factors, Table 3.1, Default Factors for Calculating Emissions from Grid Electricity by eGrid Subregion. CAMX subregion. May 29, 2019.

Appendix E1. Construction Calculations

Table E1.1.

Significance Thresholds (ton/yr)

	PM10	PM2.5	NOX	SOX	CO	VOC
	15	15	10	27	100	10

Source:

SJVAPCD. Air Quality Thresholds of Significance – Criteria Pollutants. March 19, 2015.
http://www.valleyair.org/transportation/ceqa_idx.htm

NAAQS/CAAQS Screening Level (lb/day) - Onsite emissions

	PM10	PM2.5	NOX	SOX	CO	VOC
	100	100	100	100	100	100

Source:

SJVAPCD. Air Quality Thresholds of Significance – Criteria Pollutants. March 19, 2015.
http://www.valleyair.org/transportation/ceqa_idx.htm

Table E1.2.

Annual Construction Emissions Without Mitigation

	PM10 (ton/yr)	PM2.5 (ton/yr)	NOX (ton/yr)	SOX (ton/yr)	CO (ton/yr)	VOC (ton/yr)
2020 Land-Based Source Emissions	0.26	0.16	3.39	0.01	2.34	0.33
2020 Marine Source Emissions	0.00	0.00	0.02	0.00	0.01	0.00
2021 Land-Based Source Emissions	0.31	0.19	3.83	0.01	3.09	0.36
2021 Marine Source Emissions	0.02	0.02	1.23	0.05	0.16	0.06
2022 Land-Based Source Emissions	0.40	0.27	5.24	0.01	4.85	0.53
2022 Marine Source Emissions	0.00	0.00	0.02	0.00	0.01	0.00
2023 Land-Based Source Emissions	0.24	0.20	3.85	0.01	3.59	0.42
2023 Marine Source Emissions	0.00	0.00	0.00	0.00	0.00	0.00
2024 Land-Based Source Emissions	0.06	0.05	0.92	0.00	0.90	0.10
2024 Marine Source Emissions	0.00	0.00	0.00	0.00	0.00	0.00
2020 Total	0.26	0.16	3.42	0.01	2.35	0.33
2021 Total	0.34	0.21	5.07	0.06	3.24	0.42
2022 Total	0.40	0.28	5.26	0.01	4.86	0.54
2023 Total	0.24	0.20	3.85	0.01	3.59	0.42
2024 Total	0.06	0.05	0.92	0.00	0.90	0.10
Significance Threshold	15	15	10	27	100	10
Significant?	**No**	**No**	**No**	**No**	**No**	**No**

Notes:

Emissions might not add precisely due to rounding.

Table E1.3.
Average Day Onsite Construction Emissions Without Mitigation

	PM10 Exhaust (lb/day)	PM2.5 Exhaust (lb/day)	NOX (lb/day)	SOX (lb/day)	CO (lb/day)	VOC (lb/day)
2020 Land-Based Source Emissions	1.22	1.08	24.58	0.03	16.50	2.31
2020 Marine Source Emissions	0.00	0.00	0.02	0.00	0.01	0.00
2021 Land-Based Source Emissions	1.00	0.90	20.25	0.03	16.51	1.80
2021 Marine Source Emissions	0.11	0.10	6.23	0.28	0.59	0.27
2022 Land-Based Source Emissions	1.62	1.49	30.04	0.05	28.21	3.00
2022 Marine Source Emissions	0.00	0.00	0.02	0.00	0.01	0.00
2023 Land-Based Source Emissions	1.30	1.19	24.54	0.04	22.31	2.57
2023 Marine Source Emissions	0.00	0.00	0.00	0.00	0.00	0.00
2024 Land-Based Source Emissions	1.18	1.08	23.05	0.04	22.15	2.44
2024 Marine Source Emissions	0.00	0.00	0.00	0.00	0.00	0.00
2020 Total	1.22	1.08	24.60	0.03	16.51	2.31
2021 Total	1.11	1.00	26.48	0.31	17.10	2.07
2022 Total	1.62	1.49	30.05	0.05	28.22	3.00
2023 Total	1.30	1.19	24.54	0.04	22.31	2.57
2024 Total	1.18	1.08	23.05	0.04	22.15	2.44
Significance Threshold	100	100	100	100	100	100
Significant?	**No**	**No**	**No**	**No**	**No**	**No**

Notes:

Emissions might not add precisely due to rounding.

Table E1.4.
Annual GHG Construction Emissions Without Mitigation

Source Category	CO2 (mty)	CH4 (mty)	N2O (mty)	CO2e (mty)
Construction				
2020 Land-Based Source Emissions	509	0	0	511
2020 Marine Source Emissions	1	0	0	2
2021 Land-Based Source Emissions	656	0	0	660
2021 Marine Source Emissions	300	0	0	304
2022 Land-Based Source Emissions	858	0	0	864
2022 Marine Source Emissions	1	0	0	2
2023 Land-Based Source Emissions	567	0	0	571
2023 Marine Source Emissions	0	0	0	0
2024 Land-Based Source Emissions	143	0	0	144
2024 Marine Source Emissions	0	0	0	0
2020 Total	510	0	0	513
2021 Total	956	0	0	963
2022 Total	860	0	0	865
2023 Total	567	0	0	571
2024 Total	143	0	0	144
Amortized Annual Construction	**101**	**0**	**0**	**102**

Notes:

Emissions might not add precisely due to rounding.

Construction emissions were amortized over 30 years.

Total annual GHG emissions are the sum of amortized construction and annual operational emissions.

Lehigh Construction

San Joaquin Valley Unified APCD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Heavy Industry	350.00	1000sqft	8.03	350,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.7	**Precipitation Freq (Days)**	45
Climate Zone	2			**Operational Year**	2025
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Based on information provided by Lehigh.

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment - Provided by Lehigh

Off-road Equipment - Provided by Lehigh

Trips and VMT - Provided by Lehigh.

Demolition -

Vehicle Trips -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	118.00
tblConstructionPhase	NumDays	230.00	238.00
tblConstructionPhase	NumDays	20.00	118.00
tblConstructionPhase	NumDays	230.00	238.00
tblConstructionPhase	NumDays	20.00	541.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblTripsAndVMT	HaulingTripNumber	72.00	375.00
tblTripsAndVMT	HaulingTripNumber	0.00	13.00
tblTripsAndVMT	HaulingTripNumber	40.00	68.00
tblTripsAndVMT	HaulingTripNumber	0.00	107.00
tblTripsAndVMT	HaulingTripNumber	49.00	254.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					

2020	0.3326	3.3929	2.3417	5.7500e-003	0.1184	0.1388	0.2572	0.0311	0.1289	0.1600	0.0000	508.5381	508.5381	0.1088	0.0000	511.2585
2021	0.3570	3.8330	3.0850	7.3100e-003	0.1596	0.1550	0.3145	0.0428	0.1426	0.1854	0.0000	656.2138	656.2138	0.1443	0.0000	659.8215
2022	0.5345	5.2354	4.8469	9.6800e-003	0.1487	0.2542	0.4028	0.0400	0.2345	0.2745	0.0000	858.3868	858.3868	0.2126	0.0000	863.7027
2023	0.4174	3.8493	3.5850	6.5300e-003	0.0424	0.1993	0.2418	0.0109	0.1846	0.1955	0.0000	566.6291	566.6291	0.1634	0.0000	570.7149
2024	0.1003	0.9156	0.8997	1.6500e-003	0.0120	0.0460	0.0580	3.0600e-003	0.0427	0.0457	0.0000	143.2029	143.2029	0.0414	0.0000	144.2368
Maximum	**0.5345**	**5.2354**	**4.8469**	**9.6800e-003**	**0.1596**	**0.2542**	**0.4028**	**0.0428**	**0.2345**	**0.2745**	**0.0000**	**858.3868**	**858.3868**	**0.2126**	**0.0000**	**863.7027**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.3326	3.3929	2.3417	5.7500e-003	0.1184	0.1388	0.2572	0.0311	0.1289	0.1600	0.0000	508.5377	508.5377	0.1088	0.0000	511.2581
2021	0.3570	3.8330	3.0850	7.3100e-003	0.1596	0.1550	0.3145	0.0428	0.1426	0.1854	0.0000	656.2134	656.2134	0.1443	0.0000	659.8210
2022	0.5345	5.2354	4.8469	9.6800e-003	0.1487	0.2542	0.4028	0.0400	0.2345	0.2745	0.0000	858.3861	858.3861	0.2126	0.0000	863.7019
2023	0.4174	3.8493	3.5850	6.5300e-003	0.0424	0.1993	0.2418	0.0109	0.1846	0.1955	0.0000	566.6284	566.6284	0.1634	0.0000	570.7142
2024	0.1003	0.9156	0.8997	1.6500e-003	0.0120	0.0460	0.0580	3.0600e-003	0.0427	0.0457	0.0000	143.2028	143.2028	0.0414	0.0000	144.2366
Maximum	**0.5345**	**5.2354**	**4.8469**	**9.6800e-003**	**0.1596**	**0.2542**	**0.4028**	**0.0428**	**0.2345**	**0.2745**	**0.0000**	**858.3861**	**858.3861**	**0.2126**	**0.0000**	**863.7019**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	**Start Date**	**End Date**	**Maximum Unmitigated ROG + NOX (tons/quarter)**	**Maximum Mitigated ROG + NOX (tons/quarter)**
1	**4-1-2020**	**6-30-2020**	1.0496	1.0496

2	**7-1-2020**	**9-30-2020**	1.2436	1.2436
3	**10-1-2020**	**12-31-2020**	1.4311	1.4311
4	**1-1-2021**	**3-31-2021**	1.2715	1.2715
5	**4-1-2021**	**6-30-2021**	0.8268	0.8268
6	**7-1-2021**	**9-30-2021**	0.2747	0.2747
7	**10-1-2021**	**12-31-2021**	1.8115	1.8115
8	**1-1-2022**	**3-31-2022**	1.6806	1.6806
9	**4-1-2022**	**6-30-2022**	1.6961	1.6961
10	**7-1-2022**	**9-30-2022**	1.2284	1.2284
11	**10-1-2022**	**12-31-2022**	1.1694	1.1694
12	**1-1-2023**	**3-31-2023**	1.0554	1.0554
13	**4-1-2023**	**6-30-2023**	1.0670	1.0670
14	**7-1-2023**	**9-30-2023**	1.0787	1.0787
15	**10-1-2023**	**12-31-2023**	1.0789	1.0789
16	**1-1-2024**	**3-31-2024**	1.0035	1.0035
17	**4-1-2024**	**6-30-2024**	0.0110	0.0110
		Highest	1.8115	1.8115

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.6106	3.0000e-005	3.2100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	6.2500e-003	6.2500e-003	2.0000e-005	0.0000	6.6600e-003
Energy	0.0352	0.3198	0.2686	1.9200e-003		0.0243	0.0243		0.0243	0.0243	0.0000	1,208.5162	1,208.5162	0.0456	0.0144	1,213.9562
Mobile	0.1410	1.4603	1.4934	8.7200e-003	0.5838	5.0500e-003	0.5889	0.1569	4.7300e-003	0.1616	0.0000	810.6602	810.6602	0.0419	0.0000	811.7081

Waste						0.0000	0.0000		0.0000	0.0000	88.0981	0.0000	88.0981	5.2065	0.0000	218.2593
Water						0.0000	0.0000		0.0000	0.0000	25.6777	127.4055	153.0832	2.6431	0.0635	238.0737
Total	**1.7868**	**1.7801**	**1.7653**	**0.0106**	**0.5838**	**0.0294**	**0.6132**	**0.1569**	**0.0291**	**0.1860**	**113.7758**	**2,146.5881**	**2,260.3639**	**7.9371**	**0.0779**	**2,482.0039**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.6106	3.0000e-005	3.2100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	6.2500e-003	6.2500e-003	2.0000e-005	0.0000	6.6600e-003
Energy	0.0352	0.3198	0.2686	1.9200e-003		0.0243	0.0243		0.0243	0.0243	0.0000	1,208.5162	1,208.5162	0.0456	0.0144	1,213.9562
Mobile	0.1410	1.4603	1.4934	8.7200e-003	0.5838	5.0500e-003	0.5889	0.1569	4.7300e-003	0.1616	0.0000	810.6602	810.6602	0.0419	0.0000	811.7081
Waste						0.0000	0.0000		0.0000	0.0000	88.0981	0.0000	88.0981	5.2065	0.0000	218.2593
Water						0.0000	0.0000		0.0000	0.0000	25.6777	127.4055	153.0832	2.6431	0.0635	238.0737
Total	**1.7868**	**1.7801**	**1.7653**	**0.0106**	**0.5838**	**0.0294**	**0.6132**	**0.1569**	**0.0291**	**0.1860**	**113.7758**	**2,146.5881**	**2,260.3639**	**7.9371**	**0.0779**	**2,482.0039**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Upland Improvements	Demolition	4/1/2020	8/15/2020	6	118	

2	Waterfront Berth2	Building Construction	8/16/2020	5/20/2021	6	238	
3	Ship Unloader	Demolition	5/21/2021	10/5/2021	6	118	
4	Rail Loadout Trestle	Building Construction	10/6/2021	7/10/2022	6	238	
5	Storage Dome	Demolition	7/11/2022	4/1/2024	6	541	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Upland Improvements	Rubber Tired Dozers	1	8.00	97	0.40
Upland Improvements	Excavators	1	8.00	120	0.38
Upland Improvements	Cranes	2	8.00	225	0.29
Upland Improvements	Other Construction Equipment	1	8.00	100	0.42
Upland Improvements	Welders	4	8.00	16	0.45
Upland Improvements	Generator Sets	3	8.00	16	0.74
Upland Improvements	Skid Steer Loaders	1	8.00	100	0.37
Waterfront Berth2	Rubber Tired Dozers	1	8.00	97	0.40
Waterfront Berth2	Excavators	1	8.00	120	0.38
Waterfront Berth2	Cranes	3	8.00	225	0.29
Waterfront Berth2	Bore/Drill Rigs	1	8.00	100	0.50
Waterfront Berth2	Skid Steer Loaders	3	8.00	100	0.37
Ship Unloader	Cranes	1	8.00	225	0.29
Ship Unloader	Skid Steer Loaders	1	8.00	100	0.37
Rail Loadout Trestle	Tractors/Loaders/Backhoes	1	8.00	120	0.37
Rail Loadout Trestle	Excavators	4	8.00	120	0.38
Rail Loadout Trestle	Cranes	2	8.00	225	0.29

Rail Loadout Trestle	Other Construction Equipment	3	8.00	100	0.42
Rail Loadout Trestle	Forklifts	2	8.00	150	0.20
Rail Loadout Trestle	Skid Steer Loaders	2	8.00	100	0.37
Storage Dome	Welders	1	8.00	16	0.45
Storage Dome	Tractors/Loaders/Backhoes	1	8.00	120	0.37
Storage Dome	Excavators	1	8.00	120	0.38
Storage Dome	Cranes	2	8.00	225	0.29
Storage Dome	Other Construction Equipment	1	8.00	100	0.42
Storage Dome	Other Construction Equipment	2	8.00	100	0.42
Storage Dome	Forklifts	1	8.00	150	0.20
Storage Dome	Skid Steer Loaders	1	8.00	100	0.37
Storage Dome	Generator Sets	2	8.00	16	0.74

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Upland Improvements	13	33.00	0.00	375.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Waterfront Berth2	9	147.00	57.00	13.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Ship Unloader	2	5.00	0.00	68.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Rail Loadout Trestle	15	147.00	57.00	107.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Storage Dome	12	30.00	0.00	254.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Upland Improvements - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Fugitive Dust					7.8900e-003	0.0000	7.8900e-003	1.1900e-003	0.0000	1.1900e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1459	1.3750	0.8642	1.7600e-003		0.0679	0.0679		0.0636	0.0636	0.0000	148.1228	148.1228	0.0408	0.0000	149.1429
Total	**0.1459**	**1.3750**	**0.8642**	**1.7600e-003**	**7.8900e-003**	**0.0679**	**0.0758**	**1.1900e-003**	**0.0636**	**0.0648**	**0.0000**	**148.1228**	**148.1228**	**0.0408**	**0.0000**	**149.1429**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.5000e-003	0.0522	7.5900e-003	1.5000e-004	3.2100e-003	1.8000e-004	3.3900e-003	8.8000e-004	1.7000e-004	1.0500e-003	0.0000	14.2458	14.2458	8.0000e-004	0.0000	14.2656
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.2300e-003	5.5900e-003	0.0568	1.5000e-004	0.0156	1.1000e-004	0.0157	4.1400e-003	1.0000e-004	4.2400e-003	0.0000	13.9781	13.9781	4.0000e-004	0.0000	13.9881
Total	**9.7300e-003**	**0.0578**	**0.0644**	**3.0000e-004**	**0.0188**	**2.9000e-004**	**0.0191**	**5.0200e-003**	**2.7000e-004**	**5.2900e-003**	**0.0000**	**28.2239**	**28.2239**	**1.2000e-003**	**0.0000**	**28.2538**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					7.8900e-003	0.0000	7.8900e-003	1.1900e-003	0.0000	1.1900e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1459	1.3750	0.8642	1.7600e-003		0.0679	0.0679		0.0636	0.0636	0.0000	148.1226	148.1226	0.0408	0.0000	149.1427

Total	**0.1459**	**1.3750**	**0.8642**	**1.7600e-003**	**7.8900e-003**	**0.0679**	**0.0758**	**1.1900e-003**	**0.0636**	**0.0648**	**0.0000**	**148.1226**	**148.1226**	**0.0408**	**0.0000**	**149.1427**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.5000e-003	0.0522	7.5900e-003	1.5000e-004	3.2100e-003	1.8000e-004	3.3900e-003	8.8000e-004	1.7000e-004	1.0500e-003	0.0000	14.2458	14.2458	8.0000e-004	0.0000	14.2656
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.2300e-003	5.5900e-003	0.0568	1.5000e-004	0.0156	1.1000e-004	0.0157	4.1400e-003	1.0000e-004	4.2400e-003	0.0000	13.9781	13.9781	4.0000e-004	0.0000	13.9881
Total	**9.7300e-003**	**0.0578**	**0.0644**	**3.0000e-004**	**0.0188**	**2.9000e-004**	**0.0191**	**5.0200e-003**	**2.7000e-004**	**5.2900e-003**	**0.0000**	**28.2239**	**28.2239**	**1.2000e-003**	**0.0000**	**28.2538**

3.3 Waterfront Berth2 - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1269	1.5249	1.0824	2.0400e-003		0.0679	0.0679		0.0624	0.0624	0.0000	178.8728	178.8728	0.0579	0.0000	180.3191
Total	**0.1269**	**1.5249**	**1.0824**	**2.0400e-003**		**0.0679**	**0.0679**		**0.0624**	**0.0624**	**0.0000**	**178.8728**	**178.8728**	**0.0579**	**0.0000**	**180.3191**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.0000e-005	9.0000e-004	1.3000e-004	0.0000	1.0000e-004	0.0000	1.0000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.2449	0.2449	1.0000e-005	0.0000	0.2452
Vendor	0.0133	0.4094	0.0776	9.6000e-004	0.0223	2.2600e-003	0.0246	6.4400e-003	2.1600e-003	8.6000e-003	0.0000	90.8076	90.8076	7.1700e-003	0.0000	90.9869
Worker	0.0367	0.0249	0.2529	6.9000e-004	0.0693	4.9000e-004	0.0698	0.0184	4.6000e-004	0.0189	0.0000	62.2662	62.2662	1.7800e-003	0.0000	62.3107
Total	**0.0500**	**0.4352**	**0.3307**	**1.6500e-003**	**0.0917**	**2.7500e-003**	**0.0945**	**0.0249**	**2.6200e-003**	**0.0275**	**0.0000**	**153.3186**	**153.3186**	**8.9600e-003**	**0.0000**	**153.5428**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1269	1.5249	1.0824	2.0400e-003		0.0679	0.0679		0.0624	0.0624	0.0000	178.8726	178.8726	0.0579	0.0000	180.3189
Total	**0.1269**	**1.5249**	**1.0824**	**2.0400e-003**		**0.0679**	**0.0679**		**0.0624**	**0.0624**	**0.0000**	**178.8726**	**178.8726**	**0.0579**	**0.0000**	**180.3189**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling	3.0000e-005	9.0000e-004	1.3000e-004	0.0000	1.0000e-004	0.0000	1.0000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.2449	0.2449	1.0000e-005	0.0000	0.2452
Vendor	0.0133	0.4094	0.0776	9.6000e-004	0.0223	2.2600e-003	0.0246	6.4400e-003	2.1600e-003	8.6000e-003	0.0000	90.8076	90.8076	7.1700e-003	0.0000	90.9869
Worker	0.0367	0.0249	0.2529	6.9000e-004	0.0693	4.9000e-004	0.0698	0.0184	4.6000e-004	0.0189	0.0000	62.2662	62.2662	1.7800e-003	0.0000	62.3107
Total	**0.0500**	**0.4352**	**0.3307**	**1.6500e-003**	**0.0917**	**2.7500e-003**	**0.0945**	**0.0249**	**2.6200e-003**	**0.0275**	**0.0000**	**153.3186**	**153.3186**	**8.9600e-003**	**0.0000**	**153.5428**

3.3 Waterfront Berth2 - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1181	1.4104	1.0760	2.0700e-003		0.0605	0.0605		0.0557	0.0557	0.0000	181.9590	181.9590	0.0589	0.0000	183.4303
Total	**0.1181**	**1.4104**	**1.0760**	**2.0700e-003**		**0.0605**	**0.0605**		**0.0557**	**0.0557**	**0.0000**	**181.9590**	**181.9590**	**0.0589**	**0.0000**	**183.4303**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.0000e-005	8.4000e-004	1.3000e-004	0.0000	1.0000e-004	0.0000	1.0000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.2460	0.2460	1.0000e-005	0.0000	0.2463
Vendor	0.0110	0.3771	0.0688	9.6000e-004	0.0227	1.0600e-003	0.0237	6.5500e-003	1.0100e-003	7.5600e-003	0.0000	91.4888	91.4888	6.9900e-003	0.0000	91.6634

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Worker	0.0344	0.0225	0.2333	6.8000e-004	0.0705	4.9000e-004	0.0710	0.0187	4.5000e-004	0.0192	0.0000	61.1203	61.1203	1.6200e-003	0.0000	61.1607
Total	**0.0454**	**0.4004**	**0.3022**	**1.6400e-003**	**0.0933**	**1.5500e-003**	**0.0948**	**0.0253**	**1.4600e-003**	**0.0268**	**0.0000**	**152.8551**	**152.8551**	**8.6200e-003**	**0.0000**	**153.0704**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1181	1.4104	1.0760	2.0700e-003		0.0605	0.0605		0.0557	0.0557	0.0000	181.9588	181.9588	0.0589	0.0000	183.4301
Total	**0.1181**	**1.4104**	**1.0760**	**2.0700e-003**		**0.0605**	**0.0605**		**0.0557**	**0.0557**	**0.0000**	**181.9588**	**181.9588**	**0.0589**	**0.0000**	**183.4301**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.0000e-005	8.4000e-004	1.3000e-004	0.0000	1.0000e-004	0.0000	1.0000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.2460	0.2460	1.0000e-005	0.0000	0.2463
Vendor	0.0110	0.3771	0.0688	9.6000e-004	0.0227	1.0600e-003	0.0237	6.5500e-003	1.0100e-003	7.5600e-003	0.0000	91.4888	91.4888	6.9900e-003	0.0000	91.6634
Worker	0.0344	0.0225	0.2333	6.8000e-004	0.0705	4.9000e-004	0.0710	0.0187	4.5000e-004	0.0192	0.0000	61.1203	61.1203	1.6200e-003	0.0000	61.1607
Total	**0.0454**	**0.4004**	**0.3022**	**1.6400e-003**	**0.0933**	**1.5500e-003**	**0.0948**	**0.0253**	**1.4600e-003**	**0.0268**	**0.0000**	**152.8551**	**152.8551**	**8.6200e-003**	**0.0000**	**153.0704**

3.4 Ship Unloader - 2021

Unmitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Fugitive Dust					4.3500e-003	0.0000	4.3500e-003	6.6000e-004	0.0000	6.6000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0306	0.3698	0.2401	5.2000e-004		0.0150	0.0150		0.0138	0.0138	0.0000	45.6143	45.6143	0.0148	0.0000	45.9831
Total	**0.0306**	**0.3698**	**0.2401**	**5.2000e-004**	**4.3500e-003**	**0.0150**	**0.0194**	**6.6000e-004**	**0.0138**	**0.0145**	**0.0000**	**45.6143**	**45.6143**	**0.0148**	**0.0000**	**45.9831**

Unmitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Hauling	2.5000e-004	8.7000e-003	1.3200e-003	3.0000e-005	5.8000e-004	3.0000e-005	6.1000e-004	1.6000e-004	3.0000e-005	1.9000e-004	0.0000	2.5522	2.5522	1.4000e-004	0.0000	2.5557
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1500e-003	7.5000e-004	7.8000e-003	2.0000e-005	2.3600e-003	2.0000e-005	2.3700e-003	6.3000e-004	1.0000e-005	6.4000e-004	0.0000	2.0443	2.0443	5.0000e-005	0.0000	2.0456
Total	**1.4000e-003**	**9.4500e-003**	**9.1200e-003**	**5.0000e-005**	**2.9400e-003**	**5.0000e-005**	**2.9800e-003**	**7.9000e-004**	**4.0000e-005**	**8.3000e-004**	**0.0000**	**4.5964**	**4.5964**	**1.9000e-004**	**0.0000**	**4.6013**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Fugitive Dust					4.3500e-003	0.0000	4.3500e-003	6.6000e-004	0.0000	6.6000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0306	0.3698	0.2401	5.2000e-004		0.0150	0.0150		0.0138	0.0138	0.0000	45.6143	45.6143	0.0148	0.0000	45.9831
Total	**0.0306**	**0.3698**	**0.2401**	**5.2000e-004**	**4.3500e-003**	**0.0150**	**0.0194**	**6.6000e-004**	**0.0138**	**0.0145**	**0.0000**	**45.6143**	**45.6143**	**0.0148**	**0.0000**	**45.9831**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.5000e-004	8.7000e-003	1.3200e-003	3.0000e-005	5.8000e-004	3.0000e-005	6.1000e-004	1.6000e-004	3.0000e-005	1.9000e-004	0.0000	2.5522	2.5522	1.4000e-004	0.0000	2.5557
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1500e-003	7.5000e-004	7.8000e-003	2.0000e-005	2.3600e-003	2.0000e-005	2.3700e-003	6.3000e-004	1.0000e-005	6.4000e-004	0.0000	2.0443	2.0443	5.0000e-005	0.0000	2.0456
Total	**1.4000e-003**	**9.4500e-003**	**9.1200e-003**	**5.0000e-005**	**2.9400e-003**	**5.0000e-005**	**2.9800e-003**	**7.9000e-004**	**4.0000e-005**	**8.3000e-004**	**0.0000**	**4.5964**	**4.5964**	**1.9000e-004**	**0.0000**	**4.6013**

3.5 Rail Loadout Trestle - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1331	1.3889	1.2682	1.9900e-003		0.0769	0.0769		0.0707	0.0707	0.0000	174.5428	174.5428	0.0565	0.0000	175.9541
Total	**0.1331**	**1.3889**	**1.2682**	**1.9900e-003**		**0.0769**	**0.0769**		**0.0707**	**0.0707**	**0.0000**	**174.5428**	**174.5428**	**0.0565**	**0.0000**	**175.9541**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.3000e-004	4.3200e-003	6.5000e-004	1.0000e-005	7.6000e-004	1.0000e-005	7.7000e-004	1.9000e-004	1.0000e-005	2.1000e-004	0.0000	1.2655	1.2655	7.0000e-005	0.0000	1.2672
Vendor	6.8900e-003	0.2357	0.0430	6.0000e-004	0.0142	6.6000e-004	0.0148	4.0900e-003	6.3000e-004	4.7300e-003	0.0000	57.1805	57.1805	4.3700e-003	0.0000	57.2897
Worker	0.0215	0.0141	0.1458	4.2000e-004	0.0441	3.0000e-004	0.0444	0.0117	2.8000e-004	0.0120	0.0000	38.2002	38.2002	1.0100e-003	0.0000	38.2254
Total	**0.0285**	**0.2541**	**0.1895**	**1.0300e-003**	**0.0590**	**9.7000e-004**	**0.0600**	**0.0160**	**9.2000e-004**	**0.0169**	**0.0000**	**96.6462**	**96.6462**	**5.4500e-003**	**0.0000**	**96.7823**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1331	1.3889	1.2682	1.9900e-003		0.0769	0.0769		0.0707	0.0707	0.0000	174.5426	174.5426	0.0565	0.0000	175.9538
Total	**0.1331**	**1.3889**	**1.2682**	**1.9900e-003**		**0.0769**	**0.0769**		**0.0707**	**0.0707**	**0.0000**	**174.5426**	**174.5426**	**0.0565**	**0.0000**	**175.9538**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.3000e-004	4.3200e-003	6.5000e-004	1.0000e-005	7.6000e-004	1.0000e-005	7.7000e-004	1.9000e-004	1.0000e-005	2.1000e-004	0.0000	1.2655	1.2655	7.0000e-005	0.0000	1.2672
Vendor	6.8900e-003	0.2357	0.0430	6.0000e-004	0.0142	6.6000e-004	0.0148	4.0900e-003	6.3000e-004	4.7300e-003	0.0000	57.1805	57.1805	4.3700e-003	0.0000	57.2897
Worker	0.0215	0.0141	0.1458	4.2000e-004	0.0441	3.0000e-004	0.0444	0.0117	2.8000e-004	0.0120	0.0000	38.2002	38.2002	1.0100e-003	0.0000	38.2254
Total	**0.0285**	**0.2541**	**0.1895**	**1.0300e-003**	**0.0590**	**9.7000e-004**	**0.0600**	**0.0160**	**9.2000e-004**	**0.0169**	**0.0000**	**96.6462**	**96.6462**	**5.4500e-003**	**0.0000**	**96.7823**

3.5 Rail Loadout Trestle - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2625	2.7057	2.7244	4.3200e-003		0.1450	0.1450		0.1334	0.1334	0.0000	379.3955	379.3955	0.1227	0.0000	382.4631
Total	**0.2625**	**2.7057**	**2.7244**	**4.3200e-003**		**0.1450**	**0.1450**		**0.1334**	**0.1334**	**0.0000**	**379.3955**	**379.3955**	**0.1227**	**0.0000**	**382.4631**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling	2.6000e-004	8.5600e-003	1.3600e-003	3.0000e-005	8.4000e-004	3.0000e-005	8.7000e-004	2.3000e-004	2.0000e-005	2.5000e-004	0.0000	2.7154	2.7154	1.5000e-004	0.0000	2.7190
Vendor	0.0139	0.4853	0.0862	1.3000e-003	0.0308	1.2500e-003	0.0320	8.9000e-003	1.1900e-003	0.0101	0.0000	123.1183	123.1183	9.1500e-003	0.0000	123.3470
Worker	0.0432	0.0273	0.2887	8.9000e-004	0.0958	6.4000e-004	0.0964	0.0255	5.9000e-004	0.0261	0.0000	80.0548	80.0548	1.9600e-003	0.0000	80.1038
Total	**0.0574**	**0.5211**	**0.3763**	**2.2200e-003**	**0.1274**	**1.9200e-003**	**0.1293**	**0.0346**	**1.8000e-003**	**0.0364**	**0.0000**	**205.8885**	**205.8885**	**0.0113**	**0.0000**	**206.1698**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2625	2.7057	2.7244	4.3200e-003		0.1450	0.1450		0.1334	0.1334	0.0000	379.3950	379.3950	0.1227	0.0000	382.4626
Total	**0.2625**	**2.7057**	**2.7244**	**4.3200e-003**		**0.1450**	**0.1450**		**0.1334**	**0.1334**	**0.0000**	**379.3950**	**379.3950**	**0.1227**	**0.0000**	**382.4626**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.6000e-004	8.5600e-003	1.3600e-003	3.0000e-005	8.4000e-004	3.0000e-005	8.7000e-004	2.3000e-004	2.0000e-005	2.5000e-004	0.0000	2.7154	2.7154	1.5000e-004	0.0000	2.7190
Vendor	0.0139	0.4853	0.0862	1.3000e-003	0.0308	1.2500e-003	0.0320	8.9000e-003	1.1900e-003	0.0101	0.0000	123.1183	123.1183	9.1500e-003	0.0000	123.3470

Worker	0.0432	0.0273	0.2887	8.9000e-004	0.0958	6.4000e-004	0.0964	0.0255	5.9000e-004	0.0261	0.0000	80.0548	80.0548	1.9600e-003	0.0000	80.1038
Total	**0.0574**	**0.5211**	**0.3763**	**2.2200e-003**	**0.1274**	**1.9200e-003**	**0.1293**	**0.0346**	**1.8000e-003**	**0.0364**	**0.0000**	**205.8885**	**205.8885**	**0.0113**	**0.0000**	**206.1698**

3.6 Storage Dome - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.4800e-003	0.0000	1.4800e-003	2.2000e-004	0.0000	2.2000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2063	1.9953	1.6907	2.9500e-003		0.1071	0.1071		0.0991	0.0991	0.0000	255.4586	255.4586	0.0782	0.0000	257.4129
Total	**0.2063**	**1.9953**	**1.6907**	**2.9500e-003**	**1.4800e-003**	**0.1071**	**0.1086**	**2.2000e-004**	**0.0991**	**0.0993**	**0.0000**	**255.4586**	**255.4586**	**0.0782**	**0.0000**	**257.4129**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.5000e-004	8.2300e-003	1.3100e-003	3.0000e-005	1.7800e-003	2.0000e-005	1.8000e-003	4.5000e-004	2.0000e-005	4.8000e-004	0.0000	2.6095	2.6095	1.4000e-004	0.0000	2.6130
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.1200e-003	5.1200e-003	0.0542	1.7000e-004	0.0180	1.2000e-004	0.0181	4.7800e-003	1.1000e-004	4.8900e-003	0.0000	15.0347	15.0347	3.7000e-004	0.0000	15.0439
Total	**8.3700e-003**	**0.0134**	**0.0555**	**2.0000e-004**	**0.0198**	**1.4000e-004**	**0.0199**	**5.2300e-003**	**1.3000e-004**	**5.3700e-003**	**0.0000**	**17.6443**	**17.6443**	**5.1000e-004**	**0.0000**	**17.6569**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.4800e-003	0.0000	1.4800e-003	2.2000e-004	0.0000	2.2000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2063	1.9953	1.6907	2.9500e-003		0.1071	0.1071		0.0991	0.0991	0.0000	255.4583	255.4583	0.0782	0.0000	257.4126
Total	**0.2063**	**1.9953**	**1.6907**	**2.9500e-003**	**1.4800e-003**	**0.1071**	**0.1086**	**2.2000e-004**	**0.0991**	**0.0993**	**0.0000**	**255.4583**	**255.4583**	**0.0782**	**0.0000**	**257.4126**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.5000e-004	8.2300e-003	1.3100e-003	3.0000e-005	1.7800e-003	2.0000e-005	1.8000e-003	4.5000e-004	2.0000e-005	4.8000e-004	0.0000	2.6095	2.6095	1.4000e-004	0.0000	2.6130
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.1200e-003	5.1200e-003	0.0542	1.7000e-004	0.0180	1.2000e-004	0.0181	4.7800e-003	1.1000e-004	4.8900e-003	0.0000	15.0347	15.0347	3.7000e-004	0.0000	15.0439
Total	**8.3700e-003**	**0.0134**	**0.0555**	**2.0000e-004**	**0.0198**	**1.4000e-004**	**0.0199**	**5.2300e-003**	**1.3000e-004**	**5.3700e-003**	**0.0000**	**17.6443**	**17.6443**	**5.1000e-004**	**0.0000**	**17.6569**

3.6 Storage Dome - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Fugitive Dust					3.0800e-003	0.0000	3.0800e-003	4.7000e-004	0.0000	4.7000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.4014	3.8282	3.4799	6.1400e-003		0.1991	0.1991		0.1844	0.1844	0.0000	531.2742	531.2742	0.1626	0.0000	535.3380
Total	**0.4014**	**3.8282**	**3.4799**	**6.1400e-003**	**3.0800e-003**	**0.1991**	**0.2021**	**4.7000e-004**	**0.1844**	**0.1849**	**0.0000**	**531.2742**	**531.2742**	**0.1626**	**0.0000**	**535.3380**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.5000e-004	0.0116	2.2700e-003	6.0000e-005	1.9400e-003	2.0000e-005	1.9600e-003	5.1000e-004	2.0000e-005	5.3000e-004	0.0000	5.2489	5.2489	2.0000e-004	0.0000	5.2539
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0157	9.5300e-003	0.1028	3.3000e-004	0.0374	2.4000e-004	0.0377	9.9400e-003	2.2000e-004	0.0102	0.0000	30.1060	30.1060	6.8000e-004	0.0000	30.1230
Total	**0.0160**	**0.0211**	**0.1050**	**3.9000e-004**	**0.0394**	**2.6000e-004**	**0.0396**	**0.0105**	**2.4000e-004**	**0.0107**	**0.0000**	**35.3548**	**35.3548**	**8.8000e-004**	**0.0000**	**35.3769**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.0800e-003	0.0000	3.0800e-003	4.7000e-004	0.0000	4.7000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.4014	3.8282	3.4799	6.1400e-003		0.1991	0.1991		0.1844	0.1844	0.0000	531.2736	531.2736	0.1626	0.0000	535.3373

Total	**0.4014**	**3.8282**	**3.4799**	**6.1400e-003**	**3.0800e-003**	**0.1991**	**0.2021**	**4.7000e-004**	**0.1844**	**0.1849**	**0.0000**	**531.2736**	**531.2736**	**0.1626**	**0.0000**	**535.3373**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.5000e-004	0.0116	2.2700e-003	6.0000e-005	1.9400e-003	2.0000e-005	1.9600e-003	5.1000e-004	2.0000e-005	5.3000e-004	0.0000	5.2489	5.2489	2.0000e-004	0.0000	5.2539
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0157	9.5300e-003	0.1028	3.3000e-004	0.0374	2.4000e-004	0.0377	9.9400e-003	2.2000e-004	0.0102	0.0000	30.1060	30.1060	6.8000e-004	0.0000	30.1230
Total	**0.0160**	**0.0211**	**0.1050**	**3.9000e-004**	**0.0394**	**2.6000e-004**	**0.0396**	**0.0105**	**2.4000e-004**	**0.0107**	**0.0000**	**35.3548**	**35.3548**	**8.8000e-004**	**0.0000**	**35.3769**

3.6 Storage Dome - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					7.8000e-004	0.0000	7.8000e-004	1.2000e-004	0.0000	1.2000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0965	0.9106	0.8751	1.5600e-003		0.0460	0.0460		0.0426	0.0426	0.0000	134.5508	134.5508	0.0412	0.0000	135.5795
Total	**0.0965**	**0.9106**	**0.8751**	**1.5600e-003**	**7.8000e-004**	**0.0460**	**0.0468**	**1.2000e-004**	**0.0426**	**0.0427**	**0.0000**	**134.5508**	**134.5508**	**0.0412**	**0.0000**	**135.5795**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	9.0000e-005	2.8800e-003	5.6000e-004	1.0000e-005	1.7100e-003	0.0000	1.7100e-003	4.3000e-004	0.0000	4.3000e-004	0.0000	1.3190	1.3190	5.0000e-005	0.0000	1.3203
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.7100e-003	2.1700e-003	0.0240	8.0000e-005	9.4700e-003	6.0000e-005	9.5300e-003	2.5200e-003	6.0000e-005	2.5700e-003	0.0000	7.3332	7.3332	1.6000e-004	0.0000	7.3371
Total	**3.8000e-003**	**5.0500e-003**	**0.0246**	**9.0000e-005**	**0.0112**	**6.0000e-005**	**0.0112**	**2.9500e-003**	**6.0000e-005**	**3.0000e-003**	**0.0000**	**8.6522**	**8.6522**	**2.1000e-004**	**0.0000**	**8.6573**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					7.8000e-004	0.0000	7.8000e-004	1.2000e-004	0.0000	1.2000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0965	0.9106	0.8751	1.5600e-003		0.0460	0.0460		0.0426	0.0426	0.0000	134.5506	134.5506	0.0412	0.0000	135.5793
Total	**0.0965**	**0.9106**	**0.8751**	**1.5600e-003**	**7.8000e-004**	**0.0460**	**0.0468**	**1.2000e-004**	**0.0426**	**0.0427**	**0.0000**	**134.5506**	**134.5506**	**0.0412**	**0.0000**	**135.5793**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling	9.0000e-005	2.8800e-003	5.6000e-004	1.0000e-005	1.7100e-003	0.0000	1.7100e-003	4.3000e-004	0.0000	4.3000e-004	0.0000	1.3190	1.3190	5.0000e-005	0.0000	1.3203
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.7100e-003	2.1700e-003	0.0240	8.0000e-005	9.4700e-003	6.0000e-005	9.5300e-003	2.5200e-003	6.0000e-005	2.5700e-003	0.0000	7.3332	7.3332	1.6000e-004	0.0000	7.3371
Total	**3.8000e-003**	**5.0500e-003**	**0.0246**	**9.0000e-005**	**0.0112**	**6.0000e-005**	**0.0112**	**2.9500e-003**	**6.0000e-005**	**3.0000e-003**	**0.0000**	**8.6522**	**8.6522**	**2.1000e-004**	**0.0000**	**8.6573**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.1410	1.4603	1.4934	8.7200e-003	0.5838	5.0500e-003	0.5889	0.1569	4.7300e-003	0.1616	0.0000	810.6602	810.6602	0.0419	0.0000	811.7081
Unmitigated	0.1410	1.4603	1.4934	8.7200e-003	0.5838	5.0500e-003	0.5889	0.1569	4.7300e-003	0.1616	0.0000	810.6602	810.6602	0.0419	0.0000	811.7081

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Heavy Industry	525.00	525.00	525.00	1,532,743	1,532,743
Total	525.00	525.00	525.00	1,532,743	1,532,743

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Heavy Industry	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Heavy Industry	0.527283	0.030499	0.173802	0.106831	0.014644	0.004405	0.020987	0.111827	0.001768	0.001413	0.005010	0.000913	0.000619

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	860.3707	860.3707	0.0389	8.0500e-003	863.7419
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	860.3707	860.3707	0.0389	8.0500e-003	863.7419
NaturalGas Mitigated	0.0352	0.3198	0.2686	1.9200e-003		0.0243	0.0243		0.0243	0.0243	0.0000	348.1455	348.1455	6.6700e-003	6.3800e-003	350.2143
NaturalGas Unmitigated	0.0352	0.3198	0.2686	1.9200e-003		0.0243	0.0243		0.0243	0.0243	0.0000	348.1455	348.1455	6.6700e-003	6.3800e-003	350.2143

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Heavy Industry	6.524e+006	0.0352	0.3198	0.2686	1.9200e-003		0.0243	0.0243		0.0243	0.0243	0.0000	348.1455	348.1455	6.6700e-003	6.3800e-003	350.2143
Total		**0.0352**	**0.3198**	**0.2686**	**1.9200e-003**		**0.0243**	**0.0243**		**0.0243**	**0.0243**	**0.0000**	**348.1455**	**348.1455**	**6.6700e-003**	**6.3800e-003**	**350.2143**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Heavy Industry	6.524e+006	0.0352	0.3198	0.2686	1.9200e-003		0.0243	0.0243		0.0243	0.0243	0.0000	348.1455	348.1455	6.6700e-003	6.3800e-003	350.2143
Total		**0.0352**	**0.3198**	**0.2686**	**1.9200e-003**		**0.0243**	**0.0243**		**0.0243**	**0.0243**	**0.0000**	**348.1455**	**348.1455**	**6.6700e-003**	**6.3800e-003**	**350.2143**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Heavy Industry	2.9575e+006	860.3707	0.0389	8.0500e-003	863.7419

Total		**860.3707**	**0.0389**	**8.0500e-003**	**863.7419**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Heavy Industry	2.9575e+006	860.3707	0.0389	8.0500e-003	863.7419
Total		**860.3707**	**0.0389**	**8.0500e-003**	**863.7419**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.6106	3.0000e-005	3.2100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	6.2500e-003	6.2500e-003	2.0000e-005	0.0000	6.6600e-003
Unmitigated	1.6106	3.0000e-005	3.2100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	6.2500e-003	6.2500e-003	2.0000e-005	0.0000	6.6600e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.2433					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.3669					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	3.0000e-004	3.0000e-005	3.2100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	6.2500e-003	6.2500e-003	2.0000e-005	0.0000	6.6600e-003
Total	**1.6106**	**3.0000e-005**	**3.2100e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**6.2500e-003**	**6.2500e-003**	**2.0000e-005**	**0.0000**	**6.6600e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.2433					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.3669					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	3.0000e-004	3.0000e-005	3.2100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	6.2500e-003	6.2500e-003	2.0000e-005	0.0000	6.6600e-003
Total	**1.6106**	**3.0000e-005**	**3.2100e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**6.2500e-003**	**6.2500e-003**	**2.0000e-005**	**0.0000**	**6.6600e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	153.0832	2.6431	0.0635	238.0737
Unmitigated	153.0832	2.6431	0.0635	238.0737

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Heavy Industry	80.9375 / 0	153.0832	2.6431	0.0635	238.0737
Total		**153.0832**	**2.6431**	**0.0635**	**238.0737**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Heavy Industry	80.9375 / 0	153.0832	2.6431	0.0635	238.0737
Total		**153.0832**	**2.6431**	**0.0635**	**238.0737**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	88.0981	5.2065	0.0000	218.2593
Unmitigated	88.0981	5.2065	0.0000	218.2593

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e

Land Use	tons	MT/yr			
General Heavy Industry	434	88.0981	5.2065	0.0000	218.2593
Total		**88.0981**	**5.2065**	**0.0000**	**218.2593**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Heavy Industry	434	88.0981	5.2065	0.0000	218.2593
Total		**88.0981**	**5.2065**	**0.0000**	**218.2593**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Appendix E2. Operation Calculations

Table E2.1.

Significance Thresholds (ton/yr)

	PM10	PM2.5	NOX	SOX	CO	VOC
	15	15	10	27	100	10

Source:

SJVAPCD. Air Quality Thresholds of Significance – Criteria Pollutants. March 19, 2015.
http://www.valleyair.org/transportation/ceqa_idx.htm

Notes:

Thresholds apply to both on-site and off-site emissions. PM emissions include exhaust and fugitive dust.

NAAQS/CAAQS Screening Level (lb/day)

	PM10	PM2.5	NOX	SOX	CO	VOC
	100	100	100	100	100	100

Source:

SJVAPCD. Ambient Air Quality Analysis Project Daily Emissions Assessment. May 31, 2013.
http://www.valleyair.org/transportation/ceqa_idx.htm

Notes:

Thresholds apply to on-site emissions only.

Table E2.2.
Annual Operational Emissions in SJVAPCD - Project (ton/yr)

Source Category	PM10	PM2.5	NOX	SOX	CO	VOC
Baseline						
Trucks	0.22	0.06	3.99	0.01	0.62	0.19
Ships at Berth	0.06	0.05	2.68	0.15	0.24	0.12
Ships Maneuvering and Transit	0.03	0.03	1.49	0.04	0.18	0.12
Tugboats	0.04	0.04	0.84	0.00	0.46	0.05
Rail	0.02	0.02	0.67	0.00	0.18	0.03
Employee Vehicles	0.01	0.00	0.02	0.00	0.17	0.00
Conveying/Loading	0.84	0.84				
Mobile Onsite	0.00	0.00	0.03	0.00	0.30	0.01
Baseline Total	1.21	1.04	9.72	0.21	2.15	0.51
Proposed Project Year 1						
Trucks	0.31	0.09	5.89	0.02	0.87	0.23
Ships at Berth	0.07	0.06	3.12	0.18	0.28	0.14
Ships Maneuvering and Transit	0.07	0.06	3.48	0.09	0.42	0.28
Tugboats	0.10	0.09	1.96	0.00	1.06	0.11
Rail	0.05	0.05	1.96	0.00	0.60	0.09
Employee Vehicles	0.01	0.00	0.01	0.00	0.17	0.00
Conveying/Loading	1.19	1.19				
Mobile Onsite	0.00	0.00	0.07	0.00	0.54	0.02
Year 1 Total	1.80	1.55	16.50	0.30	3.96	0.87
Proposed Project Year 5						
Trucks	0.50	0.13	6.91	0.02	0.73	0.05
Ships at Berth	0.12	0.11	5.80	0.34	0.53	0.25
Ships Maneuvering and Transit	0.12	0.11	6.46	0.18	0.79	0.52
Tugboats	0.19	0.17	3.65	0.00	1.97	0.20
Rail	0.03	0.03	1.34	0.00	0.59	0.06
Employee Vehicles	0.01	0.00	0.01	0.00	0.11	0.00
Conveying/Loading	2.12	2.12				
Mobile Onsite	0.01	0.01	0.14	0.00	0.96	0.05
Year 5 Total	3.10	2.69	24.30	0.54	5.69	1.13
Proposed Project Year 15						
Trucks	0.57	0.15	7.79	0.02	0.82	0.06
Ships at Berth	0.15	0.14	7.14	0.41	0.65	0.31
Ships Maneuvering and Transit	0.15	0.14	7.95	0.22	0.97	0.64
Tugboats	0.04	0.03	1.71	0.01	4.44	0.18
Rail	0.03	0.03	1.11	0.00	0.74	0.06
Employee Vehicles	0.01	0.00	0.00	0.00	0.08	0.00
Conveying/Loading	2.77	2.77				
Mobile Onsite	0.01	0.01	0.17	0.00	1.15	0.06
Year 15 Total	3.72	3.26	25.87	0.66	8.85	1.30
CEQA Impacts						
Significance Threshold	15	15	10	27	100	10
Proposed Project Year 1 Increment	0.6	0.5	6.8	0.1	1.8	0.4
Proposed Project Year 5 Increment	1.9	1.6	14.6	0.3	3.5	0.6
Proposed Project Year 15 Increment	2.5	2.2	16.1	0.5	6.7	0.8
Significant?	**No**	**No**	**Yes**	**No**	**No**	**No**

Notes:

Emissions might not add precisely due to rounding.

Year 1 reflects activities before installation of the new unloader.

Year 5 reflects activities after installation of the new unloader.

Year 15 is the horizon year that reflects projected activities.

PM10 and PM2.5 truck emissions include exhaust and road dust.

Tugboat emissions reflect OGV and barge assist.

Rail emissions reflect switcher and line-haul locomotives.

Conveying/loading reflect material handling dust emissions from bunkers and dome.

Mobile onsite sources include shuttle wagon and front end loaders.

Table E2.3.
Average Daily Operational Emissions, On-Site - Project (lb/day)

Source Category	**PM10**	**PM2.5**	**NOX**	**SOX**	**CO**	**VOC**
Baseline						
Trucks On-Site	0.3	0.1	0.9	0.0	0.2	0.1
Ships at Berth	0.3	0.3	14.7	0.8	1.3	0.6
Tugboats at Berth	0.0	0.0	0.5	0.0	0.3	0.0
Rail On-Site	0.0	0.0	0.9	0.0	0.2	0.1
Conveying/Loading	4.6	4.6				
Mobile Onsite	0.0	0.0	0.2	0.0	1.6	0.0
Baseline Total	5.3	5.0	17.1	0.9	3.7	0.8
Proposed Project Year 1						
Trucks On-Site	0.4	0.1	1.0	0.0	0.2	0.1
Ships at Berth	0.4	0.3	17.1	1.0	1.6	0.7
Tugboats at Berth	0.1	0.1	1.1	0.0	0.6	0.1
Rail On-Site	0.1	0.1	2.9	0.0	0.8	0.2
Conveying/Loading	6.5	6.5				
Mobile Onsite	0.0	0.0	0.4	0.0	3.0	0.1
Year 1 Total	7.4	7.1	22.5	1.0	6.1	1.1
Proposed Project Year 5						
Trucks On-Site	0.6	0.1	1.6	0.0	0.2	0.0
Ships at Berth	0.7	0.6	31.8	1.8	2.9	1.4
Tugboats at Berth	0.1	0.1	2.0	0.0	1.1	0.1
Rail On-Site	0.1	0.0	1.4	0.0	0.4	0.1
Conveying/Loading	11.6	11.6				
Mobile Onsite	0.0	0.0	0.7	0.0	5.3	0.3
Year 5 Total	13.1	12.5	37.6	1.9	9.9	1.9
Proposed Project Year 15						
Trucks On-Site	0.7	0.1	1.9	0.0	0.3	0.0
Ships at Berth	0.8	0.8	39.1	2.3	3.6	1.7
Tugboats at Berth	0.0	0.0	0.7	0.0	1.9	0.1
Rail On-Site	0.1	0.1	1.8	0.0	0.5	0.1
Conveying/Loading	15.2	15.2				
Mobile Onsite	0.0	0.0	0.9	0.0	6.3	0.3
Year 15 Total	16.8	16.1	44.4	2.3	12.5	2.2
CEQA Impacts						
Significance Threshold	100	100	100	100	100	100
Proposed Project Year 1 Increment	2.1	2.1	5.4	0.1	2.5	0.3
Proposed Project Year 5 Increment	7.8	7.5	20.5	1.0	6.2	1.0
Proposed Project Year 15 Increment	11.5	11.1	27.4	1.4	8.9	1.4
Significant?	**No**	**No**	**No**	**No**	**No**	**No**

Notes:

Emissions might not add precisely due to rounding.

Truck emissions include truck transit on-site and truck idling on-site.

Tugboat emissions reflect OGV and barge assist.

Rail emissions reflect 1 switching event onsite.

PM10 and PM2.5 truck emissions include onsite exhaust and road dust.

Conveying/loading reflect material handling dust emissions from bunkers and dome.

Mobile onsite sources include shuttle wagon and front end loaders.

Table E2.4.
Annual Construction and Operation GHG Emissions in CA - Proposed Project (mty)

Source Category	CO2	CH4	N2O	CO2e
Baseline				
Trucks	1,099	0.00	0.17	1,152
Ships at Berth	224	0.00	0.01	227
Ships Maneuvering and Transit	2,069	0.04	0.10	2,102
Tugboats	54	0.00	0.00	55
Rail	218	0.02	0.01	220
Employee Vehicles	40	0.00	0.00	40
Mobile Onsite	73	0.00	0.00	73
Electricity Consumption	677	0.04	0.01	680
Baseline Total	4,453	0.11	0.30	4,549
Proposed Project Year 1				
Trucks	1,634	0.00	0.26	1,714
Ships at Berth	261	0.00	0.01	265
Ships Maneuvering and Transit	4,829	0.10	0.24	4,905
Tugboats	126	0.00	0.01	128
Rail	706	0.06	0.02	713
Employee Vehicles	54	0.00	0.00	55
Mobile Onsite	161	0.01	0.00	162
Electricity Consumption	1,262	0.08	0.01	1,266
Year 1 Total	9,032	0.25	0.55	9,207
Proposed Project Year 5				
Trucks	2,367	0.00	0.37	2,482
Ships at Berth	484	0.00	0.02	492
Ships Maneuvering and Transit	8,968	0.19	0.44	9,109
Tugboats	233	0.00	0.01	237
Rail	895	0.07	0.02	903
Employee Vehicles	46	0.00	0.00	46
Mobile Onsite	288	0.02	0.01	290
Electricity Consumption	2,940	0.18	0.02	2,951
Year 5 Total	16,221	0.47	0.90	16,510
Proposed Project Year 15				
Trucks	2,087	0.00	0.33	2,189
Ships at Berth	596	0.00	0.03	605
Ships Maneuvering and Transit	11,037	0.24	0.54	11,211
Tugboats	1,193	0.01	0.06	1,211
Rail	1,118	0.09	0.03	1,129
Employee Vehicles	38	0.00	0.00	38
Mobile Onsite	352	0.02	0.01	355
Electricity Consumption	3,647	0.23	0.03	3,660
Year 15 Total	20,068	0.59	1.02	20,397
Proposed Project Year 1 Increment	4,579	0.14	0.24	4,658
Proposed Project Year 5 Increment	11,768	0.36	0.60	11,961
Proposed Project Year 15 Increment	15,615	0.47	0.72	15,848
Construction				
2020 Construction	510	0.11	0.00	513
2021 Construction	956	0.15	0.01	963
2022 Construction	860	0.21	0.00	865
2023 Construction	567	0.16	0.00	571
2024 Construction	143	0.04	0.00	144
Amortized Annual Construction	**101**	**0.02**	**0.00**	**102**

Notes:
Emissions might not add precisely due to rounding.
Year 1 reflects activities before installation of the new unloader.
Year 5 reflects activities after installation of the new unloader.
Year 15 is the horizon year that reflects projected activities.
Tugboat emissions reflect OGV and barge assist.
Rail emissions reflect switcher and line-haul locomotives.
Mobile onsite sources include shuttle wagon and front end loaders.

Table E2.5.

BAAQMD Significance Thresholds

Pollutant/Precursor	Maximum Annual Emissions (tpy)	Average Daily Emissions (lb/day)
ROG	10	54
Nox	10	54
PM10	15	82
PM2.5	10	54

Source:

Bay Area BAAQMD CEQA Guidelines 2017, Table 2-2.

Table E2.6.

Annual Operational Emissions - Project in BAAQMD (ton/yr)

Source Category	PM10	PM2.5	NOX	VOC
Baseline				
Ship Transit	0.07	0.07	3.75	0.35
Tugboats - barges	0.00	0.00	0.00	0.00
Truck Transit	0.00	0.00	0.00	0.00
Rail Transit	0.00	0.00	0.00	0.00
Baseline Total	0.07	0.07	3.75	0.35
Proposed Project Year 1				
Ship Transit	0.17	0.16	8.76	0.81
Tugboats - barges	0.00	0.00	0.00	0.00
Truck Transit	0.00	0.00	0.00	0.00
Rail Transit	0.00	0.00	0.00	0.00
Year 1 Total	0.17	0.16	8.76	0.81
Proposed Project Year 5				
Ship Transit	0.32	0.30	16.27	1.51
Tugboats - barges	0.00	0.00	0.00	0.00
Truck Transit	0.00	0.00	0.00	0.00
Rail Transit	0.00	0.00	0.00	0.00
Year 5 Total	0.32	0.30	16.27	1.51
Proposed Project Year 15				
Ship Transit	0.39	0.36	20.02	1.85
Tugboats - barges	0.05	0.04	2.18	0.23
Truck Transit	0.00	0.00	0.00	0.00
Rail Transit	0.00	0.00	0.00	0.00
Year 15 Total	0.44	0.41	22.20	2.08
CEQA Impacts				
BAAQMD Significance Threshold	15	10	10	10
Proposed Project Year 1 Increment	0.1	0.1	5.0	0.5
Proposed Project Year 5 Increment	0.2	0.2	12.5	1.2
Proposed Project Year 15 Increment	0.4	0.3	18.4	1.7
Significant?	**No**	**No**	**Yes**	**No**

Notes:

Emissions might not add precisely due to rounding.

No rail transit in BAAQMD. All rail goes through Roseville Rail yard in SMAQMD.

Table E2.7.

Daily Operational Emissions - Project in BAAQMD (lb/day)

Source Category	PM10	PM2.5	NOX	VOC
Baseline				
Ship Transit	0.40	0.37	20.57	1.90
Tugboats - barges	0.00	0.00	0.00	0.00
Truck Transit	0.00	0.00	0.00	0.00
Rail Transit	0.00	0.00	0.00	0.00
Baseline Total	0.40	0.37	20.57	1.90
Proposed Project Year 1				
Ship Transit	0.94	0.87	48.00	4.44
Tugboats - barges	0.00	0.00	0.00	0.00
Truck Transit	0.00	0.00	0.00	0.00
Rail Transit	0.00	0.00	0.00	0.00
Year 1 Total	0.94	0.87	48.00	4.44
Proposed Project Year 5				
Ship Transit	1.75	1.62	89.14	8.25
Tugboats - barges	0.00	0.00	0.00	0.00
Truck Transit	0.00	0.00	0.00	0.00
Rail Transit	0.00	0.00	0.00	0.00
Year 5 Total	1.75	1.62	89.14	8.25
Proposed Project Year 15				
Ship Transit	2.16	1.99	109.71	10.15
Tugboats - barges	0.27	0.24	11.94	1.26
Truck Transit	0.00	0.00	0.00	0.00
Rail Transit	0.00	0.00	0.00	0.00
Year 15 Total	2.42	2.23	121.65	11.41
CEQA Impacts				
BAAQMD Significance Threshold	82	54	54	54
Proposed Project Year 1 Increment	0.5	0.5	27.4	2.5
Proposed Project Year 5 Increment	1.3	1.2	68.6	6.3
Proposed Project Year 15 Increment	2.0	1.9	101.1	9.5
Significant?	**No**	**No**	**Yes**	**No**

Notes:

Emissions might not add precisely due to rounding.

No rail transit in BAAQMD.

Table E2.8.

SMAQMD Siginificance Thresholds

Pollutant/Precursor	Maximum Annual Emissions (tpy)	Average Daily Emissions (lb/day)
ROG	na	65
Nox	na	65
PM10	14.6	80
PM2.5	15	82

Source:

Sacramento Metropolitan SMAQMD CEQA Guidelines 2009, Revised November 2014, May 2015.

Table E2.9.

Annual Operational Emissions - Project in SMAQMD (ton/yr)

Source Category	**PM10**	**PM2.5**
Baseline		
Ship Transit	0.00	0.00
Tugboats - barges	0.00	0.00
Truck Transit	0.00	0.00
Rail Transit	0.01	0.01
Baseline Total	0.01	0.01
Proposed Project Year 1		
Ship Transit	0.00	0.00
Tugboats - barges	0.00	0.00
Truck Transit	0.00	0.00
Rail Transit	0.03	0.02
Year 1 Total	0.03	0.02
Proposed Project Year 5		
Ship Transit	0.00	0.00
Tugboats - barges	0.00	0.00
Truck Transit	0.00	0.00
Rail Transit	0.02	0.02
Year 5 Total	0.02	0.02
Proposed Project Year 15		
Ship Transit	0.00	0.00
Tugboats - barges	0.00	0.00
Truck Transit	0.00	0.00
Rail Transit	0.01	0.01
Year 15 Total	0.01	0.01
CEQA Impacts		
SMAPCD Significance Threshold	14.6	15
Proposed Project Year 1 Increment	0.0	0.0
Proposed Project Year 5 Increment	0.0	0.0
Proposed Project Year 15 Increment	0.0	0.0
Significant?	No	No

Notes:

Emissions might not add precisely due to rounding.

No vessel, tugboat or barge transit in SMAQMD.

Table E2.10.
Daily Operational Emissions - Project in SMAQMD (lb/day)

Source Category	PM10	PM2.5	NOX	VOC
Baseline				
Ship Transit	0.00	0.00	0.00	0.00
Tugboats - barges	0.00	0.00	0.00	0.00
Truck Transit	0.00	0.00	0.00	0.00
Rail Transit	0.07	0.06	3.32	0.11
Baseline Total	0.07	0.06	3.32	0.11
Proposed Project Year 1				
Ship Transit	0.00	0.00	0.00	0.00
Tugboats - barges	0.00	0.00	0.00	0.00
Truck Transit	0.00	0.00	0.00	0.00
Rail Transit	0.14	0.13	8.65	0.26
Year 1 Total	0.14	0.13	8.65	0.26
Proposed Project Year 5				
Ship Transit	0.00	0.00	0.00	0.00
Tugboats - barges	0.00	0.00	0.00	0.00
Truck Transit	0.00	0.00	0.00	0.00
Rail Transit	0.12	0.11	7.73	0.25
Year 5 Total	0.12	0.11	7.73	0.25
Proposed Project Year 15				
Ship Transit	0.00	0.00	0.00	0.00
Tugboats - barges	0.00	0.00	0.00	0.00
Truck Transit	0.00	0.00	0.00	0.00
Rail Transit	0.06	0.06	4.33	0.18
Year 15 Total	0.06	0.06	4.33	0.18
SMAPCD Significance Threshold	80	82	65	65
Proposed Project Year 1 Increment	0.1	0.1	5.3	0.1
Proposed Project Year 5 Increment	0.1	0.0	4.4	0.1
Proposed Project Year 15 Increment	0.0	0.0	1.0	0.1
Significant?	**No**	**No**	**No**	**No**

Notes:
Emissions might not add precisely due to rounding.
No vessel, tugboat or barge transit in SMAQMD.

Table E2.11.

Activity

				Truck Shipping Activity				Truck Receiving Activity				Vessel Receiving Activity			Barge Shipping Activity			Rail Shipping Activity			
	Year	**Total Volume (ton/yr)**	**Product**	Tons of Product (ton/yr)	Annual Truck Trips (1-way)	Daily Truck Trips (1-way)	Miles Traveled (1-way)	Tons of Product (ton/yr)	Annual Truck Trips (1-way)	Daily Truck Trips (1-way)	Miles Traveled (1-way)	Tons of Product (ton/yr)	Annual Ship Calls	Hoteling Time (hr/call)	Tons of Product (ton/yr)	Annual Barge Calls	Miles Traveled (1-way)	Tons of Product (ton/yr)	Annual Rail Car Trips (1-way)	Rail Cars per Train	Annual Train Trips (1-way)
Baseline	2018	883,793	cement/slag	505,432	18,720	72	30	0	0	0	0	316,698	9	96	0	0	0	61,663	587	5	117
Proposed Project																					
Year 1	2021	1,523,500	cement/slag	561,750	20,806	80	40	24,300	900	5	40	737,450	21	48	0	0	0	200,000	1,905	5	381
Year 5	2026	2,785,000	cement/slag	950,000	35,185	135	40	50,000	1,852	7	40	1,385,000	39	48	0	0	0	400,000	3,810	20	191
Year 15	2036	3,545,000	cement/slag	1,072,500	39,722	153	40	75,000	2,778	11	40	1,697,500	48	48	200,000	40	80	500,000	4,762	20	238

Source:

Operations Throuput Info Needs 11_12.docx. Provided by Lehigh.

Operations 11_12 - TKR112219.xlsx. Provided by Lehigh.

Email From: Richardson, Ted <tkrichardson@edg.net>, Sent: Monday, November 25, 2019 1:04 PM

Average truck transit distances provided by Anchor based on telephone conversations with Lehigh. E-mail: From: Lena DeSantis <lmdesantis@anchorqea.com>; Sent: Tuesday, December 17, 2019 12:02 PM; To: Lora Granovsky <lora.granovsky@ilancoenvironmental.com>; Subject: RE: Lehigh - operational questions summary

Rail transit distance provided by Anchor based on conversations with Lehigh. e-mail: From: Lena DeSantis <lmdesantis@anchorqea.com>; Sent: Tuesday, December 17, 2019 12:02 PM; To: Lora Granovsky <lora.granovsky@ilancoenvironmental.com>; Subject: RE: Lehigh - operational questions summary.

tons are short tons

Notes:

All calls are expressed in one-way moves.

Rail cars per train would increase from 5 to 20, in Years 5 and 15, following rail loadout upgrade.

Shipping = Loading = Out of Facility

Receiving = Conveying = Into Facility

Table E2.12.

OGV Main Engine Characteristics and Activity

Year	**Vessel Type**	**Engine Type**	**Engine Tier**	**Engine Rating (hp)**	**Engine Rating (kW)**	**Annual Calls**	**Annual Transits (1-way)**	**Berth Time (hr/call)**
Baseline	Handymax	propulsion	Tier I	11,394	8,500	9	18	96
Year 1	Handymax	propulsion	Tier I	11,394	8,500	21	42	48
Year 5	Handymax	propulsion	Tier I	11,394	8,500	39	78	48
Year 15	Handymax	propulsion	Tier I	11,394	8,500	48	96	48

Source:

Vessel and engine characteristics are based on the Holtrop & Mennen's Method predictions in MAN Diesel & Turbo, Propulsion Trends in Tankers. 2014. Last accesed November 2019 at:

https://marine.mandieselturbo.com/docs/librariesprovider6/technical-papers/propulsion-trends-in-tankers.pdf?sfvrsn=20

Activity provided by Lehigh: Operations 11_12 - TKR112219.xlsx.

Future years: Assumed no change to fleet mix, per Lehigh.

Engine Tier I is a conservative assumption.

Table E2.13.

OGV Average Aux Engine & Aux Boiler Loads

			Average Loads (kW)		
Year	**Vessel Type**	**Engine Type**	**Transit**	**Maneuvering**	**Berth**
Baseline	Handymax	Auxiliary Engine	313	822	210
Baseline	Handymax	Auxiliary Boiler	35	94	125
Year 1	Handymax	Auxiliary Engine	313	822	210
Year 1	Handymax	Auxiliary Boiler	35	94	125
Year 5	Handymax	Auxiliary Engine	313	822	210
Year 5	Handymax	Auxiliary Boiler	35	94	125
Year 15	Handymax	Auxiliary Engine	313	822	210
Year 15	Handymax	Auxiliary Boiler	35	94	125

Source:

POLB 2018 Emissions Inventory, Tables 2.5 and 2.8 for Bulk category.

http://www.polb.com/civica/filebank/blobdload.asp?BlobID=15271

Table E2.14.

OGV Maximum Rated Vessel Speed

Category	**Speed (knots)**
Handymax	15

Source:

Vessel and engine characteristics are based on MAN Diesel & Turbo, Propulsion Trends in Tankers. 2014. Last accesed November 2019 at:

https://marine.mandieselturbo.com/docs/librariesprovider6/technical-papers/propulsion-trends-in-tankers.pdf?sfvrsn=20

Table E2.15.
River/Harbor Information

	Maneuvering (Pilot to Berth)	Transit in SJVAPCD (San Joaquin River transit from Port to SJVAPCD Boundary)	Transit in BAAQMD (San Joaquin River transit from SJVAPCD boundary through SF Bay)	Ocean Transit (SF Bay to State Boundary)	Total Project
OGV					
Distance (nautical miles/1-way trip)	2.95	13	67	340	423
Allowed OGV Speed (knots)	2	8	6	13.9	
Transit Time (hr/call)	1.48	1.63	11.17	24.42	
Barge					
Distance (nautical miles/1-way trip)	2.95	13	55	0	71
Allowed Barge Speed (knots)	2	8	6	13.9	5.8
Transit Time (hr/call)	1.48	1.63	9.17	0.00	12.3

Source:
Maneuvering distance reflects distance from the Rough & Ready Island (at Burns Cutoff), where tugboats pick up vessels, plus the distance to the turning basin.

Distance from Rough & Ready Island (nm):	2.7
Distance to/in turning basin (nm):	0.25
Barges transit 1-way (miles):	80

Operations Throuput Info Needs 11_12.docx. Provided by Lehigh.
Operations 11_12 - TKR112219.xlsx. Provided by Lehigh.

Email From: Richardson, Ted <tkrichardson@edg.net>, Sent: Monday, November 25, 2019 1:04 PM

Table E2.16.
OGV Engine Emission Factors for 0.1% S MGO Fuel (g/kW-hr)

Engine	IMO Tier	Model Year	PM10	PM2.5	DPM	NOx	SOx	CO	HC	VOC	CO2	CH4	N2O
Slow Speed Diesel	Tier 0	≤1999	0.26	0.24	0.26	17	0.39	1.4	0.6	0.63	589	0.01	0.03
Medium Speed Diesel	Tier 0	≤1999	0.182	0.168	0.182	13.8	0.424	1.1	0.5	0.52	676	0.008	0.033
Slow Speed Diesel	Tier I	2000-2010	0.26	0.24	0.26	16.0	0.39	1.4	0.6	0.63	589	0.01	0.03
Medium Speed Diesel	Tier I	2000-2010	0.182	0.168	0.182	12.2	0.424	1.1	0.5	0.52	676	0.008	0.033
Slow Speed Diesel	Tier II	2011-2015	0.26	0.24	0.26	14.4	0.39	1.4	0.6	0.63	589	0.01	0.03
Medium Speed Diesel	Tier II	2011-2015	0.182	0.168	0.182	10.5	0.424	1.1	0.5	0.52	676	0.008	0.033
Slow Speed Diesel	Tier III	≥2016	0.26	0.24	0.26	3.4	0.39	1.4	0.6	0.63	589	0.01	0.03
Medium Speed Diesel	Tier III	≥2016	0.182	0.168	0.182	2.6	0.424	1.1	0.5	0.52	676	0.008	0.033
Gas Turbine	na	all	0.01	0.01	0.00	5.7	0.61	0.2	0.1	0.11	922	0.00	0.08
Boiler	na	all	0.164	0.151	0.00	1.995	0.587	0.2	0.1	0.11	934	0.002	0.045

Source:
For Propulsion (Slow Speed Engines): POLB 2014 Emissions Inventory, Table 2.13.

For Auxiliary (Medium Speed Engines) and Boiler: CARB 2019 Proposed Control Measure for Ocean-Going Vessels At Berth. Staff Report: Initial Statement of Reasons, Appendix H: 2019 Update to Inventory for Ocean-Going Vessels At Berth: Methodology and Results, Appendix A Emission Factors. October 9, 2019. Last accessed on 12/2019 at: https://ww2.arb.ca.gov/rulemaking/2019/ogvatberth2019.

For particulate matter: U.S. Environmental Protection Agency, Current Methodologies in Preparing Mobile Source Port-Related Emission Inventories - Final Report (April 2009),https://www.epa.gov/sites/production/files/2016-06/documents/2009-port-inventory-guidance.pdf [Accessed June 13, 2018].
For NOx: Marine Environment Protection Committee (MEPC), Resolution MEPC.176(58), Adopted on 10 October 2008, Revised MARPOL Annex VI, Regulation 13, Nitrogen Oxides (NOx), http://www.imo.org/en/KnowledgeCentre/IndexofIMOResolutions/Marine-Environment-Protection-Committee-(MEPC)/Documents/MEPC.176(58).pdf [Accessed October 8, 2018.

For other pollutants: U.S. Environmental Protection Agency, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2014, Published 2016,https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2014 [Accessed June 13 2018].
Swedish Methodology for Environmental Data, David Cooper, IVL, Tomas Gustafsson, SCB (2004-02-02), Methodology for calculating emissions from ships: 1. Update of emission factors, IVL (Swedish Environmental Research Institute), https://www.diva-portal.org/smash/get/diva2:1117198/FULLTEXT01.pdf[Accessed June 12 2018].
Marine Environment Protection Committee (MEPC), (2012). Resolution MEPC.212(63), MEPC 63/23, Annex 8, 2012 Guidelines on the Method of Calculation of the Attained Energy Efficiency Design Index (EEDI) for New Ships (2 March 2012), http://www.imo.org/en/OurWork/Environment/PollutionPrevention/AirPollution/Documents/212(63).pdf[Accessed June 12 2018].

ENTEC (2002). Quantification of emissions from ships associated with ship movements between ports in the European Community, Final Report 3, UK: Report prepared for the European Commission; 2002. http://ec.europa.eu/environment/air/pdf/chapter2_ship_emissions.pdf [Accessed June 12 2018].

Notes:
Tier I engines were assumed for both propulsion and auxiliary engines. This is a conservative assumption because OGVs Tier II engines are also available.

Average Load Propulsion Engine - Propeller Law
LF = (AS/MS)3
Where:
LF = load factor, percent
AS = actual speed, knots
MS = maximum speed, knots

Table E2.17.
OGV Low Load Adjustment Factors - Propulsion Engines

Load	PM10	PM2.5	DPM	NOx	SOx	CO	HC	VOC	CO2	CH4	N2O
2% docking load	7.29	7.29	7.29	4.63	3.30	9.68	21.18	21.18	3.28	21.18	4.63
3% transit load	4.33	4.33	4.33	2.92	2.45	6.46	11.68	11.68	2.44	11.68	2.92
4% transit load	3.09	3.09	3.09	2.21	2.02	4.86	7.71	7.71	2.01	7.71	2.21
5% transit load	2.44	2.44	2.44	1.83	1.77	3.89	5.61	5.61	1.76	5.61	1.83
6% transit load	2.04	2.04	2.04	1.60	1.60	3.25	4.35	4.35	1.59	4.35	1.60
7% transit load	1.79	1.79	1.79	1.45	1.47	2.79	3.52	3.52	1.47	3.52	1.45
8% transit load	1.61	1.61	1.61	1.35	1.38	2.45	2.95	2.95	1.38	2.95	1.35
9% transit load	1.48	1.48	1.48	1.27	1.31	2.18	2.52	2.52	1.31	2.52	1.27
10% transit load	1.38	1.38	1.38	1.22	1.26	1.96	2.20	2.20	1.25	2.20	1.22
11% transit load	1.30	1.30	1.30	1.17	1.21	1.79	1.96	1.96	1.21	1.96	1.17
12% transit load	1.24	1.24	1.24	1.14	1.17	1.64	1.76	1.76	1.17	1.76	1.14
13% transit load	1.19	1.19	1.19	1.11	1.14	1.52	1.60	1.60	1.14	1.60	1.11
14% transit load	1.15	1.15	1.15	1.08	1.11	1.41	1.47	1.47	1.11	1.47	1.08
15% transit load	1.11	1.11	1.11	1.06	1.08	1.32	1.36	1.36	1.08	1.36	1.06
16% transit load	1.08	1.08	1.08	1.05	1.06	1.24	1.26	1.26	1.06	1.26	1.05
17% transit load	1.06	1.06	1.06	1.03	1.05	1.17	1.18	1.18	1.04	1.18	1.03
18% transit load	1.04	1.04	1.04	1.02	1.03	1.11	1.11	1.11	1.03	1.11	1.02
19% transit load	1.02	1.02	1.02	1.01	1.10	1.05	1.05	1.05	1.01	1.05	1.01
20% transit load	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Source: POLB 2016 Emissions Inventory, Table 2.4.

Table E2.18.
Operational OGV Emissions Without Mitigation

	Vessel Type	Engine/Source Type	Vessel Characteristics: Engine Rating (kW)	Model Year	Max Rated Speed (knots)	Activity: Berth Time (hr/call)	Annual Calls	Annual Transits (1-way)	Fuel Sulfur	Average Auxiliary Loads (kW): Berth	Maneuvering	Transit	Work: Berth Energy Demand (kW-hr/call)
Baseline													
Baseline	Handymax	Propulsion Engine	8,500	0	15.0	96	9	18	0.1%				
Baseline	Handymax	Auxiliary Engine				96	9	18	0.1%	210	822	313	20,160
Baseline	Handymax	Auxiliary Boiler				96	9	18	0.1%	125	94	35	12,000
Baseline	**Total**												
Proposed Project													
Year 1	Handymax	Propulsion Engine	8,500	0	15.0	48	21	42	0.1%				
Year 1	Handymax	Auxiliary Engine				48	21	42	0.1%	210	822	313	10,080
Year 1	Handymax	Auxiliary Boiler				48	21	42	0.1%	125	94	35	6,000
Year 1	**Total**												
Proposed Project													
Year 5	Handymax	Propulsion Engine	8,500	0	15.0	48	39	78	0.1%				
Year 5	Handymax	Auxiliary Engine				48	39	78	0.1%	210	822	313	10,080
Year 5	Handymax	Auxiliary Boiler				48	39	78	0.1%	125	94	35	6,000
Year 5	**Total**												
Proposed Project													
Year 15	Handymax	Propulsion Engine	8,500	0	15.0	48	48	96	0.1%				
Year 15	Handymax	Auxiliary Engine				48	48	96	0.1%	210	822	313	10,080
Year 15	Handymax	Auxiliary Boiler				48	48	96	0.1%	125	94	35	6,000
Year 15	**Total**												

Table E2.18.
Operational OGV Emissions Without Mitigation

	Maneuvering in SJVAPCD (pilot to berth)					Transit in SJVAPCD (San Joaquin River transit from Port to SJVAPCD bo					Transit in BAAQMD (San Joaquin River transit from SJVAPC					Ocean Transit (SF Bay to State Boundary)				
	Speed (knots)	Distance (nm)	Maneuvering Time (hr/trip)	Loaded Energy Demand (kW-hr/trip)	Propulsion Engine Load Factor	Speed (knots)	Distance (nm)	Transit Time (hr/trip)	Loaded Energy Demand (kW-hr/trip)	Propulsion Engine Load Factor	Speed (knots)	Distance (nm)	Transit Time (hr/trip)	Loaded Energy Demand (kW-hr/trip)	Propulsion Engine Load Factor	Speed (knots)	Distance (nm)	Transit Time (hr/trip)	Loaded Energy Demand (kW-hr/trip)	Propulsion Engine Average Load in Open Ocean
Baseline																				
Baseline	2.0	3.0	1.5	251	2%	8.0	13.0	1.6	2,072	15%	6.0	67.0	11.2	5,695	6%	13.9	340.0	24.4	166,034	80%
Baseline			1.5	1,212				1.6	509				11.2	3,495				24.4	7,642	
Baseline			1.5	139				1.6	57				11.2	391				24.4	855	
Baseline																				
Proposed Project																				
Year 1	2.0	3.0	1.5	251	2%	8.0	13.0	1.6	2,072	15%	6.0	67.0	11.2	5,695	6%	13.9	340.0	24.4	166,034	80%
Year 1			1.5	1,212				1.6	509				11.2	3,495				24.4	7,642	
Year 1			1.5	139				1.6	57				11.2	391				24.4	855	
Year 1																				
Proposed Project																				
Year 5	2.0	3.0	1.5	251	2%	8.0	13.0	1.6	2,072	15%	6.0	67.0	11.2	5,695	6%	13.9	340.0	24.4	166,034	80%
Year 5			1.5	1,212				1.6	509				11.2	3,495				24.4	7,642	
Year 5			1.5	139				1.6	57				11.2	391				24.4	855	
Year 5																				
Proposed Project																				
Year 15	2.0	3.0	1.5	251	2%	8.0	13.0	1.6	2,072	15%	6.0	67.0	11.2	5,695	6%	13.9	340.0	24.4	166,034	80%
Year 15			1.5	1,212				1.6	509				11.2	3,495				24.4	7,642	
Year 15			1.5	139				1.6	57				11.2	391				24.4	855	
Year 15																				

Table E2.18.
Operational OGV Emissions Without Mitigation

	Exhaust Emission Factors (g/kW-hr) - Annual Fleet Mix										
	PM10	PM2.5	DPM	NOx	SOx	CO	HC	VOC	CO2	CH4	N2O
Baseline											
Baseline	0.26	0.24	0.26	16.00	0.39	1.40	0.60	0.63	589.00	0.01	0.03
Baseline	0.18	0.17	0.18	12.20	0.42	1.10	0.50	0.52	676.00	0.01	0.03
Baseline	0.16	0.15	0.00	2.00	0.59	0.20	0.10	0.11	934.00	0.00	0.05
Baseline											
Proposed Project											
Year 1	0.26	0.24	0.26	16.00	0.39	1.40	0.60	0.63	589.00	0.01	0.03
Year 1	0.18	0.17	0.18	12.20	0.42	1.10	0.50	0.52	676.00	0.01	0.03
Year 1	0.16	0.15	0.00	2.00	0.59	0.20	0.10	0.11	934.00	0.00	0.05
Year 1											
Proposed Project											
Year 5	0.26	0.24	0.26	16.00	0.39	1.40	0.60	0.63	589.00	0.01	0.03
Year 5	0.18	0.17	0.18	12.20	0.42	1.10	0.50	0.52	676.00	0.01	0.03
Year 5	0.16	0.15	0.00	2.00	0.59	0.20	0.10	0.11	934.00	0.00	0.05
Year 5											
Proposed Project											
Year 15	0.26	0.24	0.26	16.00	0.39	1.40	0.60	0.63	589.00	0.01	0.03
Year 15	0.18	0.17	0.18	12.20	0.42	1.10	0.50	0.52	676.00	0.01	0.03
Year 15	0.16	0.15	0.00	2.00	0.59	0.20	0.10	0.11	934.00	0.00	0.05
Year 15											

	Berth in SJVAPCD											
	PM10 (lb/yr)	PM2.5 (lb/yr)	DPM (lb/yr)	NOX (lb/yr)	SOX (lb/yr)	CO (lb/yr)	HC (lb/yr)	VOC (lb/yr)	CO2 (mty)	CH4 (mty)	N2O (mty)	CO2e (mty)
Baseline												
Baseline	-	-	-	-	-	-	-	-	-	-	-	-
Baseline	72.80	67.20	72.80	4,880.00	169.60	440.00	200.00	208.00	122.65	0.00	0.01	124.54
Baseline	39.05	35.95	-	475.00	139.76	47.62	23.81	25.07	100.87	0.00	0.00	102.38
Baseline	**111.85**	**103.15**	**72.80**	**5,355.00**	**309.36**	**487.62**	**223.81**	**233.07**	**223.53**	**0.00**	**0.01**	**226.92**
Proposed Project												
Year 1	-	-	-	-	-	-	-	-	-	-	-	-
Year 1	84.93	78.40	84.93	5,693.33	197.87	513.33	233.33	242.67	143.10	0.00	0.01	145.30
Year 1	45.56	41.94	-	554.17	163.06	55.56	27.78	29.25	117.68	0.00	0.01	119.45
Year 1	**130.49**	**120.34**	**84.93**	**6,247.50**	**360.92**	**568.89**	**261.11**	**271.92**	**260.78**	**0.00**	**0.01**	**264.74**
Proposed Project												
Year 5	-	-	-	-	-	-	-	-	-	-	-	-
Year 5	157.73	145.60	157.73	########	367.47	953.33	433.33	450.67	265.75	0.00	0.01	269.84
Year 5	84.60	77.90	-	1,029.17	302.82	103.17	51.59	54.32	218.56	0.00	0.01	221.83
Year 5	**242.34**	**223.50**	**157.73**	**11,602.50**	**670.28**	**1,056.51**	**484.92**	**504.99**	**484.31**	**0.00**	**0.02**	**491.67**
Proposed Project												
Year 15	-	-	-	-	-	-	-	-	-	-	-	-
Year 15	194.13	179.20	194.13	########	452.27	1,173.33	533.33	554.67	327.08	0.00	0.02	332.11
Year 15	104.13	95.87	-	1,266.67	372.70	126.98	63.49	66.86	268.99	0.00	0.01	273.02
Year 15	**298.26**	**275.07**	**194.13**	**14,280.00**	**824.97**	**1,300.32**	**596.83**	**621.52**	**596.07**	**0.00**	**0.03**	**605.13**

Table E2.18.
Operational OGV Emissions Without Mitigation

Maneuvering in SJVAPCD (pilot to berth)

	PM10 (lb/yr)	PM2.5 (lb/yr)	DPM (lb/yr)	NOX (lb/yr)	SOX (lb/yr)	CO (lb/yr)	HC (lb/yr)	VOC (lb/yr)	CO2 (mty)	CH4 (mty)	N2O (mty)	CO2e (mty)
Baseline												
Baseline	18.86	17.41	18.86	737.13	12.81	134.85	126.45	133.15	8.72	0.00	0.00	8.93
Baseline	8.76	8.08	8.76	586.98	20.40	52.92	24.06	25.02	14.75	0.00	0.00	14.98
Baseline	0.90	0.83	-	10.98	3.23	1.10	0.55	0.58	2.33	0.00	0.00	2.37
Baseline	**28.52**	**26.32**	**27.62**	**1,335.08**	**36.44**	**188.87**	**151.06**	**158.75**	**25.80**	**0.00**	**0.00**	**26.28**
Proposed Project												
Year 1	44.01	40.62	44.01	1,719.96	29.88	314.64	295.05	310.69	20.35	0.00	0.00	20.84
Year 1	20.43	18.86	20.43	1,369.62	47.60	123.49	56.13	58.38	34.42	0.00	0.00	34.95
Year 1	2.11	1.94	-	25.61	7.54	2.57	1.28	1.35	5.44	0.00	0.00	5.52
Year 1	**66.54**	**61.42**	**64.44**	**3,115.19**	**85.02**	**440.70**	**352.46**	**370.42**	**60.21**	**0.00**	**0.00**	**61.31**
Proposed Project												
Year 5	81.73	75.44	81.73	3,194.21	55.49	584.34	547.95	576.99	37.79	0.00	0.00	38.70
Year 5	37.95	35.03	37.95	2,543.58	88.40	229.34	104.25	108.41	63.93	0.00	0.00	64.91
Year 5	3.91	3.60	-	47.56	14.00	4.77	2.38	2.51	10.10	0.00	0.00	10.25
Year 5	**123.58**	**114.07**	**119.67**	**5,785.35**	**157.89**	**818.45**	**654.58**	**687.92**	**111.82**	**0.01**	**0.01**	**113.87**
Proposed Project												
Year 15	100.59	92.85	100.59	3,931.34	68.30	719.19	674.40	710.14	46.51	0.01	0.00	47.64
Year 15	46.70	43.11	46.70	3,130.56	108.80	282.26	128.30	133.43	78.68	0.00	0.00	79.89
Year 15	4.81	4.43	-	58.54	17.22	5.87	2.93	3.09	12.43	0.00	0.00	12.62
Year 15	**152.10**	**140.39**	**147.29**	**7,120.44**	**194.32**	**1,007.32**	**805.63**	**846.66**	**137.62**	**0.01**	**0.01**	**140.15**

Transit in SJVAPCD (San Joaquin River transit from Port to SJVAPCD boundary)

	PM10 (lb/yr)	PM2.5 (lb/yr)	DPM (lb/yr)	NOX (lb/yr)	SOX (lb/yr)	CO (lb/yr)	HC (lb/yr)	VOC (lb/yr)	CO2 (mty)	CH4 (mty)	N2O (mty)	CO2e (mty)
Baseline												
Baseline	23.73	21.90	23.73	1,394.40	34.63	151.94	67.09	70.65	23.72	0.00	0.00	24.09
Baseline	3.67	3.39	3.67	246.24	8.56	22.20	10.09	10.50	6.19	0.00	0.00	6.28
Baseline	0.37	0.34	-	4.50	1.32	0.45	0.23	0.24	0.96	0.00	0.00	0.97
Baseline	**27.77**	**25.63**	**27.40**	**1,645.15**	**44.51**	**174.59**	**77.41**	**81.38**	**30.87**	**0.00**	**0.00**	**31.35**
Proposed Project												
Year 1	55.37	51.11	55.37	3,253.61	80.80	354.52	156.54	164.84	55.35	0.00	0.00	56.21
Year 1	8.57	7.91	8.57	574.56	19.97	51.80	23.55	24.49	14.44	0.00	0.00	14.66
Year 1	0.86	0.80	-	10.51	3.09	1.05	0.53	0.55	2.23	0.00	0.00	2.26
Year 1	**64.80**	**59.81**	**63.94**	**3,838.68**	**103.86**	**407.38**	**180.62**	**189.88**	**72.03**	**0.00**	**0.00**	**73.14**
Proposed Project												
Year 5	102.82	94.91	102.82	6,042.42	150.06	658.40	290.72	306.13	102.80	0.00	0.00	104.40
Year 5	15.92	14.69	15.92	1,067.04	37.08	96.21	43.73	45.48	26.82	0.00	0.00	27.23
Year 5	1.60	1.48	-	19.51	5.74	1.96	0.98	1.03	4.14	0.00	0.00	4.21
Year 5	**120.34**	**111.08**	**118.74**	**7,128.97**	**192.89**	**756.56**	**335.43**	**352.64**	**133.76**	**0.00**	**0.01**	**135.83**
Proposed Project												
Year 15	126.55	116.81	126.55	7,436.83	184.69	810.33	357.81	376.77	126.52	0.00	0.01	128.49
Year 15	19.59	18.08	19.59	1,313.28	45.64	118.41	53.82	55.98	33.01	0.00	0.00	33.52
Year 15	1.97	1.82	-	24.01	7.07	2.41	1.20	1.27	5.10	0.00	0.00	5.18
Year 15	**148.11**	**136.72**	**146.14**	**8,774.11**	**237.40**	**931.15**	**412.84**	**434.02**	**164.63**	**0.00**	**0.01**	**167.18**

Table E2.18.
Operational OGV Emissions Without Mitigation

	Transit in BAAQMD (San Joaquin River transit from SJVAPCD Boundary through SF Bay)												Ocean Transit in CA			
Baseline	PM10 (lb/yr)	PM2.5 (lb/yr)	DPM (lb/yr)	NOX (lb/yr)	SOX (lb/yr)	CO (lb/yr)	HC (lb/yr)	VOC (lb/yr)	CO2 (mty)	CH4 (mty)	N2O (mty)	CO2e (mty)	CO2 (mty)	CH4 (mty)	N2O (mty)	CO2e (mty)
Baseline	119.87	110.65	119.87	5,785.40	141.02	1,028.26	589.84	621.10	96.00	0.01	0.00	97.59	1,760.29	0.04	0.09	1,787.91
Baseline	25.24	23.30	25.24	1,692.10	58.81	152.57	69.35	72.12	42.53	0.00	0.00	43.18	92.99	0.00	0.00	94.42
Baseline	2.54	2.34	-	30.94	9.10	3.10	1.55	1.63	6.57	0.00	0.00	6.67	14.37	0.00	0.00	14.58
Baseline	**147.65**	**136.29**	**145.11**	**7,508.44**	**208.93**	**1,183.93**	**660.74**	**694.86**	**145.10**	**0.01**	**0.01**	**147.44**	**1,867.65**	**0.04**	**0.09**	**1,896.92**
Proposed Project																
Year 1	279.69	258.17	279.69	########	329.04	2,399.28	1,376.29	1,449.24	224.00	0.01	0.01	227.71	4,107.35	0.08	0.20	4,171.79
Year 1	58.90	54.37	58.90	3,948.24	137.22	355.99	161.81	168.29	99.23	0.00	0.00	100.76	216.98	0.00	0.01	220.32
Year 1	5.93	5.46	-	72.20	21.24	7.24	3.62	3.81	15.33	0.00	0.00	15.56	33.52	0.00	0.00	34.03
Year 1	**344.52**	**318.01**	**338.59**	**17,519.70**	**487.50**	**2,762.51**	**1,541.72**	**1,621.33**	**338.57**	**0.01**	**0.02**	**344.03**	**4,357.85**	**0.09**	**0.21**	**4,426.14**
Proposed Project																
Year 5	519.42	479.46	519.42	########	611.08	4,455.81	2,555.97	2,691.44	416.01	0.02	0.02	422.88	7,627.93	0.16	0.38	7,747.62
Year 5	109.39	100.97	109.39	7,332.45	254.83	661.12	300.51	312.53	184.29	0.00	0.01	187.13	402.97	0.00	0.02	409.17
Year 5	11.02	10.15	-	134.08	39.45	13.44	6.72	7.08	28.47	0.00	0.00	28.90	62.26	0.00	0.00	63.19
Year 5	**639.83**	**590.58**	**628.81**	**32,536.58**	**905.37**	**5,130.37**	**2,863.20**	**3,011.04**	**628.77**	**0.03**	**0.03**	**638.91**	**8,093.16**	**0.16**	**0.40**	**8,219.98**
Proposed Project																
Year 15	639.29	590.11	639.29	########	752.10	5,484.07	3,145.81	3,312.54	512.01	0.03	0.03	520.47	9,388.22	0.19	0.46	9,535.53
Year 15	134.63	124.27	134.63	9,024.56	313.64	813.69	369.86	384.65	226.82	0.00	0.01	230.31	495.96	0.01	0.02	503.59
Year 15	13.57	12.49	-	165.02	48.55	16.54	8.27	8.71	35.04	0.00	0.00	35.57	76.63	0.00	0.00	77.77
Year 15	**787.48**	**726.87**	**773.91**	**40,045.03**	**1,114.30**	**6,314.31**	**3,523.94**	**3,705.90**	**773.87**	**0.03**	**0.04**	**786.35**	**9,960.81**	**0.20**	**0.49**	**10,116.90**

	Total Maneuvering and Transit in SJVAPCD								Total Emissions in CA			
Baseline	PM10 (lb/yr)	PM2.5 (lb/yr)	DPM (lb/yr)	NOX (lb/yr)	SOX (lb/yr)	CO (lb/yr)	HC (lb/yr)	VOC (lb/yr)	CO2 (mty)	CH4 (mty)	N2O (mty)	CO2e (mty)
Baseline	42.588	39.312	42.588	2131.530	47.436	286.785	193.539	203.796	1,888.74	0.04	0.09	1,918.52
Baseline	12.430	11.474	12.430	833.219	28.958	75.126	34.148	35.514	279.12	0.00	0.01	283.41
Baseline	1.272	1.172	0.000	15.479	4.554	1.552	0.776	0.817	125.10	0.00	0.01	126.97
Baseline	**56.29**	**51.96**	**55.02**	**2,980.23**	**80.95**	**363.46**	**228.46**	**240.13**	**2,292.95**	**0.05**	**0.11**	**2,328.91**
Proposed Project												
Year 1	99.372	91.728	99.372	4973.570	110.684	669.166	451.591	475.525	4,407.05	0.10	0.22	4,476.55
Year 1	29.003	26.772	29.003	1944.177	67.568	175.295	79.679	82.867	508.18	0.01	0.02	516.00
Year 1	2.969	2.734	0.000	36.118	10.627	3.621	1.810	1.906	174.21	0.00	0.01	176.82
Year 1	**131.34**	**121.23**	**128.38**	**6,953.87**	**188.88**	**848.08**	**533.08**	**560.30**	**5,089.44**	**0.11**	**0.25**	**5,169.37**
Proposed Project												
Year 5	184.547	170.352	184.547	9236.631	205.556	1242.736	838.669	883.118	8,184.52	0.19	0.40	8,313.60
Year 5	53.863	49.720	53.863	3610.615	125.484	325.547	147.976	153.895	943.76	0.01	0.05	958.28
Year 5	5.514	5.077	0.000	67.076	19.736	6.724	3.362	3.540	323.53	0.00	0.02	328.38
Year 5	**243.92**	**225.15**	**238.41**	**12,914.32**	**350.78**	**1,575.01**	**990.01**	**1,040.55**	**9,451.81**	**0.20**	**0.47**	**9,600.26**
Proposed Project												
Year 15	227.135	209.663	227.135	11368.161	252.992	1529.521	1032.208	1086.915	########	0.23	0.50	########
Year 15	66.293	61.194	66.293	4443.834	154.441	400.674	182.124	189.409	1,161.55	0.01	0.06	1,179.42
Year 15	6.786	6.249	0.000	82.555	24.291	8.276	4.138	4.357	398.19	0.00	0.02	404.16
Year 15	**300.22**	**277.11**	**293.43**	**15,894.55**	**431.72**	**1,938.47**	**1,218.47**	**1,280.68**	**11,633.00**	**0.24**	**0.57**	**11,815.70**

Table E2.19.
Harbor Craft Data

				HC Characteristics						HC Engine Activity per HC					OGV Activity	Annual HC Energy Demand				
Year		HC Classification	Engine Type	Engine Count per HC	HC Average MY	HC Average HP	HC Average kW	Load Factor	HC Count per OGV	Berth (hr/call)	Maneuvering (hr/one-way trip)	Transit in SJVAPCD (hr/one-way trip)	Transit in BAAQMD (hr/one-way trip)	Ocean Transit in CA (hr/one-way trip)	Average Annual OGV Transits (one-way trips/yr)	Berth (kW-hr/yr)	Maneuvering (kW-hr/yr)	Transit in SJVAPCD (kW-hr/yr)	Transit in BAAQMD (kW-hr/yr)	Ocean Transit in CA (kW-hr/yr)
Baseline																				
Baseline	OGV Assist	Assist Tugboat	Propulsion	2	1956	1,800	1,343	0.50	2	0.7	3.0	0.0	0.0	0.0	18	8,057	71,302	0	0	0
Baseline			Auxiliary	1	1956	235	175	0.31	2	0.3	1.5	0.0	0.0	0.0	18	326	2,886	0	0	0
Baseline																				
Proposed Project																				
Year 1	OGV Assist	Assist Tugboat	Propulsion	2	1956	1,800	1,343	0.50	2	0.7	3.0	0.0	0.0	0.0	42	18,799	166,371	0	0	0
Year 1			Auxiliary	1	1956	235	175	0.31	2	0.3	1.5	0.0	0.0	0.0	42	761	6,733	0	0	0
Year 1																				
Proposed Project																				
Year 5	OGV Assist	Assist Tugboat	Propulsion	2	1956	1,800	1,343	0.50	2	0.7	3.0	0.0	0.0	0.0	78	34,912	308,974	0	0	0
Year 5			Auxiliary	1	1956	235	175	0.31	2	0.3	1.5	0.0	0.0	0.0	78	1,413	12,505	0	0	0
Year 5																				
Proposed Project																				
Year 15	OGV Assist	Assist Tugboat	Propulsion	2	1956	1,800	1,343	0.50	2	0.7	3.0	0.0	0.0	0.0	96	42,969	380,276	0	0	0
Year 15			Auxiliary	1	1956	235	175	0.31	2	0.3	1.5	0.0	0.0	0.0	96	1,739	15,391	0	0	0
Year 15																				
Proposed Project																				
Year 15	Barge Assist	Assist Tugboat	Propulsion	2	1956	1,800	1,343	0.50	1	0.7	3.0	3.3	18.3	0.0	80	17,904	158,448	174,562	984,707	0
Year 15			Auxiliary	1	1956	235	175	0.31	1	0.3	1.5	1.6	9.2	0.0	80	725	6,413	7,065	39,853	0
Year 15																				
Proposed Project																				
Year 15	Total Assist	Assist Tugboat	Propulsion																	
Year 15			Auxiliary																	
Year 15																				

Table E2.19.
Harbor Craft Data

Year	Engine Tier	Unmitigated Emission Factors										Unmitigated Emissions Berth in SJVAPCD Average Annual											
		PM10 (g/kW-hr)	PM2.5 (g/kW-hr)	DPM (g/kW-hr)	NOX (g/kW-hr)	SOX (g/kW-hr)	CO (g/kW-hr)	VOC (g/kW-hr)	CO2 (g/kW-hr)	CH4 (g/kW-hr)	N2O (g/kW-hr)	PM10 (lb/yr)	PM2.5 (lb/yr)	DPM (lb/yr)	NOX (lb/yr)	SOX (lb/yr)	CO (lb/yr)	VOC (lb/yr)	CO2 (mty)	CH4 (mty)	N2O (mty)	CO2e (mty)
Baseline																							
Baseline	Tier 2	0.50	0.45	0.50	9.34	0.01	5.00	0.52	652	0.01	0.03	8.88	7.90	8.88	165.92	0.13	88.81	9.19	5.25	0.00	0.00	5.33
Baseline	Tier 2	0.20	0.18	0.20	6.84	0.01	5.00	0.38	652	0.01	0.03	0.14	0.13	0.14	4.92	0.01	3.59	0.27	0.21	0.00	0.00	0.22
Baseline												**9.02**	**8.03**	**9.02**	**170.84**	**0.14**	**92.40**	**9.46**	**5.47**	**0.00**	**0.00**	**5.55**
Proposed Project																							
Year 1	Tier 2	0.50	0.45	0.50	9.34	0.01	5.00	0.52	652	0.01	0.03	20.72	18.44	20.72	387.15	0.31	207.22	21.44	12.26	0.00	0.00	12.44
Year 1	Tier 2	0.20	0.18	0.20	6.84	0.01	5.00	0.38	652	0.01	0.03	0.34	0.30	0.34	11.47	0.01	8.39	0.64	0.50	0.00	0.00	0.50
Year 1												**21.06**	**18.74**	**21.06**	**398.63**	**0.32**	**215.61**	**22.07**	**12.75**	**0.00**	**0.00**	**12.94**
Proposed Project																							
Year 5	Tier 2	0.50	0.45	0.50	9.34	0.01	5.00	0.52	652	0.01	0.03	38.48	34.25	38.48	719.00	0.57	384.84	39.81	22.76	0.00	0.00	23.11
Year 5	Tier 2	0.20	0.18	0.20	6.84	0.01	5.00	0.38	652	0.01	0.03	0.62	0.55	0.62	21.31	0.02	15.58	1.18	0.92	0.00	0.00	0.94
Year 5												**39.11**	**34.80**	**39.11**	**740.31**	**0.59**	**400.41**	**40.99**	**23.68**	**0.00**	**0.00**	**24.04**
Proposed Project																							
Year 15	Tier 4	0.04	0.04	0.04	1.80	0.01	5.00	0.20	652	0.00	0.03	3.79	3.37	3.79	170.51	0.70	473.64	18.95	28.02	0.00	0.00	28.43
Year 15	Tier 3	0.12	0.11	0.12	5.13	0.01	5.00	0.28	652	0.01	0.03	0.46	0.41	0.46	19.67	0.03	19.17	1.09	1.13	0.00	0.00	1.15
Year 15												**4.25**	**3.78**	**4.25**	**190.18**	**0.73**	**492.81**	**20.04**	**29.15**	**0.00**	**0.00**	**29.58**
Proposed Project																							
Year 15	Tier 4	0.04	0.04	0.04	1.80	0.01	5.00	0.20	652.00	0.00	0.03	1.58	1.41	1.58	71.05	0.29	197.35	7.90	11.67	0.00	0.00	11.85
Year 15	Tier 3	0.12	0.11	0.12	5.13	0.01	5.00	0.28	652.00	0.01	0.03	0.19	0.17	0.19	8.19	0.01	7.99	0.45	0.47	0.00	0.00	0.48
Year 15												**1.77**	**1.58**	**1.77**	**79.24**	**0.30**	**205.34**	**8.35**	**12.15**	**0.00**	**0.00**	**12.33**
Proposed Project																							
Year 15												5.37	4.78	5.37	241.56	0.99	671.00	26.85	39.69	0.00	0.00	40.28
Year 15												0.65	0.58	0.65	27.86	0.04	27.16	1.54	1.61	0.00	0.00	1.63
Year 15												**6.02**	**5.36**	**6.02**	**269.42**	**1.03**	**698.15**	**28.39**	**41.30**	**0.00**	**0.00**	**41.91**

Table E2.19.
Harbor Craft Data

Year	Maneuvering in SJVAPCD Average Annual PM10 (lb/yr)	PM2.5 (lb/yr)	DPM (lb/yr)	NOX (lb/yr)	SOX (lb/yr)	CO (lb/yr)	VOC (lb/yr)	CO2 (mty)	CH4 (mty)	N2O (mty)	CO2e (mty)
Baseline											
Baseline	78.60	69.95	78.60	1,468.42	1.16	785.95	81.31	46.49	0.00	0.00	47.19
Baseline	1.27	1.13	1.27	43.52	0.05	31.81	2.41	1.88	0.00	0.00	1.91
Baseline	**79.87**	**71.08**	**79.87**	**1,511.94**	**1.21**	**817.76**	**83.72**	**48.37**	**0.00**	**0.00**	**49.10**
Proposed Project											
Year 1	183.39	163.22	183.39	3,426.32	2.71	1,833.89	189.73	108.47	0.00	0.01	110.11
Year 1	2.97	2.64	2.97	101.54	0.11	74.22	5.63	4.39	0.00	0.00	4.46
Year 1	**186.36**	**165.86**	**186.36**	**3,527.86**	**2.82**	**1,908.11**	**195.36**	**112.86**	**0.00**	**0.01**	**114.56**
Proposed Project											
Year 5	340.58	303.12	340.58	6,363.17	5.04	3,405.80	352.35	201.45	0.00	0.01	204.48
Year 5	5.51	4.91	5.51	188.57	0.20	137.84	10.45	8.15	0.00	0.00	8.28
Year 5	**346.09**	**308.02**	**346.09**	**6,551.73**	**5.24**	**3,543.64**	**362.81**	**209.60**	**0.00**	**0.01**	**212.76**
Proposed Project											
Year 15	33.53	29.85	33.53	1,509.03	6.20	4,191.75	167.73	247.94	0.00	0.01	251.62
Year 15	4.07	3.62	4.07	174.06	0.25	169.65	9.65	10.03	0.00	0.00	10.18
Year 15	**37.61**	**33.47**	**37.61**	**1,683.09**	**6.45**	**4,361.40**	**177.38**	**257.97**	**0.00**	**0.01**	**261.81**
Proposed Project											
Year 15	13.97	12.44	13.97	628.76	2.58	1,746.56	69.89	103.31	0.00	0.00	104.84
Year 15	1.70	1.51	1.70	72.53	0.10	70.69	4.02	4.18	0.00	0.00	4.24
Year 15	**15.67**	**13.95**	**15.67**	**701.29**	**2.69**	**1,817.25**	**73.91**	**107.49**	**0.00**	**0.01**	**109.09**
Proposed Project											
Year 15	47.51	42.28	47.51	2,137.79	8.79	5,938.32	237.62	351.25	0.00	0.02	356.47
Year 15	5.77	5.13	5.77	246.59	0.36	240.34	13.67	14.22	0.00	0.00	14.43
Year 15	**53.27**	**47.41**	**53.27**	**2,384.38**	**9.14**	**6,178.65**	**251.28**	**365.46**	**0.00**	**0.02**	**370.90**

Year	Transit in SJVAPCD Average Annual PM10 (lb/yr)	PM2.5 (lb/yr)	DPM (lb/yr)	NOX (lb/yr)	SOX (lb/yr)	CO (lb/yr)	VOC (lb/yr)	CO2 (mty)	CH4 (mty)	N2O (mty)	CO2e (mty)
Baseline											
Baseline	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Baseline	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Baseline	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Proposed Project											
Year 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Year 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Year 1	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Proposed Project											
Year 5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Year 5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Year 5	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Proposed Project											
Year 15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Year 15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Year 15	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Proposed Project											
Year 15	15.39	13.70	15.39	692.71	2.85	1,924.18	76.99	113.81	0.00	0.01	115.51
Year 15	1.87	1.66	1.87	79.90	0.12	77.88	4.43	4.61	0.00	0.00	4.68
Year 15	**17.26**	**15.36**	**17.26**	**772.61**	**2.96**	**2,002.06**	**81.42**	**118.42**	**0.00**	**0.01**	**120.18**
Proposed Project											
Year 15	15.39	13.70	15.39	692.71	2.85	1,924.18	76.99	113.81	0.00	0.01	115.51
Year 15	1.87	1.66	1.87	79.90	0.12	77.88	4.43	4.61	0.00	0.00	4.68
Year 15	**17.26**	**15.36**	**17.26**	**772.61**	**2.96**	**2,002.06**	**81.42**	**118.42**	**0.00**	**0.01**	**120.18**

Table E2.19.
Harbor Craft Data

	Transit in BAAQMD										
	Average Annual										
Year	PM10 (lb/yr)	PM2.5 (lb/yr)	DPM (lb/yr)	NOX (lb/yr)	SOX (lb/yr)	CO (lb/yr)	VOC (lb/yr)	CO2 (mty)	CH4 (mty)	N2O (mty)	CO2e (mty)
Baseline											
Baseline	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Baseline	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Baseline	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Proposed Project											
Year 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Year 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Year 1	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Proposed Project											
Year 5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Year 5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Year 5	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Proposed Project											
Year 15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Year 15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Year 15	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Proposed Project											
Year 15	86.83	77.28	86.83	3,907.57	16.06	10,854.35	434.33	642.03	0.00	0.03	651.57
Year 15	10.54	9.38	10.54	450.72	0.65	439.30	24.98	25.98	0.00	0.00	26.37
Year 15	**97.38**	**86.67**	**97.38**	**4358.29**	**16.71**	**11293.65**	**459.31**	**668.01**	**0.00**	**0.03**	**677.94**
Proposed Project											
Year 15	86.83	77.28	86.83	3,907.57	16.06	10,854.35	434.33	642.03	0.00	0.03	651.57
Year 15	10.54	9.38	10.54	450.72	0.65	439.30	24.98	25.98	0.00	0.00	26.37
Year 15	**97.38**	**86.67**	**97.38**	**4,358.29**	**16.71**	**11,293.65**	**459.31**	**668.01**	**0.00**	**0.03**	**677.94**

	Ocean Transit in CA				Total Emissions in SJVAPCD										
	Average Annual				Average Annual										
Year	CO2 (mty)	CH4 (mty)	N2O (mty)	CO2e (mty)	PM10 (lb/yr)	PM2.5 (lb/yr)	DPM (lb/yr)	NOX (lb/yr)	SOX (lb/yr)	CO (lb/yr)	VOC (lb/yr)	CO2 (mty)	CH4 (mty)	N2O (mty)	CO2e (mty)
Baseline															
Baseline	0.00	0.00	0.00	0.00	87.48	77.85	87.48	1,634.35	1.29	874.76	90.50	51.74	0.00	0.00	52.52
Baseline	0.00	0.00	0.00	0.00	1.42	1.26	1.42	48.43	0.05	35.40	2.68	2.09	0.00	0.00	2.13
Baseline	**0.00**	**0.00**	**0.00**	**0.00**	88.89	79.11	88.89	1,682.78	1.35	910.17	93.18	53.84	0.00	0.00	54.65
Proposed Project															
Year 1	0.00	0.00	0.00	0.00	204.11	181.66	204.11	3,813.48	3.02	2,041.11	211.17	120.73	0.00	0.01	122.55
Year 1	0.00	0.00	0.00	0.00	3.30	2.94	3.30	113.01	0.12	82.61	6.26	4.89	0.00	0.00	4.96
Year 1	**0.00**	**0.00**	**0.00**	**0.00**	207.42	184.60	207.42	3,926.48	3.14	2,123.72	217.43	125.62	0.00	0.01	127.51
Proposed Project															
Year 5	0.00	0.00	0.00	0.00	379.06	337.37	379.06	7,082.17	5.61	3,790.64	392.17	224.21	0.00	0.01	227.59
Year 5	0.00	0.00	0.00	0.00	6.14	5.46	6.14	209.87	0.23	153.42	11.63	9.07	0.00	0.00	9.21
Year 5	**0.00**	**0.00**	**0.00**	**0.00**	385.20	342.83	385.20	7,292.04	5.84	3,944.05	403.80	233.29	0.00	0.01	236.80
Proposed Project															
Year 15	0.00	0.00	0.00	0.00	37.32	33.22	37.32	1,679.54	6.90	4,665.40	186.68	275.96	0.00	0.01	280.06
Year 15	0.00	0.00	0.00	0.00	4.53	4.03	4.53	193.73	0.28	188.82	10.74	11.17	0.00	0.00	11.34
Year 15	**0.00**	**0.00**	**0.00**	**0.00**	41.85	37.25	41.85	1,873.27	7.18	4,854.22	197.42	287.12	0.00	0.01	291.39
Proposed Project															
Year 15	0.00	0.00	0.00	0.00	30.94	27.54	30.94	1,392.51	5.72	3,868.10	154.78	228.80	0.00	0.01	232.20
Year 15	0.00	0.00	0.00	0.00	3.76	3.34	3.76	160.62	0.23	156.55	8.90	9.26	0.00	0.00	9.40
Year 15	**0.00**	**0.00**	**0.00**	**0.00**	34.70	30.88	34.70	1,553.14	5.96	4,024.65	163.68	238.06	0.00	0.01	241.59
Proposed Project															
Year 15	0.00	0.00	0.00	0.00	68.27	60.76	68.27	3,072.06	12.63	8,533.49	341.46	504.75	0.00	0.02	512.25
Year 15	0.00	0.00	0.00	0.00	8.29	7.38	8.29	354.35	0.51	345.37	19.64	20.43	0.00	0.00	20.73
Year 15	**0.00**	**0.00**	**0.00**	**0.00**	76.56	68.14	76.56	3,426.41	13.14	8,878.86	361.10	525.18	0.00	0.02	532.99

Table E2.19.
Harbor Craft Data

	Total Emissions in BAAQMD Average Annual											Total Emissions in CA Average Annual			
Year	PM10	PM2.5	DPM	NOX	SOX	CO	VOC	CO2	CH4	N2O	CO2e	CO2	CH4	N2O	CO2e
	(lb/yr)	(lb/yr)	(lb/yr)	(lb/yr)	(lb/yr)	(lb/yr)	(lb/yr)	(mty)	(mty)	(mty)	(mty)	(mty)	(mty)	(mty)	(mty)
Baseline															
Baseline	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.74	0.00	0.00	52.52
Baseline	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.09	0.00	0.00	2.13
Baseline	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	53.84	0.00	0.00	54.65
Proposed Project															
Year 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	120.73	0.00	0.01	122.55
Year 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.89	0.00	0.00	4.96
Year 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	125.62	0.00	0.01	127.51
Proposed Project															
Year 5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	224.21	0.00	0.01	227.59
Year 5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.07	0.00	0.00	9.21
Year 5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	233.29	0.00	0.01	236.80
Proposed Project															
Year 15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	275.96	0.00	0.01	280.06
Year 15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.17	0.00	0.00	11.34
Year 15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	287.12	0.00	0.01	291.39
Proposed Project															
Year 15	86.83	77.28	86.83	3,907.57	16.06	10,854.35	434.33	642.03	0.00	0.03	651.57	870.82	0.01	0.04	883.77
Year 15	10.54	9.38	10.54	450.72	0.65	439.30	24.98	25.98	0.00	0.00	26.37	35.24	0.00	0.00	35.77
Year 15	97.38	86.67	97.38	4,358.29	16.71	11,293.65	459.31	668.01	0.00	0.03	677.94	906.07	0.01	0.04	919.54
Proposed Project															
Year 15	86.83	77.28	86.83	3,907.57	16.06	10,854.35	434.33	642.03	0.00	0.03	651.57	1,146.78	0.01	0.05	1,163.82
Year 15	10.54	9.38	10.54	450.72	0.65	439.30	24.98	25.98	0.00	0.00	26.37	46.41	0.00	0.00	47.10
Year 15	97.38	86.67	97.38	4,358.29	16.71	11,293.65	459.31	668.01	0.00	0.03	677.94	1,193.19	0.01	0.06	1,210.93

Notes and Source:

Tugboats are used to assist OGVs from Port Harbor to berth (maneuvering).

Tugboats are used to assist barges during river transit and maneuvering.

2 tugboats used to assist each OGV; 1 tugboat used to push each barge. Operations Throuput Info Needs 11_12.docx. Provided by Lehigh.

Tugboats assumed to have 2 propulsion and 2 auxiliary engines. One auxiliary engine operates at a time.

Tugboat engine characteristics are from Brusco tugboats details on Port of Stockton website. Representative tugboat:
https://www.marinetraffic.com/en/ais/details/ships/shipid:434027/mmsi:367007980/imo:5111359/vessel:ANGIE_M_BRUSCO

Per CARB regulations, tugboats with 1975 engines or older would have had to retrofit their engines in 2009. EPA required that tugboat engines manufactured in 2009 be Tier 2. The useful life of a tugboat engine is 21 for main and 22.5 years for auxiliary engines per CARB. Therefore, tugboats in Year 15 (2036), which is more than 21 years following 2009, would be retrofitted to the cleanest engines available at that time, Tier 4 for main engines and Tier 3 for auxiliary engines.

Applicable engine Tier is identified based on the EPA requirements for new engines and ARB harbor craft compliance schedule and average model year.

Example:

1975 MY engine (pre-Tier 1 per EPA standards) would have to be replaced at the end of 2009, based on ARB's compliance schedule. At that time, the engine will need to be replaced with the relevant Tier engine applicable at the time (Tier 2).

Emission Factors:

EPA emission standards, which are reported as NOx+THC, were convered by Nox and HC assuming 95% and 5% are Nox and HC, respectively, per Carl Moyer Program guidelines.

SOx emission factor is based on 15 ppm fuel sulfur content.

PM2.5 is 89% of PM10, per SCAQMD 2006 Final Methodology to Calculate PM2.5 and PM 2.5 Significance Thresholds, Table 5.

CH4 is 2% of HC, per IVL study.

Table E2.20.
HC Activity

	Berth	Maneuvering (Pilot to Berth)	Transit in SJVAPCD (San Joaquin River transit from Port to SJVAPCD Boundary)	Transit in BAAQMD (San Joaquin River transit from SJVAPCD boundary through SF Bay)	Ocean Transit (SF Bay to State Boundary)	Total Project
HC Assisting OGVs						
Distance (nm 1-way trip)		2.95				
Speed (knots)		2				
Time (hr/call)	0.3	1.48				
HC Assisting Barges						
Distance (nm 1-way trip)		2.95	13	55	0	71
Speed (knots)		2	8	6	13.9	5.8
Time (hr/call)	0.3	1.48	1.63	9.17	0.00	12.27

Notes:

It is assumed that tugboats pick up the vessel at the Rough and Ready Island and transit up to 2 miles, one-way. Source: Communication with Lena DeSantis e-mail 11/29/18.

It is assumed that tugboats operate for 20 min/call at berth.

Tugboats are used to push non-self propelled barges for 80 miles.

Table E2.21.
Harbor Craft Emission Factors - EPA Standards g/kW-hr

Engine Displacement	(kW)	EPA Tier	MY	NMHC+NOx	PM10	PM2.5	DPM	NOx	SOX	CO	HC	VOC	CO2	CH4	N2O
Category 1															
		Tier 1	2004		0.40	0.36	0.40	9.80	0.007	5.00	0.38	0.39	652	0.008	0.031
<0.9	37-75	Tier 2	2005	**7.50**	**0.40**	0.36	0.40	7.1	0.007	**5.00**	0.38	0.39	652	0.008	0.031
0.9 < displ < 1.2	75-130	Tier 2	2004	**7.20**	**0.30**	0.27	0.30	6.8	0.007	**5.00**	0.36	0.38	652	0.007	0.031
1.2 < displ < 2.5	130-560	Tier 2	2004	**7.20**	**0.20**	0.18	0.20	6.8	0.007	**5.00**	0.36	0.38	652	0.007	0.031
2.5 < displ < 5	>560	Tier 2	2007	**7.20**	**0.20**	0.18	0.20	6.8	0.007	**5.00**	0.36	0.38	652	0.007	0.031
<0.9	<19	Tier 3	2009	**7.5**	**0.40**	0.36	0.40	7.1	0.007	5.00	0.38	0.39	652	0.008	0.031
<0.9	19-75	Tier 3	2009	**7.5**	**0.30**	0.27	0.30	7.1	0.007	5.00	0.38	0.39	652	0.008	0.031
<0.9	75-3700	Tier 3	2012	**5.4**	**0.14**	0.12	0.14	5.1	0.007	5.00	0.27	0.28	652	0.005	0.031
0.9 < displ < 1.2	100-175	Tier 3	2013	**5.4**	**0.12**	0.11	0.12	5.1	0.007	5.00	0.27	0.28	652	0.005	0.031
1.2 < displ < 2.5	175-750	Tier 3	2014	**5.6**	**0.11**	0.10	0.11	5.3	0.007	5.00	0.28	0.29	652	0.006	0.031
2.5 < displ < 5	>750	Tier 3	2013	**5.6**	**0.11**	0.10	0.11	5.3	0.007	5.00	0.28	0.29	652	0.006	0.031
3.5 ≤ D < 7		Tier 3	2012	**5.8**	**0.11**	0.10	0.11	5.5	0.007	5.00	0.29	0.31	652	0.006	0.031
	>3700	Tier 4	2014		**0.12**	0.11	0.12	**1.8**	0.007	5.00	**0.19**	0.20	652	0.004	0.031
	2000-3700	Tier 4	2014		**0.04**	0.04	0.04	**1.8**	0.007	5.00	**0.19**	0.20	652	0.004	0.031
	1400-2000	Tier 4	2016		**0.04**	0.04	0.04	**1.8**	0.007	5.00	**0.19**	0.20	652	0.004	0.031
	600-1400	Tier 4	2017		**0.04**	0.04	0.04	**1.8**	0.007	5.00	**0.19**	0.20	652	0.004	0.031
Category 2															
			MY												
>2.5	>37	Tier 1	2004		0.40	0.36	0.40	**17.0**	0.007	8.50	0.95	1.00	652	0.019	0.031
5.0 ≤ D < 15	all	Tier 2	2007	**7.8**	**0.27**	0.24	0.27	7.4	0.007	**5.00**	0.39	0.41	652	0.008	0.031
15 ≤ D < 20	< 3300 kW	Tier 2	2007	**8.7**	**0.50**	0.45	0.50	8.3	0.007	**5.00**	0.44	0.46	652	0.009	0.031
15 ≤ D < 20	≥ 3300 kW	Tier 2	2007	**9.8**	**0.50**	0.45	0.50	9.3	0.007	**5.00**	0.49	0.52	652	0.010	0.031
20 ≤ D < 25	all	Tier 2	2007	**9.8**	**0.50**	0.45	0.50	9.3	0.007	**5.00**	0.49	0.52	652	0.010	0.031
25 ≤ D < 30	all	Tier 2	2007	**11.0**	**0.50**	0.45	0.50	10.5	0.007	**5.00**	0.55	0.58	652	0.011	0.031
7 ≤ D < 15	<2000	Tier 3	2013	**6.2**	**0.14**	0.12	0.14	5.9	0.007	**5.00**	0.31	0.33	652	0.006	0.031
7 ≤ D < 15	2000-3700	Tier 3	2013	**7.8**	**0.14**	0.12	0.14	7.4	0.007	**5.00**	0.39	0.41	652	0.008	0.031
15 ≤ D < 20	<2000	Tier 3	2014	**7.0**	**0.34**	0.30	0.34	6.7	0.007	**5.00**	0.35	0.37	652	0.007	0.031
20 ≤ D < 25	<2000	Tier 3	2014	**9.8**	**0.27**	0.24	0.27	9.3	0.007	**5.00**	0.49	0.52	652	0.010	0.031
25 ≤ D < 30	<2000	Tier 3	2014	**11.0**	**0.27**	0.24	0.27	10.5	0.007	**5.00**	0.55	0.58	652	0.011	0.031
all	2000-3700	Tier 4	2014		**0.04**	0.04	0.04	**1.8**	0.007	5.00	**0.19**	0.20	652	0.004	0.031
<15	>3700	Tier 4	2014		**0.12**	0.11	0.12	**1.8**	0.007	5.00	**0.19**	0.20	652	0.004	0.031
15 ≤ D < 30	>3700	Tier 4	2014		**0.25**	0.22	0.25	**1.8**	0.007	5.00	**0.19**	0.20	652	0.004	0.031
all	>3700	Tier 4	2016		**0.06**	0.05	0.06	**1.8**	0.007	5.00	**0.19**	0.20	652	0.004	0.031
all	1400-2000	Tier 4	2016		**0.04**	0.04	0.04	**1.8**	0.007	5.00	**0.19**	0.20	652	0.004	0.031
all	600-1400	Tier 4	2017		**0.04**	0.04	0.04	**1.8**	0.007	5.00	**0.19**	0.20	652	0.004	0.031

Source:

Federal Marine Compression-Ignition Engines - Exhaust Emission Standards Reference Guide, http://epa.gov/OMS/standards/nonroad/marineci.htm

Amendments to the Regulations to Reduce Emissions From Diesel Engines on Commercial Harbor Craft Operated Within California Waters and 24 Nautical Miles of the California Baseline. ARB 2011. Table 9, Compliance Dates for Engines on Crew and Supply Vessels Nationwide.
http://www.arb.ca.gov/regact/2010/chc10/frochc931185.pdf

EPA Tier 2 and Tier 3 emission standards are reported as NOx+THC. 5% is HC per Carl Moyer Program guidelines.

SOx emission factor is based on 15 ppm fuel sulfur content.

PM2.5 is 89% of PM10, per SCAQMD 2006 Final Methodology to Calculate PM2.5 and PM 2.5 Significance Thresholds, Table 5.

CO2 and N20 emission factors are from IVL: Methodology for Calculating Emissions from Ships: Update on Emission Factors, 2004, also summarized in POLA 2009 Emissions Inventory, Appendix B. CH4 is 2% of HC, per IVL study.

Bold numbers represent actual emission standards.

Table E2.22.
SOx Emission Factor

Harbor Craft	0.007399563 g/hp-hr	
Dredging Equipment	use OFFROAD BSCF and convert to g SOx /hp-hr	
SOx (gms/hp-hr) = (S content in X/1,000,000) x (MW SO2/ MW S) x BSF =		
Where:		
X = S content in parts per million (ppm)		15 ppm
S MW = Molecular Weight		32
SO2 MW = Molecular Weight		64
BSFC for harbor craft = Brake Specific Fuel Consumption (per CARB 2007 Harbor Craft Methodology)		184 (g/hp-hr)

Table E2.23.
Habor Craft Load Factor

Type	Main Engine	Auxiliary Engine
Tugboat	0.5	0.31

Source:
2011 CARB Commercial Harbor Craft Emission Inventory. Access dabatase available at: https://www.arb.ca.gov/msei/categories.htm#offroad_motor_vehicles. Last accessed 5/31/18.

Table E2.24.
Truck Activity and Exhaust Emissions

	Activity				Total Exhaust, Tire Wear, Brake Wear Emissions (lb/yr)										
Year	Annual Truck Trips (1-way)	Distance Traveled (mi/1-way)	Distance Traveled (mi/1-way) in CA	Idling Time (hr/call)	DPM	PM10	PM2.5	NOX	SOX	CO	VOC	CO2	CH4	N2O	CO2e
Baseline															
Baseline Transit Shipping On-Site	18,720	0.25			0.36	1.37	0.71	63.89	0.18	9.70	2.90	19,485.75	0.13	3.06	20,438.07
Baseline Transit Receiving On-Site	0	0.25			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Baseline Idling On-Site	18,720			0.33	0.85	0.85	0.82	251.55	0.61	70.42	19.43	64,458.21	0.00	10.13	67,599.11
Baseline Transit and Idling Shipping Off-Site	18,720	30	30		43.14	164.15	85.18	7,666.85	22.09	1,163.91	348.20	2,338,289.52	16.17	367.55	2,452,568.59
Baseline Transit and Idling Receiving Off-Site	0	0	0		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Baseline Total On-Site					1.21	2.22	1.53	315.44	0.79	80.12	22.33	83,943.96	0.13	13.19	88,037.19
Baseline Total Off-Site					43.14	164.15	85.18	7,666.85	22.09	1,163.91	348.20	2,338,289.52	16.17	367.55	2,452,568.59
Baseline Total					44.35	166.37	86.70	7,982.29	22.88	1,244.04	370.54	2,422,233.48	16.31	380.74	2,540,605.78
Year 1															
Year 1 Transit Shipping On-Site	20,806	0.25			0.38	1.50	0.77	68.29	0.20	9.91	2.68	21,010.87	0.12	3.30	22,037.29
Year 1 Transit Receiving On-Site	900	0.25			0.02	0.06	0.03	2.95	0.01	0.43	0.12	908.88	0.01	0.14	953.28
Year 1 Idling On-Site	21,706			0.33	0.87	0.87	0.83	303.68	0.70	77.99	18.86	74,159.29	0.00	11.66	77,772.90
Year 1 Transit and Idling Shipping Off-Site	20,806	40	40		60.91	240.23	123.33	10,926.81	31.76	1,585.76	428.24	3,361,739.06	19.89	528.42	3,525,966.52
Year 1 Transit and Idling Receiving Off-Site	900	40	40		2.63	10.39	5.34	472.67	1.37	68.60	18.52	145,421.02	0.86	22.86	152,525.12
Year 1 Total On-Site					1.27	2.43	1.63	374.92	0.91	88.33	21.65	96,079.04	0.13	15.10	100,763.47
Year 1 Total Off-Site					63.55	250.63	128.67	11,399.48	33.13	1,654.35	446.77	3,507,160.08	20.75	551.28	3,678,491.64
Year 1 Total					64.81	253.06	130.30	11,774.41	34.04	1,742.68	468.42	3,603,239.12	20.88	566.38	3,779,255.11
Year 5															
Year 5 Transit Shipping On-Site	35,185	0.25			0.31	2.21	0.99	78.63	0.28	8.17	0.57	30,113.58	0.03	4.73	31,581.50
Year 5 Transit Receiving On-Site	1,852	0.25			0.02	0.12	0.05	4.14	0.01	0.43	0.03	1,584.93	0.00	0.25	1,662.18
Year 5 Idling On-Site	37,037			0.33	0.44	0.44	0.42	498.33	1.09	78.02	4.57	115,104.82	0.00	18.09	120,713.61
Year 5 Transit and Idling Shipping Off-Site	35,185	40	40		49.93	353.20	157.80	12,581.54	45.52	1,306.98	91.55	4,818,172.12	4.25	757.35	5,053,039.78
Year 5 Transit and Idling Receiving Off-Site	1,852	40	40		2.63	18.59	8.31	662.19	2.40	68.79	4.82	253,588.01	0.22	39.86	265,949.46
Year 5 Total On-Site					0.77	2.77	1.46	581.11	1.39	86.61	5.17	146,803.32	0.03	23.08	153,957.30
Year 5 Total Off-Site					52.56	371.79	166.10	13,243.73	47.92	1,375.76	96.37	5,071,760.13	4.48	797.21	5,318,989.25
Year 5 Total					53.33	374.55	167.56	13,824.83	49.30	1,462.38	101.54	5,218,563.45	4.50	820.29	5,472,946.54
Year 15															
Year 15 Transit Shipping On-Site	39,722	0.25			0.34	2.48	1.10	86.95	0.25	9.03	0.63	26,121.62	0.03	4.11	27,395.08
Year 15 Transit Receiving On-Site	2,778	0.25			0.02	0.17	0.08	6.08	0.02	0.63	0.04	1,826.69	0.00	0.29	1,915.74
Year 15 Idling On-Site	42,500			0.33	0.49	0.49	0.47	592.83	0.96	87.67	5.14	101,486.97	0.00	15.95	106,432.20
Year 15 Transit and Idling Shipping Off-Site	39,722	40	40		54.49	396.86	176.35	13,912.71	39.49	1,445.05	101.23	4,179,459.21	4.70	656.95	4,383,213.31
Year 15 Transit and Idling Receiving Off-Site	2,778	40	40		3.81	27.75	12.33	972.92	2.76	101.05	7.08	292,269.87	0.33	45.94	306,518.41
Year 15 Total On-Site					0.86	3.15	1.65	685.87	1.22	97.34	5.81	129,435.28	0.03	20.35	135,743.02
Year 15 Total Off-Site					58.30	424.61	188.68	14,885.63	42.25	1,546.10	108.30	4,471,729.08	5.03	702.89	4,689,731.72
Year 15 Total					59.16	427.76	190.33	15,571.50	43.47	1,643.44	114.12	4,601,164.36	5.06	723.24	4,825,474.74

Notes:

Activity provided by Lehigh: Operations 11_12 - TKR112219.xlsx.

Transit distance onsite obtained from GoogleEarth and facility maps: 0.25 miles 1-way

Idling time onsite: 20 min per call

Transit distance offsite provided by Lehigh: Operations 11_12 - TKR112219.xlsx.

Exhaust, Tire Wear, Brake Wear Emissions in SJVAPCD (lb/yr)							Exhaust, Tire Wear, Brake Wear Emissions in BAAQMD (lb/yr)				Exhaust, Tire Wear, Brake Wear Emissions in SMAPCD (lb/yr)				Total Road Dust Emissions (lb/yr)		Road Dust Emissions in SJVAPCD (lb/yr)		Road Dust Emissions in BAAQMD (lb/yr)		Road Dust Emissions in SMAPCD (lb/yr)	
DPM	PM10	PM2.5	NOX	SOX	CO	VOC	PM10	PM2.5	NOX	VOC	PM10	PM2.5	NOX	VOC	PM10	PM2.5	PM10	PM2.5	PM10	PM2.5	PM10	PM2.5
0.36	1.37	0.71	63.89	0.18	9.70	2.90									116.65	17.50	116.65	17.50	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00									0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.85	0.85	0.82	251.55	0.61	70.42	19.43																
43.14	164.15	85.18	7,666.85	22.09	1,163.91	348.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	148.78	22.32	148.78	22.32	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.21	2.22	1.53	315.44	0.79	80.12	22.33									116.65	17.50	116.65	17.50	0.00	0.00	0.00	0.00
43.14	164.15	85.18	7,666.85	22.09	1,163.91	348.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	148.78	22.32	148.78	22.32	0.00	0.00	0.00	0.00
44.35	166.37	86.70	7,982.29	22.88	1,244.04	370.54									265.43	39.81	265.43	39.81	0.00	0.00	0.00	0.00
0.38	1.50	0.77	68.29	0.20	9.91	2.68									129.65	19.45	129.65	19.45	0.00	0.00	0.00	0.00
0.02	0.06	0.03	2.95	0.01	0.43	0.12									5.61	0.84	5.61	0.84	0.00	0.00	0.00	0.00
0.87	0.87	0.83	303.68	0.70	77.99	18.86																
60.91	240.23	123.33	10,926.81	31.76	1,585.76	428.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	220.47	33.07	220.47	33.07	0.00	0.00	0.00	0.00
2.63	10.39	5.34	472.67	1.37	68.60	18.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.54	1.43	9.54	1.43	0.00	0.00	0.00	0.00
1.27	2.43	1.63	374.92	0.91	88.33	21.65									135.26	20.29	135.26	20.29	0.00	0.00	0.00	0.00
63.55	250.63	128.67	11,399.48	33.13	1,654.35	446.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	230.01	34.50	230.01	34.50	0.00	0.00	0.00	0.00
64.81	253.06	130.30	11,774.41	34.04	1,742.68	468.42									365.27	54.79	365.27	54.79	0.00	0.00	0.00	0.00
0.31	2.21	0.99	78.63	0.28	8.17	0.57									219.26	32.89	219.26	32.89	0.00	0.00	0.00	0.00
0.02	0.12	0.05	4.14	0.01	0.43	0.03									11.54	1.73	11.54	1.73	0.00	0.00	0.00	0.00
0.44	0.44	0.42	498.33	1.09	78.02	4.57																
49.93	353.20	157.80	12,581.54	45.52	1,306.98	91.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	372.85	55.93	372.85	55.93	0.00	0.00	0.00	0.00
2.63	18.59	8.31	662.19	2.40	68.79	4.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.62	2.94	19.62	2.94	0.00	0.00	0.00	0.00
0.77	2.77	1.46	581.11	1.39	86.61	5.17									230.80	34.62	230.80	34.62	0.00	0.00	0.00	0.00
52.56	371.79	166.10	13,243.73	47.92	1,375.76	96.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	392.47	58.87	392.47	58.87	0.00	0.00	0.00	0.00
53.33	374.55	167.56	13,824.83	49.30	1,462.38	101.54									623.27	93.49	623.27	93.49	0.00	0.00	0.00	0.00
0.34	2.48	1.10	86.95	0.25	9.03	0.63									247.53	37.13	247.53	37.13	0.00	0.00	0.00	0.00
0.02	0.17	0.08	6.08	0.02	0.63	0.04									17.31	2.60	17.31	2.60	0.00	0.00	0.00	0.00
0.49	0.49	0.47	592.83	0.96	87.67	5.14																
54.49	396.86	176.35	13,912.71	39.49	1,445.05	101.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	420.93	63.14	420.93	63.14	0.00	0.00	0.00	0.00
3.81	27.75	12.33	972.92	2.76	101.05	7.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	29.44	4.42	29.44	4.42	0.00	0.00	0.00	0.00
0.86	3.15	1.65	685.87	1.22	97.34	5.81									264.84	39.73	264.84	39.73	0.00	0.00	0.00	0.00
58.30	424.61	188.68	14,885.63	42.25	1,546.10	108.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	450.36	67.55	450.36	67.55	0.00	0.00	0.00	0.00
59.16	427.76	190.33	15,571.50	43.47	1,643.44	114.12									715.20	107.28	715.20	107.28	0.00	0.00	0.00	0.00

Table E2.24.
Truck Activity and Exhaust Emissions

Year	Activity				Total Exhaust, Tire Wear, Brake Wear Emissions (lb/yr)										
Year	Annual Truck Trips (1-way)	Distance Traveled (mi/1-way)	Distance Traveled (mi/1-way) in CA	Idling Time (hr/call)	DPM	PM10	PM2.5	NOX	SOX	CO	VOC	CO2	CH4	N2O	CO2e
Baseline															
Baseline Transit Shipping On-Site	18,720	0.25			0.36	1.37	0.71	63.89	0.18	9.70	2.90	19,485.75	0.13	3.06	20,438.07
Baseline Transit Receiving On-Site	0	0.25			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Baseline Idling On-Site	18,720			0.33	0.85	0.85	0.82	251.55	0.61	70.42	19.43	64,458.21	0.00	10.13	67,599.11
Baseline Transit and Idling Shipping Off-Site	18,720	30	30		43.14	164.15	85.18	7,666.85	22.09	1,163.91	348.20	2,338,289.52	16.17	367.55	2,452,568.59
Baseline Transit and Idling Receiving Off-Site	0	0	0		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Baseline Total On-Site					1.21	2.22	1.53	315.44	0.79	80.12	22.33	83,943.96	0.13	13.19	88,037.19
Baseline Total Off-Site					43.14	164.15	85.18	7,666.85	22.09	1,163.91	348.20	2,338,289.52	16.17	367.55	2,452,568.59
Baseline Total					44.35	166.37	86.70	7,982.29	22.88	1,244.04	370.54	2,422,233.48	16.31	380.74	2,540,605.78
Year 1															
Year 1 Transit Shipping On-Site	20,806	0.25			0.38	1.50	0.77	68.29	0.20	9.91	2.68	21,010.87	0.12	3.30	22,037.29
Year 1 Transit Receiving On-Site	900	0.25			0.02	0.06	0.03	2.95	0.01	0.43	0.12	908.88	0.01	0.14	953.28
Year 1 Idling On-Site	21,706			0.33	0.87	0.87	0.83	303.68	0.70	77.99	18.86	74,159.29	0.00	11.66	77,772.90
Year 1 Transit and Idling Shipping Off-Site	20,806	40	40		60.91	240.23	123.33	10,926.81	31.76	1,585.76	428.24	3,361,739.06	19.89	528.42	3,525,966.52
Year 1 Transit and Idling Receiving Off-Site	900	40	40		2.63	10.39	5.34	472.67	1.37	68.60	18.52	145,421.02	0.86	22.86	152,525.12
Year 1 Total On-Site					1.27	2.43	1.63	374.92	0.91	88.33	21.65	96,079.04	0.13	15.10	100,763.47
Year 1 Total Off-Site					63.55	250.63	128.67	11,399.48	33.13	1,654.35	446.77	3,507,160.08	20.75	551.28	3,678,491.64
Year 1 Total					64.81	253.06	130.30	11,774.41	34.04	1,742.68	468.42	3,603,239.12	20.88	566.38	3,779,255.11
Year 5															
Year 5 Transit Shipping On-Site	35,185	0.25			0.31	2.21	0.99	78.63	0.28	8.17	0.57	30,113.58	0.03	4.73	31,581.50
Year 5 Transit Receiving On-Site	1,852	0.25			0.02	0.12	0.05	4.14	0.01	0.43	0.03	1,584.93	0.00	0.25	1,662.18
Year 5 Idling On-Site	37,037			0.33	0.44	0.44	0.42	498.33	1.09	78.02	4.57	115,104.82	0.00	18.09	120,713.61
Year 5 Transit and Idling Shipping Off-Site	35,185	40	40		49.93	353.20	157.80	12,581.54	45.52	1,306.98	91.55	4,818,172.12	4.25	757.35	5,053,039.78
Year 5 Transit and Idling Receiving Off-Site	1,852	40	40		2.63	18.59	8.31	662.19	2.40	68.79	4.82	253,588.01	0.22	39.86	265,949.46
Year 5 Total On-Site					0.77	2.77	1.46	581.11	1.39	86.61	5.17	146,803.32	0.03	23.08	153,957.30
Year 5 Total Off-Site					52.56	371.79	166.10	13,243.73	47.92	1,375.76	96.37	5,071,760.13	4.48	797.21	5,318,989.25
Year 5 Total					53.33	374.55	167.56	13,824.83	49.30	1,462.38	101.54	5,218,563.45	4.50	820.29	5,472,946.54
Year 15															
Year 15 Transit Shipping On-Site	39,722	0.25			0.34	2.48	1.10	86.95	0.25	9.03	0.63	26,121.62	0.03	4.11	27,395.08
Year 15 Transit Receiving On-Site	2,778	0.25			0.02	0.17	0.08	6.08	0.02	0.63	0.04	1,826.69	0.00	0.29	1,915.74
Year 15 Idling On-Site	42,500			0.33	0.49	0.49	0.47	592.83	0.96	87.67	5.14	101,486.97	0.00	15.95	106,432.20
Year 15 Transit and Idling Shipping Off-Site	39,722	40	40		54.49	396.86	176.35	13,912.71	39.49	1,445.05	101.23	4,179,459.21	4.70	656.95	4,383,213.31
Year 15 Transit and Idling Receiving Off-Site	2,778	40	40		3.81	27.75	12.33	972.92	2.76	101.05	7.08	292,269.87	0.33	45.94	306,518.41
Year 15 Total On-Site					0.86	3.15	1.65	685.87	1.22	97.34	5.81	129,435.28	0.03	20.35	135,743.02
Year 15 Total Off-Site					58.30	424.61	188.68	14,885.63	42.25	1,546.10	108.30	4,471,729.08	5.03	702.89	4,689,731.72
Year 15 Total					59.16	427.76	190.33	15,571.50	43.47	1,643.44	114.12	4,601,164.36	5.06	723.24	4,825,474.74

Notes:

Activity provided by Lehigh: Operations 11_12 - TKR112219.xlsx.

Transit distance onsite obtained from GoogleEarth and facility maps: 0.25 miles 1-way

Idling time onsite: 20 min per call

Transit distance offsite provided by Lehigh: Operations 11_12 - TKR112219.xlsx.

Table E2.24.
Truck Activity and Exhaust Emissions

	Exhaust, Tire Wear, Brake Wear Emissions in SJVAPCD (lb/yr)							Exhaust, Tire Wear, Brake Wear Emissions in BAAQMD (lb/yr)				Exhaust, Tire Wear, Brake Wear Emissions in SMAPCD (lb/yr)				Total Road Dust Emissions (lb/yr)		Road Dust Emissions in SJVAPCD (lb/yr)		Road Dust Emissions in BAAQMD (lb/yr)		Road Dust Emissions in SMAPCD (lb/yr)	
Year	DPM	PM10	PM2.5	NOX	SOX	CO	VOC	PM10	PM2.5	NOX	VOC	PM10	PM2.5	NOX	VOC	PM10	PM2.5	PM10	PM2.5	PM10	PM2.5	PM10	PM2.5
Baseline																							
Baseline Transit Shipping On-Site	0.36	1.37	0.71	63.89	0.18	9.70	2.90									116.65	17.50	116.65	17.50	0.00	0.00	0.00	0.00
Baseline Transit Receiving On-Site	0.00	0.00	0.00	0.00	0.00	0.00	0.00									0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Baseline Idling On-Site	0.85	0.85	0.82	251.55	0.61	70.42	19.43																
Baseline Transit and Idling Shipping Off-Site	43.14	164.15	85.18	7,666.85	22.09	1,163.91	348.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	148.78	22.32	148.78	22.32	0.00	0.00	0.00	0.00
Baseline Transit and Idling Receiving Off-Site	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Baseline Total On-Site	1.21	2.22	1.53	315.44	0.79	80.12	22.33									116.65	17.50	116.65	17.50	0.00	0.00	0.00	0.00
Baseline Total Off-Site	43.14	164.15	85.18	7,666.85	22.09	1,163.91	348.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	148.78	22.32	148.78	22.32	0.00	0.00	0.00	0.00
Baseline Total	44.35	166.37	86.70	7,982.29	22.88	1,244.04	370.54									265.43	39.81	265.43	39.81	0.00	0.00	0.00	0.00
Year 1																							
Year 1 Transit Shipping On-Site	0.38	1.50	0.77	68.29	0.20	9.91	2.68									129.65	19.45	129.65	19.45	0.00	0.00	0.00	0.00
Year 1 Transit Receiving On-Site	0.02	0.06	0.03	2.95	0.01	0.43	0.12									5.61	0.84	5.61	0.84	0.00	0.00	0.00	0.00
Year 1 Idling On-Site	0.87	0.87	0.83	303.68	0.70	77.99	18.86																
Year 1 Transit and Idling Shipping Off-Site	60.91	240.23	123.33	10,926.81	31.76	1,585.76	428.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	220.47	33.07	220.47	33.07	0.00	0.00	0.00	0.00
Year 1 Transit and Idling Receiving Off-Site	2.63	10.39	5.34	472.67	1.37	68.60	18.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.54	1.43	9.54	1.43	0.00	0.00	0.00	0.00
Year 1 Total On-Site	1.27	2.43	1.63	374.92	0.91	88.33	21.65									135.26	20.29	135.26	20.29	0.00	0.00	0.00	0.00
Year 1 Total Off-Site	63.55	250.63	128.67	11,399.48	33.13	1,654.35	446.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	230.01	34.50	230.01	34.50	0.00	0.00	0.00	0.00
Year 1 Total	64.81	253.06	130.30	11,774.41	34.04	1,742.68	468.42									365.27	54.79	365.27	54.79	0.00	0.00	0.00	0.00
Year 5																							
Year 5 Transit Shipping On-Site	0.31	2.21	0.99	78.63	0.28	8.17	0.57									219.26	32.89	219.26	32.89	0.00	0.00	0.00	0.00
Year 5 Transit Receiving On-Site	0.02	0.12	0.05	4.14	0.01	0.43	0.03									11.54	1.73	11.54	1.73	0.00	0.00	0.00	0.00
Year 5 Idling On-Site	0.44	0.44	0.42	498.33	1.09	78.02	4.57																
Year 5 Transit and Idling Shipping Off-Site	49.93	353.20	157.80	12,581.54	45.52	1,306.98	91.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	372.85	55.93	372.85	55.93	0.00	0.00	0.00	0.00
Year 5 Transit and Idling Receiving Off-Site	2.63	18.59	8.31	662.19	2.40	68.79	4.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.62	2.94	19.62	2.94	0.00	0.00	0.00	0.00
Year 5 Total On-Site	0.77	2.77	1.46	581.11	1.39	86.61	5.17									230.80	34.62	230.80	34.62	0.00	0.00	0.00	0.00
Year 5 Total Off-Site	52.56	371.79	166.10	13,243.73	47.92	1,375.76	96.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	392.47	58.87	392.47	58.87	0.00	0.00	0.00	0.00
Year 5 Total	53.33	374.55	167.56	13,824.83	49.30	1,462.38	101.54									623.27	93.49	623.27	93.49	0.00	0.00	0.00	0.00
Year 15																							
Year 15 Transit Shipping On-Site	0.34	2.48	1.10	86.95	0.25	9.03	0.63									247.53	37.13	247.53	37.13	0.00	0.00	0.00	0.00
Year 15 Transit Receiving On-Site	0.02	0.17	0.08	6.08	0.02	0.63	0.04									17.31	2.60	17.31	2.60	0.00	0.00	0.00	0.00
Year 15 Idling On-Site	0.49	0.49	0.47	592.83	0.96	87.67	5.14																
Year 15 Transit and Idling Shipping Off-Site	54.49	396.86	176.35	13,912.71	39.49	1,445.05	101.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	420.93	63.14	420.93	63.14	0.00	0.00	0.00	0.00
Year 15 Transit and Idling Receiving Off-Site	3.81	27.75	12.33	972.92	2.76	101.05	7.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	29.44	4.42	29.44	4.42	0.00	0.00	0.00	0.00
Year 15 Total On-Site	0.86	3.15	1.65	685.87	1.22	97.34	5.81									264.84	39.73	264.84	39.73	0.00	0.00	0.00	0.00
Year 15 Total Off-Site	58.30	424.61	188.68	14,885.63	42.25	1,546.10	108.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	450.36	67.55	450.36	67.55	0.00	0.00	0.00	0.00
Year 15 Total	59.16	427.76	190.33	15,571.50	43.47	1,643.44	114.12									715.20	107.28	715.20	107.28	0.00	0.00	0.00	0.00

Notes:

Activity provided by Lehigh: Operations 11_12 - TKR112219.xlsx.

Transit distance onsite obtained from GoogleEarth and facility maps:

Idling time onsite:

Transit distance offsite provided by Lehigh: Operations 11_12 - TKR112

Table E2.25.

Truck Entrained Road Dust Emissions

Paved Road Dust Emission Factor Derivation

Emission Source	(sL) Silt Loading (g/m2)	(k) Particle Size Multiplier - PM10 (g/VMT)	(k) Particle Size Multiplier - PM2.5 (g/VMT)	(W) Average Vehicle Weight on Road (tons)	(E) Uncontrolled PM10 Emission Factor (g/VMT)	(E) Uncontrolled PM2.5 Emission Factor (g/VMT)
Onsite Trucks	0.6	1.00	0.15	20.0	**11.31**	**1.70**
Offsite Roadway (all vehicles) - CARB 2016						
Freeway Statewide	0.015	1.00	0.15	2.4	0.05	0.01
Major Statewide	0.032	1.00	0.15	2.4	0.09	0.01
Collector Statewide	0.032	1.00	0.15	2.4	0.09	0.01
Local Statewide	0.32	1.00	0.15	2.4	0.73	0.11
Local Rural SJVAPCD	0.32	1.00	0.15	2.4	0.73	0.11

Notes:

1. Emission factors are calculated using CARB's Miscellaneous Process Methodology 7.9, Entrained Road Travel, Paved Road Dust.
November 2016. Last accessed on 12/2019 at: https://ww3.arb.ca.gov/ei/areasrc/fullpdf/full7-9_2016.pdf.
2. Emission factors exclude engine exhaust, tire wear, and brake wear, which are accounted for in EMFAC calculations.
3. The equation is: E = k (sL)^0.91 x (W)^1.02
4. SJV experiences 55 annual rainfall days. CARB's Miscellaneous Process Methodology 7.9, Entrained Road Travel, Paved Road Dust. Table 8.

Composite Paved Road Dust Emission Factors for Project Trips

	Fraction of Travel by Roadway Type						**Composite EF for Offsite Transit**	
Road Type	Million VMT per year	Freeway	Major	Collector	Local Urban	Local Rural	PM10 (g/VMT)	PM2.5 (g/VMT)
Vehicle Trips in San Joaquin	6485	0.456	0.351	0.117	0.058	0.020	**0.12**	**0.02**

Source:

CARB's Miscellaneous Process Methodology 7.9, Entrained Road Travel, Paved Road Dust. Table 6.
November 2016. Last accessed on 12/2019 at: https://ww3.arb.ca.gov/ei/areasrc/fullpdf/full7-9_2016.pdf.

Table E2.26.

Truck Transit Distance

	Distance to Destination (1-way miles)	Distance in SJVAPCD (1-way miles)	Distance in BAAQMD (1-way miles)	Distance in SMAPCD (1-way miles)
Baseline Transit and Idling Shipping Off-Site	30	30	0	0
Baseline Transit and Idling Receiving Off-Site	0	0	0	0
Baseline	**60**	**60**	**0**	**0**
Year 1 Transit and Idling Shipping Off-Site	40	40	0	0
Year 1 Transit and Idling Receiving Off-Site	40	40	0	0
Year 1	**80**	**80**	**0**	**0**
Year 5 Transit and Idling Shipping Off-Site	40	40	0	0
Year 5 Transit and Idling Receiving Off-Site	40	40	0	0
Year 5	**80**	**80**	**0**	**0**
Year 15 Transit and Idling Shipping Off-Site	40	40	0	0
Year 15 Transit and Idling Receiving Off-Site	40	40	0	0
Year 15	**80**	**80**	**0**	**0**

Notes:

Assumed truck split between BAAQMD and SMAPCD: 50%

On average, all transit occurs within SJVAPCD.

Source:

Total transit distance provided by Anchor based on conversations with Lehigh:

From: Lena DeSantis <lmdesantis@anchorqea.com>; Sent: Tuesday, December 17, 2019 12:02 PM; To: Lora Granovsky <lora.granovsky@ilancoenvironmental.com>
Subject: RE: Lehigh - operational questions summary

Table E2.27.

Employee Vehicle Activity and Emissions

	Activity			**Emissions (lb/yr)**										**Emissions (ton/yr)**						**(mton/yr)**			
Year	Number of Employees	Annual Employee Trips (1-way trips)	Distance Traveled (mi/1-way)	PM10	PM2.5	NOX	SOX	CO	VOC	CO2	CH4	N2O	CO2e	PM10	PM2.5	NOX	SOX	CO	VOC	CO2	CH4	N2O	CO2e
Baseline	10	7,300	16.8	13	5	31	1	331	8	87,508	2	2	88,303	0.01	0.00	0.02	0.00	0.17	0.00	39.69	0.00	0.00	40.05
Year 1	15	10,950	16.8	19	8	28	1	340	6	119,834	2	3	120,664	0.01	0.00	0.01	0.00	0.17	0.00	54.36	0.00	0.00	54.73
Year 5	15	10,950	16.8	19	8	14	1	228	3	101,476	1	2	102,026	0.01	0.00	0.01	0.00	0.11	0.00	46.03	0.00	0.00	46.28
Year 15	15	10,950	16.8	18	7	8	1	165	1	82,747	0	1	83,159	0.01	0.00	0.00	0.00	0.08	0.00	37.53	0.00	0.00	37.72

Source:

Transit Distance obtained from CalEEMod, Appendix D, Table 4.2 for SJVAPCD. Rural designation was used conservatively.

Table E2.28.
EMFAC Output - Trucks

EMFAC2017 (v1.0.2) Emission Rates
Region Type: Air Basin
Region: SAN JOAQUIN VALLEY
Calendar Year: 2018, 2021, 2026, 2036
Season: Annual
Vehicle Classification: EMFAC2011 Categories
Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HTSK and RUNLS, g/vehicle/day for IDLEX, RESTL and DIURN

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population	VMT	Trips	ROG_RUNEX	ROG_IDLEX	ROG_STREX	ROG_HOTSOAK	ROG_RUNLOSS	ROG_RESTLOSS
SAN JOAQUIN VALLEY	2018	T7 other port	Aggregated	Aggregated	DSL	253.2240807	41095.92669	1924.503013	0.281246017	1.644036067	0	0	0	0
SAN JOAQUIN VALLEY	2021	T7 other port	Aggregated	Aggregated	DSL	289.462072	46368.24414	2199.911747	0.233412127	1.642041148	0	0	0	0
SAN JOAQUIN VALLEY	2026	T7 other port	Aggregated	Aggregated	DSL	289.287825	54557.68796	2198.58747	0.029507144	1.641996952	0	0	0	0
SAN JOAQUIN VALLEY	2036	T7 other port	Aggregated	Aggregated	DSL	386.8938672	63902.71452	2940.39339	0.028898248	1.641996952	0	0	0	0

Table E2.28.
EMFAC Output - Trucks

EMFAC2017 (v1.0.2) Emission Rates
Region Type: Air Basin
Region: SAN JOAQUIN VALLEY
Calendar Year: 2018, 2021, 2026, 2036
Season: Annual
Vehicle Classification: EMFAC2011 Categories
Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX,

Region	ROG_DIURN	TOG_RUNEX	TOG_IDLEX	TOG_STREX	TOG_HOTSOAK	TOG_RUNLOSS	TOG_RESTLOSS	TOG_DIURN	CO_RUNEX	CO_IDLEX	CO_STREX
SAN JOAQUIN VALLEY	0	0.320177181	1.871609916	0	0	0	0	0	0.9400992	15.907444	0
SAN JOAQUIN VALLEY	0	0.265721939	1.869338852	0	0	0	0	0	0.8643122	17.608551	0
SAN JOAQUIN VALLEY	0	0.033591637	1.869288539	0	0	0	0	0	0.4212315	24.261851	0
SAN JOAQUIN VALLEY	0	0.032898456	1.869288539	0	0	0	0	0	0.4125361	24.261851	0

Region	NOx_RUNEX	NOx_IDLEX	NOx_STREX	CO2_RUNEX	CO2_IDLEX	CO2_STREX	CH4_RUNEX	CH4_IDLEX	CH4_STREX	PM10_RUNEX	PM10_IDLEX	PM10_STREX	PM10_PMTW
SAN JOAQUIN VALLEY	6.1925497	30.654194	0.9180526	1888.6469	4787.7664	0	0.0130631	0.0763612	0	0.0348457	0.0103528	0	0.036
SAN JOAQUIN VALLEY	5.9556241	27.815106	1.0879709	1832.3049	4677.2259	0	0.0108414	0.0762686	0	0.0331989	0.0093329	0	0.036
SAN JOAQUIN VALLEY	4.0549641	19.403374	1.7705706	1552.8715	4026.0994	0	0.0013705	0.0762665	0	0.0160932	0.0069881	0	0.036
SAN JOAQUIN VALLEY	3.9718356	19.403374	1.7863717	1193.1625	3171.2199	0	0.0013422	0.0762665	0	0.0155564	0.0069881	0	0.036

Table E2.28.
EMFAC Output - Trucks

EMFAC2017 (v1.0.2) Emission Rates
Region Type: Air Basin
Region: SAN JOAQUIN VALLEY
Calendar Year: 2018, 2021, 2026, 2036
Season: Annual
Vehicle Classification: EMFAC2011 Categories
Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX,

Region	PM10_PMBW	PM2_5_RUNEX	PM2_5_IDLEX	PM2_5_STREX	PM2_5_PMTW	PM2_5_PMBW	SOx_RUNEX	SOx_IDLEX	SOx_STREX	N2O_RUNEX	N2O_IDLEX	N2O_STREX
SAN JOAQUIN VALLEY	0.06174	0.0333383	0.009905	0	0.009	0.02646	0.017843	0.0452324	0	0.296869	0.7525702	0
SAN JOAQUIN VALLEY	0.06174	0.0317628	0.0089292	0	0.009	0.02646	0.0173107	0.0441881	0	0.2880128	0.7351948	0
SAN JOAQUIN VALLEY	0.06174	0.015397	0.0066858	0	0.009	0.02646	0.0146708	0.0380366	0	0.2440898	0.6328468	0
SAN JOAQUIN VALLEY	0.06174	0.0148835	0.0066858	0	0.009	0.02646	0.0112724	0.0299601	0	0.1875485	0.4984716	0

Table E2.29.
EMFAC Output - Worker Vehicles

EMFAC2017 (v1.0.2) Emission Rates
Region Type: Air Basin
Region: SAN JOAQUIN VALLEY
Calendar Year: 2018, 2021, 2026, 2036
Season: Annual
Vehicle Classification: EMFAC2011 Categories
Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HTSK and RUNLS, g/vehicle/day for IDLEX, RESTL and DIURN

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population	VMT	Trips	ROG_RUNEX	ROG_IDLEX	ROG_STREX	ROG_HOTSOAK	ROG_RUNLOSS	ROG_RESTLOSS
SAN JOAQUIN VALLEY	2018	LDA	Aggregated	Aggregated	GAS	1473207.951	58537725.34	6880474.074	0.020791715	0	0.374227	0.157369733	0.293544338	0.330669825
SAN JOAQUIN VALLEY	2018	LDA	Aggregated	Aggregated	DSL	9385.342796	388267.0505	43981.25506	0.024475009	0	0	0	0	0
SAN JOAQUIN VALLEY	2018	LDA	Aggregated	Aggregated	ELEC	11010.29585	417777.7857	55780.06259	0	0	0	0.004888026	0	0.010221985
SAN JOAQUIN VALLEY	2018	LDT1	Aggregated	Aggregated	GAS	165464.879	5663233.805	731901.6856	0.06806691	0	0.730579	0.407685043	1.395119164	0.852107733
SAN JOAQUIN VALLEY	2018	LDT1	Aggregated	Aggregated	DSL	199.9466399	3657.486356	684.4807788	0.231459467	0	0	0	0	0
SAN JOAQUIN VALLEY	2018	LDT1	Aggregated	Aggregated	ELEC	84.48792547	2973.399427	415.6426663	0	0	0	0.004888026	0	0.010206759
SAN JOAQUIN VALLEY	2018	LDT2	Aggregated	Aggregated	GAS	539171.2244	19989671.58	2476200.171	0.037828179	0	0.545436	0.212482479	0.675437623	0.489155254
SAN JOAQUIN VALLEY	2018	LDT2	Aggregated	Aggregated	DSL	1533.170173	68663.74036	7430.251466	0.02648599	0	0	0	0	0
SAN JOAQUIN VALLEY	2018	LDT2	Aggregated	Aggregated	ELEC	1122.938505	40185.72553	5765.469572	0	0	0	0.004888026	0	0.010113164
SAN JOAQUIN VALLEY	2021	LDA	Aggregated	Aggregated	GAS	1612278.084	63245427.41	7566660.32	0.011291495	0	0.267734	0.119458121	0.242321484	0.252631255
SAN JOAQUIN VALLEY	2021	LDA	Aggregated	Aggregated	DSL	13026.25015	542705.5241	61896.93827	0.016030315	0	0	0	0	0
SAN JOAQUIN VALLEY	2021	LDA	Aggregated	Aggregated	ELEC	22348.94152	900517.8695	112034.5529	0	0	0	0.004888026	0	0.010148608
SAN JOAQUIN VALLEY	2021	LDT1	Aggregated	Aggregated	GAS	172823.1037	5999592.305	775743.6063	0.037611955	0	0.515643	0.310589017	1.050987236	0.672543178
SAN JOAQUIN VALLEY	2021	LDT1	Aggregated	Aggregated	DSL	149.4394701	2636.981321	501.7114787	0.19805375	0	0	0	0	0
SAN JOAQUIN VALLEY	2021	LDT1	Aggregated	Aggregated	ELEC	554.3214802	23601.06012	2824.551397	0	0	0	0.004888026	0	0.010156145
SAN JOAQUIN VALLEY	2021	LDT2	Aggregated	Aggregated	GAS	564173.8523	20549787.92	2599256.606	0.022021424	0	0.414589	0.177497452	0.578664246	0.434091797
SAN JOAQUIN VALLEY	2021	LDT2	Aggregated	Aggregated	DSL	2556.305983	111966.2528	12536.45627	0.017243576	0	0	0	0	0
SAN JOAQUIN VALLEY	2021	LDT2	Aggregated	Aggregated	ELEC	3217.069129	107395.4157	16321.8794	0	0	0	0.004888026	0	0.010125948
SAN JOAQUIN VALLEY	2026	LDA	Aggregated	Aggregated	GAS	1852652.691	69600516.51	8705085.357	0.005415126	0	0.168483	0.086749934	0.20445483	0.180273389
SAN JOAQUIN VALLEY	2026	LDA	Aggregated	Aggregated	DSL	18751.1893	743927.8707	89472.7998	0.008913904	0	0	0	0	0
SAN JOAQUIN VALLEY	2026	LDA	Aggregated	Aggregated	ELEC	56882.73488	2427043.726	281598.3777	0	0	0	0.004888026	0	0.010092475
SAN JOAQUIN VALLEY	2026	LDT1	Aggregated	Aggregated	GAS	191294.3935	6567175.959	871443.3229	0.016342179	0	0.288482	0.19558215	0.685378058	0.44486509
SAN JOAQUIN VALLEY	2026	LDT1	Aggregated	Aggregated	DSL	91.37740684	1693.164376	309.4036556	0.129664979	0	0	0	0	0
SAN JOAQUIN VALLEY	2026	LDT1	Aggregated	Aggregated	ELEC	2627.240278	117233.4962	13196.06776	0	0	0	0.004888026	0	0.010134656
SAN JOAQUIN VALLEY	2026	LDT2	Aggregated	Aggregated	GAS	617352.7421	21634118.34	2850217.892	0.011438268	0	0.268908	0.135195989	0.474514394	0.365492091
SAN JOAQUIN VALLEY	2026	LDT2	Aggregated	Aggregated	DSL	4299.663727	171030.6861	20845.27181	0.014412215	0	0	0	0	0
SAN JOAQUIN VALLEY	2026	LDT2	Aggregated	Aggregated	ELEC	10859.72169	329262.3498	54200.23107	0	0	0	0.004888026	0	0.010124197
SAN JOAQUIN VALLEY	2036	LDA	Aggregated	Aggregated	GAS	2281154.707	79229327.64	10649959.6	0.00235815	0	0.088419	0.052220381	0.172622962	0.109155857
SAN JOAQUIN VALLEY	2036	LDA	Aggregated	Aggregated	DSL	27219.89085	969175.1972	128269.9413	0.004955192	0	0	0	0	0
SAN JOAQUIN VALLEY	2036	LDA	Aggregated	Aggregated	ELEC	129603.3389	4699109.727	619941.5789	0	0	0	0.004888026	0	0.010038667
SAN JOAQUIN VALLEY	2036	LDT1	Aggregated	Aggregated	GAS	237627.5416	7707250.676	1088457.265	0.003832367	0	0.110573	0.079510471	0.299390388	0.198707296
SAN JOAQUIN VALLEY	2036	LDT1	Aggregated	Aggregated	DSL	35.91792897	1112.92363	160.8947026	0.017440618	0	0	0	0	0
SAN JOAQUIN VALLEY	2036	LDT1	Aggregated	Aggregated	ELEC	7368.708804	269068.6704	35328.92517	0	0	0	0.004888026	0	0.010118363
SAN JOAQUIN VALLEY	2036	LDT2	Aggregated	Aggregated	GAS	737895.5132	24233306.91	3397741.725	0.004236437	0	0.133657	0.075592495	0.284989289	0.239220516
SAN JOAQUIN VALLEY	2036	LDT2	Aggregated	Aggregated	DSL	7021.549269	241232.1193	33016.45519	0.014015674	0	0	0	0	0
SAN JOAQUIN VALLEY	2036	LDT2	Aggregated	Aggregated	ELEC	27860.59345	699103.4324	133247.7853	0	0	0	0.004888026	0	0.010111868

Table E2.29.
EMFAC Output - Worker Vehicles

EMFAC2017 (v1.0.2) Emission Rates
Region Type: Air Basin
Region: SAN JOAQUIN VALLEY
Calendar Year: 2018, 2021, 2026, 2036
Season: Annual
Vehicle Classification: EMFAC2011 Categories
Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX,

Region	ROG_DIURN	TOG_RUNEX	TOG_IDLEX	TOG_STREX	TOG_HOTS	TOG_RUNLOSS	TOG_RESTL	TOG_DIURN	CO_RUNEX	CO_IDLEX	CO_STRE	NOx_RUNE	NOx_IDLEX	NOx_STREX	CO2_RUNE	CO2_IDLEX	CO2_STREX	CH4_RUNE
SAN JOAQUIN VALLEY	0.47378334	0.029967701	0	0.409701	0.15737	0.293544338	0.33067	0.4737833	0.999356	0	2.57936	0.0768945	0	0.26753	300.479	0	61.82081	0.004855
SAN JOAQUIN VALLEY	0	0.027863171	0	0	0	0	0	0	0.285226	0	0	0.1877122	0	0	227.5307	0	0	0.001137
SAN JOAQUIN VALLEY	0.029305882	0	0	0	0.004888	0	0.010222	0.0293059	0	0	0	0	0	0	0	0	0	0
SAN JOAQUIN VALLEY	1.379112151	0.097054601	0	0.799798	0.407685	1.395119164	0.852108	1.3791122	2.5321023	0	3.04391	0.2579722	0	0.450482	353.5578	0	74.48491	0.01421
SAN JOAQUIN VALLEY	0	0.263501215	0	0	0	0	0	0	1.5064696	0	0	1.380645	0	0	440.5375	0	0	0.010751
SAN JOAQUIN VALLEY	0.029238	0	0	0	0.004888	0	0.010207	0.029238	0	0	0	0	0	0	0	0	0	0
SAN JOAQUIN VALLEY	0.683001501	0.05374606	0	0.597121	0.212482	0.675437623	0.489155	0.6830015	1.5700297	0	3.42775	0.1848199	0	0.489964	392.4272	0	82.63993	0.008191
SAN JOAQUIN VALLEY	0	0.030152538	0	0	0	0	0	0	0.169389	0	0	0.1048186	0	0	312.0864	0	0	0.00123
SAN JOAQUIN VALLEY	0.029212	0	0	0	0.004888	0	0.010113	0.029212	0	0	0	0	0	0	0	0	0	0
SAN JOAQUIN VALLEY	0.344650323	0.016465822	0	0.293133	0.119458	0.242321484	0.252631	0.3446503	0.6995197	0	2.33661	0.0457078	0	0.210931	278.2614	0	57.12756	0.002885
SAN JOAQUIN VALLEY	0	0.018249448	0	0	0	0	0	0	0.2230693	0	0	0.0928326	0	0	209.3131	0	0	0.000745
SAN JOAQUIN VALLEY	0.029236184	0	0	0	0.004888	0	0.010149	0.0292362	0	0	0	0	0	0	0	0	0	0
SAN JOAQUIN VALLEY	1.043010639	0.054835444	0	0.56456	0.310589	1.050987236	0.672543	1.0430106	1.6155276	0	2.64454	0.1546221	0	0.341705	327.0593	0	68.5556	0.008373
SAN JOAQUIN VALLEY	0	0.225471027	0	0	0	0	0	0	1.3122079	0	0	1.1976025	0	0	432.8707	0	0	0.009199
SAN JOAQUIN VALLEY	0.029275739	0	0	0	0.004888	0	0.010156	0.0292757	0	0	0	0	0	0	0	0	0	0
SAN JOAQUIN VALLEY	0.576468128	0.032111892	0	0.453921	0.177497	0.578664246	0.434092	0.5764681	1.0944868	0	3.02788	0.1143591	0	0.368709	356.4118	0	75.25289	0.005215
SAN JOAQUIN VALLEY	0	0.019630665	0	0	0	0	0	0	0.1348425	0	0	0.0558358	0	0	283.9277	0	0	0.000801
SAN JOAQUIN VALLEY	0.029241721	0	0	0	0.004888	0	0.010126	0.0292417	0	0	0	0	0	0	0	0	0	0
SAN JOAQUIN VALLEY	0.234824921	0.007901739	0	0.184468	0.08675	0.20445483	0.180273	0.2348249	0.5022147	0	1.9881	0.0258545	0	0.155019	242.4634	0	49.67787	0.001552
SAN JOAQUIN VALLEY	0	0.010147887	0	0	0	0	0	0	0.1786336	0	0	0.0326401	0	0	184.1205	0	0	0.000414
SAN JOAQUIN VALLEY	0.029179424	0	0	0	0.004888	0	0.010092	0.0291794	0	0	0	0	0	0	0	0	0	0
SAN JOAQUIN VALLEY	0.649529602	0.023846469	0	0.315851	0.195582	0.685378058	0.444865	0.6495296	0.8822251	0	2.14505	0.0712767	0	0.222452	285.1765	0	59.35734	0.00384
SAN JOAQUIN VALLEY	0	0.147614958	0	0	0	0	0	0	0.9134043	0	0	0.7852326	0	0	402.2659	0	0	0.006023
SAN JOAQUIN VALLEY	0.029257746	0	0	0	0.004888	0	0.010135	0.0292577	0	0	0	0	0	0	0	0	0	0
SAN JOAQUIN VALLEY	0.458963751	0.016690693	0	0.294421	0.135196	0.474514394	0.365492	0.4589638	0.7250107	0	2.55723	0.0576384	0	0.23863	300.058	0	63.63129	0.002899
SAN JOAQUIN VALLEY	0	0.016407348	0	0	0	0	0	0	0.1354467	0	0	0.0344477	0	0	247.8433	0	0	0.000669
SAN JOAQUIN VALLEY	0.02924284	0	0	0	0.004888	0	0.010124	0.0292428	0	0	0	0	0	0	0	0	0	0
SAN JOAQUIN VALLEY	0.134272682	0.003441007	0	0.096808	0.05222	0.172622962	0.109156	0.1342727	0.3967769	0	1.54949	0.0183797	0	0.120979	204.7321	0	41.12736	0.000791
SAN JOAQUIN VALLEY	0	0.005641157	0	0	0	0	0	0	0.1498899	0	0	0.0102816	0	0	159.8792	0	0	0.00023
SAN JOAQUIN VALLEY	0.029112814	0	0	0	0.004888	0	0.010039	0.0291128	0	0	0	0	0	0	0	0	0	0
SAN JOAQUIN VALLEY	0.247585386	0.005592182	0	0.121063	0.07951	0.299390388	0.198707	0.2475854	0.4444519	0	1.6307	0.0237937	0	0.138067	240.0006	0	48.711	0.001118
SAN JOAQUIN VALLEY	0	0.019854984	0	0	0	0	0	0	0.1897353	0	0	0.0884475	0	0	318.5196	0	0	0.00081
SAN JOAQUIN VALLEY	0.029235696	0	0	0	0.004888	0	0.010118	0.0292357	0	0	0	0	0	0	0	0	0	0
SAN JOAQUIN VALLEY	0.283681041	0.006181799	0	0.146338	0.075592	0.284989289	0.239221	0.283681	0.4882591	0	2.0475	0.0242716	0	0.141766	239.6887	0	49.99292	0.001262
SAN JOAQUIN VALLEY	0	0.015955914	0	0	0	0	0	0	0.1458622	0	0	0.0283731	0	0	213.9905	0	0	0.000651
SAN JOAQUIN VALLEY	0.029225336	0	0	0	0.004888	0	0.010112	0.0292253	0	0	0	0	0	0	0	0	0	0

Table E2.29.
EMFAC Output - Worker Vehicles

EMFAC2017 (v1.0.2) Emission Rates
Region Type: Air Basin
Region: SAN JOAQUIN VALLEY
Calendar Year: 2018, 2021, 2026, 2036
Season: Annual
Vehicle Classification: EMFAC2011 Categories
Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX,

Region	CH4_IDLEX	CH4_STREX	PM10_RUN	PM10_IDLE	PM10_STRE	PM10_PMT	PM10_PMB	PM2_5_RU	PM2_5_IDL	PM2_5_STR	PM2_5_PM	PM2_5_PM	SOx_RUNEX	SOx_IDLEX	SOx_STREX	N2O_RUNE	N2O_IDLEX	N2O_STREX
SAN JOAQUIN VALLEY	0	0.076814	0.001556	0	0.002157	0.008	0.03675	0.001431	0	0.001985	0.002	0.01575	0.002973	0	0.000612	0.007023	0	0.031154
SAN JOAQUIN VALLEY	0	0	0.014183	0	0	0.008	0.03675	0.013569	0	0	0.002	0.01575	0.002151	0	0	0.035765	0	0
SAN JOAQUIN VALLEY	0	0	0	0	0	0.008	0.03675	0	0	0	0.002	0.01575	0	0	0	0	0	0
SAN JOAQUIN VALLEY	0	0.132448	0.003072	0	0.003973	0.008	0.03675	0.002826	0	0.003657	0.002	0.01575	0.003499	0	0.000737	0.016601	0	0.038305
SAN JOAQUIN VALLEY	0	0	0.17935	0	0	0.008	0.03675	0.171592	0	0	0.002	0.01575	0.004165	0	0	0.069246	0	0
SAN JOAQUIN VALLEY	0	0	0	0	0	0.008	0.03675	0	0	0	0.002	0.01575	0	0	0	0	0	0
SAN JOAQUIN VALLEY	0	0.106809	0.001776	0	0.002339	0.008	0.03675	0.001635	0	0.002153	0.002	0.01575	0.003883	0	0.000818	0.01242	0	0.043593
SAN JOAQUIN VALLEY	0	0	0.014186	0	0	0.008	0.03675	0.013572	0	0	0.002	0.01575	0.00295	0	0	0.049056	0	0
SAN JOAQUIN VALLEY	0	0	0	0	0	0.008	0.03675	0	0	0	0.002	0.01575	0	0	0	0	0	0
SAN JOAQUIN VALLEY	0	0.058576	0.001502	0	0.002011	0.008	0.03675	0.001381	0	0.001849	0.002	0.01575	0.002754	0	0.000565	0.005003	0	0.027715
SAN JOAQUIN VALLEY	0	0	0.00814	0	0	0.008	0.03675	0.007788	0	0	0.002	0.01575	0.001979	0	0	0.032901	0	0
SAN JOAQUIN VALLEY	0	0	0	0	0	0.008	0.03675	0	0	0	0.002	0.01575	0	0	0	0	0	0
SAN JOAQUIN VALLEY	0	0.09762	0.00237	0	0.003146	0.008	0.03675	0.00218	0	0.002893	0.002	0.01575	0.003237	0	0.000678	0.010903	0	0.03311
SAN JOAQUIN VALLEY	0	0	0.152337	0	0	0.008	0.03675	0.145747	0	0	0.002	0.01575	0.004092	0	0	0.068041	0	0
SAN JOAQUIN VALLEY	0	0	0	0	0	0.008	0.03675	0	0	0	0.002	0.01575	0	0	0	0	0	0
SAN JOAQUIN VALLEY	0	0.084998	0.001607	0	0.002086	0.008	0.03675	0.001478	0	0.001918	0.002	0.01575	0.003527	0	0.000745	0.00857	0	0.037112
SAN JOAQUIN VALLEY	0	0	0.007007	0	0	0.008	0.03675	0.006704	0	0	0.002	0.01575	0.002684	0	0	0.044629	0	0
SAN JOAQUIN VALLEY	0	0	0	0	0	0.008	0.03675	0	0	0	0.002	0.01575	0	0	0	0	0	0
SAN JOAQUIN VALLEY	0	0.039825	0.00125	0	0.001674	0.008	0.03675	0.001149	0	0.001539	0.002	0.01575	0.002399	0	0.000492	0.003579	0	0.022961
SAN JOAQUIN VALLEY	0	0	0.003442	0	0	0.008	0.03675	0.003293	0	0	0.002	0.01575	0.001741	0	0	0.028941	0	0
SAN JOAQUIN VALLEY	0	0	0	0	0	0.008	0.03675	0	0	0	0.002	0.01575	0	0	0	0	0	0
SAN JOAQUIN VALLEY	0	0.058963	0.001604	0	0.002175	0.008	0.03675	0.001475	0	0.002	0.002	0.01575	0.002822	0	0.000587	0.006089	0	0.026087
SAN JOAQUIN VALLEY	0	0	0.096795	0	0	0.008	0.03675	0.092608	0	0	0.002	0.01575	0.003803	0	0	0.063231	0	0
SAN JOAQUIN VALLEY	0	0	0	0	0	0.008	0.03675	0	0	0	0.002	0.01575	0	0	0	0	0	0
SAN JOAQUIN VALLEY	0	0.058627	0.001322	0	0.001743	0.008	0.03675	0.001216	0	0.001603	0.002	0.01575	0.002969	0	0.00063	0.005246	0	0.028367
SAN JOAQUIN VALLEY	0	0	0.004445	0	0	0.008	0.03675	0.004252	0	0	0.002	0.01575	0.002343	0	0	0.038958	0	0
SAN JOAQUIN VALLEY	0	0	0	0	0	0.008	0.03675	0	0	0	0.002	0.01575	0	0	0	0	0	0
SAN JOAQUIN VALLEY	0	0.023146	0.000695	0	0.00099	0.008	0.03675	0.000639	0	0.00091	0.002	0.01575	0.002026	0	0.000407	0.003037	0	0.019497
SAN JOAQUIN VALLEY	0	0	0.001048	0	0	0.008	0.03675	0.001002	0	0	0.002	0.01575	0.001511	0	0	0.025131	0	0
SAN JOAQUIN VALLEY	0	0	0	0	0	0.008	0.03675	0	0	0	0.002	0.01575	0	0	0	0	0	0
SAN JOAQUIN VALLEY	0	0.027194	0.000787	0	0.001121	0.008	0.03675	0.000724	0	0.001031	0.002	0.01575	0.002375	0	0.000482	0.003404	0	0.020917
SAN JOAQUIN VALLEY	0	0	0.006213	0	0	0.008	0.03675	0.005944	0	0	0.002	0.01575	0.003011	0	0	0.050067	0	0
SAN JOAQUIN VALLEY	0	0	0	0	0	0.008	0.03675	0	0	0	0.002	0.01575	0	0	0	0	0	0
SAN JOAQUIN VALLEY	0	0.032675	0.000742	0	0.001044	0.008	0.03675	0.000682	0	0.00096	0.002	0.01575	0.002372	0	0.000495	0.003309	0	0.021145
SAN JOAQUIN VALLEY	0	0	0.004076	0	0	0.008	0.03675	0.0039	0	0	0.002	0.01575	0.002023	0	0	0.033636	0	0
SAN JOAQUIN VALLEY	0	0	0	0	0	0.008	0.03675	0	0	0	0.002	0.01575	0	0	0	0	0	0

Table E2.30.

EMFAC2017 Adjustment Factors

Adjustment Factors for EMFAC2017 Gasoline Light Duty Vehicles

Year	NOx Exhaust	TOG Evaporativ	TOG Exhaust	PM Exhaust	CO Exhaust
2018	1	1	1	1	1
2021	1.0002	1.0001	1.0002	1.0009	1.0005
2026	1.0023	1.0022	1.002	1.0091	1.0083
2036	1.0088	1.0121	1.0069	1.0223	1.0244

Notes:

EMFAC2017 automobile emission factors were corrected per CARB's guidance to reflect the "Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule Part One: One National Program" adopted by the USEPA and the National Highway Traffic Safety Administration (NHTSA). CARB EMFAC Off-Model Adjustment Factors to Account for the SAFE Vehicle Rule Part One, Table 2. November 20, 2019. Last accessed November 26, 2019 at: https://ww2.arb.ca.gov/our-work/programs/mobile-source-emissions-inventory/msei-announcement.

CARB did not issue adjustment factors for years prior to 2021.

Table E2.31.

Emission Factors used to calculate Truck Idling Emissions

EMFAC2017 (v1.0.2) Emission Rates
Region Type: Air Basin
Region: SAN JOAQUIN VALLEY
Calendar Year: 2018, 2021, 2026, 2036
Season: Annual
Vehicle Classification: EMFAC2011 Categories
Units: miles/day for VMT, g/mile for RUNEX, PMBW and PMTW

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	VMT	ROG_RUNEX	TOG_RUNEX	CO_RUNEX	NOx_RUNEX	SOx_RUNEX	CO2_RUNEX	CH4_RUNEX	PM10_RUNEX	PM2_5_RUNEX	N2O_RUNEX
SAN JOAQUIN VALLEY	2018	T7 other port	Aggregated	5	DSL	1750.1634	1.130063209	1.286490941	4.095357203	14.62868284	0.0354144	3748.549463	0.052488509	0.049643918	0.047496344	0.589219774
SAN JOAQUIN VALLEY	2021	T7 other port	Aggregated	5	DSL	1974.697016	0.945986583	1.076933715	3.911415565	15.23089944	0.0351395	3719.451676	0.043938627	0.043528079	0.041645073	0.584646007
SAN JOAQUIN VALLEY	2026	T7 other port	Aggregated	5	DSL	2323.463086	0.134345529	0.152942158	2.293156659	14.64761055	0.0319638	3383.30826	0.006240002	0.013049272	0.012484766	0.531808943
SAN JOAQUIN VALLEY	2036	T7 other port	Aggregated	5	DSL	2721.442272	0.131570528	0.149783031	2.245789023	15.18548904	0.0245597	2599.594768	0.00611111	0.012614016	0.012068339	0.408620096

Notes:

Onsite idling emission factors for trucks were based on EMFAC2017 emissions at 5 mph for heavy duty trucks, corrected by a CARB-specified speed correction factor.

Table E2.32.

Combined Rail Emissions

	Average Day Emissions (lb/day)						Annual Emissions (ton/yr)									
	PM10	PM2.5	NOX	SOX	CO	VOC	PM10	PM2.5	NOX	SOX	CO	VOC	CO2	CH4	N2O	CO2e
Baseline																
Switching																
Switching Onsite	0.03	0.03	0.89	0.00	0.24	0.05	0.01	0.01	0.16	0.00	0.04	0.01	19.73	0.00	0.00	
Switching in SJVAPCD	0.06	0.06	1.77	0.00	0.48	0.10	0.01	0.01	0.32	0.00	0.09	0.02	39.45	0.00	0.00	
Line Haul																
In SJVAPCD	0.04	0.04	1.91	0.00	0.54	0.06	0.01	0.01	0.35	0.00	0.10	0.01	37.50	0.00	0.00	
In Sacramento Metro	0.07	0.06	3.32	0.00	0.93	0.11	0.01	0.01	0.61	0.00	0.17	0.02	65.21	0.01	0.00	
In California													200.53	0.02	0.01	
Total																
In SJVAPCD	0.10	0.09	3.68	0.00	1.01	0.17	0.02	0.02	0.67	0.00	0.18	0.03	76.95	0.01	0.00	
In Sacramento Metro	0.07	0.06	3.32	0.00	0.93	0.11	0.01	0.01	0.61	0.00	0.17	0.02	65.21	0.01	0.00	
In California													239.98	0.02	0.01	242
Year 1																
Switching																
Switching Onsite	0.10	0.10	2.87	0.00	0.77	0.16	0.02	0.02	0.52	0.00	0.14	0.03	64.02	0.01	0.00	
Switching in SJVAPCD	0.20	0.20	5.75	0.01	1.55	0.33	0.04	0.04	1.05	0.00	0.28	0.06	128.04	0.01	0.00	
Line Haul																
In SJVAPCD	0.08	0.08	4.97	0.01	1.74	0.15	0.02	0.01	0.91	0.00	0.32	0.03	121.66	0.01	0.00	
In Sacramento Metro	0.14	0.13	8.65	0.01	3.02	0.26	0.03	0.02	1.58	0.00	0.55	0.05	211.58	0.02	0.01	
In California													650.61	0.05	0.02	
Total																
In SJVAPCD	0.29	0.27	10.72	0.01	3.29	0.48	0.05	0.05	1.96	0.00	0.60	0.09	249.69	0.02	0.01	
In Sacramento Metro	0.14	0.13	8.65	0.01	3.02	0.26	0.03	0.02	1.58	0.00	0.55	0.05	211.58	0.02	0.01	
In California													778.64	0.06	0.02	786
Year 5																
Switching																
Switching Onsite	0.05	0.05	1.44	0.00	0.39	0.08	0.01	0.01	0.26	0.00	0.07	0.01	32.01	0.00	0.00	
Switching in SJVAPCD	0.10	0.10	2.87	0.00	0.77	0.16	0.02	0.02	0.52	0.00	0.14	0.03	64.02	0.01	0.00	
Line Haul																
In SJVAPCD	0.07	0.06	4.44	0.01	2.46	0.14	0.01	0.01	0.81	0.00	0.45	0.03	172.43	0.01	0.00	
In Sacramento Metro	0.12	0.11	7.73	0.02	4.28	0.25	0.02	0.02	1.41	0.00	0.78	0.04	299.88	0.02	0.01	
In California													922.13	0.07	0.02	
Total																
In SJVAPCD	0.17	0.16	7.32	0.01	3.24	0.30	0.03	0.03	1.34	0.00	0.59	0.06	236.45	0.02	0.01	
In Sacramento Metro	0.12	0.11	7.73	0.02	4.28	0.25	0.02	0.02	1.41	0.00	0.78	0.04	299.88	0.02	0.01	
In California													986.15	0.08	0.02	995
Year 15																
Switching																
Switching Onsite	0.06	0.06	1.80	0.00	0.48	0.10	0.01	0.01	0.33	0.00	0.09	0.02	40.01	0.00	0.00	
Switching in SJVAPCD	0.13	0.12	3.59	0.00	0.97	0.20	0.02	0.02	0.66	0.00	0.18	0.04	80.01	0.01	0.00	
Line Haul																
In SJVAPCD	0.04	0.03	2.49	0.01	3.08	0.10	0.01	0.01	0.45	0.00	0.56	0.02	215.53	0.02	0.01	
In Sacramento Metro	0.06	0.06	4.33	0.02	5.36	0.18	0.01	0.01	0.79	0.00	0.98	0.03	374.84	0.03	0.01	
In California													1152.62	0.09	0.03	
Total																
In SJVAPCD	0.16	0.16	6.08	0.01	4.05	0.31	0.03	0.03	1.11	0.00	0.74	0.06	295.54	0.02	0.01	
In Sacramento Metro	0.06	0.06	4.33	0.02	5.36	0.18	0.01	0.01	0.79	0.00	0.98	0.03	374.84	0.03	0.01	
In California													1232.64	0.10	0.03	1,244

Table E2.33.
Average Line-Haul Emissions

		Empty Train		Filled Train		In SJVAPCD Total		In Sacramento Metro Total		In California Total	
Pollutant	Line-Haul Locomotive Emission Factor (g/gal)	Average Daily Emissions (lb/day)	Annual Emissions (ton/yr)	Average Daily Emissions (lb/day)	Annual Emissions (ton/yr)	Total Average Day Line-Haul Emissions (lb/day)	Total Annual Line-Haul Emissions (ton/yr)	Total Average Day Line-Haul Emissions (lb/day)	Total Annual Line-Haul Emissions (ton/yr)	Total Average Day Line-Haul Emissions (lb/day)	Total Annual Line-Haul Emissions (ton/yr)
Baseline											
NOx	94.78	0.49	0.09	1.42	0.26	1.91	0.35	3.32	0.61		
PM10	1.93	0.01	0.00	0.03	0.01	0.04	0.01	0.07	0.01		
PM2.5	1.77	0.01	0.00	0.03	0.00	0.04	0.01	0.06	0.01		
VOC	3.21	0.02	0.00	0.05	0.01	0.06	0.01	0.11	0.02		
CO	26.62	0.14	0.02	0.40	0.07	0.54	0.10	0.93	0.17		
SOx	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
CO2	10,210.00	52.36	9.56	153.11	27.94	205.47	37.50	357.34	65.21	1098.81	200.53
CH4	0.80	0.00	0.00	0.01	0.00	0.02	0.00	0.03	0.01	0.09	0.02
N2O	0.26	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.03	0.01
Year 1											
NOx	76.16	1.27	0.23	3.70	0.68	4.97	0.91	8.65	1.58		
PM10	1.26	0.02	0.00	0.06	0.01	0.08	0.02	0.14	0.03		
PM2.5	1.16	0.02	0.00	0.06	0.01	0.08	0.01	0.13	0.02		
VOC	2.26	0.04	0.01	0.11	0.02	0.15	0.03	0.26	0.05		
CO	26.62	0.44	0.08	1.29	0.24	1.74	0.32	3.02	0.55		
SOx	0.09	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00		
CO2	10,210.00	169.93	31.01	496.69	90.65	666.62	121.66	1159.34	211.58	3564.98	650.61
CH4	0.80	0.01	0.00	0.04	0.01	0.05	0.01	0.09	0.02	0.28	0.05
N2O	0.26	0.00	0.00	0.01	0.00	0.02	0.00	0.03	0.01	0.09	0.02
Year 5											
NOx	48.01	0.68	0.13	3.76	0.69	4.44	0.81	7.73	1.41		
PM10	0.76	0.01	0.00	0.06	0.01	0.07	0.01	0.12	0.02		
PM2.5	0.70	0.01	0.00	0.05	0.01	0.06	0.01	0.11	0.02		
VOC	1.53	0.02	0.00	0.12	0.02	0.14	0.03	0.25	0.04		
CO	26.62	0.38	0.07	2.08	0.38	2.46	0.45	4.28	0.78		
SOx	0.09	0.00	0.00	0.01	0.00	0.01	0.00	0.02	0.00		
CO2	10,210.00	145.66	26.58	799.17	145.85	944.82	172.43	1643.17	299.88	5052.75	922.13
CH4	0.80	0.01	0.00	0.06	0.01	0.07	0.01	0.13	0.02	0.39	0.07
N2O	0.26	0.00	0.00	0.02	0.00	0.02	0.00	0.04	0.01	0.13	0.02
Year 15											
NOx	21.54	0.38	0.07	2.11	0.38	2.49	0.45	4.33	0.79		
PM10	0.32	0.01	0.00	0.03	0.01	0.04	0.01	0.06	0.01		
PM2.5	0.30	0.01	0.00	0.03	0.01	0.03	0.01	0.06	0.01		
VOC	0.89	0.02	0.00	0.09	0.02	0.10	0.02	0.18	0.03		
CO	26.62	0.47	0.09	2.60	0.48	3.08	0.56	5.36	0.98		
SOx	0.09	0.00	0.00	0.01	0.00	0.01	0.00	0.02	0.00		
CO2	10,210.00	182.05	33.22	998.94	182.31	1,180.99	215.53	2053.90	374.84	6315.74	1152.62
CH4	0.80	0.01	0.00	0.08	0.01	0.09	0.02	0.16	0.03	0.49	0.09
N2O	0.26	0.00	0.00	0.02	0.00	0.03	0.01	0.05	0.01	0.16	0.03

Notes:

CO2e annual emissions are presented in short tons of CO2e per year.

Source: CARB. 2017 Line Haul / Class I Documentation https://www.arb.ca.gov/msei/ordiesel.htm and 2017 Emissions Inventory Aggregated at County/Air Basin/State. Last accessed 10/2/2018: https://www.arb.ca.gov/msei/ordiesel.htm

PM2.5 is 97% of PM10

HC emission factor convered to VOC = 1.053 * HC

Criteria pollutant emmissions are to the first point of rest.

Table E2.34.
Line- Haul Fuel Usage

Parameter	Value	Units	Reference
Baseline			
Product Volume to be Transported	61,663	ton per year	Rail car throughput provided by Lehigh in Operations 11_12 - TKR112219.xlsx. Email From: Richardson, Ted <tkrichardson@edg.net>, Sent: Monday, November 25, 2019 1:04 PM
Rail cars per year	294	rail cars per year is 1-way trips/2	Rail car activity (1-way trips) provided by Lehigh in Operations 11_12 - TKR112219.xlsx. Email From: Richardson, Ted <tkrichardson@edg.net>, Sent: Monday, November 25, 2019 1:04 PM
Rail cars per train	5	rail cars per train	Per Lehigh: An average of 5 rail cars per train in Baseline and Year 1. Operations Throuput Info Needs 11_12.docx.
Net Aggregated Fuel Consumption Index (Gross Weight - Locomotive Weight) (Line Hauling)	868	ton-miles/gal	Calculated from: California Air Resources Board (ARB). 2017. "2016 Line Haul Locomotive Model & Update". October. Available at: https://www.arb.ca.gov/msei/ordiesel.htm
Locomotives			
Number of locomotives per train	2	locomotives/train	Past Port projects.
Weight of locomotive	208	ton/locomotive	General Electric ET44C4
Miles traveled	23	miles/1-way	GoogleEarth.
Fuel consumption	647	gal/yr (1-way trip)	
Empty Rail Cars			
Weight of empty tank car	26	tons/car	Weight of empty rail typical 3250 cubic-foot GBX rail car used for cement products. Last accessed 12/2/2019 at: https://www.gbrx.com/manufacturing/north-america-rail/covered-hopper-railcars/3250-covered-hopper-railcar/
Weight of empty tank cars per year	7,631	tons/year	
Miles traveled	23	miles/1-way	GoogleEarth.
Fuel consumption	202	gal/yr (1-way trip)	
Product Transported			
Weight of product transported in year	61,663	tons/yr	
Miles traveled	23	miles/1-way	GoogleEarth.
Fuel consumption	1,634	gal/yr (1-way trip)	
Year 1			
Product Volume to be Transported	200,000	ton per year	Rail car throughput provided by Lehigh in Operations 11_12 - TKR112219.xlsx. Email From: Richardson, Ted <tkrichardson@edg.net>, Sent: Monday, November 25, 2019 1:04 PM
Rail cars per year	953	rail cars per year is 1-way trips/2	Rail car activity (1-way trips) provided by Lehigh in Operations 11_12 - TKR112219.xlsx. Email From: Richardson, Ted <tkrichardson@edg.net>, Sent: Monday, November 25, 2019 1:04 PM
Rail cars per train	5	rail cars per train	Per Lehigh: An average of 5 rail cars per train in Baseline and Year 1. Operations Throuput Info Needs 11_12.docx.
Net Aggregated Fuel Consumption Index (Gross Weight - Locomotive Weight) (Line Hauling)	868	ton-miles/gal	Calculated from: California Air Resources Board (ARB). 2017. "2016 Line Haul Locomotive Model & Update". October. Available at: https://www.arb.ca.gov/msei/ordiesel.htm
Locomotives			
Number of locomotives per train	2	locomotives/train	
Weight of locomotive	208	ton/locomotive	General Electric ET44C4
Miles traveled	23	miles/1-way	GoogleEarth.
Fuel consumption	2,100	gal/yr (1-way trip)	
Empty Rail Cars			
Weight of empty tank car	26	tons/car	Weight of empty rail typical 3250 cubic-foot GBX rail car used for cement products. Last accessed 12/2/2019 at: https://www.gbrx.com/manufacturing/north-america-rail/covered-hopper-railcars/3250-covered-hopper-railcar/
Weight of empty tank cars per year	24,765	tons/year	
Miles traveled	23	miles/1-way	GoogleEarth.
Fuel consumption	656	gal/yr (1-way trip)	
Product Transported			
Weight of product transported in year	200,000	tons/yr	
Miles traveled	23	miles/1-way	GoogleEarth.
Fuel consumption	5,299	gal/yr (1-way trip)	
Year 5			
Product Volume to be Transported	400,000	ton per year	Rail car throughput provided by Lehigh in Operations 11_12 - TKR112219.xlsx. Email From: Richardson, Ted <tkrichardson@edg.net>, Sent: Monday, November 25, 2019 1:04 PM
Rail cars per year	1,905	rail cars per year is 1-way trips/2	Rail car activity (1-way trips) provided by Lehigh in Operations 11_12 - TKR112219.xlsx. Email From: Richardson, Ted <tkrichardson@edg.net>, Sent: Monday, November 25, 2019 1:04 PM
Rail cars per train	20	rail cars per train	Per Lehigh: An average of 5 rail cars per train in Baseline and Year 1. Operations Throuput Info Needs 11_12.docx.
Net Aggregated Fuel Consumption Index (Gross Weight - Locomotive Weight) (Line Hauling)	868	ton-miles/gal	Calculated from: California Air Resources Board (ARB). 2017. "2016 Line Haul Locomotive Model & Update". October. Available at: https://www.arb.ca.gov/msei/ordiesel.htm
Locomotives			
Number of locomotives per train	2	locomotives/train	
Weight of locomotive	208	ton/locomotive	General Electric ET44C4
Miles traveled	23	miles/1-way	GoogleEarth.
Fuel consumption	1,050	gal/yr (1-way trip)	
Empty Rail Cars			
Weight of empty tank car	26	tons/car	Weight of empty rail typical 3250 cubic-foot GBX rail car used for cement products. Last accessed 12/2/2019 at: https://www.gbrx.com/manufacturing/north-america-rail/covered-hopper-railcars/3250-covered-hopper-railcar/
Weight of empty tank cars per year	49,530	tons/year	
Miles traveled	23	miles/1-way	GoogleEarth.
Fuel consumption	1,312	gal/yr (1-way trip)	
Product Transported			
Weight of product transported in year	400,000	tons/yr	
Miles traveled	23	miles/1-way	GoogleEarth.
Fuel consumption	10,597	gal/yr (1-way trip)	
Year 15			
Product Volume to be Transported	500,000	ton per year	Rail car throughput provided by Lehigh in Operations 11_12 - TKR112219.xlsx. Email From: Richardson, Ted <tkrichardson@edg.net>, Sent: Monday, November 25, 2019 1:04 PM
Rail cars per year	2,381	rail cars per year is 1-way trips/2	Rail car activity (1-way trips) provided by Lehigh in Operations 11_12 - TKR112219.xlsx. Email From: Richardson, Ted <tkrichardson@edg.net>, Sent: Monday, November 25, 2019 1:04 PM
Rail cars per train	20	rail cars per train	Per Lehigh: An average of 5 rail cars per train in Baseline and Year 1. Operations Throuput Info Needs 11_12.docx.
Net Aggregated Fuel Consumption Index (Gross Weight - Locomotive Weight) (Line Hauling)	868	ton-miles/gal	Calculated from: California Air Resources Board (ARB). 2017. "2016 Line Haul Locomotive Model & Update". October. Available at: https://www.arb.ca.gov/msei/ordiesel.htm
Locomotives			
Number of locomotives per train	2	locomotives/train	
Weight of locomotive	208	ton/locomotive	General Electric ET44C4
Miles traveled	23	miles/1-way	GoogleEarth.
Fuel consumption	1,312	gal/yr (1-way trip)	
Empty Rail Cars			
Weight of empty tank car	26	tons/car	Weight of empty rail typical 3250 cubic-foot GBX rail car used for cement products. Last accessed 12/2/2019 at: https://www.gbrx.com/manufacturing/north-america-rail/covered-hopper-railcars/3250-covered-hopper-railcar/
Weight of empty tank cars per year	61,906	tons/year	
Miles traveled	23	miles/1-way	GoogleEarth.
Fuel consumption	1,640	gal/yr (1-way trip)	
Product Transported			
Weight of product transported in year	500,000	tons/yr	
Miles traveled	23	miles/1-way	GoogleEarth.
Fuel consumption	13,247	gal/yr (1-way trip)	

Table E2.35.
Fuel Consumption Index Calculation

Parameter	Value	Units
Roseville to Fresno: positive grade	0.0058	
Roseville to Fresno: negative grade	-0.0048	
Fuel productivity (CARB equation)	832	GTM/gal
Fresno to Roseville: positive grade	0.0048	
Fresno to Roseville: negative grade	-0.0058	
Fuel productivity (CARB equation)	904	GTM/gal
Composite Fuel Consumption Index	868	ton-mile/gal

Source: California Air Resources Board (ARB). 2017. "2016 Line Haul Locomotive Model & Update". October. Table 4-4 and Equation 4.2. Last accessed on 12/2/2019 at: https://www.arb.ca.gov/msei/ordiesel.htm

Table E2.36.
SO2 Emission Factor - Line Haul

SO2 (g/gal)=	0.09	
(fuel density) * (MW SO2/ MW S) * (S content of fuel) * (conversion factor)		
Where:		
Fuel density	3,200	g/gal
the fraction of fuel sulfur converted to SO2	97.8%	
S content of fuel in parts per million (ppm)	15	ppm
S MW = Molecular Weight	32	
SO2 MW = Molecular Weight	64	

Table E2.37.
Rail Transit Distance

	Distance (1-way miles)	Distance in SJVAPCD (1-way miles)	Distance in Sacramento Metro (1-way miles)	Total Distance to CA Boundary (1-way miles)	Direction
Port to Galt	23	23			N
Galt to Roseville rail yard	40		40		N
Roseville to CA boundary	100			123	NE

Source:
Google Earth

Table E2.38.
U.S. EPA Emission Factors (g/gal)

	PM10	PM2.5	HC	NOx	CO	Tier Distribution 2018	2021	2026	2036
Pre-Tier	6.66	6.13	9.98	270.4	26.62	0%	0%	0%	0%
Tier 0	6.66	6.13	9.98	178.88	26.62	0%	0%	0%	0%
Tier 0+	4.16	3.83	6.24	149.76	26.62	2%	1%	0%	0%
Tier 1	6.66	6.13	9.78	139.36	26.62	0%	0%	0%	0%
Tier 1+	4.16	3.83	6.03	139.36	26.62	7%	1%	0%	0%
Tier 2	3.74	3.44	5.41	102.96	26.62	11%	0%	0%	0%
Tier 2+	1.66	1.53	2.7	102.96	26.62	33%	31%	3%	0%
Tier 3	1.66	1.53	2.7	102.96	26.62	32%	33%	30%	1%
Tier 4	0.31	0.29	0.83	20.8	26.62	14%	34%	67%	99%

Source:
CARB. 2017 Line Haul / Class I Documentation. Last accessed on 12/2/2019 at: https://www.arb.ca.gov/msei/ordiesel.htm

Tier distribution calculated by applying CARB Tier distribution for analysis year. CARB. 2017 Emissions Inventory Aggregated at County/Air Basin/State. Last accessed on 12/2/2019 at: https://www.arb.ca.gov/msei/ordiesel.htm

Line Haul Project Emission Factors (g/gal) | **Line Haul Project Emission Factors (g/gal)**

	PM10	PM2.5	VOC	NOx	CO	CO2	CH4	N2O
2018	1.93	1.77	3.21	94.78	26.62	10,210	0.798	0.255
2021	1.26	1.16	2.26	76.16	26.62	10,210	0.798	0.255
2026	0.76	0.70	1.53	48.01	26.62	10,210	0.798	0.255
2036	0.32	0.30	0.89	21.54	26.62	10,210	0.798	0.255

Source:
CO2: The Climate Registry. 2019 Emission Factors, Table 2.1.
CH4 and N2O: The Climate Registry. 2019 Emission Factors, Table 2.7.

Table E2.39.
Line Haul Locomotives Tier Distribution

	Pre-Tier	Tier 0	Tier 0+	Tier 1	Tier 1+	Tier 2	Tier 2+	Tier 3	Tier 4
2018	0%	0%	2%	0%	7%	11%	33%	32%	14%
2019	0%	0%	2%	0%	2%	5%	38%	32%	21%
2020	0%	0%	1%	0%	2%	0%	36%	33%	28%
2021	0%	0%	1%	0%	1%	0%	31%	33%	34%
2022	0%	0%	0%	0%	1%	0%	24%	34%	40%
2023	0%	0%	0%	0%	1%	0%	19%	34%	46%
2024	0%	0%	0%	0%	1%	0%	13%	32%	53%
2025	0%	0%	0%	0%	0%	0%	8%	31%	60%
2026	0%	0%	0%	0%	0%	0%	3%	30%	67%
2027	0%	0%	0%	0%	0%	0%	3%	24%	73%
2028	0%	0%	0%	0%	0%	0%	2%	18%	80%
2029	0%	0%	0%	0%	0%	0%	2%	13%	86%
2030	0%	0%	0%	0%	0%	0%	1%	8%	91%
2031	0%	0%	0%	0%	0%	0%	1%	2%	97%
2032	0%	0%	0%	0%	0%	0%	0%	2%	97%
2033	0%	0%	0%	0%	0%	0%	0%	2%	98%
2034	0%	0%	0%	0%	0%	0%	0%	2%	98%
2035	0%	0%	0%	0%	0%	0%	0%	1%	99%
2036	0%	0%	0%	0%	0%	0%	0%	1%	99%
2037	0%	0%	0%	0%	0%	0%	0%	0%	100%
2038	0%	0%	0%	0%	0%	0%	0%	0%	100%
2039	0%	0%	0%	0%	0%	0%	0%	0%	100%
2040	0%	0%	0%	0%	0%	0%	0%	0%	100%

Source:
Tier Distribution Activity is from: CARB. 2017 Emissions Inventory Aggregated at County/Air Basin/State. Last accessed on 12/2/2019 at: https://www.arb.ca.gov/msei/ordiesel.htm

Table E2.40.
Switching Fuel Usage Determination

Parameter	Value	Units	Reference
Baseline			
Rail cars per year	294	rail cars per year is 1-way trips/2	Rail car activity (1-way trips) provided by Lehigh in Operations 11_12 - TKR112219.xlsx. Email From: Richardson, Ted <tkrichardson@edg.net>, Sent: Monday, November 25, 2019 1:04 PM
Rail cars per train	5	rail cars per train	Per Lehigh: An average of 5 rail cars per train in Baseline and Year 1. Operations Throuput Info Needs 11_12.docx.
Manifest trains per year	59	trains per year	Calculated
Number of locomotives required per switch at the Terminal	1	per train	
Switching events at the Terminal	1	per train	Assumes: 1 switching event on property; 1 switching event elswhere within the Port.
Switching time at the Terminal	1	hour/train	Per Lehigh.
Number of locomotives required per switch at the Port staging	2	per train	
Switching events at the Port staging yard	1	per train	Assumes: 1 switching event on property; 1 switching event elswhere within the Port.
Switching time at the Port stating yard	2	hour/train	
Fuel used per hour per locomotive	12	gal/hr/locomotive	Calculated. See Switcher emission factor calculations.
Fuel used	60	gal/train	Calculated
Year 1			
Rail cars per year	953	rail cars per year is 1-way trips/2	
Rail cars per train	5	rail cars per train	Per Lehigh: An average of 5 rail cars per train in Baseline and Year 1. Operations Throuput Info Needs 11_12.docx.
Manifest trains per year	191	trains per year	Calculated.
Number of locomotives required per switch at the Terminal	1	per train	
Switching events at the Terminal	1	per train	Assumes: 1 switching event on property; 1 switching event elswhere within the Port.
Switching time at the Terminal	1	hour/train	Per Lehigh.
Number of locomotives required per switch at the Port staging	2	per train	
Switching events at the Port staging yard	1	per train	Assumes: 1 switching event on property; 1 switching event elswhere within the Port.
Switching time at the Port stating yard	2	hour/train	
Fuel used per hour per locomotive	12	gal/hr/locomotive	Calculated. See Switcher emission factor calculations.
Fuel used	60	gal/train	Calculated.
Year 5			
Rail cars per year	1,905	rail cars per year is	
Rail cars per train	20	rail cars per train	Per Lehigh: An average of 20 rail cars per train in Years 5 and 15, following rail loadout upgrade. Operations Throuput Info Needs 11_12.docx.
Manifest trains per year	95	trains per year	Calculated.
Number of locomotives required per switch at the Terminal	1	per train	
Switching events at the Terminal	1	per train	Assumes: 1 switching event on property; 1 switching event elswhere within the Port.
Switching time at the Terminal	1	hour/train	Per Lehigh.
Number of locomotives required per switch at the Port staging	2	per train	
Switching events at the Port staging yard	1	per train	Assumes: 1 switching event on property; 1 switching event elswhere within the Port.
Switching time at the Port stating yard	2	hour/train	
Fuel used per hour per locomotive	12	gal/hr/locomotive	Calculated. See Switcher emission factor calculations.
Fuel used	60	gal/train	Calculated.
Year 15			
Rail cars per year	2,381	rail cars per year is	
Rail cars per train	20	rail cars per train	Per Lehigh: An average of 20 rail cars per train in Years 5 and 15, following rail loadout upgrade. Operations Throuput Info Needs 11_12.docx.
Manifest trains per year	119	trains per year	Calculated.
Number of locomotives required per switch at the Terminal	1	per train	
Switching events at the Terminal	1	per train	Assumes: 1 switching event on property; 1 switching event elswhere within the Port.
Switching time at the Terminal	1	hour/train	Per Lehigh.
Number of locomotives required per switch at the Port staging	2	per train	
Switching events at the Port staging yard	1	per train	Assumes: 1 switching event on property; 1 switching event elswhere within the Port.
Switching time at the Port stating yard	2	hour/train	
Fuel used per hour per locomotive	12	gal/hr/locomotive	Calculated. See Switcher emission factor calculations.
Fuel used	60	gal/train	Calculated.

Table E2.41.
Average Switching Emissions

Pollutant	Switching Locomotive Emission Factor (g/gal)	Average Daily Emissions (lb/day)	Annual Emissions Emissions (ton/yr)
Baseline			
NOx	83.61	1.77	0.32
PM10	2.96	0.06	0.01
PM2.5	2.72	0.06	0.01
VOC	4.8	0.10	0.02
CO	22.53	0.48	0.09
SOx	0.09	0.00	0.00
CO2	10,210.00	216.18	39.45
CH4	0.80	0.02	0.00
N2O	0.26	0.01	0.00
Year 1			
NOx	83.61	5.75	1.05
PM10	2.96	0.20	0.04
PM2.5	2.9	0.20	0.04
VOC	4.8	0.33	0.06
CO	22.53	1.55	0.28
SOx	0.09	0.01	0.00
CO2	10,210.00	701.56	128.04
CH4	0.80	0.05	0.01
N2O	0.26	0.02	0.00
Year 5			
NOx	83.61	2.87	0.52
PM10	2.96	0.10	0.02
PM2.5	2.9	0.10	0.02
VOC	4.8	0.16	0.03
CO	22.53	0.77	0.14
SOx	0.09	0.00	0.00
CO2	10,210.00	350.78	64.02
CH4	0.80	0.03	0.01
N2O	0.26	0.01	0.00
Year 15			
NOx	83.61	3.59	0.66
PM10	2.96	0.13	0.02
PM2.5	2.9	0.12	0.02
VOC	4.8	0.20	0.04
CO	22.53	0.97	0.18
SOx	0.09	0.00	0.00
CO2	10,210.00	438.43	80.01
CH4	0.80	0.03	0.01
N2O	0.26	0.01	0.00

Notes:

CO2e annual emissions are presented in short tons of CO2e per year.

HC emission factor convered to VOC = 1.053 * HC

Source: Reflects switching fleet provided by Central California raction Company (CCT) and emission factors from CARB 2017 Short Line / Class III Documentation. Last accessed 10/2/2018 at: https://www.arb.ca.gov/msei/ordiesel.htm

Table E2.42.
SO2 Emission Factor - Switchers

SO2 (g/gal)=	0.09	
(fuel density) * (MW SO2/ MW S) * (S content of fuel) * (conversion factor)		
Where:		
Fuel density	3,200	g/gal
the fraction of fuel sulfur converted to SO2	97.8%	
S content of fuel in parts per million (ppm)	15	ppm
S MW = Molecular Weight	32	
SO2 MW = Molecular Weight	64	

Table E2.43.
CCT Switchers[1]

	Quantity	Engine Tier	Tier Distribution	Switcher Emission Factors (g/gal) PM10	HC	NOx	CO
4 SW 1500s	4	Tier 0	57%	4.864	7.296	130.72	19.456
3 Brookville Genset locomotives Tier IV	3	Tier 4	43%	0.416	0.832	20.8	26.624

Notes:

1. CCT Switchers.pdf. Switching operations provided by Central California Traction Company (CCT).

CCT operates 7 locomotives (4 SW 1500s and 3 Brookville Genset locomotives Tier IV), per CCT website. Last accessed on 11/27/2019 at: https://www.cctrailroad.com/about-us/

Switchers Project Emission Factors (g/gal)

	PM10	PM2.5	HC	NOx	CO	CO2	CH4	N2O
All Years	2.96	2.72	4.53	83.61	22.53	10210	1	0

Notes:

Conservatively assumes no change in switcher fleet in future years.

Table E2.44.
Switcher Emission Factors (g/bhp-hr)

	PM10	HC	NOx	CO
Pre-Tier	0.32	0.48	13	1.28
Tier 0	0.32	0.48	8.6	1.28
Tier 0+	0.2	0.3	7.2	1.28
Tier 1	0.32	0.47	6.7	1.28
Tier 1+	0.2	0.29	6.7	1.28
Tier 2	0.18	0.26	4.95	1.28
Tier 2+	0.08	0.13	4.95	1.28
Tier 3	0.08	0.13	4.95	1.28
Tier 4	0.02	0.04	1	1.28

Switcher Emission Factors (g/gal)

	PM10	HC	NOx	CO
Pre-Tier	4.864	7.296	197.6	19.456
Tier 0	4.864	7.296	130.72	19.456
Tier 0+	3.64	5.46	131.04	23.296
Tier 1	5.824	8.554	121.94	23.296
Tier 1+	3.64	5.278	121.94	23.296
Tier 2	3.744	5.408	102.96	26.624
Tier 2+	1.664	2.704	102.96	26.624
Tier 3	1.664	2.704	102.96	26.624
Tier 4	0.416	0.832	20.8	26.624

Source:

CARB. 2017 Short Line / Class III Documentation, Table 5.1. Last accessed 11/27/19 at: https://www.arb.ca.gov/msei/ordiesel.htm.

Table E2.45.
Switcher Conversion Factors (bhp-hr/gal)

Pre-Tier, Tier 0	15.2
Tier 0+, Tier 1, Tier 1+	18.2
Tier 2, Tier 2+, Tier 3, Tier 4	20.8

Source:

CARB. 2017 Short Line / Class III Documentation, Table 5.2. Last accessed 11/27/19 at: https://www.arb.ca.gov/msei/ordiesel.htm.

Table E2.46.
Power Distribution in Switcher Mode

Notch Position	Number Locomotives	Power (hp)[2][3]	Idle	DB	1	2	3	4	5	6	7	8	Composite Power (hp)	Composite Fuel Use (gal/hr)	Composite Fuel Use (gal/hr))
Time in Notch[1]			44.2%	0.0%	5.0%	25.0%	2.3%	21.5%	1.5%	0.6%	0.0%	0.0%			
EPA Power in Notch for an EPA-tested 1500 hp locomotive[2]			15	70	72	233	440	569	885	1109	1372	1586			
Load in Notch for and EPA-tested 1500 hp locomotive[2]		1500	1.0%	4.7%	4.8%	15.5%	29.3%	37.9%	59.0%	73.9%	91.5%	105.7%			
Work Done at Notch Setting Under the Indicated Duty Cycle (bhp-hr/hr)															
CCT Switcher Locomotive SW 1500s	4	1500	7	0	4	58	10	122	13	7	0	0	221	14.5	
CCT Switcher Locomotive Brookville Genset Tier IV	3	1200	5	0	3	47	8	98	11	5	0	0	177	8.5	
Composite Fuel Use for CCT Switchers															**11.9**

Notes:

1. Time in notch based on CARB's Toxic Air Contaminant Emissions Inventory and Air Dispersion Modeling Report for the Stockton Rail Yard, California. January 2007.

Last on 11/27/2019 at: https://ww2.arb.ca.gov/resources/documents/railyard-health-risk-assessments-and-mitigation-measures.

2. USEPA Office of Mobile Sources, Locomotive Emission Standards Regulatory Support Document, Appendix B. April 1998. EPA-420-R-98-101.

3. Power rating from SW1500 Locomotives.pdf. Last accessed on 11/27/19 at: https://www.brookvillecorp.com/BROOKVILLE-Ships-CoGens-to-CCT-04.10.2015.asp?news=News-Corporate.asp.

3. Power rating from BrookvilleTier-4_CCTp.df. Last accessed on 11/27/19 at: http://www.gatx.com/wps/wcm/connect/GATX/GATX_SITE/Home/Rail+North+America/Products/Equipment+Types/Locomotives/SW1500/

Table E2.47.
Conveying and Loading Dust Emissions

	Activity (ton/yr)	Activity (ton/day)	Emission Factor (lb/ton product)	Annual Emissions (ton/yr)		Average Day Emissions (lb/day)	
			PM	PM10	PM2.5	PM10	PM2.5
Baseline							
Loading	567,095	1,554	0.00278	0.79	0.79	4.32	4.32
Conveying	316,698	868	0.00034	0.05	0.05	0.30	0.30
Baseline Total	883,793	2,421		0.84	0.84	4.61	4.61
Year 1							
Loading	761,750	2,087	0.00278	1.06	1.06	5.80	5.80
Conveying	761,750	2,087	0.00034	0.13	0.13	0.71	0.71
Year 1 Total	1,523,500	4,174		1.19	1.19	6.51	6.51
Year 5							
Loading	1,350,000	3,699	0.00278	1.88	1.88	10.28	10.28
Conveying	1,435,000	3,932	0.00034	0.24	0.24	1.34	1.34
Year 5 Total	2,785,000	7,630		2.12	2.12	11.62	11.62
Year 15							
Loading	1,772,500	4,856	0.00278	2.46	2.46	13.50	13.50
Conveying	1,772,500	4,856	0.00034	0.30	0.30	1.65	1.65
Year 15 Total	3,545,000	9,712		2.77	2.77	15.15	15.15

Notes:

Emissions might not add precisely due to rounding.

Loading = Shipping out of facility.

Conveying = Receiving into facility

Emission factors are from SJVAPCD permit and permit application. Lehigh Stockton ATC Application 2019-1216 Final.pdf.

Table E2.48.
Onsite Mobile Source Emissions

Year	Equipment	Activity (hr/yr)	Fuel Use (ga/yr)	Model Year	Power Rating (hp)	Exhaust Emission Factors (g/hp-hr) - Loaded PM10	PM2.5	DPM	NOX	SOX	CO	VOC	(kg/gal) CO2	CH4	N2O
Baseline	Shuttle wagon	663	3,478	2017	260	0.003	0.002	0.003	0.075	0.002	0.375	0.011	205.929	0.001	0.000
	Front end loader	1,391	3,656	2017	141	0.003	0.003	0.003	0.096	0.002	1.040	0.025	190.245	0.001	0.000
Total Baseline															
Year 1	Shuttle wagon	2,151	11,282	2017	260	0.003	0.003	0.003	0.078	0.002	0.400	0.016	205.929	0.001	0.000
	Front end loader	1,691	4,448	2017	141	0.004	0.004	0.004	0.100	0.002	1.133	0.039	190.396	0.001	0.000
Total Year 1															
Year 5	Shuttle wagon	4,301	22,564	2017	260	0.003	0.003	0.003	0.082	0.002	0.440	0.024	205.929	0.001	0.000
	Front end loader	2,141	5,629	2017	141	0.005	0.004	0.005	0.107	0.002	1.265	0.057	190.318	0.001	0.000
Total Year 5															
Year 15	Shuttle wagon	5,376	28,205	2017	260	0.003	0.003	0.003	0.082	0.002	0.440	0.024	205.929	0.001	0.000
	Front end loader	2,366	6,237	2017	141	0.005	0.005	0.005	0.108	0.002	1.285	0.060	190.814	0.001	0.000
Total Year 15															

Year	Equipment	Exhaust Emissions (ton/yr) PM10	PM2.5	DPM	NOX	SOX	CO	VOC	(mton/yr) CO2	CH4	N2O	CO2e
Baseline	Shuttle wagon	0.00	0.00	0.00	0.01	0.00	0.07	0.00	35.50	0.00	0.00	35.82
	Front end loader	0.00	0.00	0.00	0.02	0.00	0.22	0.01	37.31	0.00	0.00	37.65
Total Baseline		**0.00**	**0.00**	**0.00**	**0.03**	**0.00**	**0.30**	**0.01**	**72.81**	**0.00**	**0.00**	**73.47**
Year 1	Shuttle wagon	0.00	0.00	0.00	0.05	0.00	0.25	0.01	115.14	0.01	0.00	116.17
	Front end loader	0.00	0.00	0.00	0.03	0.00	0.30	0.01	45.40	0.00	0.00	45.80
Total Year 1		**0.00**	**0.00**	**0.00**	**0.07**	**0.00**	**0.54**	**0.02**	**160.54**	**0.01**	**0.00**	**161.98**
Year 5	Shuttle wagon	0.00	0.00	0.00	0.10	0.00	0.54	0.03	230.29	0.01	0.01	232.35
	Front end loader	0.00	0.00	0.00	0.04	0.00	0.42	0.02	57.45	0.00	0.00	57.97
Total Year 5		**0.01**	**0.01**	**0.01**	**0.14**	**0.00**	**0.96**	**0.05**	**287.74**	**0.02**	**0.01**	**290.32**
Year 15	Shuttle wagon	0.00	0.00	0.00	0.13	0.00	0.68	0.04	287.86	0.02	0.01	290.44
	Front end loader	0.00	0.00	0.00	0.04	0.00	0.47	0.02	63.66	0.00	0.00	64.23
Total Year 15		**0.01**	**0.01**	**0.01**	**0.17**	**0.00**	**1.15**	**0.06**	**351.51**	**0.02**	**0.01**	**354.66**

Notes:

A sweeper, manlift, and forklift also operate onsite. Activity of this equipment would not change with the project. Emissions were therefore not quantified.

Only exhaust emissions were quantified. Fugitive emissions associated with front end loaders operating within bunkers would be controlled with permitted air quality control equipment and are accounted for in the conveying/loading particulate emmissions. Front end loaders would also operate at the bottom of a vessel cargo hold to push material remaining after ship unloading to the unloader intake point. Because ship holds are approximately 50-55 feet deep and unloading operations are not conducted during high wind events, fugitive emissions from front end loaders operating during ship receiving are not anticipated.

Source:

Exhaust emission factors were obtained from CARB's OFFROAD2017.

CH4 and N2O emission factors were obtained from 2019 Climate Registry Default Emission Factors, Table 13.7, Default CH4 and N2O Emission Factors for Non-Highway Vehicles.

Table E2.49.
Onsite Mobile Equipment Activity

Equipment	Facility Activity (ton/yr)	Number of Vessels	Equipment Processing Activity (ton/hr)	Units	Equipment Activity (hr/yr)
Baseline					
Shuttle wagon	61,663	1	93	ton/hr	663
Front End Loader		2			
truck shipping	148,080		127	ton/hr	1,166
ship receiving		9	25	hr/vessel	225
Year 1					
Shuttle wagon	200,000		93	ton/hr	2,151
Front End Loader		2			
truck shipping	148,080		127	ton/hr	1,166
ship receiving		21	25	hr/vessel	525
Year 5					
Shuttle wagon	400,000		93	ton/hr	4,301
Front End Loader		2			
truck shipping	148,080		127	ton/hr	1,166
ship receiving		39	25	hr/vessel	975
Year 15					
Shuttle wagon	500,000		93	ton/hr	5,376
Front End Loader		2			
truck shipping	148,080		127	ton/hr	1,166
ship receiving		48	25	hr/vessel	1200

Source:

Activity from and from information provided by Lehigh in 2019 Equipment Usage.pdf.

Notes:

loaders will not be needed inside the Dome but will continue to be used in the other bunkers. Per Lehigh's 2019 Equipment Usage.pdf, front end loaders will

Table E2.50.
GHG Emission Factors for Onsite Mobile Equipment

	CO2 (kg CO2/gal fuel)	CH4 (kg CH4/gal fuel)	N2O (kg N2O/gal fuel)	Fuel
offroad construction equipment[1],[2]	10.21	0.000576	0.000256	diesel

Source:

[1] CO_2 emission factors: 2019 Climate Registry Default Emission Factors, Table 13.1, US Default CO_2 Emission Factors for Transport Fuels

[2] N_2O and CH_4 emission factors: 2019 Climate Registry Default Emission Factors, Table 13.7, Default CH_4 and N_2O Emission Factors for Non-Highway Vehicles.

Table E2.51.
OFFROAD2017 Output

OFFROAD2017 (v1.0.1) Emissions Inventory
Region Type: Air District
Region: San Joaquin Valley Unified APCD
Calendar Year: 2018, 2021, 2026, 2036
Scenario: All Adopted Rules - Exhaust
Vehicle Classification: OFFROAD2017 Equipment Types
Units: Emissions: tons/day, Fuel Consumption: gallons/year, Activity: hours/year, HP-Hours: HP-hours/year

Region	CalYr	VehClass	MdlYr	HP_Bin	Fuel	HC_tpd	ROG_tpd	TOG_tpd	CO_tpd	NOx_tpd	CO2_tpd	PM10_tpd	PM2_5_tpd	PM_tpd	SOx_tpd	NH3_tpd	Fuel_gpy	Total_Activity_hpy	Total_Population	Horsepower_Hours_hhpy
San Joaquin Valley Unified APCD	2018	ConstMin - Sweepers	2007	50	Diesel	0.000130511	0.000157918	0.000187935	0.001393403	0.001452173	0.159043	0.000122273	0.000112491	0.000122273	1.46652E-06	1.29809E-06	5159.974256	5237.975	7.3411778	196909.0613
San Joaquin Valley Unified APCD	2018	ConstMin - Sweepers	2007	100	Diesel	0.000181307	0.000219381	0.000261081	0.002332693	0.003312367	0.3296618	0.000178628	0.000164338	0.000178628	3.04245E-06	2.69066E-06	10695.51476	5685.1192	8.1568642	454430.5312
San Joaquin Valley Unified APCD	2018	ConstMin - Sweepers	2007	300	Diesel	2.16763E-05	2.62284E-05	3.12139E-05	0.000112723	0.000259663	0.0535597	1.24971E-05	1.14974E-05	1.24971E-05	4.94535E-07	4.37147E-07	1737.684753	387.99815	0.5437909	73719.64856
San Joaquin Valley Unified APCD	2018	ConstMin - Sweepers	2007	600	Diesel	3.54237E-05	4.28627E-05	5.10101E-05	0.000176253	0.000424345	0.0875278	2.03812E-05	1.87507E-05	2.03812E-05	8.08175E-07	7.1439E-07	2839.742714	387.99815	0.5437909	120473.4257
San Joaquin Valley Unified APCD	2021	ConstMin - Sweepers	2007	50	Diesel	0.000156458	0.000189315	0.0002253	0.001599398	0.001551694	0.16432	0.000138318	0.000127252	0.000138318	1.51453E-06	1.34116E-06	5331.181432	5347.6308	7.2205211	203442.4745
San Joaquin Valley Unified APCD	2021	ConstMin - Sweepers	2007	100	Diesel	0.000213734	0.000258618	0.000307777	0.002533779	0.003539116	0.3432366	0.000201208	0.000185111	0.000201208	3.16698E-06	2.80145E-06	11135.93493	5883.528	8.1623282	473171.4256
San Joaquin Valley Unified APCD	2021	ConstMin - Sweepers	2007	300	Diesel	3.67409E-05	4.44565E-05	5.29069E-05	0.000165744	0.000386289	0.0778734	1.9441E-05	1.78857E-05	1.9441E-05	7.18876E-07	6.35592E-07	2526.517067	465.01137	0.6278714	107185.1209
San Joaquin Valley Unified APCD	2026	ConstMin - Sweepers	2007	50	Diesel	0.000131612	0.000159251	0.000189522	0.001296332	0.001174571	0.1200257	0.000110642	0.000101791	0.000110642	1.10575E-06	9.79633E-07	3894.100121	3796.4069	4.9110405	148602.2141
San Joaquin Valley Unified APCD	2026	ConstMin - Sweepers	2007	100	Diesel	0.000106561	0.000128938	0.000153447	0.001170679	0.001607843	0.1516847	0.000103693	9.53972E-05	0.000103693	1.3992E-06	1.23803E-06	4921.242968	2523.2217	3.5078861	209175.0772
San Joaquin Valley Unified APCD	2026	ConstMin - Sweepers	2007	300	Diesel	2.91211E-05	3.52366E-05	4.19344E-05	0.000115109	0.000271429	0.0533911	1.42855E-05	1.31427E-05	1.42855E-05	4.92753E-07	4.35771E-07	1732.214809	271.17192	0.3507886	73487.5913
San Joaquin Valley Unified APCD	2036	ConstMin - Sweepers	2007	50	Diesel	2.89081E-05	3.49787E-05	4.16276E-05	0.000284733	0.000257989	0.0263631	2.4302E-05	2.23579E-05	2.4302E-05	2.42872E-07	2.15172E-07	855.3205647	810.97551	1.5447004	31019.81307
San Joaquin Valley Unified APCD	2036	ConstMin - Sweepers	2007	75	Diesel	1.94869E-05	2.35791E-05	2.80611E-05	0.000214083	0.000294028	0.0277388	1.89624E-05	1.74454E-05	1.89624E-05	2.55874E-07	2.264E-07	899.953588	568.44077	2.3170506	38180.27203

OFFROAD2017 (v1.0.1) Emissions Inventory
Region Type: Air District
Region: San Joaquin Valley Unified APCD
Calendar Year: 2018, 2021, 2026, 2036
Scenario: All Adopted Rules - Exhaust
Vehicle Classification: OFFROAD2017 Equipment Types
Units: Emissions: tons/day, Fuel Consumption: gallons/year, Activity: hours/year, HP-Hours: HP-hours/year

Region	CalYr	VehClass	MdlYr	HP_Bin	Fuel	HC_tpd	ROG_tpd	TOG_tpd	CO_tpd	NOx_tpd	CO2_tpd	PM10_tpd	PM2_5_tpd	PM_tpd	SOx_tpd	NH3_tpd	Fuel_gpy	Total_Activi	Total_Popu	Horsepower_Hours_hhpy
San Joaquin Valley Unified APCD	2018	CHE - Rail Yard Tractc	2017	175	Diesel	0.000105651	0.000127837	0.000152137	0.009174377	0.000604897	1.5972681	2.30986E-05	2.12507E-05	2.30986E-05	1.47644E-05	1.30367E-05	51821.60479	16494.592	10.202299	2568571.586
San Joaquin Valley Unified APCD	2018	CHE - Rail Yard Tractc	2017	300	Diesel	1.33289E-06	1.61279E-06	1.91936E-06	5.47217E-05	1.09614E-05	0.030042	3.7948E-07	3.49121E-07	3.7948E-07	2.77714E-07	2.45199E-07	974.6808733	268.36628	0.2946275	48305.93111
San Joaquin Valley Unified APCD	2021	CHE - Rail Yard Tractc	2017	175	Diesel	3.03967E-05	3.678E-05	4.37712E-05	0.001922675	0.000120821	0.3014911	5.14322E-06	4.73176E-06	5.14322E-06	2.78652E-06	2.46073E-06	9781.5454	3024.3403	2.3140035	484815.3366
San Joaquin Valley Unified APCD	2021	CHE - Rail Yard Tractc	2017	300	Diesel	1.77562E-06	2.1485E-06	2.5569E-06	5.4283E-05	1.05477E-05	0.0279775	3.85118E-07	3.54309E-07	3.85118E-07	2.58613E-07	2.28349E-07	907.6989162	249.92363	0.2639103	44986.25398
San Joaquin Valley Unified APCD	2026	CHE - Rail Yard Tractc	2017	175	Diesel	2.26729E-06	2.74342E-06	3.26489E-06	0.000149324	9.45086E-06	0.0237917	3.96024E-07	3.64342E-07	3.96024E-07	2.19898E-07	1.94185E-07	771.8968492	220.49452	0.2177716	38255.79945
San Joaquin Valley Unified APCD	2026	CHE - Rail Yard Tractc	2017	300	Diesel	6.43917E-07	7.79139E-07	9.2724E-07	1.44472E-05	2.68408E-06	0.0067569	1.05778E-07	9.73157E-08	1.05778E-07	6.24519E-08	5.51492E-08	219.2211704	60.359829	0.0596144	10864.76923
San Joaquin Valley Unified APCD	2036	CHE - Rail Yard Tractc	2017	175	Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Joaquin Valley Unified APCD	2036	CHE - Rail Yard Tractc	2017	300	Diesel	6.43917E-07	7.79139E-07	9.2724E-07	1.44472E-05	2.68408E-06	0.0067569	1.05778E-07	9.73157E-08	1.05778E-07	6.24519E-08	5.51492E-08	219.2211704	60.359829	0.0596144	10864.76923

OFFROAD2017 (v1.0.1) Emissions Inventory
Region Type: Air District
Region: San Joaquin Valley Unified APCD
Calendar Year: 2018, 2021, 2026, 2036
Scenario: All Adopted Rules - Exhaust
Vehicle Classification: OFFROAD2017 Equipment Types
Units: Emissions: tons/day, Fuel Consumption: gallons/year, Activity: hours/year, HP-Hours: HP-hours/year

Region	CalYr	VehClass	MdlYr	HP_Bin	Fuel	HC_tpd	ROG_tpd	TOG_tpd	CO_tpd	NOx_tpd	CO2_tpd	PM10_tpd	PM2_5_tpd	PM_tpd	SOx_tpd	NH3_tpd	Fuel_gpy	Total_Activi	Total_Popu	Horsepower_Hours_hhpy
San Joaquin Valley Unified APCD	2018	ConstMin - Rubber Ti	2017	50	Diesel	4.96789E-06	6.01115E-06	7.15376E-06	0.000116111	9.77843E-05	0.0198086	3.77614E-07	3.47405E-07	3.77614E-07	1.82991E-07	1.61675E-07	642.6682606	678.71716	0.830912	31220.98942
San Joaquin Valley Unified APCD	2018	ConstMin - Rubber Ti	2017	100	Diesel	0.000215032	0.000260189	0.000309646	0.008437625	0.00355388	1.3659932	2.80282E-05	2.57859E-05	2.80282E-05	1.26228E-05	1.11491E-05	44318.14386	26546.487	24.096449	2409627.666
San Joaquin Valley Unified APCD	2018	ConstMin - Rubber Ti	2017	175	Diesel	0.000325273	0.00039358	0.000468393	0.01618736	0.001487491	2.9611486	5.40196E-05	4.96981E-05	5.40196E-05	2.73675E-05	2.41685E-05	96071.20468	34821.534	30.743746	5153900.776
San Joaquin Valley Unified APCD	2018	ConstMin - Rubber Ti	2017	300	Diesel	0.000521436	0.000630937	0.000750867	0.008841372	0.002384554	4.7469328	8.40967E-05	7.7369E-05	8.40967E-05	4.38721E-05	3.87438E-05	154009.0063	39736.736	30.189804	8285291.703
San Joaquin Valley Unified APCD	2018	ConstMin - Rubber Ti	2017	600	Diesel	0.000515292	0.000623503	0.00074202	0.008595657	0.002356458	4.6910016	8.31059E-05	7.64574E-05	8.31059E-05	4.33552E-05	3.82873E-05	152194.3803	25616.226	19.110977	8071709.824
San Joaquin Valley Unified APCD	2018	ConstMin - Rubber Ti	2017	750	Diesel	9.62183E-05	0.000116424	0.000138554	0.001605031	0.000440011	0.8759309	1.5518E-05	1.42766E-05	1.5518E-05	8.09553E-06	7.14923E-06	28418.61309	2284.0806	2.2157654	1526051.328
San Joaquin Valley Unified APCD	2018	ConstMin - Rubber Ti	2017	9999	Diesel	6.69269E-05	8.09815E-05	9.63747E-05	0.001116417	0.002667258	0.6092744	2.22297E-05	2.04514E-05	2.22297E-05	5.63104E-06	4.97282E-06	19767.23815	1292.9667	0.830912	1068852.502
San Joaquin Valley Unified APCD	2021	ConstMin - Rubber Ti	2017	50	Diesel	1.72652E-05	2.08909E-05	2.48619E-05	0.000305282	0.000213666	0.0404327	1.02371E-06	9.41811E-07	1.02371E-06	3.73303E-07	3.30006E-07	1311.795141	1351.0311	1.9187738	63723.63245
San Joaquin Valley Unified APCD	2021	ConstMin - Rubber Ti	2017	100	Diesel	0.000453812	0.000549113	0.000653489	0.012583468	0.005092783	1.8703436	4.96497E-05	4.56777E-05	4.96497E-05	1.72786E-05	1.52655E-05	60681.23721	36583.625	36.776497	3300479.24
San Joaquin Valley Unified APCD	2021	ConstMin - Rubber Ti	2017	175	Diesel	0.000707307	0.000855842	0.001018523	0.025187667	0.00222802	4.231617	8.94586E-05	8.23019E-05	8.94586E-05	3.91022E-05	3.45379E-05	137290.1517	49228.15	51.1673	7359300.709
San Joaquin Valley Unified APCD	2021	ConstMin - Rubber Ti	2017	300	Diesel	0.001016726	0.001230238	0.001464085	0.012334877	0.003202688	6.0827765	0.000120982	0.000111304	0.000120982	5.62078E-05	4.96468E-05	197348.9848	50756.454	43.492205	10585706.33
San Joaquin Valley Unified APCD	2021	ConstMin - Rubber Ti	2017	600	Diesel	0.001140773	0.001380335	0.001642712	0.013350697	0.003593436	6.824914	0.000135743	0.000124883	0.000135743	6.30655E-05	5.5704E-05	221426.8196	36992.328	32.93895	11834312.77
San Joaquin Valley Unified APCD	2021	ConstMin - Rubber Ti	2017	750	Diesel	0.000260442	0.000315135	0.000375037	0.00304801	0.000820394	1.5581512	3.09905E-05	2.85113E-05	3.09905E-05	1.43981E-05	1.27174E-05	50552.50033	3990.9935	3.8375475	2710882.307
San Joaquin Valley Unified APCD	2021	ConstMin - Rubber Ti	2017	9999	Diesel	0.000119808	0.000144967	0.000172523	0.001402135	0.003276533	0.7167752	3.0306E-05	2.78815E-05	3.0306E-05	6.62335E-06	5.85022E-06	23254.98305	1520.7223	0.9593869	1257130.445
San Joaquin Valley Unified APCD	2026	ConstMin - Rubber Ti	2017	50	Diesel	3.24643E-05	3.92818E-05	4.67486E-05	0.00047669	0.000276752	0.0478786	1.63893E-06	1.50781E-06	1.63893E-06	4.41687E-07	3.90778E-07	1553.36742	1598.8705	2.1440186	75413.3934
San Joaquin Valley Unified APCD	2026	ConstMin - Rubber Ti	2017	100	Diesel	0.000636057	0.000769629	0.000915923	0.013126557	0.005059285	1.7472178	6.13841E-05	5.64733E-05	6.13841E-05	1.61348E-05	1.42606E-05	56686.55683	33566.596	38.592335	3044925.392
San Joaquin Valley Unified APCD	2026	ConstMin - Rubber Ti	2017	175	Diesel	0.000984311	0.001191017	0.001417408	0.026287761	0.002219478	3.9565165	9.99762E-05	9.19781E-05	9.99762E-05	3.65504E-05	3.22926E-05	128364.821	46156.28	53.957802	6883704.865
San Joaquin Valley Unified APCD	2026	ConstMin - Rubber Ti	2017	300	Diesel	0.001361873	0.001647867	0.001961098	0.012389768	0.003070826	5.4741578	0.000125826	0.00011576	0.000125826	5.05704E-05	4.46793E-05	177603.0202	45637.921	44.667054	9508752.172
San Joaquin Valley Unified APCD	2026	ConstMin - Rubber Ti	2017	600	Diesel	0.001333211	0.001613186	0.001919824	0.011428174	0.003006197	5.3589478	0.000123178	0.000113324	0.000123178	4.95061E-05	4.3739E-05	173865.1588	29016.321	31.802943	9335104.688
San Joaquin Valley Unified APCD	2026	ConstMin - Rubber Ti	2017	750	Diesel	0.000404609	0.000489577	0.000582637	0.003468274	0.000912334	1.6263579	3.73826E-05	3.4392E-05	3.73826E-05	1.50243E-05	1.32741E-05	52765.39255	4068.5507	3.9307008	2809519.205
San Joaquin Valley Unified APCD	2026	ConstMin - Rubber Ti	2017	9999	Diesel	0.000146389	0.000177131	0.0002108	0.001254835	0.002851977	0.5884227	2.97374E-05	2.73584E-05	2.97374E-05	5.43587E-06	4.80263E-06	19090.72553	1237.1561	1.0720093	1022715.69
San Joaquin Valley Unified APCD	2036	ConstMin - Rubber Ti	2017	25	Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Joaquin Valley Unified APCD	2036	ConstMin - Rubber Ti	2017	50	Diesel	2.73998E-05	3.31538E-05	3.94557E-05	0.000395775	0.000225167	0.0385154	1.36401E-06	1.25489E-06	1.36401E-06	3.55272E-07	3.14357E-07	1249.589556	1407.5772	2.3603007	60995.01209
San Joaquin Valley Unified APCD	2036	ConstMin - Rubber Ti	2017	100	Diesel	9.1553E-05	0.000110779	0.000131836	0.001834381	0.000702861	0.2408243	8.73541E-06	8.03658E-06	8.73541E-06	2.22379E-06	1.96558E-06	7813.280766	4560.029	7.4742854	404642.5723
San Joaquin Valley Unified APCD	2036	ConstMin - Rubber Ti	2017	175	Diesel	0.000157846	0.000190994	0.000227299	0.004095381	0.000343838	0.6079779	1.56962E-05	1.44405E-05	1.56962E-05	5.61632E-06	4.96223E-06	19725.17363	7195.6775	11.40812	1055035.196
San Joaquin Valley Unified APCD	2036	ConstMin - Rubber Ti	2017	300	Diesel	0.000152652	0.000184709	0.00021982	0.00134916	0.000332524	0.5879728	1.37566E-05	1.26561E-05	1.37566E-05	5.43152E-06	4.79896E-06	19076.13078	4780.0685	5.9007517	1015923.888
San Joaquin Valley Unified APCD	2036	ConstMin - Rubber Ti	2017	600	Diesel	0.000241182	0.00029183	0.000347302	0.002002813	0.000525369	0.9289632	2.17347E-05	1.99959E-05	2.17347E-05	8.58149E-06	7.58207E-06	30139.18853	5143.4232	8.2610523	1620178.3

Table E2.52.
Indirect GHG Emissions, Electricity Use

	Product Throughput (mty)	Electricity Use (kW-hr)	CO2 (mty)	CH4 (mty)	N2O (mty)	CO2e (mty)
Baseline	801,764	2,828,535.00	677	0.04	0.01	680
Year 1	1,382,096	5,268,588.49	1,262	0.08	0.01	1,266
Year 5	2,526,510	12,278,573.66	2,940	0.18	0.02	2,951
Year 15	3,215,971	15,230,653.04	3,647	0.23	0.03	3,660

Source: Stockton Estimated Electrical Consumption 12-30-2019.pdf. Provided by Lehigh in e-mail: From: Richardson, Ted <tkrichardson@edg.net>; Sent: Monday, December 30, 2019 1:48 PM; To: Lora Granovsky <lora.granovsky@ilancoenvironmental.com>; Subject: RE: throughput.

Notes:

mty is metric tons per year

Table E2.53.
GHG Emission Factors, Electricity Use

	CO_2	CH_4	N_2O
	(lb CO_2/MWhr)	(lb CO_2/GWhr)	(lb CO_2/GWhr)
electricity generation[1]	527.9	33	4

Notes:

[1] 2019 Climate Registry Default Emission Factors, Table 3.1, Default Factors for Calculating Emissions from Grid Electricity by eGrid Subregion. CAMX subregion. May 29, 2019.

Table E2.54.
Global Warming Potentials (GWP)

CO_2	CH_4	N_2O
1	21	310

Source: The Climate Registry, General Protocols, v. 2.0, Table B.2. March 2013.

Appendix E2. Operation Calculations

Table E2.1.
Significance Thresholds (ton/yr)

	PM10	PM2.5	NOX	SOX	CO	VOC
	15	15	10	27	100	10

Source:

SJVAPCD. Air Quality Thresholds of Significance – Criteria Pollutants. March 19, 2015.
http://www.valleyair.org/transportation/ceqa_idx.htm

Notes:

Thresholds apply to both on-site and off-site emissions. PM emissions include exhaust and fugitive dust.

NAAQS/CAAQS Screening Level (lb/day)

	PM10	PM2.5	NOX	SOX	CO	VOC
	100	100	100	100	100	100

Source:

SJVAPCD. Ambient Air Quality Analysis Project Daily Emissions Assessment. May 31, 2013.
http://www.valleyair.org/transportation/ceqa_idx.htm

Notes:

Thresholds apply to on-site emissions only.

Table E2.2.
Annual Operational Emissions in SJVAPCD - Project (ton/yr)

Source Category	PM10	PM2.5	NOX	SOX	CO	VOC
Baseline						
Trucks	0.22	0.06	3.99	0.01	0.62	0.19
Ships at Berth	0.06	0.05	2.68	0.15	0.24	0.12
Ships Maneuvering and Transit	0.03	0.03	1.49	0.04	0.18	0.12
Tugboats	0.04	0.04	0.84	0.00	0.46	0.05
Rail	0.02	0.02	0.67	0.00	0.18	0.03
Employee Vehicles	0.01	0.00	0.02	0.00	0.17	0.00
Conveying/Loading	0.84	0.84				
Mobile Onsite	0.00	0.00	0.03	0.00	0.30	0.01
Baseline Total	1.21	1.04	9.72	0.21	2.15	0.51
Proposed Project Year 1						
Trucks	0.31	0.09	5.89	0.02	0.87	0.23
Ships at Berth	0.13	0.12	6.25	0.36	0.57	0.27
Ships Maneuvering and Transit	0.07	0.06	3.48	0.09	0.42	0.28
Tugboats	0.10	0.09	1.96	0.00	1.06	0.11
Rail	0.05	0.05	1.96	0.00	0.60	0.09
Employee Vehicles	0.01	0.00	0.01	0.00	0.17	0.00
Conveying/Loading	1.19	1.19				
Mobile Onsite	0.00	0.00	0.07	0.00	0.54	0.02
Year 1 Total	1.86	1.61	19.62	0.48	4.24	1.00
Proposed Project Year 5						
Trucks	0.50	0.13	6.91	0.02	0.73	0.05
Ships at Berth	0.12	0.11	5.80	0.34	0.53	0.25
Ships Maneuvering and Transit	0.12	0.11	6.46	0.18	0.79	0.52
Tugboats	0.19	0.17	3.65	0.00	1.97	0.20
Rail	0.03	0.03	1.34	0.00	0.59	0.06
Employee Vehicles	0.01	0.00	0.01	0.00	0.11	0.00
Conveying/Loading	2.12	2.12				
Mobile Onsite	0.01	0.01	0.14	0.00	0.96	0.05
Year 5 Total	3.10	2.69	24.30	0.54	5.69	1.13
Proposed Project Year 15						
Trucks	0.57	0.15	7.79	0.02	0.82	0.06
Ships at Berth	0.15	0.14	7.14	0.41	0.65	0.31
Ships Maneuvering and Transit	0.15	0.14	7.95	0.22	0.97	0.64
Tugboats	0.04	0.03	1.71	0.01	4.44	0.18
Rail	0.03	0.03	1.11	0.00	0.74	0.06
Employee Vehicles	0.01	0.00	0.00	0.00	0.08	0.00
Conveying/Loading	2.77	2.77				
Mobile Onsite	0.01	0.01	0.17	0.00	1.15	0.06
Year 15 Total	3.72	3.26	25.87	0.66	8.85	1.30
CEQA Impacts						
Significance Threshold	15	15	10	27	100	10
Proposed Project Year 1 Increment	0.6	0.6	9.9	0.3	2.1	0.5
Proposed Project Year 5 Increment	1.9	1.6	14.6	0.3	3.5	0.6
Proposed Project Year 15 Increment	2.5	2.2	16.1	0.5	6.7	0.8
Significant?	**No**	**No**	**Yes**	**No**	**No**	**No**

Notes:

Emissions might not add precisely due to rounding.

Year 1 reflects activities before installation of the new unloader.

Year 5 reflects activities after installation of the new unloader.

Year 15 is the horizon year that reflects projected activities.

PM10 and PM2.5 truck emissions include exhaust and road dust.

Tugboat emissions reflect OGV and barge assist.

Rail emissions reflect switcher and line-haul locomotives.

Conveying/loading reflect material handling dust emissions from bunkers and dome.

Mobile onsite sources include shuttle wagon and front end loaders.

Table E2.3.
Average Daily Operational Emissions, On-Site - Project (lb/day)

Source Category	**PM10**	**PM2.5**	**NOX**	**SOX**	**CO**	**VOC**
Baseline						
Trucks On-Site	0.3	0.1	0.9	0.0	0.2	0.1
Ships at Berth	0.3	0.3	14.7	0.8	1.3	0.6
Tugboats at Berth	0.0	0.0	0.5	0.0	0.3	0.0
Rail On-Site	0.0	0.0	0.9	0.0	0.2	0.1
Conveying/Loading	4.6	4.6				
Mobile Onsite	0.0	0.0	0.2	0.0	1.6	0.0
Baseline Total	5.3	5.0	17.1	0.9	3.7	0.8
Proposed Project Year 1						
Trucks On-Site	0.4	0.1	1.0	0.0	0.2	0.1
Ships at Berth	0.7	0.7	34.2	2.0	3.1	1.5
Tugboats at Berth	0.1	0.1	1.1	0.0	0.6	0.1
Rail On-Site	0.1	0.1	2.9	0.0	0.8	0.2
Conveying/Loading	6.5	6.5				
Mobile Onsite	0.0	0.0	0.4	0.0	3.0	0.1
Year 1 Total	7.8	7.4	39.6	2.0	7.7	1.9
Proposed Project Year 5						
Trucks On-Site	0.6	0.1	1.6	0.0	0.2	0.0
Ships at Berth	0.7	0.6	31.8	1.8	2.9	1.4
Tugboats at Berth	0.1	0.1	2.0	0.0	1.1	0.1
Rail On-Site	0.1	0.0	1.4	0.0	0.4	0.1
Conveying/Loading	11.6	11.6				
Mobile Onsite	0.0	0.0	0.7	0.0	5.3	0.3
Year 5 Total	13.1	12.5	37.6	1.9	9.9	1.9
Proposed Project Year 15						
Trucks On-Site	0.7	0.1	1.9	0.0	0.3	0.0
Ships at Berth	0.8	0.8	39.1	2.3	3.6	1.7
Tugboats at Berth	0.0	0.0	0.7	0.0	1.9	0.1
Rail On-Site	0.1	0.1	1.8	0.0	0.5	0.1
Conveying/Loading	15.2	15.2				
Mobile Onsite	0.0	0.0	0.9	0.0	6.3	0.3
Year 15 Total	16.8	16.1	44.4	2.3	12.5	2.2
CEQA Impacts						
Significance Threshold	100	100	100	100	100	100
Proposed Project Year 1 Increment	2.5	2.4	22.6	1.1	4.0	1.1
Proposed Project Year 5 Increment	7.8	7.5	20.5	1.0	6.2	1.0
Proposed Project Year 15 Increment	11.5	11.1	27.4	1.4	8.9	1.4
Significant?	No	No	No	No	No	No

Notes:

Emissions might not add precisely due to rounding.

Truck emissions include truck transit on-site and truck idling on-site.

Tugboat emissions reflect OGV and barge assist.

Rail emissions reflect 1 switching event onsite.

PM10 and PM2.5 truck emissions include onsite exhaust and road dust.

Conveying/loading reflect material handling dust emissions from bunkers and dome.

Mobile onsite sources include shuttle wagon and front end loaders.

Table E2.4.
Annual Construction and Operation GHG Emissions in CA - Proposed Project (mty)

Source Category	CO2	CH4	N2O	CO2e
Baseline				
Trucks	1,099	0.00	0.17	1,152
Ships at Berth	224	0.00	0.01	227
Ships Maneuvering and Transit	2,069	0.04	0.10	2,102
Tugboats	54	0.00	0.00	55
Rail	218	0.02	0.01	220
Employee Vehicles	40	0.00	0.00	40
Mobile Onsite	73	0.00	0.00	73
Electricity Consumption	677	0.04	0.01	680
Baseline Total	4,453	0.11	0.30	4,549
Proposed Project Year 1				
Trucks	1,634	0.00	0.26	1,714
Ships at Berth	522	0.00	0.03	529
Ships Maneuvering and Transit	4,829	0.10	0.24	4,905
Tugboats	126	0.00	0.01	128
Rail	706	0.06	0.02	713
Employee Vehicles	54	0.00	0.00	55
Mobile Onsite	161	0.01	0.00	162
Electricity Consumption	1,262	0.08	0.01	1,266
Year 1 Total	9,293	0.25	0.56	9,472
Proposed Project Year 5				
Trucks	2,367	0.00	0.37	2,482
Ships at Berth	484	0.00	0.02	492
Ships Maneuvering and Transit	8,968	0.19	0.44	9,109
Tugboats	233	0.00	0.01	237
Rail	895	0.07	0.02	903
Employee Vehicles	46	0.00	0.00	46
Mobile Onsite	288	0.02	0.01	290
Electricity Consumption	2,940	0.18	0.02	2,951
Year 5 Total	16,221	0.47	0.90	16,510
Proposed Project Year 15				
Trucks	2,087	0.00	0.33	2,189
Ships at Berth	596	0.00	0.03	605
Ships Maneuvering and Transit	11,037	0.24	0.54	11,211
Tugboats	1,193	0.01	0.06	1,211
Rail	1,118	0.09	0.03	1,129
Employee Vehicles	38	0.00	0.00	38
Mobile Onsite	352	0.02	0.01	355
Electricity Consumption	3,647	0.23	0.03	3,660
Year 15 Total	20,068	0.59	1.02	20,397
Proposed Project Year 1 Increment	4,840	0.14	0.26	4,923
Proposed Project Year 5 Increment	11,768	0.36	0.60	11,961
Proposed Project Year 15 Increment	15,615	0.47	0.72	15,848
Construction				
2020 Construction	510	0.11	0.00	513
2021 Construction	956	0.15	0.01	963
2022 Construction	860	0.21	0.00	865
2023 Construction	567	0.16	0.00	571
2024 Construction	143	0.04	0.00	144
Amortized Annual Construction	**101**	**0.02**	**0.00**	**102**

Notes:
Emissions might not add precisely due to rounding.
Year 1 reflects activities before installation of the new unloader.
Year 5 reflects activities after installation of the new unloader.
Year 15 is the horizon year that reflects projected activities.
Tugboat emissions reflect OGV and barge assist.
Rail emissions reflect switcher and line-haul locomotives.
Mobile onsite sources include shuttle wagon and front end loaders.

Table E2.5.

BAAQMD Significance Thresholds

Pollutant/Precursor	Maximum Annual Emissions (tpy)	Average Daily Emissions (lb/day)
ROG	10	54
Nox	10	54
PM10	15	82
PM2.5	10	54

Source:

Bay Area BAAQMD CEQA Guidelines 2017, Table 2-2.

Table E2.6.

Annual Operational Emissions - Project in BAAQMD (ton/yr)

Source Category	PM10	PM2.5	NOX	VOC
Baseline				
Ship Transit	0.07	0.07	3.75	0.35
Tugboats - barges	0.00	0.00	0.00	0.00
Truck Transit	0.00	0.00	0.00	0.00
Rail Transit	0.00	0.00	0.00	0.00
Baseline Total	0.07	0.07	3.75	0.35
Proposed Project Year 1				
Ship Transit	0.17	0.16	8.76	0.81
Tugboats - barges	0.00	0.00	0.00	0.00
Truck Transit	0.00	0.00	0.00	0.00
Rail Transit	0.00	0.00	0.00	0.00
Year 1 Total	0.17	0.16	8.76	0.81
Proposed Project Year 5				
Ship Transit	0.32	0.30	16.27	1.51
Tugboats - barges	0.00	0.00	0.00	0.00
Truck Transit	0.00	0.00	0.00	0.00
Rail Transit	0.00	0.00	0.00	0.00
Year 5 Total	0.32	0.30	16.27	1.51
Proposed Project Year 15				
Ship Transit	0.39	0.36	20.02	1.85
Tugboats - barges	0.05	0.04	2.18	0.23
Truck Transit	0.00	0.00	0.00	0.00
Rail Transit	0.00	0.00	0.00	0.00
Year 15 Total	0.44	0.41	22.20	2.08
CEQA Impacts				
BAAQMD Significance Threshold	15	10	10	10
Proposed Project Year 1 Increment	0.1	0.1	5.0	0.5
Proposed Project Year 5 Increment	0.2	0.2	12.5	1.2
Proposed Project Year 15 Increment	0.4	0.3	18.4	1.7
Significant?	**No**	**No**	**Yes**	**No**

Notes:

Emissions might not add precisely due to rounding.

No rail transit in BAAQMD. All rail goes through Roseville Rail yard in SMAQMD.

Table E2.7.

Daily Operational Emissions - Project in BAAQMD (lb/day)

Source Category	PM10	PM2.5	NOX	VOC
Baseline				
Ship Transit	0.40	0.37	20.57	1.90
Tugboats - barges	0.00	0.00	0.00	0.00
Truck Transit	0.00	0.00	0.00	0.00
Rail Transit	0.00	0.00	0.00	0.00
Baseline Total	0.40	0.37	20.57	1.90
Proposed Project Year 1				
Ship Transit	0.94	0.87	48.00	4.44
Tugboats - barges	0.00	0.00	0.00	0.00
Truck Transit	0.00	0.00	0.00	0.00
Rail Transit	0.00	0.00	0.00	0.00
Year 1 Total	0.94	0.87	48.00	4.44
Proposed Project Year 5				
Ship Transit	1.75	1.62	89.14	8.25
Tugboats - barges	0.00	0.00	0.00	0.00
Truck Transit	0.00	0.00	0.00	0.00
Rail Transit	0.00	0.00	0.00	0.00
Year 5 Total	1.75	1.62	89.14	8.25
Proposed Project Year 15				
Ship Transit	2.16	1.99	109.71	10.15
Tugboats - barges	0.27	0.24	11.94	1.26
Truck Transit	0.00	0.00	0.00	0.00
Rail Transit	0.00	0.00	0.00	0.00
Year 15 Total	2.42	2.23	121.65	11.41
CEQA Impacts				
BAAQMD Significance Threshold	82	54	54	54
Proposed Project Year 1 Increment	0.5	0.5	27.4	2.5
Proposed Project Year 5 Increment	1.3	1.2	68.6	6.3
Proposed Project Year 15 Increment	2.0	1.9	101.1	9.5
Significant?	**No**	**No**	**Yes**	**No**

Notes:

Emissions might not add precisely due to rounding.

No rail transit in BAAQMD.

Table E2.8.

SMAQMD Siginificance Thresholds

Pollutant/Precursor	Maximum Annual Emissions (tpy)	Average Daily Emissions (lb/day)
ROG	na	65
Nox	na	65
PM10	14.6	80
PM2.5	15	82

Source:

Sacramento Metropolitan SMAQMD CEQA Guidelines 2009, Revised November 2014, May 2015.

Table E2.9.

Annual Operational Emissions - Project in SMAQMD (ton/yr)

Source Category	PM10	PM2.5
Baseline		
Ship Transit	0.00	0.00
Tugboats - barges	0.00	0.00
Truck Transit	0.00	0.00
Rail Transit	0.01	0.01
Baseline Total	0.01	0.01
Proposed Project Year 1		
Ship Transit	0.00	0.00
Tugboats - barges	0.00	0.00
Truck Transit	0.00	0.00
Rail Transit	0.03	0.02
Year 1 Total	0.03	0.02
Proposed Project Year 5		
Ship Transit	0.00	0.00
Tugboats - barges	0.00	0.00
Truck Transit	0.00	0.00
Rail Transit	0.02	0.02
Year 5 Total	0.02	0.02
Proposed Project Year 15		
Ship Transit	0.00	0.00
Tugboats - barges	0.00	0.00
Truck Transit	0.00	0.00
Rail Transit	0.01	0.01
Year 15 Total	0.01	0.01
CEQA Impacts		
SMAPCD Significance Threshold	14.6	15
Proposed Project Year 1 Increment	0.0	0.0
Proposed Project Year 5 Increment	0.0	0.0
Proposed Project Year 15 Increment	0.0	0.0
Significant?	No	No

Notes:

Emissions might not add precisely due to rounding.

No vessel, tugboat or barge transit in SMAQMD.

Table E2.10.

Daily Operational Emissions - Project in SMAQMD (lb/day)

Source Category	PM10	PM2.5	NOX	VOC
Baseline				
Ship Transit	0.00	0.00	0.00	0.00
Tugboats - barges	0.00	0.00	0.00	0.00
Truck Transit	0.00	0.00	0.00	0.00
Rail Transit	0.07	0.06	3.32	0.11
Baseline Total	0.07	0.06	3.32	0.11
Proposed Project Year 1				
Ship Transit	0.00	0.00	0.00	0.00
Tugboats - barges	0.00	0.00	0.00	0.00
Truck Transit	0.00	0.00	0.00	0.00
Rail Transit	0.14	0.13	8.65	0.26
Year 1 Total	0.14	0.13	8.65	0.26
Proposed Project Year 5				
Ship Transit	0.00	0.00	0.00	0.00
Tugboats - barges	0.00	0.00	0.00	0.00
Truck Transit	0.00	0.00	0.00	0.00
Rail Transit	0.12	0.11	7.73	0.25
Year 5 Total	0.12	0.11	7.73	0.25
Proposed Project Year 15				
Ship Transit	0.00	0.00	0.00	0.00
Tugboats - barges	0.00	0.00	0.00	0.00
Truck Transit	0.00	0.00	0.00	0.00
Rail Transit	0.06	0.06	4.33	0.18
Year 15 Total	0.06	0.06	4.33	0.18
SMAPCD Significance Threshold	80	82	65	65
Proposed Project Year 1 Increment	0.1	0.1	5.3	0.1
Proposed Project Year 5 Increment	0.1	0.0	4.4	0.1
Proposed Project Year 15 Increment	0.0	0.0	1.0	0.1
Significant?	**No**	**No**	**No**	**No**

Notes:

Emissions might not add precisely due to rounding.

No vessel, tugboat or barge transit in SMAQMD.

Table E2.11.
Activity

				Truck Shipping Activity				Truck Receiving Activity				Vessel Receiving Activity			Barge Shipping Activity			Rail Shipping Activity			
	Year	Total Volume (ton/yr)	Product	Tons of Product (ton/yr)	Annual Truck Trips (1-way)	Daily Truck Trips (1-way)	Miles Traveled (1 way)	Tons of Product (ton/yr)	Annual Truck Trips (1-way)	Daily Truck Trips (1-way)	Miles Traveled (1 way)	Tons of Product (ton/yr)	Annual Ship Calls	Hoteling Time (hr/call)	Tons of Product (ton/yr)	Annual Barge Calls	Miles Traveled (1-way)	Tons of Product (ton/yr)	Annual Rail Car Trips (1-way)	Rail Cars per Train	Annual Train Trips (1-way)
Baseline	2018	883,793	cement/slag	505,432	18,720	72	30	0	0	0	0	316,698	9	96	0	0	0	61,663	587	5	117
Proposed Project																					
Year 1	2021	1,523,500	cement/slag	561,750	20,806	80	40	24,300	900	5	40	737,450	21	96	0	0	0	200,000	1,905	5	381
Year 5	2026	2,785,000	cement/slag	950,000	35,185	135	40	50,000	1,852	7	40	1,385,000	39	48	0	0	0	400,000	3,810	20	191
Year 15	2036	3,545,000	cement/slag	1,072,500	39,722	153	40	75,000	2,778	11	40	1,697,500	48	48	200,000	40	80	500,000	4,762	20	238

Source:
Operations Throuput Info Needs 11_12.docx. Provided by Lehigh.
Operations 11_12 - TKR112219.xlsx. Provided by Lehigh.
Email From: Richardson, Ted <tkrichardson@edg.net>, Sent: Monday, November 25, 2019 1:04 PM
Average truck transit distances provided by Anchor based on telephone conversations with Lehigh. E-mail: From: Lena DeSantis <lmdesantis@anchorqea.com>; Sent: Tuesday, December 17, 2019 12:02 PM; To: Lora Granovsky <lora.granovsky@ilancoenvironmental.com>; Subject: RE: Lehigh - operational questions summary
Rail transit distance provided by Anchor based on conversations with Lehigh. e-mail: From: Lena DeSantis <lmdesantis@anchorqea.com>; Sent: Tuesday, December 17, 2019 12:02 PM; To: Lora Granovsky <lora.granovsky@ilancoenvironmental.com>; Subject: RE: Lehigh - operational questions summary.
tons are short tons
Notes:
All calls are expressed in one-way moves.
Rail cars per train would increase from 5 to 20, in Years 5 and 15, following rail loadout upgrade.
Shipping = Loading = Out of Facility
Receiving = Conveying = Into Facility

Table E2.12.
OGV Main Engine Characteristics and Activity

Year	Vessel Type	Engine Type	Engine Tier	Engine Rating (hp)	Engine Rating (kW)	Annual Calls	Annual Transits (1-way)	Berth Time (hr/call)
Baseline	Handymax	propulsion	Tier I	11,394	8,500	9	18	96
Year 1	Handymax	propulsion	Tier I	11,394	8,500	21	42	96
Year 5	Handymax	propulsion	Tier I	11,394	8,500	39	78	48
Year 15	Handymax	propulsion	Tier I	11,394	8,500	48	96	48

Source:
Vessel and engine characteristics are based on the Holtrop & Mennen's Method predictions in MAN Diesel & Turbo, Propulsion Trends in Tankers. 2014. Last accesed November 2019 at:
https://marine.mandieselturbo.com/docs/librariesprovider6/technical-papers/propulsion-trends-in-tankers.pdf?sfvrsn=20
Activity provided by Lehigh: Operations 11_12 - TKR112219.xlsx.
Future years: Assumed no change to fleet mix, per Lehigh.
Engine Tier I is a conservative assumption.

Table E2.13.
OGV Average Aux Engine & Aux Boiler Loads

			Average Loads (kW)			
Year	Vessel Type	Engine Type	Transit	Maneuvering	Berth	
Baseline	Handymax	Auxiliary Engine	313	822	210	
Baseline	Handymax	Auxiliary Boiler	35	94	125	
Year 1	Handymax	Auxiliary Engine	313	822	210	
Year 1	Handymax	Auxiliary Boiler	35	94	125	
Year 5	Handymax	Auxiliary Engine	313	822	210	
Year 5	Handymax	Auxiliary Boiler	35	94	125	
Year 15	Handymax	Auxiliary Engine	313	822	210	
Year 15	Handymax	Auxiliary Boiler	35	94	125	

Source:
POLB 2018 Emissions Inventory, Tables 2.5 and 2.8 for Bulk category.
http://www.polb.com/civica/filebank/blobdload.asp?BlobID=15271

Table E2.14.
OGV Maximum Rated Vessel Speed

Category	Speed (knots)
Handymax	15

Source:
Vessel and engine characteristics are based on MAN Diesel & Turbo, Propulsion Trends in Tankers. 2014. Last accesed November 2019 at:
https://marine.mandieselturbo.com/docs/librariesprovider6/technical-papers/propulsion-trends-in-tankers.pdf?sfvrsn=20

Table E2.15.
River/Harbor Information

	Maneuvering (Pilot to Berth)	Transit in SJVAPCD (San Joaquin River transit from Port to SJVAPCD Boundary)	Transit in BAAQMD (San Joaquin River transit from SJVAPCD boundary through SF Bay)	Ocean Transit (SF Bay to State Boundary)	Total Project
OGV					
Distance (nautical miles/1-way trip)	2.95	13	67	340	423
Allowed OGV Speed (knots)	2	8	6	13.9	
Transit Time (hr/call)	1.48	1.63	11.17	24.42	
Barge					
Distance (nautical miles/1-way trip)	2.95	13	55	0	71
Allowed Barge Speed (knots)	2	8	6	13.9	5.8
Transit Time (hr/call)	1.48	1.63	9.17	0.00	12.3

Source:
Maneuvering distance reflects distance from the Rough & Ready Island (at Burns Cutoff), where tugboats pick up vessels, plus the distance to the turning basin.

Distance from Rough & Ready Island (nm):	2.7
Distance to/in turning basin (nm):	0.25
Barges transit 1-way (miles):	80

Operations Throuput Info Needs 11_12.docx. Provided by Lehigh.
Operations 11_12 - TKR112219.xlsx. Provided by Lehigh.

Email From: Richardson, Ted <tkrichardson@edg.net>, Sent: Monday, November 25, 2019 1:04 PM

Table E2.16.
OGV Engine Emission Factors for 0.1% S MGO Fuel (g/kW-hr)

Engine	IMO Tier	Model Year	PM10	PM2.5	DPM	NOx	SOx	CO	HC	VOC	CO2	CH4	N2O
Slow Speed Diesel	Tier 0	≤1999	0.26	0.24	0.26	17	0.39	1.4	0.6	0.63	589	0.01	0.03
Medium Speed Diesel	Tier 0	≤1999	0.182	0.168	0.182	13.8	0.424	1.1	0.5	0.52	676	0.008	0.033
Slow Speed Diesel	Tier I	2000-2010	0.26	0.24	0.26	16.0	0.39	1.4	0.6	0.63	589	0.01	0.03
Medium Speed Diesel	Tier I	2000-2010	0.182	0.168	0.182	12.2	0.424	1.1	0.5	0.52	676	0.008	0.033
Slow Speed Diesel	Tier II	2011-2015	0.26	0.24	0.26	14.4	0.39	1.4	0.6	0.63	589	0.01	0.03
Medium Speed Diesel	Tier II	2011-2015	0.182	0.168	0.182	10.5	0.424	1.1	0.5	0.52	676	0.008	0.033
Slow Speed Diesel	Tier III	≥2016	0.26	0.24	0.26	3.4	0.39	1.4	0.6	0.63	589	0.01	0.03
Medium Speed Diesel	Tier III	≥2016	0.182	0.168	0.182	2.6	0.424	1.1	0.5	0.52	676	0.008	0.033
Gas Turbine	na	all	0.01	0.01	0.00	5.7	0.61	0.2	0.1	0.11	922	0.00	0.08
Boiler	na	all	0.164	0.151	0.00	1.995	0.587	0.2	0.1	0.11	934	0.002	0.045

Source:

For Propulsion (Slow Speed Engines): POLB 2014 Emissions Inventory, Table 2.13.

For Auxiliary (Medium Speed Engines) and Boiler: CARB 2019 Proposed Control Measure for Ocean-Going Vessels At Berth. Staff Report: Initial Statement of Reasons, Appendix H: 2019 Update to Inventory for Ocean-Going Vessels At Berth: Methodology and Results, Appendix A Emission Factors. October 9, 2019. Last accessed on 12/2019 at: https://ww2.arb.ca.gov/rulemaking/2019/ogvatberth2019.

For particulate matter: U.S. Environmental Protection Agency, Current Methodologies in Preparing Mobile Source Port-Related Emission Inventories - Final Report (April 2009),https://www.epa.gov/sites/production/files/2016-06/documents/2009-port-inventory-guidance.pdf [Accessed June 13, 2018].
For NOx: Marine Environment Protection Committee (MEPC), Resolution MEPC.176(58), Adopted on 10 October 2008, Revised MARPOL Annex VI, Regulation 13, Nitrogen Oxides (NOx), http://www.imo.org/en/KnowledgeCentre/IndexofIMOResolutions/Marine-Environment-Protection-Committee-(MEPC)/Documents/MEPC.176(58).pdf [Accessed October 8, 2018.

For other pollutants: U.S. Environmental Protection Agency, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2014, Published 2016,https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2014 [Accessed June 13 2018].
Swedish Methodology for Environmental Data, David Cooper, IVL, Tomas Gustafsson, SCB (2004-02-02), Methodology for calculating emissions from ships: 1. Update of emission factors, IVL (Swedish Environmental Research Institute), https://www.diva-portal.org/smash/get/diva2:1117198/FULLTEXT01.pdf[Accessed June 12 2018].
Marine Environment Protection Committee (MEPC), (2012). Resolution MEPC.212(63), MEPC 63/23, Annex 8, 2012 Guidelines on the Method of Calculation of the Attained Energy Efficiency Design Index (EEDI) for New Ships (2 March 2012), http://www.imo.org/en/OurWork/Environment/PollutionPrevention/AirPollution/Documents/212(63).pdf[Accessed June 12 2018].

ENTEC (2002). Quantification of emissions from ships associated with ship movements between ports in the European Community, Final Report 3, UK: Report prepared for the European Commission; 2002. http://ec.europa.eu/environment/air/pdf/chapter2_ship_emissions.pdf [Accessed June 12 2018].

Notes:

Tier I engines were assumed for both propulsion and auxiliary engines. This is a conservative assumption because OGVs Tier II engines are also available.

Average Load Propulsion Engine - Propeller Law

LF = (AS/MS)3

Where:

LF = load factor, percent

AS = actual speed, knots

MS = maximum speed, knots

Table E2.17.
OGV Low Load Adjustment Factors - Propulsion Engines

Load	PM10	PM2.5	DPM	NOx	SOx	CO	HC	VOC	CO2	CH4	N2O
2% docking load	7.29	7.29	7.29	4.63	3.30	9.68	21.18	21.18	3.28	21.18	4.63
3% transit load	4.33	4.33	4.33	2.92	2.45	6.46	11.68	11.68	2.44	11.68	2.92
4% transit load	3.09	3.09	3.09	2.21	2.02	4.86	7.71	7.71	2.01	7.71	2.21
5% transit load	2.44	2.44	2.44	1.83	1.77	3.89	5.61	5.61	1.76	5.61	1.83
6% transit load	2.04	2.04	2.04	1.60	1.60	3.25	4.35	4.35	1.59	4.35	1.60
7% transit load	1.79	1.79	1.79	1.45	1.47	2.79	3.52	3.52	1.47	3.52	1.45
8% transit load	1.61	1.61	1.61	1.35	1.38	2.45	2.95	2.95	1.38	2.95	1.35
9% transit load	1.48	1.48	1.48	1.27	1.31	2.18	2.52	2.52	1.31	2.52	1.27
10% transit load	1.38	1.38	1.38	1.22	1.26	1.96	2.20	2.20	1.25	2.20	1.22
11% transit load	1.30	1.30	1.30	1.17	1.21	1.79	1.96	1.96	1.21	1.96	1.17
12% transit load	1.24	1.24	1.24	1.14	1.17	1.64	1.76	1.76	1.17	1.76	1.14
13% transit load	1.19	1.19	1.19	1.11	1.14	1.52	1.60	1.60	1.14	1.60	1.11
14% transit load	1.15	1.15	1.15	1.08	1.11	1.41	1.47	1.47	1.11	1.47	1.08
15% transit load	1.11	1.11	1.11	1.06	1.08	1.32	1.36	1.36	1.08	1.36	1.06
16% transit load	1.08	1.08	1.08	1.05	1.06	1.24	1.26	1.26	1.06	1.26	1.05
17% transit load	1.06	1.06	1.06	1.03	1.05	1.17	1.18	1.18	1.04	1.18	1.03
18% transit load	1.04	1.04	1.04	1.02	1.03	1.11	1.11	1.11	1.03	1.11	1.02
19% transit load	1.02	1.02	1.02	1.01	1.10	1.05	1.05	1.05	1.01	1.05	1.01
20% transit load	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Source: POLB 2016 Emissions Inventory, Table 2.4.

Table E2.18.
Operational OGV Emissions Without Mitigation

			Vessel Characteristics			Activity				Average Auxiliary Loads (kW)			Work
	Vessel Type	Engine/Source Type	Engine Rating (kW)	Model Year	Max Rated Speed (knots)	Berth Time (hr/call)	Annual Calls	Annual Transits (1-way)	Fuel Sulfur	Berth	Maneuvering	Transit	Berth Energy Demand (kW-hr/call)
Baseline													
Baseline	Handymax	Propulsion Engine	8,500	0	15.0	96	9	18	0.1%				
Baseline	Handymax	Auxiliary Engine				96	9	18	0.1%	210	822	313	20,160
Baseline	Handymax	Auxiliary Boiler				96	9	18	0.1%	125	94	35	12,000
Baseline	**Total**												
Proposed Project													
Year 1	Handymax	Propulsion Engine	8,500	0	15.0	96	21	42	0.1%				
Year 1	Handymax	Auxiliary Engine				96	21	42	0.1%	210	822	313	20,160
Year 1	Handymax	Auxiliary Boiler				96	21	42	0.1%	125	94	35	12,000
Year 1	**Total**												
Proposed Project													
Year 5	Handymax	Propulsion Engine	8,500	0	15.0	48	39	78	0.1%				
Year 5	Handymax	Auxiliary Engine				48	39	78	0.1%	210	822	313	10,080
Year 5	Handymax	Auxiliary Boiler				48	39	78	0.1%	125	94	35	6,000
Year 5	**Total**												
Proposed Project													
Year 15	Handymax	Propulsion Engine	8,500	0	15.0	48	48	96	0.1%				
Year 15	Handymax	Auxiliary Engine				48	48	96	0.1%	210	822	313	10,080
Year 15	Handymax	Auxiliary Boiler				48	48	96	0.1%	125	94	35	6,000
Year 15	**Total**												

Table E2.18.
Operational OGV Emissions Without Mitigation

	Vessel Type	Engine/Source Type	Maneuvering in SJVAPCD (pilot to berth)					Transit in SJVAPCD (San Joaquin River transit from Port to SJVAPCD b				
			Speed (knots)	Distance (nm)	Maneuvering Time (hr/trip)	Loaded Energy Demand (kW-hr/trip)	Propulsion Engine Load Factor	Speed (knots)	Distance (nm)	Transit Time (hr/trip)	Loaded Energy Demand (kW-hr/trip)	Propulsion Engine Load Factor
Baseline												
Baseline	Handymax	Propulsion Engine	2.0	3.0	1.5	251	2%	8.0	13.0	1.6	2,072	15%
Baseline	Handymax	Auxiliary Engine			1.5	1,212				1.6	509	
Baseline	Handymax	Auxiliary Boiler			1.5	139				1.6	57	
Baseline	**Total**											
Proposed Project												
Year 1	Handymax	Propulsion Engine	2.0	3.0	1.5	251	2%	8.0	13.0	1.6	2,072	15%
Year 1	Handymax	Auxiliary Engine			1.5	1,212				1.6	509	
Year 1	Handymax	Auxiliary Boiler			1.5	139				1.6	57	
Year 1	**Total**											
Proposed Project												
Year 5	Handymax	Propulsion Engine	2.0	3.0	1.5	251	2%	8.0	13.0	1.6	2,072	15%
Year 5	Handymax	Auxiliary Engine			1.5	1,212				1.6	509	
Year 5	Handymax	Auxiliary Boiler			1.5	139				1.6	57	
Year 5	**Total**											
Proposed Project												
Year 15	Handymax	Propulsion Engine	2.0	3.0	1.5	251	2%	8.0	13.0	1.6	2,072	15%
Year 15	Handymax	Auxiliary Engine			1.5	1,212				1.6	509	
Year 15	Handymax	Auxiliary Boiler			1.5	139				1.6	57	
Year 15	**Total**											

	Vessel Type	Engine/Source Type	Transit in BAAQMD (San Joaquin River transit from SJVAP(					Ocean Transit (SF Bay to State Boundary)				
			Speed (knots)	Distance (nm)	Transit Time (hr/trip)	Loaded Energy Demand (kW-hr/trip)	Propulsion Engine Load Factor	Speed (knots)	Distance (nm)	Transit Time (hr/trip)	Loaded Energy Demand (kW-hr/trip)	Propulsion Engine Average Load in Open Ocean
Baseline												
Baseline	Handymax	Propulsion Engine	6.0	67.0	11.2	5,695	6%	13.9	340.0	24.4	166,034	80%
Baseline	Handymax	Auxiliary Engine			11.2	3,495				24.4	7,642	
Baseline	Handymax	Auxiliary Boiler			11.2	391				24.4	855	
Baseline	**Total**											
Proposed Project												
Year 1	Handymax	Propulsion Engine	6.0	67.0	11.2	5,695	6%	13.9	340.0	24.4	166,034	80%
Year 1	Handymax	Auxiliary Engine			11.2	3,495				24.4	7,642	
Year 1	Handymax	Auxiliary Boiler			11.2	391				24.4	855	
Year 1	**Total**											
Proposed Project												
Year 5	Handymax	Propulsion Engine	6.0	67.0	11.2	5,695	6%	13.9	340.0	24.4	166,034	80%
Year 5	Handymax	Auxiliary Engine			11.2	3,495				24.4	7,642	
Year 5	Handymax	Auxiliary Boiler			11.2	391				24.4	855	
Year 5	**Total**											
Proposed Project												
Year 15	Handymax	Propulsion Engine	6.0	67.0	11.2	5,695	6%	13.9	340.0	24.4	166,034	80%
Year 15	Handymax	Auxiliary Engine			11.2	3,495				24.4	7,642	
Year 15	Handymax	Auxiliary Boiler			11.2	391				24.4	855	
Year 15	**Total**											

Table E2.18.
Operational OGV Emissions Without Mitigation

	Vessel Type	Engine/Source Type	Exhaust Emission Factors (g/kW-hr) - Annual Fleet Mix PM10	PM2.5	DPM	NOx	SOx	CO	HC	VOC	CO2	CH4	N2O
Baseline													
Baseline	Handymax	Propulsion Engine	0.26	0.24	0.26	16.00	0.39	1.40	0.60	0.63	589.00	0.01	0.03
Baseline	Handymax	Auxiliary Engine	0.18	0.17	0.18	12.20	0.42	1.10	0.50	0.52	676.00	0.01	0.03
Baseline	Handymax	Auxiliary Boiler	0.16	0.15	0.00	2.00	0.59	0.20	0.10	0.11	934.00	0.00	0.05
Baseline	**Total**												
Proposed Project													
Year 1	Handymax	Propulsion Engine	0.26	0.24	0.26	16.00	0.39	1.40	0.60	0.63	589.00	0.01	0.03
Year 1	Handymax	Auxiliary Engine	0.18	0.17	0.18	12.20	0.42	1.10	0.50	0.52	676.00	0.01	0.03
Year 1	Handymax	Auxiliary Boiler	0.16	0.15	0.00	2.00	0.59	0.20	0.10	0.11	934.00	0.00	0.05
Year 1	**Total**												
Proposed Project													
Year 5	Handymax	Propulsion Engine	0.26	0.24	0.26	16.00	0.39	1.40	0.60	0.63	589.00	0.01	0.03
Year 5	Handymax	Auxiliary Engine	0.18	0.17	0.18	12.20	0.42	1.10	0.50	0.52	676.00	0.01	0.03
Year 5	Handymax	Auxiliary Boiler	0.16	0.15	0.00	2.00	0.59	0.20	0.10	0.11	934.00	0.00	0.05
Year 5	**Total**												
Proposed Project													
Year 15	Handymax	Propulsion Engine	0.26	0.24	0.26	16.00	0.39	1.40	0.60	0.63	589.00	0.01	0.03
Year 15	Handymax	Auxiliary Engine	0.18	0.17	0.18	12.20	0.42	1.10	0.50	0.52	676.00	0.01	0.03
Year 15	Handymax	Auxiliary Boiler	0.16	0.15	0.00	2.00	0.59	0.20	0.10	0.11	934.00	0.00	0.05
Year 15	**Total**												

	Vessel Type	Engine/Source Type	Berth in SJVAPCD PM10 (lb/yr)	PM2.5 (lb/yr)	DPM (lb/yr)	NOX (lb/yr)	SOX (lb/yr)	CO (lb/yr)	HC (lb/yr)	VOC (lb/yr)	CO2 (mty)	CH4 (mty)	N2O (mty)	CO2e (mty)
Baseline														
Baseline	Handymax	Propulsion Engine	-	-	-	-	-	-	-	-	-	-	-	-
Baseline	Handymax	Auxiliary Engine	72.80	67.20	72.80	4,880.00	169.60	440.00	200.00	208.00	122.65	0.00	0.01	124.54
Baseline	Handymax	Auxiliary Boiler	39.05	35.95	-	475.00	139.76	47.62	23.81	25.07	100.87	0.00	0.00	102.38
Baseline	**Total**		**111.85**	**103.15**	**72.80**	**5,355.00**	**309.36**	**487.62**	**223.81**	**233.07**	**223.53**	**0.00**	**0.01**	**226.92**
Proposed Project														
Year 1	Handymax	Propulsion Engine	-	-	-	-	-	-	-	-	-	-	-	-
Year 1	Handymax	Auxiliary Engine	169.87	156.80	169.87	########	395.73	1,026.67	466.67	485.33	286.19	0.00	0.01	290.59
Year 1	Handymax	Auxiliary Boiler	91.11	83.89	-	1,108.33	326.11	111.11	55.56	58.50	235.37	0.00	0.01	238.89
Year 1	**Total**		**260.98**	**240.69**	**169.87**	**12,495.00**	**721.84**	**1,137.78**	**522.22**	**543.83**	**521.56**	**0.00**	**0.03**	**529.49**
Proposed Project														
Year 5	Handymax	Propulsion Engine	-	-	-	-	-	-	-	-	-	-	-	-
Year 5	Handymax	Auxiliary Engine	157.73	145.60	157.73	########	367.47	953.33	433.33	450.67	265.75	0.00	0.01	269.84
Year 5	Handymax	Auxiliary Boiler	84.60	77.90	-	1,029.17	302.82	103.17	51.59	54.32	218.56	0.00	0.01	221.83
Year 5	**Total**		**242.34**	**223.50**	**157.73**	**11,602.50**	**670.28**	**1,056.51**	**484.92**	**504.99**	**484.31**	**0.00**	**0.02**	**491.67**
Proposed Project														
Year 15	Handymax	Propulsion Engine	-	-	-	-	-	-	-	-	-	-	-	-
Year 15	Handymax	Auxiliary Engine	194.13	179.20	194.13	########	452.27	1,173.33	533.33	554.67	327.08	0.00	0.02	332.11
Year 15	Handymax	Auxiliary Boiler	104.13	95.87	-	1,266.67	372.70	126.98	63.49	66.86	268.99	0.00	0.01	273.02
Year 15	**Total**		**298.26**	**275.07**	**194.13**	**14,280.00**	**824.97**	**1,300.32**	**596.83**	**621.52**	**596.07**	**0.00**	**0.03**	**605.13**

Table E2.18.
Operational OGV Emissions Without Mitigation

	Vessel Type	Engine/Source Type	Maneuvering in SJVAPCD (pilot to berth)											
			PM10 (lb/yr)	PM2.5 (lb/yr)	DPM (lb/yr)	NOX (lb/yr)	SOX (lb/yr)	CO (lb/yr)	HC (lb/yr)	VOC (lb/yr)	CO2 (mty)	CH4 (mty)	N2O (mty)	CO2e (mty)
Baseline														
Baseline	Handymax	Propulsion Engine	18.86	17.41	18.86	737.13	12.81	134.85	126.45	133.15	8.72	0.00	0.00	8.93
Baseline	Handymax	Auxiliary Engine	8.76	8.08	8.76	586.98	20.40	52.92	24.06	25.02	14.75	0.00	0.00	14.98
Baseline	Handymax	Auxiliary Boiler	0.90	0.83	-	10.98	3.23	1.10	0.55	0.58	2.33	0.00	0.00	2.37
Baseline	**Total**		**28.52**	**26.32**	**27.62**	**1,335.08**	**36.44**	**188.87**	**151.06**	**158.75**	**25.80**	**0.00**	**0.00**	**26.28**
Proposed Project														
Year 1	Handymax	Propulsion Engine	44.01	40.62	44.01	1,719.96	29.88	314.64	295.05	310.69	20.35	0.00	0.00	20.84
Year 1	Handymax	Auxiliary Engine	20.43	18.86	20.43	1,369.62	47.60	123.49	56.13	58.38	34.42	0.00	0.00	34.95
Year 1	Handymax	Auxiliary Boiler	2.11	1.94	-	25.61	7.54	2.57	1.28	1.35	5.44	0.00	0.00	5.52
Year 1	**Total**		**66.54**	**61.42**	**64.44**	**3,115.19**	**85.02**	**440.70**	**352.46**	**370.42**	**60.21**	**0.00**	**0.00**	**61.31**
Proposed Project														
Year 5	Handymax	Propulsion Engine	81.73	75.44	81.73	3,194.21	55.49	584.34	547.95	576.99	37.79	0.00	0.00	38.70
Year 5	Handymax	Auxiliary Engine	37.95	35.03	37.95	2,543.58	88.40	229.34	104.25	108.41	63.93	0.00	0.00	64.91
Year 5	Handymax	Auxiliary Boiler	3.91	3.60	-	47.56	14.00	4.77	2.38	2.51	10.10	0.00	0.00	10.25
Year 5	**Total**		**123.58**	**114.07**	**119.67**	**5,785.35**	**157.89**	**818.45**	**654.58**	**687.92**	**111.82**	**0.01**	**0.01**	**113.87**
Proposed Project														
Year 15	Handymax	Propulsion Engine	100.59	92.85	100.59	3,931.34	68.30	719.19	674.40	710.14	46.51	0.01	0.00	47.64
Year 15	Handymax	Auxiliary Engine	46.70	43.11	46.70	3,130.56	108.80	282.26	128.30	133.43	78.68	0.00	0.00	79.89
Year 15	Handymax	Auxiliary Boiler	4.81	4.43	-	58.54	17.22	5.87	2.93	3.09	12.43	0.00	0.00	12.62
Year 15	**Total**		**152.10**	**140.39**	**147.29**	**7,120.44**	**194.32**	**1,007.32**	**805.63**	**846.66**	**137.62**	**0.01**	**0.01**	**140.15**

	Vessel Type	Engine/Source Type	Transit in SJVAPCD (San Joaquin River transit from Port to SJVAPCD boundary)											
			PM10 (lb/yr)	PM2.5 (lb/yr)	DPM (lb/yr)	NOX (lb/yr)	SOX (lb/yr)	CO (lb/yr)	HC (lb/yr)	VOC (lb/yr)	CO2 (mty)	CH4 (mty)	N2O (mty)	CO2e (mty)
Baseline														
Baseline	Handymax	Propulsion Engine	23.73	21.90	23.73	1,394.40	34.63	151.94	67.09	70.65	23.72	0.00	0.00	24.09
Baseline	Handymax	Auxiliary Engine	3.67	3.39	3.67	246.24	8.56	22.20	10.09	10.50	6.19	0.00	0.00	6.28
Baseline	Handymax	Auxiliary Boiler	0.37	0.34	-	4.50	1.32	0.45	0.23	0.24	0.96	0.00	0.00	0.97
Baseline	**Total**		**27.77**	**25.63**	**27.40**	**1,645.15**	**44.51**	**174.59**	**77.41**	**81.38**	**30.87**	**0.00**	**0.00**	**31.35**
Proposed Project														
Year 1	Handymax	Propulsion Engine	55.37	51.11	55.37	3,253.61	80.80	354.52	156.54	164.84	55.35	0.00	0.00	56.21
Year 1	Handymax	Auxiliary Engine	8.57	7.91	8.57	574.56	19.97	51.80	23.55	24.49	14.44	0.00	0.00	14.66
Year 1	Handymax	Auxiliary Boiler	0.86	0.80	-	10.51	3.09	1.05	0.53	0.55	2.23	0.00	0.00	2.26
Year 1	**Total**		**64.80**	**59.81**	**63.94**	**3,838.68**	**103.86**	**407.38**	**180.62**	**189.88**	**72.03**	**0.00**	**0.00**	**73.14**
Proposed Project														
Year 5	Handymax	Propulsion Engine	102.82	94.91	102.82	6,042.42	150.06	658.40	290.72	306.13	102.80	0.00	0.00	104.40
Year 5	Handymax	Auxiliary Engine	15.92	14.69	15.92	1,067.04	37.08	96.21	43.73	45.48	26.82	0.00	0.00	27.23
Year 5	Handymax	Auxiliary Boiler	1.60	1.48	-	19.51	5.74	1.96	0.98	1.03	4.14	0.00	0.00	4.21
Year 5	**Total**		**120.34**	**111.08**	**118.74**	**7,128.97**	**192.89**	**756.56**	**335.43**	**352.64**	**133.76**	**0.00**	**0.01**	**135.83**
Proposed Project														
Year 15	Handymax	Propulsion Engine	126.55	116.81	126.55	7,436.83	184.69	810.33	357.81	376.77	126.52	0.00	0.01	128.49
Year 15	Handymax	Auxiliary Engine	19.59	18.08	19.59	1,313.28	45.64	118.41	53.82	55.98	33.01	0.00	0.00	33.52
Year 15	Handymax	Auxiliary Boiler	1.97	1.82	-	24.01	7.07	2.41	1.20	1.27	5.10	0.00	0.00	5.18
Year 15	**Total**		**148.11**	**136.72**	**146.14**	**8,774.11**	**237.40**	**931.15**	**412.84**	**434.02**	**164.63**	**0.00**	**0.01**	**167.18**

Table E2.18.
Operational OGV Emissions Without Mitigation

	Vessel Type	Engine/Source Type	Transit in BAAQMD (San Joaquin River transit from SJVAPCD Boundary through SF Bay)											
			PM10 (lb/yr)	PM2.5 (lb/yr)	DPM (lb/yr)	NOX (lb/yr)	SOX (lb/yr)	CO (lb/yr)	HC (lb/yr)	VOC (lb/yr)	CO2 (mty)	CH4 (mty)	N2O (mty)	CO2e (mty)
Baseline														
Baseline	Handymax	Propulsion Engine	119.87	110.65	119.87	5,785.40	141.02	1,028.26	589.84	621.10	96.00	0.01	0.00	97.59
Baseline	Handymax	Auxiliary Engine	25.24	23.30	25.24	1,692.10	58.81	152.57	69.35	72.12	42.53	0.00	0.00	43.18
Baseline	Handymax	Auxiliary Boiler	2.54	2.34	-	30.94	9.10	3.10	1.55	1.63	6.57	0.00	0.00	6.67
Baseline	**Total**		**147.65**	**136.29**	**145.11**	**7,508.44**	**208.93**	**1,183.93**	**660.74**	**694.86**	**145.10**	**0.01**	**0.01**	**147.44**
Proposed Project														
Year 1	Handymax	Propulsion Engine	279.69	258.17	279.69	########	329.04	2,399.28	1,376.29	1,449.24	224.00	0.01	0.01	227.71
Year 1	Handymax	Auxiliary Engine	58.90	54.37	58.90	3,948.24	137.22	355.99	161.81	168.29	99.23	0.00	0.00	100.76
Year 1	Handymax	Auxiliary Boiler	5.93	5.46	-	72.20	21.24	7.24	3.62	3.81	15.33	0.00	0.00	15.56
Year 1	**Total**		**344.52**	**318.01**	**338.59**	**17,519.70**	**487.50**	**2,762.51**	**1,541.72**	**1,621.33**	**338.57**	**0.01**	**0.02**	**344.03**
Proposed Project														
Year 5	Handymax	Propulsion Engine	519.42	479.46	519.42	########	611.08	4,455.81	2,555.97	2,691.44	416.01	0.02	0.02	422.88
Year 5	Handymax	Auxiliary Engine	109.39	100.97	109.39	7,332.45	254.83	661.12	300.51	312.53	184.29	0.00	0.01	187.13
Year 5	Handymax	Auxiliary Boiler	11.02	10.15	-	134.08	39.45	13.44	6.72	7.08	28.47	0.00	0.00	28.90
Year 5	**Total**		**639.83**	**590.58**	**628.81**	**32,536.58**	**905.37**	**5,130.37**	**2,863.20**	**3,011.04**	**628.77**	**0.03**	**0.03**	**638.91**
Proposed Project														
Year 15	Handymax	Propulsion Engine	639.29	590.11	639.29	########	752.10	5,484.07	3,145.81	3,312.54	512.01	0.03	0.03	520.47
Year 15	Handymax	Auxiliary Engine	134.63	124.27	134.63	9,024.56	313.64	813.69	369.86	384.65	226.82	0.00	0.01	230.31
Year 15	Handymax	Auxiliary Boiler	13.57	12.49	-	165.02	48.55	16.54	8.27	8.71	35.04	0.00	0.00	35.57
Year 15	**Total**		**787.48**	**726.87**	**773.91**	**40,045.03**	**1,114.30**	**6,314.31**	**3,523.94**	**3,705.90**	**773.87**	**0.03**	**0.04**	**786.35**

	Vessel Type	Engine/Source Type	Ocean Transit in CA			
			CO2 (mty)	CH4 (mty)	N2O (mty)	CO2e (mty)
Baseline						
Baseline	Handymax	Propulsion Engine	1,760.29	0.04	0.09	1,787.91
Baseline	Handymax	Auxiliary Engine	92.99	0.00	0.00	94.42
Baseline	Handymax	Auxiliary Boiler	14.37	0.00	0.00	14.58
Baseline	**Total**		**1,867.65**	**0.04**	**0.09**	**1,896.92**
Proposed Project						
Year 1	Handymax	Propulsion Engine	4,107.35	0.08	0.20	4,171.79
Year 1	Handymax	Auxiliary Engine	216.98	0.00	0.01	220.32
Year 1	Handymax	Auxiliary Boiler	33.52	0.00	0.00	34.03
Year 1	**Total**		**4,357.85**	**0.09**	**0.21**	**4,426.14**
Proposed Project						
Year 5	Handymax	Propulsion Engine	7,627.93	0.16	0.38	7,747.62
Year 5	Handymax	Auxiliary Engine	402.97	0.00	0.02	409.17
Year 5	Handymax	Auxiliary Boiler	62.26	0.00	0.00	63.19
Year 5	**Total**		**8,093.16**	**0.16**	**0.40**	**8,219.98**
Proposed Project						
Year 15	Handymax	Propulsion Engine	9,388.22	0.19	0.46	9,535.53
Year 15	Handymax	Auxiliary Engine	495.96	0.01	0.02	503.59
Year 15	Handymax	Auxiliary Boiler	76.63	0.00	0.00	77.77
Year 15	**Total**		**9,960.81**	**0.20**	**0.49**	**10,116.90**

	Vessel Type	Engine/Source Type	Total Maneuvering and Transit in SJVAPCD								Total Emissions in CA			
			PM10 (lb/yr)	PM2.5 (lb/yr)	DPM (lb/yr)	NOX (lb/yr)	SOX (lb/yr)	CO (lb/yr)	HC (lb/yr)	VOC (lb/yr)	CO2 (mty)	CH4 (mty)	N2O (mty)	CO2e (mty)
Baseline														
Baseline	Handymax	Propulsion Engine	42.588	39.312	42.588	2131.530	47.436	286.785	193.539	203.796	1,888.74	0.04	0.09	1,918.52
Baseline	Handymax	Auxiliary Engine	12.430	11.474	12.430	833.219	28.958	75.126	34.148	35.514	279.12	0.00	0.01	283.41
Baseline	Handymax	Auxiliary Boiler	1.272	1.172	0.000	15.479	4.554	1.552	0.776	0.817	125.10	0.00	0.01	126.97
Baseline	**Total**		**56.29**	**51.96**	**55.02**	**2,980.23**	**80.95**	**363.46**	**228.46**	**240.13**	**2,292.95**	**0.05**	**0.11**	**2,328.91**
Proposed Project														
Year 1	Handymax	Propulsion Engine	99.372	91.728	99.372	4973.570	110.684	669.166	451.591	475.525	4,407.05	0.10	0.22	4,476.55
Year 1	Handymax	Auxiliary Engine	29.003	26.772	29.003	1944.177	67.568	175.295	79.679	82.867	651.28	0.01	0.03	661.29
Year 1	Handymax	Auxiliary Boiler	2.969	2.734	0.000	36.118	10.627	3.621	1.810	1.906	291.89	0.00	0.01	296.27
Year 1	**Total**		**131.34**	**121.23**	**128.38**	**6,953.87**	**188.88**	**848.08**	**533.08**	**560.30**	**5,350.22**	**0.11**	**0.26**	**5,434.11**
Proposed Project														
Year 5	Handymax	Propulsion Engine	184.547	170.352	184.547	9236.631	205.556	1242.736	838.669	883.118	8,184.52	0.19	0.40	8,313.60
Year 5	Handymax	Auxiliary Engine	53.863	49.720	53.863	3610.615	125.484	325.547	147.976	153.895	943.76	0.01	0.05	958.28
Year 5	Handymax	Auxiliary Boiler	5.514	5.077	0.000	67.076	19.736	6.724	3.362	3.540	323.53	0.00	0.02	328.38
Year 5	**Total**		**243.92**	**225.15**	**238.41**	**12,914.32**	**350.78**	**1,575.01**	**990.01**	**1,040.55**	**9,451.81**	**0.20**	**0.47**	**9,600.26**
Proposed Project														
Year 15	Handymax	Propulsion Engine	227.135	209.663	227.135	11368.161	252.992	1529.521	1032.208	1086.915	########	0.23	0.50	########
Year 15	Handymax	Auxiliary Engine	66.293	61.194	66.293	4443.834	154.441	400.674	182.124	189.409	1,161.55	0.01	0.06	1,179.42
Year 15	Handymax	Auxiliary Boiler	6.786	6.249	0.000	82.555	24.291	8.276	4.138	4.357	398.19	0.00	0.02	404.16
Year 15	**Total**		**300.22**	**277.11**	**293.43**	**15,894.55**	**431.72**	**1,938.47**	**1,218.47**	**1,280.68**	**11,633.00**	**0.24**	**0.57**	**11,815.70**

Table E2.19.
Harbor Craft Data

				HC Characteristics						HC Engine Activity per HC					OGV Activity	Annual HC Energy Demand				
Year		**HC Classification**	**Engine Type**	**Engine Count per HC**	**HC Average MY**	**HC Average HP**	**HC Average kW**	**Load Factor**	**HC Count per OGV**	**Berth** (hr/call)	**Maneuvering** (hr/one-way trip)	**Transit in SJVAPCD** (hr/one-way trip)	**Transit in BAAQMD** (hr/one-way trip)	**Ocean Transit in CA** (hr/one-way trip)	**Average Annual OGV Transits** (one-way trips/yr)	**Berth** (kW-hr/yr)	**Maneuvering** (kW-hr/yr)	**Transit in SJVAPCD** (kW-hr/yr)	**Transit in BAAQMD** (kW-hr/yr)	**Ocean Transit in CA** (kW-hr/yr)
Baseline																				
Baseline	OGV Assist	Assist Tugboat	Propulsion	2	1956	1,800	1,343	0.50	2	0.7	3.0	0.0	0.0	0.0	18	8,057	71,302	0	0	0
Baseline			Auxiliary	1	1956	235	175	0.31	2	0.3	1.5	0.0	0.0	0.0	18	326	2,886	0	0	0
Baseline																				
Proposed Project																				
Year 1	OGV Assist	Assist Tugboat	Propulsion	2	1956	1,800	1,343	0.50	2	0.7	3.0	0.0	0.0	0.0	42	18,799	166,371	0	0	0
Year 1			Auxiliary	1	1956	235	175	0.31	2	0.3	1.5	0.0	0.0	0.0	42	761	6,733	0	0	0
Year 1																				
Proposed Project																				
Year 5	OGV Assist	Assist Tugboat	Propulsion	2	1956	1,800	1,343	0.50	2	0.7	3.0	0.0	0.0	0.0	78	34,912	308,974	0	0	0
Year 5			Auxiliary	1	1956	235	175	0.31	2	0.3	1.5	0.0	0.0	0.0	78	1,413	12,505	0	0	0
Year 5																				
Proposed Project																				
Year 15	OGV Assist	Assist Tugboat	Propulsion	2	1956	1,800	1,343	0.50	2	0.7	3.0	0.0	0.0	0.0	96	42,969	380,276	0	0	0
Year 15			Auxiliary	1	1956	235	175	0.31	2	0.3	1.5	0.0	0.0	0.0	96	1,739	15,391	0	0	0
Year 15																				
Proposed Project																				
Year 15	Barge Assist	Assist Tugboat	Propulsion	2	1956	1,800	1,343	0.50	1	0.7	3.0	3.3	18.3	0.0	80	17,904	158,448	174,562	984,707	0
Year 15			Auxiliary	1	1956	235	175	0.31	1	0.3	1.5	1.6	9.2	0.0	80	725	6,413	7,065	39,853	0
Year 15																				
Proposed Project																				
Year 15	Total Assist	Assist Tugboat	Propulsion																	
Year 15			Auxiliary																	
Year 15																				

Table E2.19.
Harbor Craft Data

Unmitigated Emission Factors

Year	**Engine Tier**	PM10 (g/kW-hr)	PM2.5 (g/kW-hr)	DPM (g/kW-hr)	NOX (g/kW-hr)	SOX (g/kW-hr)	CO (g/kW-hr)	VOC (g/kW-hr)	CO2 (g/kW-hr)	CH4 (g/kW-hr)	N2O (g/kW-hr)
Baseline											
Baseline	Tier 2	0.50	0.45	0.50	9.34	0.01	5.00	0.52	652	0.01	0.03
Baseline	Tier 2	0.20	0.18	0.20	6.84	0.01	5.00	0.38	652	0.01	0.03
Baseline											
Proposed Project											
Year 1	Tier 2	0.50	0.45	0.50	9.34	0.01	5.00	0.52	652	0.01	0.03
Year 1	Tier 2	0.20	0.18	0.20	6.84	0.01	5.00	0.38	652	0.01	0.03
Year 1											
Proposed Project											
Year 5	Tier 2	0.50	0.45	0.50	9.34	0.01	5.00	0.52	652	0.01	0.03
Year 5	Tier 2	0.20	0.18	0.20	6.84	0.01	5.00	0.38	652	0.01	0.03
Year 5											
Proposed Project											
Year 15	Tier 4	0.04	0.04	0.04	1.80	0.01	5.00	0.20	652	0.00	0.03
Year 15	Tier 3	0.12	0.11	0.12	5.13	0.01	5.00	0.28	652	0.01	0.03
Year 15											
Proposed Project											
Year 15	Tier 4	0.04	0.04	0.04	1.80	0.01	5.00	0.20	652.00	0.00	0.03
Year 15	Tier 3	0.12	0.11	0.12	5.13	0.01	5.00	0.28	652.00	0.01	0.03
Year 15											
Proposed Project											
Year 15											
Year 15											
Year 15											

Unmitigated Emissions
Berth in SJVAPCD
Average Annual

Year	PM10 (lb/yr)	PM2.5 (lb/yr)	DPM (lb/yr)	NOX (lb/yr)	SOX (lb/yr)	CO (lb/yr)	VOC (lb/yr)	CO2 (mty)	CH4 (mty)	N2O (mty)	CO2e (mty)
Baseline											
Baseline	8.88	7.90	8.88	165.92	0.13	88.81	9.19	5.25	0.00	0.00	5.33
Baseline	0.14	0.13	0.14	4.92	0.01	3.59	0.27	0.21	0.00	0.00	0.22
Baseline	**9.02**	**8.03**	**9.02**	**170.84**	**0.14**	**92.40**	**9.46**	**5.47**	**0.00**	**0.00**	**5.55**
Proposed Project											
Year 1	20.72	18.44	20.72	387.15	0.31	207.22	21.44	12.26	0.00	0.00	12.44
Year 1	0.34	0.30	0.34	11.47	0.01	8.39	0.64	0.50	0.00	0.00	0.50
Year 1	**21.06**	**18.74**	**21.06**	**398.63**	**0.32**	**215.61**	**22.07**	**12.75**	**0.00**	**0.00**	**12.94**
Proposed Project											
Year 5	38.48	34.25	38.48	719.00	0.57	384.84	39.81	22.76	0.00	0.00	23.11
Year 5	0.62	0.55	0.62	21.31	0.02	15.58	1.18	0.92	0.00	0.00	0.94
Year 5	**39.11**	**34.80**	**39.11**	**740.31**	**0.59**	**400.41**	**40.99**	**23.68**	**0.00**	**0.00**	**24.04**
Proposed Project											
Year 15	3.79	3.37	3.79	170.51	0.70	473.64	18.95	28.02	0.00	0.00	28.43
Year 15	0.46	0.41	0.46	19.67	0.03	19.17	1.09	1.13	0.00	0.00	1.15
Year 15	**4.25**	**3.78**	**4.25**	**190.18**	**0.73**	**492.81**	**20.04**	**29.15**	**0.00**	**0.00**	**29.58**
Proposed Project											
Year 15	1.58	1.41	1.58	71.05	0.29	197.35	7.90	11.67	0.00	0.00	11.85
Year 15	0.19	0.17	0.19	8.19	0.01	7.99	0.45	0.47	0.00	0.00	0.48
Year 15	**1.77**	**1.58**	**1.77**	**79.24**	**0.30**	**205.34**	**8.35**	**12.15**	**0.00**	**0.00**	**12.33**
Proposed Project											
Year 15	5.37	4.78	5.37	241.56	0.99	671.00	26.85	39.69	0.00	0.00	40.28
Year 15	0.65	0.58	0.65	27.86	0.04	27.16	1.54	1.61	0.00	0.00	1.63
Year 15	**6.02**	**5.36**	**6.02**	**269.42**	**1.03**	**698.15**	**28.39**	**41.30**	**0.00**	**0.00**	**41.91**

Table E2.19.
Harbor Craft Data

Year	Maneuvering in SJVAPCD, Average Annual PM10 (lb/yr)	PM2.5 (lb/yr)	DPM (lb/yr)	NOX (lb/yr)	SOX (lb/yr)	CO (lb/yr)	VOC (lb/yr)	CO2 (mty)	CH4 (mty)	N2O (mty)	CO2e (mty)
Baseline											
Baseline	78.60	69.95	78.60	1,468.42	1.16	785.95	81.31	46.49	0.00	0.00	47.19
Baseline	1.27	1.13	1.27	43.52	0.05	31.81	2.41	1.88	0.00	0.00	1.91
Baseline	**79.87**	**71.08**	**79.87**	**1,511.94**	**1.21**	**817.76**	**83.72**	**48.37**	**0.00**	**0.00**	**49.10**
Proposed Project											
Year 1	183.39	163.22	183.39	3,426.32	2.71	1,833.89	189.73	108.47	0.00	0.01	110.11
Year 1	2.97	2.64	2.97	101.54	0.11	74.22	5.63	4.39	0.00	0.00	4.46
Year 1	**186.36**	**165.86**	**186.36**	**3,527.86**	**2.82**	**1,908.11**	**195.36**	**112.86**	**0.00**	**0.01**	**114.56**
Proposed Project											
Year 5	340.58	303.12	340.58	6,363.17	5.04	3,405.80	352.35	201.45	0.00	0.01	204.48
Year 5	5.51	4.91	5.51	188.57	0.20	137.84	10.45	8.15	0.00	0.00	8.28
Year 5	**346.09**	**308.02**	**346.09**	**6,551.73**	**5.24**	**3,543.64**	**362.81**	**209.60**	**0.00**	**0.01**	**212.76**
Proposed Project											
Year 15	33.53	29.85	33.53	1,509.03	6.20	4,191.75	167.73	247.94	0.00	0.01	251.62
Year 15	4.07	3.62	4.07	174.06	0.25	169.65	9.65	10.03	0.00	0.00	10.18
Year 15	**37.61**	**33.47**	**37.61**	**1,683.09**	**6.45**	**4,361.40**	**177.38**	**257.97**	**0.00**	**0.01**	**261.81**
Proposed Project											
Year 15	13.97	12.44	13.97	628.76	2.58	1,746.56	69.89	103.31	0.00	0.00	104.84
Year 15	1.70	1.51	1.70	72.53	0.10	70.69	4.02	4.18	0.00	0.00	4.24
Year 15	**15.67**	**13.95**	**15.67**	**701.29**	**2.69**	**1,817.25**	**73.91**	**107.49**	**0.00**	**0.01**	**109.09**
Proposed Project											
Year 15	47.51	42.28	47.51	2,137.79	8.79	5,938.32	237.62	351.25	0.00	0.02	356.47
Year 15	5.77	5.13	5.77	246.59	0.36	240.34	13.67	14.22	0.00	0.00	14.43
Year 15	**53.27**	**47.41**	**53.27**	**2,384.38**	**9.14**	**6,178.65**	**251.28**	**365.46**	**0.00**	**0.02**	**370.90**

Year	Transit in SJVAPCD, Average Annual PM10 (lb/yr)	PM2.5 (lb/yr)	DPM (lb/yr)	NOX (lb/yr)	SOX (lb/yr)	CO (lb/yr)	VOC (lb/yr)	CO2 (mty)	CH4 (mty)	N2O (mty)	CO2e (mty)
Baseline											
Baseline	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Baseline	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Baseline	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Proposed Project											
Year 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Year 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Year 1	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Proposed Project											
Year 5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Year 5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Year 5	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Proposed Project											
Year 15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Year 15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Year 15	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Proposed Project											
Year 15	15.39	13.70	15.39	692.71	2.85	1,924.18	76.99	113.81	0.00	0.01	115.51
Year 15	1.87	1.66	1.87	79.90	0.12	77.88	4.43	4.61	0.00	0.00	4.68
Year 15	**17.26**	**15.36**	**17.26**	**772.61**	**2.96**	**2,002.06**	**81.42**	**118.42**	**0.00**	**0.01**	**120.18**
Proposed Project											
Year 15	15.39	13.70	15.39	692.71	2.85	1,924.18	76.99	113.81	0.00	0.01	115.51
Year 15	1.87	1.66	1.87	79.90	0.12	77.88	4.43	4.61	0.00	0.00	4.68
Year 15	**17.26**	**15.36**	**17.26**	**772.61**	**2.96**	**2,002.06**	**81.42**	**118.42**	**0.00**	**0.01**	**120.18**

Table E2.19.
Harbor Craft Data

	Transit in BAAQMD Average Annual											Ocean Transit in CA Average Annual				Total Emissions in SJVAPCD Average Annual										
Year	PM10	PM2.5	DPM	NOX	SOX	CO	VOC	CO2	CH4	N2O	CO2e	CO2	CH4	N2O	CO2e	PM10	PM2.5	DPM	NOX	SOX	CO	VOC	CO2	CH4	N2O	CO2e
	(lb/yr)	(lb/yr)	(lb/yr)	(lb/yr)	(lb/yr)	(lb/yr)	(lb/yr)	(mty)	(mty)	(mty)	(mty)	(mty)	(mty)	(mty)	(mty)	(lb/yr)	(lb/yr)	(lb/yr)	(lb/yr)	(lb/yr)	(lb/yr)	(lb/yr)	(mty)	(mty)	(mty)	(mty)
Baseline																										
Baseline	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	87.48	77.85	87.48	1,634.35	1.29	874.76	90.50	51.74	0.00	0.00	52.52
Baseline	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.42	1.26	1.42	48.43	0.05	35.40	2.68	2.09	0.00	0.00	2.13
Baseline	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	88.89	79.11	88.89	1,682.78	1.35	910.17	93.18	53.84	0.00	0.00	54.65
Proposed Project																										
Year 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	204.11	181.66	204.11	3,813.48	3.02	2,041.11	211.17	120.73	0.00	0.01	122.55
Year 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.30	2.94	3.30	113.01	0.12	82.61	6.26	4.89	0.00	0.00	4.96
Year 1	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	207.42	184.60	207.42	3,926.48	3.14	2,123.72	217.43	125.62	0.00	0.01	127.51
Proposed Project																										
Year 5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	379.06	337.37	379.06	7,082.17	5.61	3,790.64	392.17	224.21	0.00	0.01	227.59
Year 5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.14	5.46	6.14	209.87	0.23	153.42	11.63	9.07	0.00	0.00	9.21
Year 5	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	385.20	342.83	385.20	7,292.04	5.84	3,944.05	403.80	233.29	0.00	0.01	236.80
Proposed Project																										
Year 15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	37.32	33.22	37.32	1,679.54	6.90	4,665.40	186.68	275.96	0.00	0.01	280.06
Year 15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.53	4.03	4.53	193.73	0.28	188.82	10.74	11.17	0.00	0.00	11.34
Year 15	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	41.85	37.25	41.85	1,873.27	7.18	4,854.22	197.42	287.12	0.00	0.01	291.39
Proposed Project																										
Year 15	86.83	77.28	86.83	3,907.57	16.06	10,854.35	434.33	642.03	0.00	0.03	651.57	0.00	0.00	0.00	0.00	30.94	27.54	30.94	1,392.51	5.72	3,868.10	154.78	228.80	0.00	0.01	232.20
Year 15	10.54	9.38	10.54	450.72	0.65	439.30	24.98	25.98	0.00	0.00	26.37	0.00	0.00	0.00	0.00	3.76	3.34	3.76	160.62	0.23	156.55	8.90	9.26	0.00	0.00	9.40
Year 15	**97.38**	**86.67**	**97.38**	**4358.29**	**16.71**	**11293.65**	**459.31**	**668.01**	**0.00**	**0.03**	**677.94**	**0.00**	**0.00**	**0.00**	**0.00**	34.70	30.88	34.70	1,553.14	5.96	4,024.65	163.68	238.06	0.00	0.01	241.59
Proposed Project																										
Year 15	86.83	77.28	86.83	3,907.57	16.06	10,854.35	434.33	642.03	0.00	0.03	651.57	0.00	0.00	0.00	0.00	68.27	60.76	68.27	3,072.06	12.63	8,533.49	341.46	504.75	0.00	0.02	512.25
Year 15	10.54	9.38	10.54	450.72	0.65	439.30	24.98	25.98	0.00	0.00	26.37	0.00	0.00	0.00	0.00	8.29	7.38	8.29	354.35	0.51	345.37	19.64	20.43	0.00	0.00	20.73
Year 15	**97.38**	**86.67**	**97.38**	**4,358.29**	**16.71**	**11,293.65**	**459.31**	**668.01**	**0.00**	**0.03**	**677.94**	**0.00**	**0.00**	**0.00**	**0.00**	76.56	68.14	76.56	3,426.41	13.14	8,878.86	361.10	525.18	0.00	0.02	532.99

Table E2.19.
Harbor Craft Data

	Total Emissions in BAAQMD Average Annual											Total Emissions in CA Average Annual			
Year	PM10	PM2.5	DPM	NOX	SOX	CO	VOC	CO2	CH4	N2O	CO2e	CO2	CH4	N2O	CO2e
	(lb/yr)	(lb/yr)	(lb/yr)	(lb/yr)	(lb/yr)	(lb/yr)	(lb/yr)	(mty)	(mty)	(mty)	(mty)	(mty)	(mty)	(mty)	(mty)
Baseline															
Baseline	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.74	0.00	0.00	52.52
Baseline	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.09	0.00	0.00	2.13
Baseline	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	53.84	0.00	0.00	54.65
Proposed Project															
Year 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	120.73	0.00	0.01	122.55
Year 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.89	0.00	0.00	4.96
Year 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	125.62	0.00	0.01	127.51
Proposed Project															
Year 5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	224.21	0.00	0.01	227.59
Year 5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.07	0.00	0.00	9.21
Year 5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	233.29	0.00	0.01	236.80
Proposed Project															
Year 15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	275.96	0.00	0.01	280.06
Year 15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.17	0.00	0.00	11.34
Year 15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	287.12	0.00	0.01	291.39
Proposed Project															
Year 15	86.83	77.28	86.83	3,907.57	16.06	10,854.35	434.33	642.03	0.00	0.03	651.57	870.82	0.01	0.04	883.77
Year 15	10.54	9.38	10.54	450.72	0.65	439.30	24.98	25.98	0.00	0.00	26.37	35.24	0.00	0.00	35.77
Year 15	97.38	86.67	97.38	4,358.29	16.71	11,293.65	459.31	668.01	0.00	0.03	677.94	906.07	0.01	0.04	919.54
Proposed Project															
Year 15	86.83	77.28	86.83	3,907.57	16.06	10,854.35	434.33	642.03	0.00	0.03	651.57	1,146.78	0.01	0.05	1,163.82
Year 15	10.54	9.38	10.54	450.72	0.65	439.30	24.98	25.98	0.00	0.00	26.37	46.41	0.00	0.00	47.10
Year 15	97.38	86.67	97.38	4,358.29	16.71	11,293.65	459.31	668.01	0.00	0.03	677.94	1,193.19	0.01	0.06	1,210.93

Notes and Source:

Tugboats are used to assist OGVs from Port Harbor to berth (maneuvering).

Tugboats are used to assist barges during river transit and maneuvering.

2 tugboats used to assist each OGV; 1 tugboat used to push each barge. Operations Throuput Info Needs 11_12.docx. Provided by Lehigh.

Tugboats assumed to have 2 propulsion and 2 auxiliary engines. One auxiliary engine operates at a time.

Tugboat engine characteristics are from Brusco tugboats details on Port of Stockton website. Representative tugboat: https://www.marinetraffic.com/en/ais/details/ships/shipid:434027/mmsi:367007980/imo:5111359/vessel:ANGIE_M_BRUSCO

Per CARB regulations, tugboats with 1975 engines or older would have had to retrofit their engines in 2009. EPA required that tugboat engines manufactured in 2009 be Tier 2. The useful life of a tugboat engine is 21 for main and 22.5 years for auxiliary engines per CARB. Therefore, tugboats in Year 15 (2036), which is more than 21 years following 2009, would be retrofitted to the cleanest engines available at that time, Tier 4 for main engines and Tier 3 for auxiliary engines.

Applicable engine Tier is identified based on the EPA requirements for new engines and ARB harbor craft compliance schedule and average model year.

Example:

1975 MY engine (pre-Tier 1 per EPA standards) would have to be replaced at the end of 2009, based on ARB's compliance schedule. At that time, the engine will need to be replaced with the relevant Tier engine applicable at the time (Tier 2).

Emission Factors:

EPA emission standards, which are reported as NOx+THC, were convered by Nox and HC assuming 95% and 5% are Nox and HC, respectively, per Carl Moyer Program guidelines.

SOx emission factor is based on 15 ppm fuel sulfur content.

PM2.5 is 89% of PM10, per SCAQMD 2006 Final Methodology to Calculate PM2.5 and PM 2.5 Significance Thresholds, Table 5.

CH4 is 2% of HC, per IVL study.

Table E2.20.
HC Activity

	Berth	Maneuvering (Pilot to Berth)	Transit in SJVAPCD (San Joaquin River transit from Port to SJVAPCD Boundary)	Transit in BAAQMD (San Joaquin River transit from SJVAPCD boundary through SF Bay)	Ocean Transit (SF Bay to State Boundary)	Total Project
HC Assisting OGVs						
Distance (nm 1-way trip)		2.95				
Speed (knots)		2				
Time (hr/call)	0.3	1.48				
HC Assisting Barges						
Distance (nm 1-way trip)		2.95	13	55	0	71
Speed (knots)		2	8	6	13.9	5.8
Time (hr/call)	0.3	1.48	1.63	9.17	0.00	12.27

Notes:

It is assumed that tugboats pick up the vessel at the Rough and Ready Island and transit up to 2 miles, one-way. Source: Communication with Lena DeSantis e-mail 11/29/18.

It is assumed that tugboats operate for 20 min/call at berth.

Tugboats are used to push non-self propelled barges for 80 miles.

Table E2.21.
Harbor Craft Emission Factors - EPA Standards g/kW-hr

Engine Displacement	(kW)	EPA Tier	MY	NMHC+NOx	PM10	PM2.5	DPM	NOx	SOX	CO	HC	VOC	CO2	CH4	N2O
Category 1															
		Tier 1	2004		0.40	0.36	0.40	9.80	0.007	5.00	0.38	0.39	652	0.008	0.031
<0.9	37-75	Tier 2	2005	**7.50**	**0.40**	0.36	0.40	7.1	0.007	**5.00**	0.38	0.39	652	0.008	0.031
0.9 < displ < 1.2	75-130	Tier 2	2004	**7.20**	**0.30**	0.27	0.30	6.8	0.007	**5.00**	0.36	0.38	652	0.007	0.031
1.2 < displ < 2.5	130-560	Tier 2	2004	**7.20**	**0.20**	0.18	0.20	6.8	0.007	**5.00**	0.36	0.38	652	0.007	0.031
2.5 < displ < 5	>560	Tier 2	2007	**7.20**	**0.20**	0.18	0.20	6.8	0.007	**5.00**	0.36	0.38	652	0.007	0.031
<0.9	<19	Tier 3	2009	**7.5**	**0.40**	0.36	0.40	7.1	0.007	5.00	0.38	0.39	652	0.008	0.031
<0.9	19-75	Tier 3	2009	**7.5**	**0.30**	0.27	0.30	7.1	0.007	5.00	0.38	0.39	652	0.008	0.031
<0.9	75-3700	Tier 3	2012	**5.4**	**0.14**	0.12	0.14	5.1	0.007	5.00	0.27	0.28	652	0.005	0.031
0.9 < displ < 1.2	100-175	Tier 3	2013	**5.4**	**0.12**	0.11	0.12	5.1	0.007	5.00	0.27	0.28	652	0.005	0.031
1.2 < displ < 2.5	175-750	Tier 3	2014	**5.6**	**0.11**	0.10	0.11	5.3	0.007	5.00	0.28	0.29	652	0.006	0.031
2.5 < displ < 5	>750	Tier 3	2013	**5.6**	**0.11**	0.10	0.11	5.3	0.007	5.00	0.28	0.29	652	0.006	0.031
3.5 ≤ D < 7		Tier 3	2012	**5.8**	**0.11**	0.10	0.11	5.5	0.007	5.00	0.29	0.31	652	0.006	0.031
	>3700	Tier 4	2014		**0.12**	0.11	0.12	**1.8**	0.007	5.00	**0.19**	0.20	652	0.004	0.031
	2000-3700	Tier 4	2014		**0.04**	0.04	0.04	**1.8**	0.007	5.00	**0.19**	0.20	652	0.004	0.031
	1400-2000	Tier 4	2016		**0.04**	0.04	0.04	**1.8**	0.007	5.00	**0.19**	0.20	652	0.004	0.031
	600-1400	Tier 4	2017		**0.04**	0.04	0.04	**1.8**	0.007	5.00	**0.19**	0.20	652	0.004	0.031
Category 2															
			MY												
>2.5	>37	Tier 1	2004		0.40	0.36	0.40	**17.0**	0.007	8.50	0.95	1.00	652	0.019	0.031
5.0 ≤ D < 15	all	Tier 2	2007	**7.8**	**0.27**	0.24	0.27	7.4	0.007	**5.00**	0.39	0.41	652	0.008	0.031
15 ≤ D < 20	< 3300 kW	Tier 2	2007	**8.7**	**0.50**	0.45	0.50	8.3	0.007	**5.00**	0.44	0.46	652	0.009	0.031
15 ≤ D < 20	≥ 3300 kW	Tier 2	2007	**9.8**	**0.50**	0.45	0.50	9.3	0.007	**5.00**	0.49	0.52	652	0.010	0.031
20 ≤ D < 25	all	Tier 2	2007	**9.8**	**0.50**	0.45	0.50	9.3	0.007	**5.00**	0.49	0.52	652	0.010	0.031
25 ≤ D < 30	all	Tier 2	2007	**11.0**	**0.50**	0.45	0.50	10.5	0.007	**5.00**	0.55	0.58	652	0.011	0.031
7 ≤ D < 15	<2000	Tier 3	2013	**6.2**	**0.14**	0.12	0.14	5.9	0.007	**5.00**	0.31	0.33	652	0.006	0.031
7 ≤ D < 15	2000-3700	Tier 3	2013	**7.8**	**0.14**	0.12	0.14	7.4	0.007	**5.00**	0.39	0.41	652	0.008	0.031
15 ≤ D < 20	<2000	Tier 3	2014	**7.0**	**0.34**	0.30	0.34	6.7	0.007	**5.00**	0.35	0.37	652	0.007	0.031
20 ≤ D < 25	<2000	Tier 3	2014	**9.8**	**0.27**	0.24	0.27	9.3	0.007	**5.00**	0.49	0.52	652	0.010	0.031
25 ≤ D < 30	<2000	Tier 3	2014	**11.0**	**0.27**	0.24	0.27	10.5	0.007	**5.00**	0.55	0.58	652	0.011	0.031
all	2000-3700	Tier 4	2014		**0.04**	0.04	0.04	**1.8**	0.007	5.00	**0.19**	0.20	652	0.004	0.031
<15	>3700	Tier 4	2014		**0.12**	0.11	0.12	**1.8**	0.007	5.00	**0.19**	0.20	652	0.004	0.031
15 ≤ D < 30	>3700	Tier 4	2014		**0.25**	0.22	0.25	**1.8**	0.007	5.00	**0.19**	0.20	652	0.004	0.031
all	>3700	Tier 4	2016		**0.06**	0.05	0.06	**1.8**	0.007	5.00	**0.19**	0.20	652	0.004	0.031
all	1400-2000	Tier 4	2016		**0.04**	0.04	0.04	**1.8**	0.007	5.00	**0.19**	0.20	652	0.004	0.031
all	600-1400	Tier 4	2017		**0.04**	0.04	0.04	**1.8**	0.007	5.00	**0.19**	0.20	652	0.004	0.031

Source:

Federal Marine Compression-Ignition Engines - Exhaust Emission Standards Reference Guide, http://epa.gov/OMS/standards/nonroad/marineci.htm

Amendments to the Regulations to Reduce Emissions From Diesel Engines on Commercial Harbor Craft Operated Within California Waters and 24 Nautical Miles of the California Baseline. ARB 2011. Table 9, Compliance Dates for Engines on Crew and Supply Vessels Nationwide.

http://www.arb.ca.gov/regact/2010/chc10/frochc931185.pdf

EPA Tier 2 and Tier 3 emission standards are reported as NOx+THC. 5% is HC per Carl Moyer Program guidelines.

SOx emission factor is based on 15 ppm fuel sulfur content.

PM2.5 is 89% of PM10, per SCAQMD 2006 Final Methodology to Calculate PM2.5 and PM 2.5 Significance Thresholds, Table 5.

CO2 and N20 emission factors are from IVL: Methodology for Calculating Emissions from Ships: Update on Emission Factors, 2004, also summarized in POLA 2009 Emissions Inventory, Appendix B. CH4 is 2% of HC, per IVL study.

Bold numbers represent actual emission standards.

Table E2.22.
SOx Emission Factor

Harbor Craft	0.007399563 g/hp-hr	
Dredging Equipment	use OFFROAD BSCF and convert to g SOx /hp-hr	
SOx (gms/hp-hr) = (S content in X/1,000,000) x (MW SO2/ MW S) x BSF =		
Where:		
X = S content in parts per million (ppm)		15 ppm
S MW = Molecular Weight		32
SO2 MW = Molecular Weight		64
BSFC for harbor craft = Brake Specific Fuel Consumption (per CARB 2007 Harbor Craft Methodology)		184 (g/hp-hr)

Table E2.23.
Habor Craft Load Factor

Type	Main Engine	Auxiliary Engine
Tugboat	0.5	0.31

Source:
2011 CARB Commercial Harbor Craft Emission Inventory. Access dabatase available at: https://www.arb.ca.gov/msei/categories.htm#offroad_motor_vehicles. Last accessed 5/31/18.

Table E2.24.
Truck Activity and Exhaust Emissions

	Activity				Total Exhaust, Tire Wear, Brake Wear Emissions (lb/yr)										
Year	Annual Truck Trips (1-way)	Distance Traveled (mi/1-way)	Distance Traveled (mi/1-way) in CA	Idling Time (hr/call)	DPM	PM10	PM2.5	NOX	SOX	CO	VOC	CO2	CH4	N2O	CO2e
Baseline															
Baseline Transit Shipping On-Site	18,720	0.25			0.36	1.37	0.71	63.89	0.18	9.70	2.90	19,485.75	0.13	3.06	20,438.07
Baseline Transit Receiving On-Site	0	0.25			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Baseline Idling On-Site	18,720			0.33	0.85	0.85	0.82	251.55	0.61	70.42	19.43	64,458.21	0.00	10.13	67,599.11
Baseline Transit and Idling Shipping Off-Site	18,720	30	30		43.14	164.15	85.18	7,666.85	22.09	1,163.91	348.20	2,338,289.52	16.17	367.55	2,452,568.59
Baseline Transit and Idling Receiving Off-Site	0	0	0		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Baseline Total On-Site					1.21	2.22	1.53	315.44	0.79	80.12	22.33	83,943.96	0.13	13.19	88,037.19
Baseline Total Off-Site					43.14	164.15	85.18	7,666.85	22.09	1,163.91	348.20	2,338,289.52	16.17	367.55	2,452,568.59
Baseline Total					44.35	166.37	86.70	7,982.29	22.88	1,244.04	370.54	2,422,233.48	16.31	380.74	2,540,605.78
Year 1															
Year 1 Transit Shipping On-Site	20,806	0.25			0.38	1.50	0.77	68.29	0.20	9.91	2.68	21,010.87	0.12	3.30	22,037.29
Year 1 Transit Receiving On-Site	900	0.25			0.02	0.06	0.03	2.95	0.01	0.43	0.12	908.88	0.01	0.14	953.28
Year 1 Idling On-Site	21,706			0.33	0.87	0.87	0.83	303.68	0.70	77.99	18.86	74,159.29	0.00	11.66	77,772.90
Year 1 Transit and Idling Shipping Off-Site	20,806	40	40		60.91	240.23	123.33	10,926.81	31.76	1,585.76	428.24	3,361,739.06	19.89	528.42	3,525,966.52
Year 1 Transit and Idling Receiving Off-Site	900	40	40		2.63	10.39	5.34	472.67	1.37	68.60	18.52	145,421.02	0.86	22.86	152,525.12
Year 1 Total On-Site					1.27	2.43	1.63	374.92	0.91	88.33	21.65	96,079.04	0.13	15.10	100,763.47
Year 1 Total Off-Site					63.55	250.63	128.67	11,399.48	33.13	1,654.35	446.77	3,507,160.08	20.75	551.28	3,678,491.64
Year 1 Total					64.81	253.06	130.30	11,774.41	34.04	1,742.68	468.42	3,603,239.12	20.88	566.38	3,779,255.11
Year 5															
Year 5 Transit Shipping On-Site	35,185	0.25			0.31	2.21	0.99	78.63	0.28	8.17	0.57	30,113.58	0.03	4.73	31,581.50
Year 5 Transit Receiving On-Site	1,852	0.25			0.02	0.12	0.05	4.14	0.01	0.43	0.03	1,584.93	0.00	0.25	1,662.18
Year 5 Idling On-Site	37,037			0.33	0.44	0.44	0.42	498.33	1.09	78.02	4.57	115,104.82	0.00	18.09	120,713.61
Year 5 Transit and Idling Shipping Off-Site	35,185	40	40		49.93	353.20	157.80	12,581.54	45.52	1,306.98	91.55	4,818,172.12	4.25	757.35	5,053,039.78
Year 5 Transit and Idling Receiving Off-Site	1,852	40	40		2.63	18.59	8.31	662.19	2.40	68.79	4.82	253,588.01	0.22	39.86	265,949.46
Year 5 Total On-Site					0.77	2.77	1.46	581.11	1.39	86.61	5.17	146,803.32	0.03	23.08	153,957.30
Year 5 Total Off-Site					52.56	371.79	166.10	13,243.73	47.92	1,375.76	96.37	5,071,760.13	4.48	797.21	5,318,989.25
Year 5 Total					53.33	374.55	167.56	13,824.83	49.30	1,462.38	101.54	5,218,563.45	4.50	820.29	5,472,946.54
Year 15															
Year 15 Transit Shipping On-Site	39,722	0.25			0.34	2.48	1.10	86.95	0.25	9.03	0.63	26,121.62	0.03	4.11	27,395.08
Year 15 Transit Receiving On-Site	2,778	0.25			0.02	0.17	0.08	6.08	0.02	0.63	0.04	1,826.69	0.00	0.29	1,915.74
Year 15 Idling On-Site	42,500			0.33	0.49	0.49	0.47	592.83	0.96	87.67	5.14	101,486.97	0.00	15.95	106,432.20
Year 15 Transit and Idling Shipping Off-Site	39,722	40	40		54.49	396.86	176.35	13,912.71	39.49	1,445.05	101.23	4,179,459.21	4.70	656.95	4,383,213.31
Year 15 Transit and Idling Receiving Off-Site	2,778	40	40		3.81	27.75	12.33	972.92	2.76	101.05	7.08	292,269.87	0.33	45.94	306,518.41
Year 15 Total On-Site					0.86	3.15	1.65	685.87	1.22	97.34	5.81	129,435.28	0.03	20.35	135,743.02
Year 15 Total Off-Site					58.30	424.61	188.68	14,885.63	42.25	1,546.10	108.30	4,471,729.08	5.03	702.89	4,689,731.72
Year 15 Total					59.16	427.76	190.33	15,571.50	43.47	1,643.44	114.12	4,601,164.36	5.06	723.24	4,825,474.74

Notes:

Activity provided by Lehigh: Operations 11_12 - TKR112219.xlsx.

Transit distance onsite obtained from GoogleEarth and facility maps: 0.25 miles 1-way

Idling time onsite: 20 min per call

Transit distance offsite provided by Lehigh: Operations 11_12 - TKR112219.xlsx.

Exhaust, Tire Wear, Brake Wear Emissions in SJVAPCD (lb/yr)							Exhaust, Tire Wear, Brake Wear Emissions in BAAQMD (lb/yr)				Exhaust, Tire Wear, Brake Wear Emissions in SMAPCD (lb/yr)				Total Road Dust Emissions (lb/yr)		Road Dust Emissions in SJVAPCD (lb/yr)		Road Dust Emissions in BAAQMD (lb/yr)		Road Dust Emissions in SMAPCD (lb/yr)	
DPM	PM10	PM2.5	NOX	SOX	CO	VOC	PM10	PM2.5	NOX	VOC	PM10	PM2.5	NOX	VOC	PM10	PM2.5	PM10	PM2.5	PM10	PM2.5	PM10	PM2.5
0.36	1.37	0.71	63.89	0.18	9.70	2.90									116.65	17.50	116.65	17.50	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00									0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.85	0.85	0.82	251.55	0.61	70.42	19.43																
43.14	164.15	85.18	7,666.85	22.09	1,163.91	348.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	148.78	22.32	148.78	22.32	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.21	2.22	1.53	315.44	0.79	80.12	22.33									116.65	17.50	116.65	17.50	0.00	0.00	0.00	0.00
43.14	164.15	85.18	7,666.85	22.09	1,163.91	348.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	148.78	22.32	148.78	22.32	0.00	0.00	0.00	0.00
44.35	166.37	86.70	7,982.29	22.88	1,244.04	370.54									265.43	39.81	265.43	39.81	0.00	0.00	0.00	0.00
0.38	1.50	0.77	68.29	0.20	9.91	2.68									129.65	19.45	129.65	19.45	0.00	0.00	0.00	0.00
0.02	0.06	0.03	2.95	0.01	0.43	0.12									5.61	0.84	5.61	0.84	0.00	0.00	0.00	0.00
0.87	0.87	0.83	303.68	0.70	77.99	18.86																
60.91	240.23	123.33	10,926.81	31.76	1,585.76	428.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	220.47	33.07	220.47	33.07	0.00	0.00	0.00	0.00
2.63	10.39	5.34	472.67	1.37	68.60	18.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.54	1.43	9.54	1.43	0.00	0.00	0.00	0.00
1.27	2.43	1.63	374.92	0.91	88.33	21.65									135.26	20.29	135.26	20.29	0.00	0.00	0.00	0.00
63.55	250.63	128.67	11,399.48	33.13	1,654.35	446.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	230.01	34.50	230.01	34.50	0.00	0.00	0.00	0.00
64.81	253.06	130.30	11,774.41	34.04	1,742.68	468.42									365.27	54.79	365.27	54.79	0.00	0.00	0.00	0.00
0.31	2.21	0.99	78.63	0.28	8.17	0.57									219.26	32.89	219.26	32.89	0.00	0.00	0.00	0.00
0.02	0.12	0.05	4.14	0.01	0.43	0.03									11.54	1.73	11.54	1.73	0.00	0.00	0.00	0.00
0.44	0.44	0.42	498.33	1.09	78.02	4.57																
49.93	353.20	157.80	12,581.54	45.52	1,306.98	91.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	372.85	55.93	372.85	55.93	0.00	0.00	0.00	0.00
2.63	18.59	8.31	662.19	2.40	68.79	4.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.62	2.94	19.62	2.94	0.00	0.00	0.00	0.00
0.77	2.77	1.46	581.11	1.39	86.61	5.17									230.80	34.62	230.80	34.62	0.00	0.00	0.00	0.00
52.56	371.79	166.10	13,243.73	47.92	1,375.76	96.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	392.47	58.87	392.47	58.87	0.00	0.00	0.00	0.00
53.33	374.55	167.56	13,824.83	49.30	1,462.38	101.54									623.27	93.49	623.27	93.49	0.00	0.00	0.00	0.00
0.34	2.48	1.10	86.95	0.25	9.03	0.63									247.53	37.13	247.53	37.13	0.00	0.00	0.00	0.00
0.02	0.17	0.08	6.08	0.02	0.63	0.04									17.31	2.60	17.31	2.60	0.00	0.00	0.00	0.00
0.49	0.49	0.47	592.83	0.96	87.67	5.14																
54.49	396.86	176.35	13,912.71	39.49	1,445.05	101.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	420.93	63.14	420.93	63.14	0.00	0.00	0.00	0.00
3.81	27.75	12.33	972.92	2.76	101.05	7.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	29.44	4.42	29.44	4.42	0.00	0.00	0.00	0.00
0.86	3.15	1.65	685.87	1.22	97.34	5.81									264.84	39.73	264.84	39.73	0.00	0.00	0.00	0.00
58.30	424.61	188.68	14,885.63	42.25	1,546.10	108.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	450.36	67.55	450.36	67.55	0.00	0.00	0.00	0.00
59.16	427.76	190.33	15,571.50	43.47	1,643.44	114.12									715.20	107.28	715.20	107.28	0.00	0.00	0.00	0.00

Table E2.25.

Truck Entrained Road Dust Emissions

Paved Road Dust Emission Factor Derivation

Emission Source	(sL) Silt Loading (g/m2)	(k) Particle Size Multiplier - PM10 (g/VMT)	(k) Particle Size Multiplier - PM2.5 (g/VMT)	(W) Average Vehicle Weight on Road (tons)	(E) Uncontrolled PM10 Emission Factor (g/VMT)	(E) Uncontrolled PM2.5 Emission Factor (g/VMT)
Onsite Trucks	0.6	1.00	0.15	20.0	**11.31**	**1.70**
Offsite Roadway (all vehicles) - CARB 2016						
Freeway Statewide	0.015	1.00	0.15	2.4	0.05	0.01
Major Statewide	0.032	1.00	0.15	2.4	0.09	0.01
Collector Statewide	0.032	1.00	0.15	2.4	0.09	0.01
Local Statewide	0.32	1.00	0.15	2.4	0.73	0.11
Local Rural SJVAPCD	0.32	1.00	0.15	2.4	0.73	0.11

Notes:

1. Emission factors are calculated using CARB's Miscellaneous Process Methodology 7.9, Entrained Road Travel, Paved Road Dust.
November 2016. Last accessed on 12/2019 at: https://ww3.arb.ca.gov/ei/areasrc/fullpdf/full7-9_2016.pdf.
2. Emission factors exclude engine exhaust, tire wear, and brake wear, which are accounted for in EMFAC calculations.
3. The equation is: E = k (sL)^0.91 x (W)^1.02
4. SJV experiences 55 annual rainfall days. CARB's Miscellaneous Process Methodology 7.9, Entrained Road Travel, Paved Road Dust. Table 8.

Composite Paved Road Dust Emission Factors for Project Trips

	Fraction of Travel by Roadway Type						**Composite EF for Offsite Transit**	
Road Type	Million VMT per year	Freeway	Major	Collector	Local Urban	Local Rural	PM10 (g/VMT)	PM2.5 (g/VMT)
Vehicle Trips in San Joaquin	6485	0.456	0.351	0.117	0.058	0.020	**0.12**	**0.02**

Source:

CARB's Miscellaneous Process Methodology 7.9, Entrained Road Travel, Paved Road Dust. Table 6.
November 2016. Last accessed on 12/2019 at: https://ww3.arb.ca.gov/ei/areasrc/fullpdf/full7-9_2016.pdf.

Table E2.26.

Truck Transit Distance

	Distance to Destination (1-way miles)	Distance in SJVAPCD (1-way miles)	Distance in BAAQMD (1-way miles)	Distance in SMAPCD (1-way miles)
Baseline Transit and Idling Shipping Off-Site	30	30	0	0
Baseline Transit and Idling Receiving Off-Site	0	0	0	0
Baseline	**60**	**60**	**0**	**0**
Year 1 Transit and Idling Shipping Off-Site	40	40	0	0
Year 1 Transit and Idling Receiving Off-Site	40	40	0	0
Year 1	**80**	**80**	**0**	**0**
Year 5 Transit and Idling Shipping Off-Site	40	40	0	0
Year 5 Transit and Idling Receiving Off-Site	40	40	0	0
Year 5	**80**	**80**	**0**	**0**
Year 15 Transit and Idling Shipping Off-Site	40	40	0	0
Year 15 Transit and Idling Receiving Off-Site	40	40	0	0
Year 15	**80**	**80**	**0**	**0**

Notes:

Assumed truck split between BAAQMD and SMAPCD: 50%

On average, all transit occurs within SJVAPCD.

Source:

Total transit distance provided by Anchor based on conversations with Lehigh:

From: Lena DeSantis <lmdesantis@anchorqea.com>; Sent: Tuesday, December 17, 2019 12:02 PM; To: Lora Granovsky <lora.granovsky@ilancoenvironmental.com>
Subject: RE: Lehigh - operational questions summary

Table E2.27.

Employee Vehicle Activity and Emissions

	Activity			**Emissions (lb/yr)**									
Year	Number of Employees	Annual Employee Trips (1-way trips)	Distance Traveled (mi/1-way)	PM10	PM2.5	NOX	SOX	CO	VOC	CO2	CH4	N2O	CO2e
Baseline	10	7,300	16.8	13	5	31	1	331	8	87,508	2	2	88,303
Year 1	15	10,950	16.8	19	8	28	1	340	6	119,834	2	3	120,664
Year 5	15	10,950	16.8	19	8	14	1	228	3	101,476	1	2	102,026
Year 15	15	10,950	16.8	18	7	8	1	165	1	82,747	0	1	83,159

	Emissions (ton/yr)						**(mton/yr)**			
Year	PM10	PM2.5	NOX	SOX	CO	VOC	CO2	CH4	N2O	CO2e
Baseline	0.01	0.00	0.02	0.00	0.17	0.00	39.69	0.00	0.00	40.05
Year 1	0.01	0.00	0.01	0.00	0.17	0.00	54.36	0.00	0.00	54.73
Year 5	0.01	0.00	0.01	0.00	0.11	0.00	46.03	0.00	0.00	46.28
Year 15	0.01	0.00	0.00	0.00	0.08	0.00	37.53	0.00	0.00	37.72

Source:

Transit Distance obtained from CalEEMod, Appendix D, Table 4.2 for SJVAPCD. Rural designation was used conservatively.

Table E2.28.
EMFAC Output - Trucks

EMFAC2017 (v1.0.2) Emission Rates
Region Type: Air Basin
Region: SAN JOAQUIN VALLEY
Calendar Year: 2018, 2021, 2026, 2036
Season: Annual
Vehicle Classification: EMFAC2011 Categories
Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HTSK and RUNLS, g/vehicle/day for IDLEX, RESTL and DIURN

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population	VMT	Trips	ROG_RUNEX	ROG_IDLEX	ROG_STREX	ROG_HOTSOAK	ROG_RUNLOSS	ROG_RESTLOSS
SAN JOAQUIN VALLEY	2018	T7 other port	Aggregated	Aggregated	DSL	253.2240807	41095.92669	1924.503013	0.281246017	1.644036067	0	0	0	0
SAN JOAQUIN VALLEY	2021	T7 other port	Aggregated	Aggregated	DSL	289.462072	46368.24414	2199.911747	0.233412127	1.642041148	0	0	0	0
SAN JOAQUIN VALLEY	2026	T7 other port	Aggregated	Aggregated	DSL	289.287825	54557.68796	2198.58747	0.029507144	1.641996952	0	0	0	0
SAN JOAQUIN VALLEY	2036	T7 other port	Aggregated	Aggregated	DSL	386.8938672	63902.71452	2940.39339	0.028898248	1.641996952	0	0	0	0

Table E2.28.
EMFAC Output - Trucks

EMFAC2017 (v1.0.2) Emission Rates
Region Type: Air Basin
Region: SAN JOAQUIN VALLEY
Calendar Year: 2018, 2021, 2026, 2036
Season: Annual
Vehicle Classification: EMFAC2011 Categories
Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX,

Region	ROG_DIURN	TOG_RUNEX	TOG_IDLEX	TOG_STREX	TOG_HOTSOAK	TOG_RUNLOSS	TOG_RESTLOSS	TOG_DIURN	CO_RUNEX	CO_IDLEX	CO_STREX	NOx_RUNEX	NOx_IDLEX	NOx_STREX	CO2_RUNEX	CO2_IDLEX	CO2_STREX	CH4_RUNEX	CH4_IDLEX	CH4_STREX	PM10_RUNEX	PM10_IDLEX	PM10_STREX	PM10_PMTW
SAN JOAQUIN VALLEY	0	0.320177181	1.871609916	0	0	0	0	0	0.9400992	15.907444	0	6.1925497	30.654194	0.9180526	1888.6469	4787.7664	0	0.0130631	0.0763612	0	0.0348457	0.0103528	0	0.036
SAN JOAQUIN VALLEY	0	0.265721939	1.869338852	0	0	0	0	0	0.8643122	17.608551	0	5.9556241	27.815106	1.0879709	1832.3049	4677.2259	0	0.0108414	0.0762686	0	0.0331989	0.0093329	0	0.036
SAN JOAQUIN VALLEY	0	0.033591637	1.869288539	0	0	0	0	0	0.4212315	24.261851	0	4.0549641	19.403374	1.7705706	1552.8715	4026.0994	0	0.0013705	0.0762665	0	0.0160932	0.0069881	0	0.036
SAN JOAQUIN VALLEY	0	0.032898456	1.869288539	0	0	0	0	0	0.4125361	24.261851	0	3.9718356	19.403374	1.7863717	1193.1625	3171.2199	0	0.0013422	0.0762665	0	0.0155564	0.0069881	0	0.036

Table E2.28.
EMFAC Output - Trucks

EMFAC2017 (v1.0.2) Emission Rates
Region Type: Air Basin
Region: SAN JOAQUIN VALLEY
Calendar Year: 2018, 2021, 2026, 2036
Season: Annual
Vehicle Classification: EMFAC2011 Categories
Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX,

Region	PM10_PMBW	PM2_5_RUNEX	PM2_5_IDLEX	PM2_5_STREX	PM2_5_PMTW	PM2_5_PMBW	SOx_RUNEX	SOx_IDLEX	SOx_STREX	N2O_RUNEX	N2O_IDLEX	N2O_STREX
SAN JOAQUIN VALLEY	0.06174	0.0333383	0.009905	0	0.009	0.02646	0.017843	0.0452324	0	0.296869	0.7525702	0
SAN JOAQUIN VALLEY	0.06174	0.0317628	0.0089292	0	0.009	0.02646	0.0173107	0.0441881	0	0.2880128	0.7351948	0
SAN JOAQUIN VALLEY	0.06174	0.015397	0.0066858	0	0.009	0.02646	0.0146708	0.0380366	0	0.2440898	0.6328468	0
SAN JOAQUIN VALLEY	0.06174	0.0148835	0.0066858	0	0.009	0.02646	0.0112724	0.0299601	0	0.1875485	0.4984716	0

Table E2.29.

EMFAC Output - Worker Vehicles

EMFAC2017 (v1.0.2) Emission Rates
Region Type: Air Basin
Region: SAN JOAQUIN VALLEY
Calendar Year: 2018, 2021, 2026, 2036
Season: Annual
Vehicle Classification: EMFAC2011 Categories
Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HTSK and RUNLS, g/vehicle/day for IDLEX, RESTL and DIURN

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population	VMT	Trips	ROG_RUNEX	ROG_IDLEX	ROG_STREX	ROG_HOTSOAK	ROG_RUNLOSS	ROG_RESTLOSS
SAN JOAQUIN VALLEY	2018	LDA	Aggregated	Aggregated	GAS	1473207.951	58537725.34	6880474.074	0.020791715	0	0.374227	0.157369733	0.293544338	0.330669825
SAN JOAQUIN VALLEY	2018	LDA	Aggregated	Aggregated	DSL	9385.342796	388267.0505	43981.25506	0.024475009	0	0	0	0	0
SAN JOAQUIN VALLEY	2018	LDA	Aggregated	Aggregated	ELEC	11010.29585	417777.7857	55780.06259	0	0	0	0.004888026	0	0.010221985
SAN JOAQUIN VALLEY	2018	LDT1	Aggregated	Aggregated	GAS	165464.879	5663233.805	731901.6856	0.06806691	0	0.730579	0.407685043	1.395119164	0.852107733
SAN JOAQUIN VALLEY	2018	LDT1	Aggregated	Aggregated	DSL	199.9466399	3657.486356	684.4807788	0.231459467	0	0	0	0	0
SAN JOAQUIN VALLEY	2018	LDT1	Aggregated	Aggregated	ELEC	84.48792547	2973.399427	415.6426663	0	0	0	0.004888026	0	0.010206759
SAN JOAQUIN VALLEY	2018	LDT2	Aggregated	Aggregated	GAS	539171.2244	19989671.58	2476200.171	0.037828179	0	0.545436	0.212482479	0.675437623	0.489155254
SAN JOAQUIN VALLEY	2018	LDT2	Aggregated	Aggregated	DSL	1533.170173	68663.74036	7430.251466	0.02648599	0	0	0	0	0
SAN JOAQUIN VALLEY	2018	LDT2	Aggregated	Aggregated	ELEC	1122.938505	40185.72553	5765.469572	0	0	0	0.004888026	0	0.010113164
SAN JOAQUIN VALLEY	2021	LDA	Aggregated	Aggregated	GAS	1612278.084	63245427.41	7566660.32	0.011291495	0	0.267734	0.119458121	0.242321484	0.252631255
SAN JOAQUIN VALLEY	2021	LDA	Aggregated	Aggregated	DSL	13026.25015	542705.5241	61896.93827	0.016030315	0	0	0	0	0
SAN JOAQUIN VALLEY	2021	LDA	Aggregated	Aggregated	ELEC	22348.94152	900517.8695	112034.5529	0	0	0	0.004888026	0	0.010148608
SAN JOAQUIN VALLEY	2021	LDT1	Aggregated	Aggregated	GAS	172823.1037	5999592.305	775743.6063	0.037611955	0	0.515643	0.310589017	1.050987236	0.672543178
SAN JOAQUIN VALLEY	2021	LDT1	Aggregated	Aggregated	DSL	149.4394701	2636.981321	501.7114787	0.19805375	0	0	0	0	0
SAN JOAQUIN VALLEY	2021	LDT1	Aggregated	Aggregated	ELEC	554.3214802	23601.06012	2824.551397	0	0	0	0.004888026	0	0.010156145
SAN JOAQUIN VALLEY	2021	LDT2	Aggregated	Aggregated	GAS	564173.8523	20549787.92	2599256.606	0.022021424	0	0.414589	0.177497452	0.578664246	0.434091797
SAN JOAQUIN VALLEY	2021	LDT2	Aggregated	Aggregated	DSL	2556.305983	111966.2528	12536.45627	0.017243576	0	0	0	0	0
SAN JOAQUIN VALLEY	2021	LDT2	Aggregated	Aggregated	ELEC	3217.069129	107395.4157	16321.8794	0	0	0	0.004888026	0	0.010125948
SAN JOAQUIN VALLEY	2026	LDA	Aggregated	Aggregated	GAS	1852652.691	69600516.51	8705085.357	0.005415126	0	0.168483	0.086749934	0.20445483	0.180273389
SAN JOAQUIN VALLEY	2026	LDA	Aggregated	Aggregated	DSL	18751.1893	743927.8707	89472.7998	0.008913904	0	0	0	0	0
SAN JOAQUIN VALLEY	2026	LDA	Aggregated	Aggregated	ELEC	56882.73488	2427043.726	281598.3777	0	0	0	0.004888026	0	0.010092475
SAN JOAQUIN VALLEY	2026	LDT1	Aggregated	Aggregated	GAS	191294.3935	6567175.959	871443.3229	0.016342179	0	0.288482	0.19558215	0.685378058	0.44486509
SAN JOAQUIN VALLEY	2026	LDT1	Aggregated	Aggregated	DSL	91.37740684	1693.164376	309.4036556	0.129664979	0	0	0	0	0
SAN JOAQUIN VALLEY	2026	LDT1	Aggregated	Aggregated	ELEC	2627.240278	117233.4962	13196.06776	0	0	0	0.004888026	0	0.010134656
SAN JOAQUIN VALLEY	2026	LDT2	Aggregated	Aggregated	GAS	617352.7421	21634118.34	2850217.892	0.011438268	0	0.268908	0.135195989	0.474514394	0.365492091
SAN JOAQUIN VALLEY	2026	LDT2	Aggregated	Aggregated	DSL	4299.663727	171030.6861	20845.27181	0.014412215	0	0	0	0	0
SAN JOAQUIN VALLEY	2026	LDT2	Aggregated	Aggregated	ELEC	10859.72169	329262.3498	54200.23107	0	0	0	0.004888026	0	0.010124197
SAN JOAQUIN VALLEY	2036	LDA	Aggregated	Aggregated	GAS	2281154.707	79229327.64	10649959.6	0.00235815	0	0.088419	0.052220381	0.172622962	0.109155857
SAN JOAQUIN VALLEY	2036	LDA	Aggregated	Aggregated	DSL	27219.89085	969175.1972	128269.9413	0.004955192	0	0	0	0	0
SAN JOAQUIN VALLEY	2036	LDA	Aggregated	Aggregated	ELEC	129603.3389	4699109.727	619941.5789	0	0	0	0.004888026	0	0.010038667
SAN JOAQUIN VALLEY	2036	LDT1	Aggregated	Aggregated	GAS	237627.5416	7707250.676	1088457.265	0.003832367	0	0.110573	0.079510471	0.299390388	0.198707296
SAN JOAQUIN VALLEY	2036	LDT1	Aggregated	Aggregated	DSL	35.91792897	1112.92363	160.8947026	0.017440618	0	0	0	0	0
SAN JOAQUIN VALLEY	2036	LDT1	Aggregated	Aggregated	ELEC	7368.708804	269068.6704	35328.92517	0	0	0	0.004888026	0	0.010118363
SAN JOAQUIN VALLEY	2036	LDT2	Aggregated	Aggregated	GAS	737895.5132	24233306.91	3397741.725	0.004236437	0	0.133657	0.075592495	0.284989289	0.239220516
SAN JOAQUIN VALLEY	2036	LDT2	Aggregated	Aggregated	DSL	7021.549269	241232.1193	33016.45519	0.014015674	0	0	0	0	0
SAN JOAQUIN VALLEY	2036	LDT2	Aggregated	Aggregated	ELEC	27860.59345	699103.4324	133247.7853	0	0	0	0.004888026	0	0.010111868

Table E2.29.
EMFAC Output - Worker Vehicles

EMFAC2017 (v1.0.2) Emission Rates
Region Type: Air Basin
Region: SAN JOAQUIN VALLEY
Calendar Year: 2018, 2021, 2026, 2036
Season: Annual
Vehicle Classification: EMFAC2011 Categories
Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX,

Region	ROG_DIURN	TOG_RUNEX	TOG_IDLEX	TOG_STREX	TOG_HOTS	TOG_RUNLOSS	TOG_RESTL	TOG_DIURN	CO_RUNEX	CO_IDLEX	CO_STRE	NOx_RUNE	NOx_IDLEX	NOx_STREX	CO2_RUNE	CO2_IDLEX	CO2_STREX	CH4_RUNE
SAN JOAQUIN VALLEY	0.47378334	0.029967701	0	0.409701	0.15737	0.293544338	0.33067	0.4737833	0.999356	0	2.57936	0.0768945	0	0.26753	300.479	0	61.82081	0.004855
SAN JOAQUIN VALLEY	0	0.027863171	0	0	0	0	0	0	0.285226	0	0	0.1877122	0	0	227.5307	0	0	0.001137
SAN JOAQUIN VALLEY	0.029305882	0	0	0	0.004888	0	0.010222	0.0293059	0	0	0	0	0	0	0	0	0	0
SAN JOAQUIN VALLEY	1.379112151	0.097054601	0	0.799798	0.407685	1.395119164	0.852108	1.3791122	2.5321023	0	3.04391	0.2579722	0	0.450482	353.5578	0	74.48491	0.01421
SAN JOAQUIN VALLEY	0	0.263501215	0	0	0	0	0	0	1.5064696	0	0	1.380645	0	0	440.5375	0	0	0.010751
SAN JOAQUIN VALLEY	0.029238	0	0	0	0.004888	0	0.010207	0.029238	0	0	0	0	0	0	0	0	0	0
SAN JOAQUIN VALLEY	0.683001501	0.05374606	0	0.597121	0.212482	0.675437623	0.489155	0.6830015	1.5700297	0	3.42775	0.1848199	0	0.489964	392.4272	0	82.63993	0.008191
SAN JOAQUIN VALLEY	0	0.030152538	0	0	0	0	0	0	0.169389	0	0	0.1048186	0	0	312.0864	0	0	0.00123
SAN JOAQUIN VALLEY	0.029212	0	0	0	0.004888	0	0.010113	0.029212	0	0	0	0	0	0	0	0	0	0
SAN JOAQUIN VALLEY	0.344650323	0.016465822	0	0.293133	0.119458	0.242321484	0.252631	0.3446503	0.6995197	0	2.33661	0.0457078	0	0.210931	278.2614	0	57.12756	0.002885
SAN JOAQUIN VALLEY	0	0.018249448	0	0	0	0	0	0	0.2230693	0	0	0.0928326	0	0	209.3131	0	0	0.000745
SAN JOAQUIN VALLEY	0.029236184	0	0	0	0.004888	0	0.010149	0.0292362	0	0	0	0	0	0	0	0	0	0
SAN JOAQUIN VALLEY	1.043010639	0.054835444	0	0.56456	0.310589	1.050987236	0.672543	1.0430106	1.6155276	0	2.64454	0.1546221	0	0.341705	327.0593	0	68.5556	0.008373
SAN JOAQUIN VALLEY	0	0.225471027	0	0	0	0	0	0	1.3122079	0	0	1.1976025	0	0	432.8707	0	0	0.009199
SAN JOAQUIN VALLEY	0.029275739	0	0	0	0.004888	0	0.010156	0.0292757	0	0	0	0	0	0	0	0	0	0
SAN JOAQUIN VALLEY	0.576468128	0.032111892	0	0.453921	0.177497	0.578664246	0.434092	0.5764681	1.0944868	0	3.02788	0.1143591	0	0.368709	356.4118	0	75.25289	0.005215
SAN JOAQUIN VALLEY	0	0.019630665	0	0	0	0	0	0	0.1348425	0	0	0.0558358	0	0	283.9277	0	0	0.000801
SAN JOAQUIN VALLEY	0.029241721	0	0	0	0.004888	0	0.010126	0.0292417	0	0	0	0	0	0	0	0	0	0
SAN JOAQUIN VALLEY	0.234824921	0.007901739	0	0.184468	0.08675	0.20445483	0.180273	0.2348249	0.5022147	0	1.9881	0.0258545	0	0.155019	242.4634	0	49.67787	0.001552
SAN JOAQUIN VALLEY	0	0.010147887	0	0	0	0	0	0	0.1786336	0	0	0.0326401	0	0	184.1205	0	0	0.000414
SAN JOAQUIN VALLEY	0.029179424	0	0	0	0.004888	0	0.010092	0.0291794	0	0	0	0	0	0	0	0	0	0
SAN JOAQUIN VALLEY	0.649529602	0.023846469	0	0.315851	0.195582	0.685378058	0.444865	0.6495296	0.8822251	0	2.14505	0.0712767	0	0.222452	285.1765	0	59.35734	0.00384
SAN JOAQUIN VALLEY	0	0.147614958	0	0	0	0	0	0	0.9134043	0	0	0.7852326	0	0	402.2659	0	0	0.006023
SAN JOAQUIN VALLEY	0.029257746	0	0	0	0.004888	0	0.010135	0.0292577	0	0	0	0	0	0	0	0	0	0
SAN JOAQUIN VALLEY	0.458963751	0.016690693	0	0.294421	0.135196	0.474514394	0.365492	0.4589638	0.7250107	0	2.55723	0.0576384	0	0.23863	300.058	0	63.63129	0.002899
SAN JOAQUIN VALLEY	0	0.016407348	0	0	0	0	0	0	0.1354467	0	0	0.0344477	0	0	247.8433	0	0	0.000669
SAN JOAQUIN VALLEY	0.02924284	0	0	0	0.004888	0	0.010124	0.0292428	0	0	0	0	0	0	0	0	0	0
SAN JOAQUIN VALLEY	0.134272682	0.003441007	0	0.096808	0.05222	0.172622962	0.109156	0.1342727	0.3967769	0	1.54949	0.0183797	0	0.120979	204.7321	0	41.12736	0.000791
SAN JOAQUIN VALLEY	0	0.005641157	0	0	0	0	0	0	0.1498899	0	0	0.0102816	0	0	159.8792	0	0	0.00023
SAN JOAQUIN VALLEY	0.029112814	0	0	0	0.004888	0	0.010039	0.0291128	0	0	0	0	0	0	0	0	0	0
SAN JOAQUIN VALLEY	0.247585386	0.005592182	0	0.121063	0.07951	0.299390388	0.198707	0.2475854	0.4444519	0	1.6307	0.0237937	0	0.138067	240.0006	0	48.711	0.001118
SAN JOAQUIN VALLEY	0	0.019854984	0	0	0	0	0	0	0.1897353	0	0	0.0884475	0	0	318.5196	0	0	0.00081
SAN JOAQUIN VALLEY	0.029235696	0	0	0	0.004888	0	0.010118	0.0292357	0	0	0	0	0	0	0	0	0	0
SAN JOAQUIN VALLEY	0.283681041	0.006181799	0	0.146338	0.075592	0.284989289	0.239221	0.283681	0.4882591	0	2.0475	0.0242716	0	0.141766	239.6887	0	49.99292	0.001262
SAN JOAQUIN VALLEY	0	0.015955914	0	0	0	0	0	0	0.1458622	0	0	0.0283731	0	0	213.9905	0	0	0.000651
SAN JOAQUIN VALLEY	0.029225336	0	0	0	0.004888	0	0.010112	0.0292253	0	0	0	0	0	0	0	0	0	0

Table E2.29.

EMFAC Output - Worker Vehicles

EMFAC2017 (v1.0.2) Emission Rates
Region Type: Air Basin
Region: SAN JOAQUIN VALLEY
Calendar Year: 2018, 2021, 2026, 2036
Season: Annual
Vehicle Classification: EMFAC2011 Categories
Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX,

Region	CH4_IDLEX	CH4_STREX	PM10_RUN	PM10_IDLE	PM10_STRE	PM10_PMT	PM10_PME	PM2_5_RU	PM2_5_IDL	PM2_5_STF	PM2_5_PN	PM2_5_PN	SOx_RUNE	SOx_IDLEX	SOx_STREX	N2O_RUNE	N2O_IDLEX	N2O_STREX
SAN JOAQUIN VALLEY	0	0.076814	0.001556	0	0.002157	0.008	0.03675	0.001431	0	0.001985	0.002	0.01575	0.002973	0	0.000612	0.007023	0	0.031154
SAN JOAQUIN VALLEY	0	0	0.014183	0	0	0.008	0.03675	0.013569	0	0	0.002	0.01575	0.002151	0	0	0.035765	0	0
SAN JOAQUIN VALLEY	0	0	0	0	0	0.008	0.03675	0	0	0	0.002	0.01575	0	0	0	0	0	0
SAN JOAQUIN VALLEY	0	0.132448	0.003072	0	0.003973	0.008	0.03675	0.002826	0	0.003657	0.002	0.01575	0.003499	0	0.000737	0.016601	0	0.038305
SAN JOAQUIN VALLEY	0	0	0.17935	0	0	0.008	0.03675	0.171592	0	0	0.002	0.01575	0.004165	0	0	0.069246	0	0
SAN JOAQUIN VALLEY	0	0	0	0	0	0.008	0.03675	0	0	0	0.002	0.01575	0	0	0	0	0	0
SAN JOAQUIN VALLEY	0	0.106809	0.001776	0	0.002339	0.008	0.03675	0.001635	0	0.002153	0.002	0.01575	0.003883	0	0.000818	0.01242	0	0.043593
SAN JOAQUIN VALLEY	0	0	0.014186	0	0	0.008	0.03675	0.013572	0	0	0.002	0.01575	0.00295	0	0	0.049056	0	0
SAN JOAQUIN VALLEY	0	0	0	0	0	0.008	0.03675	0	0	0	0.002	0.01575	0	0	0	0	0	0
SAN JOAQUIN VALLEY	0	0.058576	0.001502	0	0.002011	0.008	0.03675	0.001381	0	0.001849	0.002	0.01575	0.002754	0	0.000565	0.005003	0	0.027715
SAN JOAQUIN VALLEY	0	0	0.00814	0	0	0.008	0.03675	0.007788	0	0	0.002	0.01575	0.001979	0	0	0.032901	0	0
SAN JOAQUIN VALLEY	0	0	0	0	0	0.008	0.03675	0	0	0	0.002	0.01575	0	0	0	0	0	0
SAN JOAQUIN VALLEY	0	0.09762	0.00237	0	0.003146	0.008	0.03675	0.00218	0	0.002893	0.002	0.01575	0.003237	0	0.000678	0.010903	0	0.03311
SAN JOAQUIN VALLEY	0	0	0.152337	0	0	0.008	0.03675	0.145747	0	0	0.002	0.01575	0.004092	0	0	0.068041	0	0
SAN JOAQUIN VALLEY	0	0	0	0	0	0.008	0.03675	0	0	0	0.002	0.01575	0	0	0	0	0	0
SAN JOAQUIN VALLEY	0	0.084998	0.001607	0	0.002086	0.008	0.03675	0.001478	0	0.001918	0.002	0.01575	0.003527	0	0.000745	0.00857	0	0.037112
SAN JOAQUIN VALLEY	0	0	0.007007	0	0	0.008	0.03675	0.006704	0	0	0.002	0.01575	0.002684	0	0	0.044629	0	0
SAN JOAQUIN VALLEY	0	0	0	0	0	0.008	0.03675	0	0	0	0.002	0.01575	0	0	0	0	0	0
SAN JOAQUIN VALLEY	0	0.039825	0.00125	0	0.001674	0.008	0.03675	0.001149	0	0.001539	0.002	0.01575	0.002399	0	0.000492	0.003579	0	0.022961
SAN JOAQUIN VALLEY	0	0	0.003442	0	0	0.008	0.03675	0.003293	0	0	0.002	0.01575	0.001741	0	0	0.028941	0	0
SAN JOAQUIN VALLEY	0	0	0	0	0	0.008	0.03675	0	0	0	0.002	0.01575	0	0	0	0	0	0
SAN JOAQUIN VALLEY	0	0.058963	0.001604	0	0.002175	0.008	0.03675	0.001475	0	0.002	0.002	0.01575	0.002822	0	0.000587	0.006089	0	0.026087
SAN JOAQUIN VALLEY	0	0	0.096795	0	0	0.008	0.03675	0.092608	0	0	0.002	0.01575	0.003803	0	0	0.063231	0	0
SAN JOAQUIN VALLEY	0	0	0	0	0	0.008	0.03675	0	0	0	0.002	0.01575	0	0	0	0	0	0
SAN JOAQUIN VALLEY	0	0.058627	0.001322	0	0.001743	0.008	0.03675	0.001216	0	0.001603	0.002	0.01575	0.002969	0	0.00063	0.005246	0	0.028367
SAN JOAQUIN VALLEY	0	0	0.004445	0	0	0.008	0.03675	0.004252	0	0	0.002	0.01575	0.002343	0	0	0.038958	0	0
SAN JOAQUIN VALLEY	0	0	0	0	0	0.008	0.03675	0	0	0	0.002	0.01575	0	0	0	0	0	0
SAN JOAQUIN VALLEY	0	0.023146	0.000695	0	0.00099	0.008	0.03675	0.000639	0	0.00091	0.002	0.01575	0.002026	0	0.000407	0.003037	0	0.019497
SAN JOAQUIN VALLEY	0	0	0.001048	0	0	0.008	0.03675	0.001002	0	0	0.002	0.01575	0.001511	0	0	0.025131	0	0
SAN JOAQUIN VALLEY	0	0	0	0	0	0.008	0.03675	0	0	0	0.002	0.01575	0	0	0	0	0	0
SAN JOAQUIN VALLEY	0	0.027194	0.000787	0	0.001121	0.008	0.03675	0.000724	0	0.001031	0.002	0.01575	0.002375	0	0.000482	0.003404	0	0.020917
SAN JOAQUIN VALLEY	0	0	0.006213	0	0	0.008	0.03675	0.005944	0	0	0.002	0.01575	0.003011	0	0	0.050067	0	0
SAN JOAQUIN VALLEY	0	0	0	0	0	0.008	0.03675	0	0	0	0.002	0.01575	0	0	0	0	0	0
SAN JOAQUIN VALLEY	0	0.032675	0.000742	0	0.001044	0.008	0.03675	0.000682	0	0.00096	0.002	0.01575	0.002372	0	0.000495	0.003309	0	0.021145
SAN JOAQUIN VALLEY	0	0	0.004076	0	0	0.008	0.03675	0.0039	0	0	0.002	0.01575	0.002023	0	0	0.033636	0	0
SAN JOAQUIN VALLEY	0	0	0	0	0	0.008	0.03675	0	0	0	0.002	0.01575	0	0	0	0	0	0

Table E2.30.

EMFAC2017 Adjustment Factors

Adjustment Factors for EMFAC2017 Gasoline Light Duty Vehicles

Year	NOx Exhaust	TOG Evaporativ	TOG Exhaust	PM Exhaust	CO Exhaust
2018	1	1	1	1	1
2021	1.0002	1.0001	1.0002	1.0009	1.0005
2026	1.0023	1.0022	1.002	1.0091	1.0083
2036	1.0088	1.0121	1.0069	1.0223	1.0244

Notes:

EMFAC2017 automobile emission factors were corrected per CARB's guidance to reflect the "Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule Part One: One National Program" adopted by the USEPA and the National Highway Traffic Safety Administration (NHTSA). CARB EMFAC Off-Model Adjustment Factors to Account for the SAFE Vehicle Rule Part One, Table 2. November 20, 2019. Last accessed November 26, 2019 at: https://ww2.arb.ca.gov/our-work/programs/mobile-source-emissions-inventory/msei-announcement.

CARB did not issue adjustment factors for years prior to 2021.

Table E2.31.

Emission Factors used to calculate Truck Idling Emissions

EMFAC2017 (v1.0.2) Emission Rates
Region Type: Air Basin
Region: SAN JOAQUIN VALLEY
Calendar Year: 2018, 2021, 2026, 2036
Season: Annual
Vehicle Classification: EMFAC2011 Categories
Units: miles/day for VMT, g/mile for RUNEX, PMBW and PMTW

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	VMT	ROG_RUNEX	TOG_RUNEX	CO_RUNEX	NOx_RUNEX	SOx_RUNEX	CO2_RUNEX	CH4_RUNEX	PM10_RUNEX	PM2_5_RUNEX	N2O_RUNEX
SAN JOAQUIN VALLEY	2018	T7 other port	Aggregated	5	DSL	1750.1634	1.130063209	1.286490941	4.095357203	14.62868284	0.0354144	3748.549463	0.052488509	0.049643918	0.047496344	0.589219774
SAN JOAQUIN VALLEY	2021	T7 other port	Aggregated	5	DSL	1974.697016	0.945986583	1.076933715	3.911415565	15.23089944	0.0351395	3719.451676	0.043938627	0.043528079	0.041645073	0.584646007
SAN JOAQUIN VALLEY	2026	T7 other port	Aggregated	5	DSL	2323.463086	0.134345529	0.152942158	2.293156659	14.64761055	0.0319638	3383.30826	0.006240002	0.013049272	0.012484766	0.531808943
SAN JOAQUIN VALLEY	2036	T7 other port	Aggregated	5	DSL	2721.442272	0.131570528	0.149783031	2.245789023	15.18548904	0.0245597	2599.594768	0.00611111	0.012614016	0.012068339	0.408620096

Notes:

Onsite idling emission factors for trucks were based on EMFAC2017 emissions at 5 mph for heavy duty trucks, corrected by a CARB-specified speed correction factor.

Table E2.32.

Combined Rail Emissions

	Average Day Emissions (lb/day)						Annual Emissions (ton/yr)									
	PM10	**PM2.5**	**NOX**	**SOX**	**CO**	**VOC**	**PM10**	**PM2.5**	**NOX**	**SOX**	**CO**	**VOC**	**CO2**	**CH4**	**N2O**	**CO2e**
Baseline																
Switching																
Switching Onsite	0.03	0.03	0.89	0.00	0.24	0.05	0.01	0.01	0.16	0.00	0.04	0.01	19.73	0.00	0.00	
Switching in SJVAPCD	0.06	0.06	1.77	0.00	0.48	0.10	0.01	0.01	0.32	0.00	0.09	0.02	39.45	0.00	0.00	
Line Haul																
In SJVAPCD	0.04	0.04	1.91	0.00	0.54	0.06	0.01	0.01	0.35	0.00	0.10	0.01	37.50	0.00	0.00	
In Sacramento Metro	0.07	0.06	3.32	0.00	0.93	0.11	0.01	0.01	0.61	0.00	0.17	0.02	65.21	0.01	0.00	
In California													200.53	0.02	0.01	
Total																
In SJVAPCD	0.10	0.09	3.68	0.00	1.01	0.17	0.02	0.02	0.67	0.00	0.18	0.03	76.95	0.01	0.00	
In Sacramento Metro	0.07	0.06	3.32	0.00	0.93	0.11	0.01	0.01	0.61	0.00	0.17	0.02	65.21	0.01	0.00	
In California													239.98	0.02	0.01	242
Year 1																
Switching																
Switching Onsite	0.10	0.10	2.87	0.00	0.77	0.16	0.02	0.02	0.52	0.00	0.14	0.03	64.02	0.01	0.00	
Switching in SJVAPCD	0.20	0.20	5.75	0.01	1.55	0.33	0.04	0.04	1.05	0.00	0.28	0.06	128.04	0.01	0.00	
Line Haul																
In SJVAPCD	0.08	0.08	4.97	0.01	1.74	0.15	0.02	0.01	0.91	0.00	0.32	0.03	121.66	0.01	0.00	
In Sacramento Metro	0.14	0.13	8.65	0.01	3.02	0.26	0.03	0.02	1.58	0.00	0.55	0.05	211.58	0.02	0.01	
In California													650.61	0.05	0.02	
Total																
In SJVAPCD	0.29	0.27	10.72	0.01	3.29	0.48	0.05	0.05	1.96	0.00	0.60	0.09	249.69	0.02	0.01	
In Sacramento Metro	0.14	0.13	8.65	0.01	3.02	0.26	0.03	0.02	1.58	0.00	0.55	0.05	211.58	0.02	0.01	
In California													778.64	0.06	0.02	786
Year 5																
Switching																
Switching Onsite	0.05	0.05	1.44	0.00	0.39	0.08	0.01	0.01	0.26	0.00	0.07	0.01	32.01	0.00	0.00	
Switching in SJVAPCD	0.10	0.10	2.87	0.00	0.77	0.16	0.02	0.02	0.52	0.00	0.14	0.03	64.02	0.01	0.00	
Line Haul																
In SJVAPCD	0.07	0.06	4.44	0.01	2.46	0.14	0.01	0.01	0.81	0.00	0.45	0.03	172.43	0.01	0.00	
In Sacramento Metro	0.12	0.11	7.73	0.02	4.28	0.25	0.02	0.02	1.41	0.00	0.78	0.04	299.88	0.02	0.01	
In California													922.13	0.07	0.02	
Total																
In SJVAPCD	0.17	0.16	7.32	0.01	3.24	0.30	0.03	0.03	1.34	0.00	0.59	0.06	236.45	0.02	0.01	
In Sacramento Metro	0.12	0.11	7.73	0.02	4.28	0.25	0.02	0.02	1.41	0.00	0.78	0.04	299.88	0.02	0.01	
In California													986.15	0.08	0.02	995
Year 15																
Switching																
Switching Onsite	0.06	0.06	1.80	0.00	0.48	0.10	0.01	0.01	0.33	0.00	0.09	0.02	40.01	0.00	0.00	
Switching in SJVAPCD	0.13	0.12	3.59	0.00	0.97	0.20	0.02	0.02	0.66	0.00	0.18	0.04	80.01	0.01	0.00	
Line Haul																
In SJVAPCD	0.04	0.03	2.49	0.01	3.08	0.10	0.01	0.01	0.45	0.00	0.56	0.02	215.53	0.02	0.01	
In Sacramento Metro	0.06	0.06	4.33	0.02	5.36	0.18	0.01	0.01	0.79	0.00	0.98	0.03	374.84	0.03	0.01	
In California													1152.62	0.09	0.03	
Total																
In SJVAPCD	0.16	0.16	6.08	0.01	4.05	0.31	0.03	0.03	1.11	0.00	0.74	0.06	295.54	0.02	0.01	
In Sacramento Metro	0.06	0.06	4.33	0.02	5.36	0.18	0.01	0.01	0.79	0.00	0.98	0.03	374.84	0.03	0.01	
In California													1232.64	0.10	0.03	1,244

Table E2.33.
Average Line-Haul Emissions

		Empty Train		Filled Train		In SJVAPCD Total		In Sacramento Metro Total		In California Total	
Pollutant	Line-Haul Locomotive Emission Factor (g/gal)	Average Daily Emissions (lb/day)	Annual Emissions (ton/yr)	Average Daily Emissions (lb/day)	Annual Emissions (ton/yr)	Total Average Day Line-Haul Emissions (lb/day)	Total Annual Line-Haul Emissions (ton/yr)	Total Average Day Line-Haul Emissions (lb/day)	Total Annual Line-Haul Emissions (ton/yr)	Total Average Day Line-Haul Emissions (lb/day)	Total Annual Line-Haul Emissions (ton/yr)
Baseline											
NOx	94.78	0.49	0.09	1.42	0.26	1.91	0.35	3.32	0.61		
PM10	1.93	0.01	0.00	0.03	0.01	0.04	0.01	0.07	0.01		
PM2.5	1.77	0.01	0.00	0.03	0.00	0.04	0.01	0.06	0.01		
VOC	3.21	0.02	0.00	0.05	0.01	0.06	0.01	0.11	0.02		
CO	26.62	0.14	0.02	0.40	0.07	0.54	0.10	0.93	0.17		
SOx	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
CO2	10,210.00	52.36	9.56	153.11	27.94	205.47	37.50	357.34	65.21	1098.81	200.53
CH4	0.80	0.00	0.00	0.01	0.00	0.02	0.00	0.03	0.01	0.09	0.02
N2O	0.26	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.03	0.01
Year 1											
NOx	76.16	1.27	0.23	3.70	0.68	4.97	0.91	8.65	1.58		
PM10	1.26	0.02	0.00	0.06	0.01	0.08	0.02	0.14	0.03		
PM2.5	1.16	0.02	0.00	0.06	0.01	0.08	0.01	0.13	0.02		
VOC	2.26	0.04	0.01	0.11	0.02	0.15	0.03	0.26	0.05		
CO	26.62	0.44	0.08	1.29	0.24	1.74	0.32	3.02	0.55		
SOx	0.09	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00		
CO2	10,210.00	169.93	31.01	496.69	90.65	666.62	121.66	1159.34	211.58	3564.98	650.61
CH4	0.80	0.01	0.00	0.04	0.01	0.05	0.01	0.09	0.02	0.28	0.05
N2O	0.26	0.00	0.00	0.01	0.00	0.02	0.00	0.03	0.01	0.09	0.02
Year 5											
NOx	48.01	0.68	0.13	3.76	0.69	4.44	0.81	7.73	1.41		
PM10	0.76	0.01	0.00	0.06	0.01	0.07	0.01	0.12	0.02		
PM2.5	0.70	0.01	0.00	0.05	0.01	0.06	0.01	0.11	0.02		
VOC	1.53	0.02	0.00	0.12	0.02	0.14	0.03	0.25	0.04		
CO	26.62	0.38	0.07	2.08	0.38	2.46	0.45	4.28	0.78		
SOx	0.09	0.00	0.00	0.01	0.00	0.01	0.00	0.02	0.00		
CO2	10,210.00	145.66	26.58	799.17	145.85	944.82	172.43	1643.17	299.88	5052.75	922.13
CH4	0.80	0.01	0.00	0.06	0.01	0.07	0.01	0.13	0.02	0.39	0.07
N2O	0.26	0.00	0.00	0.02	0.00	0.02	0.00	0.04	0.01	0.13	0.02
Year 15											
NOx	21.54	0.38	0.07	2.11	0.38	2.49	0.45	4.33	0.79		
PM10	0.32	0.01	0.00	0.03	0.01	0.04	0.01	0.06	0.01		
PM2.5	0.30	0.01	0.00	0.03	0.01	0.03	0.01	0.06	0.01		
VOC	0.89	0.02	0.00	0.09	0.02	0.10	0.02	0.18	0.03		
CO	26.62	0.47	0.09	2.60	0.48	3.08	0.56	5.36	0.98		
SOx	0.09	0.00	0.00	0.01	0.00	0.01	0.00	0.02	0.00		
CO2	10,210.00	182.05	33.22	998.94	182.31	1,180.99	215.53	2053.90	374.84	6315.74	1152.62
CH4	0.80	0.01	0.00	0.08	0.01	0.09	0.02	0.16	0.03	0.49	0.09
N2O	0.26	0.00	0.00	0.02	0.00	0.03	0.01	0.05	0.01	0.16	0.03

Notes:

CO2e annual emissions are presented in short tons of CO2e per year.

Source: CARB. 2017 Line Haul / Class I Documentation https://www.arb.ca.gov/msei/ordiesel.htm and 2017 Emissions Inventory Aggregated at County/Air Basin/State. Last accessed 10/2/2018: https://www.arb.ca.gov/msei/ordiesel.htm

PM2.5 is 97% of PM10

HC emission factor convered to VOC = 1.053 * HC

Criteria pollutant emmissions are to the first point of rest.

Table E2.34.
Line- Haul Fuel Usage

Parameter	Value	Units	Reference
Baseline			
Product Volume to be Transported	61,663	ton per year	Rail car throughput provided by Lehigh in Operations 11_12 - TKR112219.xlsx. Email From: Richardson, Ted <tkrichardson@edg.net>, Sent: Monday, November 25, 2019 1:04 PM
Rail cars per year	294	rail cars per year is 1-way trips/2	Rail car activity (1-way trips) provided by Lehigh in Operations 11_12 - TKR112219.xlsx. Email From: Richardson, Ted <tkrichardson@edg.net>, Sent: Monday, November 25, 2019 1:04 PM
Rail cars per train	5	rail cars per train	Per Lehigh: An average of 5 rail cars per train in Baseline and Year 1. Operations Throuput Info Needs 11_12.docx.
Net Aggregated Fuel Consumption Index (Gross Weight - Locomotive Weight) (Line Hauling)	868	ton-miles/gal	Calculated from: California Air Resources Board (ARB). 2017. "2016 Line Haul Locomotive Model & Update". October. Available at: https://www.arb.ca.gov/msei/ordiesel.htm
Locomotives			
Number of locomotives per train	2	locomotives/train	Past Port projects.
Weight of locomotive	208	ton/locomotive	General Electric ET44C4
Miles traveled	23	miles/1-way	GoogleEarth.
Fuel consumption	647	gal/yr (1-way trip)	
Empty Rail Cars			
Weight of empty tank car	26	tons/car	Weight of empty rail typical 3250 cubic-foot GBX rail car used for cement products. Last accessed 12/2/2019 at: https://www.gbrx.com/manufacturing/north-america-rail/covered-hopper-railcars/3250-covered-hopper-railcar/
Weight of empty tank cars per year	7,631	tons/year	
Miles traveled	23	miles/1-way	GoogleEarth.
Fuel consumption	202	gal/yr (1-way trip)	
Product Transported			
Weight of product transported in year	61,663	tons/yr	
Miles traveled	23	miles/1-way	GoogleEarth.
Fuel consumption	1,634	gal/yr (1-way trip)	
Year 1			
Product Volume to be Transported	200,000	ton per year	Rail car throughput provided by Lehigh in Operations 11_12 - TKR112219.xlsx. Email From: Richardson, Ted <tkrichardson@edg.net>, Sent: Monday, November 25, 2019 1:04 PM
Rail cars per year	953	rail cars per year is 1-way trips/2	Rail car activity (1-way trips) provided by Lehigh in Operations 11_12 - TKR112219.xlsx. Email From: Richardson, Ted <tkrichardson@edg.net>, Sent: Monday, November 25, 2019 1:04 PM
Rail cars per train	5	rail cars per train	Per Lehigh: An average of 5 rail cars per train in Baseline and Year 1. Operations Throuput Info Needs 11_12.docx.
Net Aggregated Fuel Consumption Index (Gross Weight - Locomotive Weight) (Line Hauling)	868	ton-miles/gal	Calculated from: California Air Resources Board (ARB). 2017. "2016 Line Haul Locomotive Model & Update". October. Available at: https://www.arb.ca.gov/msei/ordiesel.htm
Locomotives			
Number of locomotives per train	2	locomotives/train	
Weight of locomotive	208	ton/locomotive	General Electric ET44C4
Miles traveled	23	miles/1-way	GoogleEarth.
Fuel consumption	2,100	gal/yr (1-way trip)	
Empty Rail Cars			
Weight of empty tank car	26	tons/car	Weight of empty rail typical 3250 cubic-foot GBX rail car used for cement products. Last accessed 12/2/2019 at: https://www.gbrx.com/manufacturing/north-america-rail/covered-hopper-railcars/3250-covered-hopper-railcar/
Weight of empty tank cars per year	24,765	tons/year	
Miles traveled	23	miles/1-way	GoogleEarth.
Fuel consumption	656	gal/yr (1-way trip)	
Product Transported			
Weight of product transported in year	200,000	tons/yr	
Miles traveled	23	miles/1-way	GoogleEarth.
Fuel consumption	5,299	gal/yr (1-way trip)	
Year 5			
Product Volume to be Transported	400,000	ton per year	Rail car throughput provided by Lehigh in Operations 11_12 - TKR112219.xlsx. Email From: Richardson, Ted <tkrichardson@edg.net>, Sent: Monday, November 25, 2019 1:04 PM
Rail cars per year	1,905	rail cars per year is 1-way trips/2	Rail car activity (1-way trips) provided by Lehigh in Operations 11_12 - TKR112219.xlsx. Email From: Richardson, Ted <tkrichardson@edg.net>, Sent: Monday, November 25, 2019 1:04 PM
Rail cars per train	20	rail cars per train	Per Lehigh: An average of 5 rail cars per train in Baseline and Year 1. Operations Throuput Info Needs 11_12.docx.
Net Aggregated Fuel Consumption Index (Gross Weight - Locomotive Weight) (Line Hauling)	868	ton-miles/gal	Calculated from: California Air Resources Board (ARB). 2017. "2016 Line Haul Locomotive Model & Update". October. Available at: https://www.arb.ca.gov/msei/ordiesel.htm
Locomotives			
Number of locomotives per train	2	locomotives/train	
Weight of locomotive	208	ton/locomotive	General Electric ET44C4
Miles traveled	23	miles/1-way	GoogleEarth.
Fuel consumption	1,050	gal/yr (1-way trip)	
Empty Rail Cars			
Weight of empty tank car	26	tons/car	Weight of empty rail typical 3250 cubic-foot GBX rail car used for cement products. Last accessed 12/2/2019 at: https://www.gbrx.com/manufacturing/north-america-rail/covered-hopper-railcars/3250-covered-hopper-railcar/
Weight of empty tank cars per year	49,530	tons/year	
Miles traveled	23	miles/1-way	GoogleEarth.
Fuel consumption	1,312	gal/yr (1-way trip)	
Product Transported			
Weight of product transported in year	400,000	tons/yr	
Miles traveled	23	miles/1-way	GoogleEarth.
Fuel consumption	10,597	gal/yr (1-way trip)	
Year 15			
Product Volume to be Transported	500,000	ton per year	Rail car throughput provided by Lehigh in Operations 11_12 - TKR112219.xlsx. Email From: Richardson, Ted <tkrichardson@edg.net>, Sent: Monday, November 25, 2019 1:04 PM
Rail cars per year	2,381	rail cars per year is 1-way trips/2	Rail car activity (1-way trips) provided by Lehigh in Operations 11_12 - TKR112219.xlsx. Email From: Richardson, Ted <tkrichardson@edg.net>, Sent: Monday, November 25, 2019 1:04 PM
Rail cars per train	20	rail cars per train	Per Lehigh: An average of 5 rail cars per train in Baseline and Year 1. Operations Throuput Info Needs 11_12.docx.
Net Aggregated Fuel Consumption Index (Gross Weight - Locomotive Weight) (Line Hauling)	868	ton-miles/gal	Calculated from: California Air Resources Board (ARB). 2017. "2016 Line Haul Locomotive Model & Update". October. Available at: https://www.arb.ca.gov/msei/ordiesel.htm
Locomotives			
Number of locomotives per train	2	locomotives/train	
Weight of locomotive	208	ton/locomotive	General Electric ET44C4
Miles traveled	23	miles/1-way	GoogleEarth.
Fuel consumption	1,312	gal/yr (1-way trip)	
Empty Rail Cars			
Weight of empty tank car	26	tons/car	Weight of empty rail typical 3250 cubic-foot GBX rail car used for cement products. Last accessed 12/2/2019 at: https://www.gbrx.com/manufacturing/north-america-rail/covered-hopper-railcars/3250-covered-hopper-railcar/
Weight of empty tank cars per year	61,906	tons/year	
Miles traveled	23	miles/1-way	GoogleEarth.
Fuel consumption	1,640	gal/yr (1-way trip)	
Product Transported			
Weight of product transported in year	500,000	tons/yr	
Miles traveled	23	miles/1-way	GoogleEarth.
Fuel consumption	13,247	gal/yr (1-way trip)	

Table E2.35.
Fuel Consumption Index Calculation

Parameter	Value	Units
Roseville to Fresno: positive grade	0.0058	
Roseville to Fresno: negative grade	-0.0048	
Fuel productivity (CARB equation)	832	GTM/gal
Fresno to Roseville: positive grade	0.0048	
Fresno to Roseville: negative grade	-0.0058	
Fuel productivity (CARB equation)	904	GTM/gal
Composite Fuel Consumption Index	868	ton-mile/gal

Source: California Air Resources Board (ARB). 2017. "2016 Line Haul Locomotive Model & Update". October. Table 4-4 and Equation 4.2. Last accessed on 12/2/2019 at: https://www.arb.ca.gov/msei/ordiesel.htm

Table E2.36.
SO2 Emission Factor - Line Haul

SO2 (g/gal)=	0.09	
(fuel density) * (MW SO2/ MW S) * (S content of fuel) * (conversion factor)		
Where:		
Fuel density	3,200	g/gal
the fraction of fuel sulfur converted to SO2	97.8%	
S content of fuel in parts per million (ppm)	15	ppm
S MW = Molecular Weight	32	
SO2 MW = Molecular Weight	64	

Table E2.37.
Rail Transit Distance

	Distance (1-way miles)	Distance in SJVAPCD (1-way miles)	Distance in Sacramento Metro (1-way miles)	Total Distance to CA Boundary (1-way miles)	Direction
Port to Galt	23	23			N
Galt to Roseville rail yard	40		40		N
Roseville to CA boundary	100			123	NE

Source:
Google Earth

Table E2.38.
U.S. EPA Emission Factors (g/gal)

	PM10	PM2.5	HC	NOx	CO	Tier Distribution 2018	2021	2026	2036
Pre-Tier	6.66	6.13	9.98	270.4	26.62	0%	0%	0%	0%
Tier 0	6.66	6.13	9.98	178.88	26.62	0%	0%	0%	0%
Tier 0+	4.16	3.83	6.24	149.76	26.62	2%	1%	0%	0%
Tier 1	6.66	6.13	9.78	139.36	26.62	0%	0%	0%	0%
Tier 1+	4.16	3.83	6.03	139.36	26.62	7%	1%	0%	0%
Tier 2	3.74	3.44	5.41	102.96	26.62	11%	0%	0%	0%
Tier 2+	1.66	1.53	2.7	102.96	26.62	33%	31%	3%	0%
Tier 3	1.66	1.53	2.7	102.96	26.62	32%	33%	30%	1%
Tier 4	0.31	0.29	0.83	20.8	26.62	14%	34%	67%	99%

Source:
CARB. 2017 Line Haul / Class I Documentation. Last accessed on 12/2/2019 at: https://www.arb.ca.gov/msei/ordiesel.htm

Tier distribution calculated by applying CARB Tier distribution for analysis year. CARB. 2017 Emissions Inventory Aggregated at County/Air Basin/State. Last accessed on 12/2/2019 at: https://www.arb.ca.gov/msei/ordiesel.htm

Line Haul Project Emission Factors (g/gal)

	PM10	PM2.5	VOC	NOx	CO	CO2	CH4	N2O
2018	1.93	1.77	3.21	94.78	26.62	10,210	0.798	0.255
2021	1.26	1.16	2.26	76.16	26.62	10,210	0.798	0.255
2026	0.76	0.70	1.53	48.01	26.62	10,210	0.798	0.255
2036	0.32	0.30	0.89	21.54	26.62	10,210	0.798	0.255

Source:
CO2: The Climate Registry. 2019 Emission Factors, Table 2.1.
CH4 and N2O: The Climate Registry. 2019 Emission Factors, Table 2.7.

Table E2.39.
Line Haul Locomotives Tier Distribution

	Pre-Tier	Tier 0	Tier 0+	Tier 1	Tier 1+	Tier 2	Tier 2+	Tier 3	Tier 4
2018	0%	0%	2%	0%	7%	11%	33%	32%	14%
2019	0%	0%	2%	0%	2%	5%	38%	32%	21%
2020	0%	0%	1%	0%	2%	0%	36%	33%	28%
2021	0%	0%	1%	0%	1%	0%	31%	33%	34%
2022	0%	0%	0%	0%	1%	0%	24%	34%	40%
2023	0%	0%	0%	0%	1%	0%	19%	34%	46%
2024	0%	0%	0%	0%	1%	0%	13%	32%	53%
2025	0%	0%	0%	0%	0%	0%	8%	31%	60%
2026	0%	0%	0%	0%	0%	0%	3%	30%	67%
2027	0%	0%	0%	0%	0%	0%	3%	24%	73%
2028	0%	0%	0%	0%	0%	0%	2%	18%	80%
2029	0%	0%	0%	0%	0%	0%	2%	13%	86%
2030	0%	0%	0%	0%	0%	0%	1%	8%	91%
2031	0%	0%	0%	0%	0%	0%	1%	2%	97%
2032	0%	0%	0%	0%	0%	0%	0%	2%	97%
2033	0%	0%	0%	0%	0%	0%	0%	2%	98%
2034	0%	0%	0%	0%	0%	0%	0%	2%	98%
2035	0%	0%	0%	0%	0%	0%	0%	1%	99%
2036	0%	0%	0%	0%	0%	0%	0%	1%	99%
2037	0%	0%	0%	0%	0%	0%	0%	0%	100%
2038	0%	0%	0%	0%	0%	0%	0%	0%	100%
2039	0%	0%	0%	0%	0%	0%	0%	0%	100%
2040	0%	0%	0%	0%	0%	0%	0%	0%	100%

Source:
Tier Distribution Activity is from: CARB. 2017 Emissions Inventory Aggregated at County/Air Basin/State. Last accessed on 12/2/2019 at: https://www.arb.ca.gov/msei/ordiesel.htm

Table E2.40.
Switching Fuel Usage Determination

Parameter	Value	Units	Reference
Baseline			
Rail cars per year	294	rail cars per year is 1-way trips/2	Rail car activity (1-way trips) provided by Lehigh in Operations 11_12 - TKR112219.xlsx. Email From: Richardson, Ted <tkrichardson@edg.net>, Sent: Monday, November 25, 2019 1:04 PM
Rail cars per train	5	rail cars per train	Per Lehigh: An average of 5 rail cars per train in Baseline and Year 1. Operations Throuput Info Needs 11_12.docx.
Manifest trains per year	59	trains per year	Calculated
Number of locomotives required per switch at the Terminal	1	per train	
Switching events at the Terminal	1	per train	Assumes: 1 switching event on property; 1 switching event elswhere within the Port.
Switching time at the Terminal	1	hour/train	Per Lehigh.
Number of locomotives required per switch at the Port staging	2	per train	
Switching events at the Port staging yard	1	per train	Assumes: 1 switching event on property; 1 switching event elswhere within the Port.
Switching time at the Port stating yard	2	hour/train	
Fuel used per hour per locomotive	12	gal/hr/locomotive	Calculated. See Switcher emission factor calculations.
Fuel used	60	gal/train	Calculated
Year 1			
Rail cars per year	953	rail cars per year is 1-way trips/2	
Rail cars per train	5	rail cars per train	Per Lehigh: An average of 5 rail cars per train in Baseline and Year 1. Operations Throuput Info Needs 11_12.docx.
Manifest trains per year	191	trains per year	Calculated.
Number of locomotives required per switch at the Terminal	1	per train	
Switching events at the Terminal	1	per train	Assumes: 1 switching event on property; 1 switching event elswhere within the Port.
Switching time at the Terminal	1	hour/train	Per Lehigh.
Number of locomotives required per switch at the Port staging	2	per train	
Switching events at the Port staging yard	1	per train	Assumes: 1 switching event on property; 1 switching event elswhere within the Port.
Switching time at the Port stating yard	2	hour/train	
Fuel used per hour per locomotive	12	gal/hr/locomotive	Calculated. See Switcher emission factor calculations.
Fuel used	60	gal/train	Calculated.
Year 5			
Rail cars per year	1,905	rail cars per year is	
Rail cars per train	20	rail cars per train	Per Lehigh: An average of 20 rail cars per train in Years 5 and 15, following rail loadout upgrade. Operations Throuput Info Needs 11_12.docx.
Manifest trains per year	95	trains per year	Calculated.
Number of locomotives required per switch at the Terminal	1	per train	
Switching events at the Terminal	1	per train	Assumes: 1 switching event on property; 1 switching event elswhere within the Port.
Switching time at the Terminal	1	hour/train	Per Lehigh.
Number of locomotives required per switch at the Port staging	2	per train	
Switching events at the Port staging yard	1	per train	Assumes: 1 switching event on property; 1 switching event elswhere within the Port.
Switching time at the Port stating yard	2	hour/train	
Fuel used per hour per locomotive	12	gal/hr/locomotive	Calculated. See Switcher emission factor calculations.
Fuel used	60	gal/train	Calculated.
Year 15			
Rail cars per year	2,381	rail cars per year is	
Rail cars per train	20	rail cars per train	Per Lehigh: An average of 20 rail cars per train in Years 5 and 15, following rail loadout upgrade. Operations Throuput Info Needs 11_12.docx.
Manifest trains per year	119	trains per year	Calculated.
Number of locomotives required per switch at the Terminal	1	per train	
Switching events at the Terminal	1	per train	Assumes: 1 switching event on property; 1 switching event elswhere within the Port.
Switching time at the Terminal	1	hour/train	Per Lehigh.
Number of locomotives required per switch at the Port staging	2	per train	
Switching events at the Port staging yard	1	per train	Assumes: 1 switching event on property; 1 switching event elswhere within the Port.
Switching time at the Port stating yard	2	hour/train	
Fuel used per hour per locomotive	12	gal/hr/locomotive	Calculated. See Switcher emission factor calculations.
Fuel used	60	gal/train	Calculated.

Table E2.41.
Average Switching Emissions

Pollutant	Switching Locomotive Emission Factor (g/gal)	Average Daily Emissions (lb/day)	Annual Emissions Emissions (ton/yr)
Baseline			
NOx	83.61	1.77	0.32
PM10	2.96	0.06	0.01
PM2.5	2.72	0.06	0.01
VOC	4.8	0.10	0.02
CO	22.53	0.48	0.09
SOx	0.09	0.00	0.00
CO2	10,210.00	216.18	39.45
CH4	0.80	0.02	0.00
N2O	0.26	0.01	0.00
Year 1			
NOx	83.61	5.75	1.05
PM10	2.96	0.20	0.04
PM2.5	2.9	0.20	0.04
VOC	4.8	0.33	0.06
CO	22.53	1.55	0.28
SOx	0.09	0.01	0.00
CO2	10,210.00	701.56	128.04
CH4	0.80	0.05	0.01
N2O	0.26	0.02	0.00
Year 5			
NOx	83.61	2.87	0.52
PM10	2.96	0.10	0.02
PM2.5	2.9	0.10	0.02
VOC	4.8	0.16	0.03
CO	22.53	0.77	0.14
SOx	0.09	0.00	0.00
CO2	10,210.00	350.78	64.02
CH4	0.80	0.03	0.01
N2O	0.26	0.01	0.00
Year 15			
NOx	83.61	3.59	0.66
PM10	2.96	0.13	0.02
PM2.5	2.9	0.12	0.02
VOC	4.8	0.20	0.04
CO	22.53	0.97	0.18
SOx	0.09	0.00	0.00
CO2	10,210.00	438.43	80.01
CH4	0.80	0.03	0.01
N2O	0.26	0.01	0.00

Notes:
CO2e annual emissions are presented in short tons of CO2e per year.
HC emission factor convered to VOC = 1.053 * HC

Source: Reflects switching fleet provided by Central California raction Company (CCT) and emission factors from CARB 2017 Short Line / Class III Documentation. Last accessed 10/2/2018 at: https://www.arb.ca.gov/msei/ordiesel.htm

Table E2.42.
SO2 Emission Factor - Switchers

SO2 (g/gal)=	0.09	
(fuel density) * (MW SO2/ MW S) * (S content of fuel) * (conversion factor)		
Where:		
Fuel density	3,200	g/gal
the fraction of fuel sulfur converted to SO2	97.8%	
S content of fuel in parts per million (ppm)	15	ppm
S MW = Molecular Weight	32	
SO2 MW = Molecular Weight	64	

Table E2.43.
CCT Switchers[1]

	Quantity	Engine Tier	Tier Distribution	Switcher Emission Factors (g/gal) PM10	HC	NOx	CO
4 SW 1500s	4	Tier 0	57%	4.864	7.296	130.72	19.456
3 Brookville Genset locomotives Tier IV	3	Tier 4	43%	0.416	0.832	20.8	26.624

Notes:
1. CCT Switchers.pdf. Switching operations provided by Central California Traction Company (CCT).
CCT operates 7 locomotives (4 SW 1500s and 3 Brookville Genset locomotives Tier IV), per CCT website. Last accessed on 11/27/2019 at: https://www.cctrailroad.com/about-us/

Switchers Project Emission Factors (g/gal)

	PM10	PM2.5	HC	NOx	CO	CO2	CH4	N2O
All Years	2.96	2.72	4.53	83.61	22.53	10210	1	0

Notes:
Conservatively assumes no change in switcher fleet in future years.

Table E2.44.
Switcher Emission Factors (g/bhp-hr)

	PM10	HC	NOx	CO
Pre-Tier	0.32	0.48	13	1.28
Tier 0	0.32	0.48	8.6	1.28
Tier 0+	0.2	0.3	7.2	1.28
Tier 1	0.32	0.47	6.7	1.28
Tier 1+	0.2	0.29	6.7	1.28
Tier 2	0.18	0.26	4.95	1.28
Tier 2+	0.08	0.13	4.95	1.28
Tier 3	0.08	0.13	4.95	1.28
Tier 4	0.02	0.04	1	1.28

Switcher Emission Factors (g/gal)

	PM10	HC	NOx	CO
Pre-Tier	4.864	7.296	197.6	19.456
Tier 0	4.864	7.296	130.72	19.456
Tier 0+	3.64	5.46	131.04	23.296
Tier 1	5.824	8.554	121.94	23.296
Tier 1+	3.64	5.278	121.94	23.296
Tier 2	3.744	5.408	102.96	26.624
Tier 2+	1.664	2.704	102.96	26.624
Tier 3	1.664	2.704	102.96	26.624
Tier 4	0.416	0.832	20.8	26.624

Source:
CARB. 2017 Short Line / Class III Documentation, Table 5.1. Last accessed 11/27/19 at: https://www.arb.ca.gov/msei/ordiesel.htm.

Table E2.45.
Switcher Conversion Factors (bhp-hr/gal)

Pre-Tier, Tier 0	15.2
Tier 0+, Tier 1, Tier 1+	18.2
Tier 2, Tier 2+, Tier 3, Tier 4	20.8

Source:
CARB. 2017 Short Line / Class III Documentation, Table 5.2. Last accessed 11/27/19 at: https://www.arb.ca.gov/msei/ordiesel.htm.

Table E2.46.
Power Distribution in Switcher Mode

Notch Position	Number Locomotives	Power (hp)[2][3]	Idle	DB	1	2	3	4	5	6	7	8	Composite Power (hp)	Composite Fuel Use (gal/hr)	Composite Fuel Use (gal/hr))
Time in Notch[1]			44.2%	0.0%	5.0%	25.0%	2.3%	21.5%	1.5%	0.6%	0.0%	0.0%			
EPA Power in Notch for an EPA-tested 1500 hp locomotive[2]			15	70	72	233	440	569	885	1109	1372	1586			
Load in Notch for and EPA-tested 1500 hp locomotive[2]		1500	1.0%	4.7%	4.8%	15.5%	29.3%	37.9%	59.0%	73.9%	91.5%	105.7%			
Work Done at Notch Setting Under the Indicated Duty Cycle (bhp-hr/hr)															
CCT Switcher Locomotive SW 1500s	4	1500	7	0	4	58	10	122	13	7	0	0	221	14.5	
CCT Switcher Locomotive Brookville Genset Tier IV	3	1200	5	0	3	47	8	98	11	5	0	0	177	8.5	
Composite Fuel Use for CCT Switchers															**11.9**

Notes:

1. Time in notch based on CARB's Toxic Air Contaminant Emissions Inventory and Air Dispersion Modeling Report for the Stockton Rail Yard, California. January 2007.

Last on 11/27/2019 at: https://ww2.arb.ca.gov/resources/documents/railyard-health-risk-assessments-and-mitigation-measures.

2. USEPA Office of Mobile Sources, Locomotive Emission Standards Regulatory Support Document, Appendix B. April 1998. EPA-420-R-98-101.

3. Power rating from SW1500 Locomotives.pdf. Last accessed on 11/27/19 at: https://www.brookvillecorp.com/BROOKVILLE-Ships-CoGens-to-CCT-04.10.2015.asp?news=News-Corporate.asp.

3. Power rating from BrookvilleTier-4_CCTp.df. Last accessed on 11/27/19 at: http://www.gatx.com/wps/wcm/connect/GATX/GATX_SITE/Home/Rail+North+America/Products/Equipment+Types/Locomotives/SW1500/

Table E2.47.
Conveying and Loading Dust Emissions

	Activity (ton/yr)	Activity (ton/day)	Emission Factor (lb/ton product)	Annual Emissions (ton/yr)		Average Day Emissions (lb/day)	
			PM	PM10	PM2.5	PM10	PM2.5
Baseline							
Loading	567,095	1,554	0.00278	0.79	0.79	4.32	4.32
Conveying	316,698	868	0.00034	0.05	0.05	0.30	0.30
Baseline Total	883,793	2,421		0.84	0.84	4.61	4.61
Year 1							
Loading	761,750	2,087	0.00278	1.06	1.06	5.80	5.80
Conveying	761,750	2,087	0.00034	0.13	0.13	0.71	0.71
Year 1 Total	1,523,500	4,174		1.19	1.19	6.51	6.51
Year 5							
Loading	1,350,000	3,699	0.00278	1.88	1.88	10.28	10.28
Conveying	1,435,000	3,932	0.00034	0.24	0.24	1.34	1.34
Year 5 Total	2,785,000	7,630		2.12	2.12	11.62	11.62
Year 15							
Loading	1,772,500	4,856	0.00278	2.46	2.46	13.50	13.50
Conveying	1,772,500	4,856	0.00034	0.30	0.30	1.65	1.65
Year 15 Total	3,545,000	9,712		2.77	2.77	15.15	15.15

Notes:

Emissions might not add precisely due to rounding.

Loading = Shipping out of facility.

Conveying = Receiving into facility

Emission factors are from SJVAPCD permit and permit application. Lehigh Stockton ATC Application 2019-1216 Final.pdf.

Table E2.48.
Onsite Mobile Source Emissions

Year	Equipment	Activity (hr/yr)	Fuel Use (ga/yr)	Model Year	Power Rating (hp)	Exhaust Emission Factors (g/hp-hr) - Loaded PM10	PM2.5	DPM	NOX	SOX	CO	VOC	(kg/gal) CO2	CH4	N2O
Baseline	Shuttle wagon	663	3,478	2017	260	0.003	0.002	0.003	0.075	0.002	0.375	0.011	205.929	0.001	0.000
	Front end loader	1,391	3,656	2017	141	0.003	0.003	0.003	0.096	0.002	1.040	0.025	190.245	0.001	0.000
Total Baseline															
Year 1	Shuttle wagon	2,151	11,282	2017	260	0.003	0.003	0.003	0.078	0.002	0.400	0.016	205.929	0.001	0.000
	Front end loader	1,691	4,448	2017	141	0.004	0.004	0.004	0.100	0.002	1.133	0.039	190.396	0.001	0.000
Total Year 1															
Year 5	Shuttle wagon	4,301	22,564	2017	260	0.003	0.003	0.003	0.082	0.002	0.440	0.024	205.929	0.001	0.000
	Front end loader	2,141	5,629	2017	141	0.005	0.004	0.005	0.107	0.002	1.265	0.057	190.318	0.001	0.000
Total Year 5															
Year 15	Shuttle wagon	5,376	28,205	2017	260	0.003	0.003	0.003	0.082	0.002	0.440	0.024	205.929	0.001	0.000
	Front end loader	2,366	6,237	2017	141	0.005	0.005	0.005	0.108	0.002	1.285	0.060	190.814	0.001	0.000
Total Year 15															

Year	Equipment	Exhaust Emissions (ton/yr) PM10	PM2.5	DPM	NOX	SOX	CO	VOC	(mton/yr) CO2	CH4	N2O	CO2e
Baseline	Shuttle wagon	0.00	0.00	0.00	0.01	0.00	0.07	0.00	35.50	0.00	0.00	35.82
	Front end loader	0.00	0.00	0.00	0.02	0.00	0.22	0.01	37.31	0.00	0.00	37.65
Total Baseline		**0.00**	**0.00**	**0.00**	**0.03**	**0.00**	**0.30**	**0.01**	**72.81**	**0.00**	**0.00**	**73.47**
Year 1	Shuttle wagon	0.00	0.00	0.00	0.05	0.00	0.25	0.01	115.14	0.01	0.00	116.17
	Front end loader	0.00	0.00	0.00	0.03	0.00	0.30	0.01	45.40	0.00	0.00	45.80
Total Year 1		**0.00**	**0.00**	**0.00**	**0.07**	**0.00**	**0.54**	**0.02**	**160.54**	**0.01**	**0.00**	**161.98**
Year 5	Shuttle wagon	0.00	0.00	0.00	0.10	0.00	0.54	0.03	230.29	0.01	0.01	232.35
	Front end loader	0.00	0.00	0.00	0.04	0.00	0.42	0.02	57.45	0.00	0.00	57.97
Total Year 5		**0.01**	**0.01**	**0.01**	**0.14**	**0.00**	**0.96**	**0.05**	**287.74**	**0.02**	**0.01**	**290.32**
Year 15	Shuttle wagon	0.00	0.00	0.00	0.13	0.00	0.68	0.04	287.86	0.02	0.01	290.44
	Front end loader	0.00	0.00	0.00	0.04	0.00	0.47	0.02	63.66	0.00	0.00	64.23
Total Year 15		**0.01**	**0.01**	**0.01**	**0.17**	**0.00**	**1.15**	**0.06**	**351.51**	**0.02**	**0.01**	**354.66**

Notes:

A sweeper, manlift, and forklift also operate onsite. Activity of this equipment would not change with the project. Emissions were therefore not quantified.

Only exhaust emissions were quantified. Fugitive emissions associated with front end loaders operating within bunkers would be controlled with permitted air quality control equipment and are accounted for in the conveying/loading particulate emmissions. Front end loaders would also operate at the bottom of a vessel cargo hold to push material remaining after ship unloading to the unloader intake point. Because ship holds are approximately 50-55 feet deep and unloading operations are not conducted during high wind events, fugitive emissions from front end loaders operating during ship receiving are not anticipated.

Source:

Exhaust emission factors were obtained from CARB's OFFROAD2017.

CH4 and N2O emission factors were obtained from 2019 Climate Registry Default Emission Factors, Table 13.7, Default CH4 and N2O Emission Factors for Non-Highway Vehicles.

Table E2.49.
Onsite Mobile Equipment Activity

Equipment	Facility Activity (ton/yr)	Number of Vessels	Equipment Processing Activity (ton/hr)	Units	Equipment Activity (hr/yr)
Baseline					
Shuttle wagon	61,663	1	93	ton/hr	663
Front End Loader		2			
truck shipping	148,080		127	ton/hr	1,166
ship receiving		9	25	hr/vessel	225
Year 1					
Shuttle wagon	200,000		93	ton/hr	2,151
Front End Loader		2			
truck shipping	148,080		127	ton/hr	1,166
ship receiving		21	25	hr/vessel	525
Year 5					
Shuttle wagon	400,000		93	ton/hr	4,301
Front End Loader		2			
truck shipping	148,080		127	ton/hr	1,166
ship receiving		39	25	hr/vessel	975
Year 15					
Shuttle wagon	500,000		93	ton/hr	5,376
Front End Loader		2			
truck shipping	148,080		127	ton/hr	1,166
ship receiving		48	25	hr/vessel	1200

Source:

Activity from and from information provided by Lehigh in 2019 Equipment Usage.pdf.

Notes:

loaders will not be needed inside the Dome but will continue to be used in the other bunkers. Per Lehigh's 2019 Equipment Usage.pdf, front end loaders will

Table E2.50.
GHG Emission Factors for Onsite Mobile Equipment

	CO2 (kg CO2/gal fuel)	CH4 (kg CH4/gal fuel)	N2O (kg N2O/gal fuel)	Fuel
offroad construction equipment[1],[2]	10.21	0.000576	0.000256	diesel

Source:

[1] CO2 emission factors: 2019 Climate Registry Default Emission Factors, Table 13.1, US Default CO2 Emission Factors for Transport Fuels

[2] N2O and CH4 emission factors: 2019 Climate Registry Default Emission Factors, Table 13.7, Default CH4 and N2O Emission Factors for Non-Highway Vehicles.

Table E2.51.
OFFROAD2017 Output

OFFROAD2017 (v1.0.1) Emissions Inventory
Region Type: Air District
Region: San Joaquin Valley Unified APCD
Calendar Year: 2018, 2021, 2026, 2036
Scenario: All Adopted Rules - Exhaust
Vehicle Classification: OFFROAD2017 Equipment Types
Units: Emissions: tons/day, Fuel Consumption: gallons/year, Activity: hours/year, HP-Hours: HP-hours/year

Region	CalYr	VehClass	MdlYr	HP_Bin	Fuel	HC_tpd	ROG_tpd	TOG_tpd	CO_tpd	NOx_tpd	CO2_tpd	PM10_tpd	PM2_5_tpd	PM_tpd	SOx_tpd	NH3_tpd	Fuel_gpy	Total_Activity_hpy	Total_Population	Horsepower_Hours_hhpy
San Joaquin Valley Unified APCD	2018	ConstMin - Sweepers	2007	50	Diesel	0.000130511	0.000157918	0.000187935	0.001393403	0.001452173	0.159043	0.000122273	0.000112491	0.000122273	1.46652E-06	1.29809E-06	5159.974256	5237.975	7.3411778	196909.0613
San Joaquin Valley Unified APCD	2018	ConstMin - Sweepers	2007	100	Diesel	0.000181307	0.000219381	0.000261081	0.002332693	0.003312367	0.3296618	0.000178628	0.000164338	0.000178628	3.04245E-06	2.69066E-06	10695.51476	5685.1192	8.1568642	454430.5312
San Joaquin Valley Unified APCD	2018	ConstMin - Sweepers	2007	300	Diesel	2.16763E-05	2.62284E-05	3.12139E-05	0.000112723	0.000259663	0.0535597	1.24971E-05	1.14974E-05	1.24971E-05	4.94535E-07	4.37147E-07	1737.684753	387.99815	0.5437909	73719.64856
San Joaquin Valley Unified APCD	2018	ConstMin - Sweepers	2007	600	Diesel	3.54237E-05	4.28627E-05	5.10101E-05	0.000176253	0.000424345	0.0875278	2.03812E-05	1.87507E-05	2.03812E-05	8.08175E-07	7.1439E-07	2839.742714	387.99815	0.5437909	120473.4257
San Joaquin Valley Unified APCD	2021	ConstMin - Sweepers	2007	50	Diesel	0.000156458	0.000189315	0.0002253	0.001599398	0.001551694	0.16432	0.000138318	0.000127252	0.000138318	1.51453E-06	1.34116E-06	5331.181432	5347.6308	7.2205211	203442.4745
San Joaquin Valley Unified APCD	2021	ConstMin - Sweepers	2007	100	Diesel	0.000213734	0.000258618	0.000307777	0.002533779	0.003539116	0.3432366	0.000201208	0.000185111	0.000201208	3.16698E-06	2.80145E-06	11135.93493	5883.528	8.1623282	473171.4256
San Joaquin Valley Unified APCD	2021	ConstMin - Sweepers	2007	300	Diesel	3.67409E-05	4.44565E-05	5.29069E-05	0.000165744	0.000386289	0.0778734	1.9441E-05	1.78857E-05	1.9441E-05	7.18876E-07	6.35592E-07	2526.517067	465.01137	0.6278714	107185.1209
San Joaquin Valley Unified APCD	2026	ConstMin - Sweepers	2007	50	Diesel	0.000131612	0.000159251	0.000189522	0.001296332	0.001174571	0.1200257	0.000110642	0.000101791	0.000110642	1.10575E-06	9.79633E-07	3894.100121	3796.4069	4.9110405	148602.2141
San Joaquin Valley Unified APCD	2026	ConstMin - Sweepers	2007	100	Diesel	0.000106561	0.000128938	0.000153447	0.001170679	0.001607843	0.1516847	0.000103693	9.53972E-05	0.000103693	1.3992E-06	1.23803E-06	4921.242968	2523.2217	3.5078861	209175.0772
San Joaquin Valley Unified APCD	2026	ConstMin - Sweepers	2007	300	Diesel	2.91211E-05	3.52366E-05	4.19344E-05	0.000115109	0.000271429	0.0533911	1.42855E-05	1.31427E-05	1.42855E-05	4.92753E-07	4.35771E-07	1732.214809	271.17192	0.3507886	73487.5913
San Joaquin Valley Unified APCD	2036	ConstMin - Sweepers	2007	50	Diesel	2.89081E-05	3.49787E-05	4.16276E-05	0.000284733	0.000257989	0.0263631	2.4302E-05	2.23579E-05	2.4302E-05	2.42872E-07	2.15172E-07	855.3205647	810.97551	1.5447004	31019.81307
San Joaquin Valley Unified APCD	2036	ConstMin - Sweepers	2007	75	Diesel	1.94869E-05	2.35791E-05	2.80611E-05	0.000214083	0.000294028	0.0277388	1.89624E-05	1.74454E-05	1.89624E-05	2.55874E-07	2.264E-07	899.953588	568.44077	2.3170506	38180.27203

OFFROAD2017 (v1.0.1) Emissions Inventory
Region Type: Air District
Region: San Joaquin Valley Unified APCD
Calendar Year: 2018, 2021, 2026, 2036
Scenario: All Adopted Rules - Exhaust
Vehicle Classification: OFFROAD2017 Equipment Types
Units: Emissions: tons/day, Fuel Consumption: gallons/year, Activity: hours/year, HP-Hours: HP-hours/year

Region	CalYr	VehClass	MdlYr	HP_Bin	Fuel	HC_tpd	ROG_tpd	TOG_tpd	CO_tpd	NOx_tpd	CO2_tpd	PM10_tpd	PM2_5_tpd	PM_tpd	SOx_tpd	NH3_tpd	Fuel_gpy	Total_Activi	Total_Popu	Horsepower_Hours_hhpy
San Joaquin Valley Unified APCD	2018	CHE - Rail Yard Tractc	2017	175	Diesel	0.000105651	0.000127837	0.000152137	0.009174377	0.000604897	1.5972681	2.30986E-05	2.12507E-05	2.30986E-05	1.47644E-05	1.30367E-05	51821.60479	16494.592	10.202299	2568571.586
San Joaquin Valley Unified APCD	2018	CHE - Rail Yard Tractc	2017	300	Diesel	1.33289E-06	1.61279E-06	1.91936E-06	5.47217E-05	1.09614E-05	0.030042	3.7948E-07	3.49121E-07	3.7948E-07	2.77714E-07	2.45199E-07	974.6808733	268.36628	0.2946275	48305.93111
San Joaquin Valley Unified APCD	2021	CHE - Rail Yard Tractc	2017	175	Diesel	3.03967E-05	3.678E-05	4.37712E-05	0.001922675	0.000120821	0.3014911	5.14322E-06	4.73176E-06	5.14322E-06	2.78652E-06	2.46073E-06	9781.5454	3024.3403	2.3140035	484815.3366
San Joaquin Valley Unified APCD	2021	CHE - Rail Yard Tractc	2017	300	Diesel	1.77562E-06	2.1485E-06	2.5569E-06	5.4283E-05	1.05477E-05	0.0279775	3.85118E-07	3.54309E-07	3.85118E-07	2.58613E-07	2.28349E-07	907.6989162	249.92363	0.2639103	44986.25398
San Joaquin Valley Unified APCD	2026	CHE - Rail Yard Tractc	2017	175	Diesel	2.26729E-06	2.74342E-06	3.26489E-06	0.000149324	9.45086E-06	0.0237917	3.96024E-07	3.64342E-07	3.96024E-07	2.19898E-07	1.94185E-07	771.8968492	220.49452	0.2177716	38255.79945
San Joaquin Valley Unified APCD	2026	CHE - Rail Yard Tractc	2017	300	Diesel	6.43917E-07	7.79139E-07	9.2724E-07	1.44472E-05	2.68408E-06	0.0067569	1.05778E-07	9.73157E-08	1.05778E-07	6.24519E-08	5.51492E-08	219.2211704	60.359829	0.0596144	10864.76923
San Joaquin Valley Unified APCD	2036	CHE - Rail Yard Tractc	2017	175	Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Joaquin Valley Unified APCD	2036	CHE - Rail Yard Tractc	2017	300	Diesel	6.43917E-07	7.79139E-07	9.2724E-07	1.44472E-05	2.68408E-06	0.0067569	1.05778E-07	9.73157E-08	1.05778E-07	6.24519E-08	5.51492E-08	219.2211704	60.359829	0.0596144	10864.76923

OFFROAD2017 (v1.0.1) Emissions Inventory
Region Type: Air District
Region: San Joaquin Valley Unified APCD
Calendar Year: 2018, 2021, 2026, 2036
Scenario: All Adopted Rules - Exhaust
Vehicle Classification: OFFROAD2017 Equipment Types
Units: Emissions: tons/day, Fuel Consumption: gallons/year, Activity: hours/year, HP-Hours: HP-hours/year

Region	CalYr	VehClass	MdlYr	HP_Bin	Fuel	HC_tpd	ROG_tpd	TOG_tpd	CO_tpd	NOx_tpd	CO2_tpd	PM10_tpd	PM2_5_tpd	PM_tpd	SOx_tpd	NH3_tpd	Fuel_gpy	Total_Activi	Total_Popu	Horsepower_Hours_hhpy
San Joaquin Valley Unified APCD	2018	ConstMin - Rubber Ti	2017	50	Diesel	4.96789E-06	6.01115E-06	7.15376E-06	0.000116111	9.77843E-05	0.0198086	3.77614E-07	3.47405E-07	3.77614E-07	1.82991E-07	1.61675E-07	642.6682606	678.71716	0.830912	31220.98942
San Joaquin Valley Unified APCD	2018	ConstMin - Rubber Ti	2017	100	Diesel	0.000215032	0.000260189	0.000309646	0.008437625	0.00355388	1.3659932	2.80282E-05	2.57859E-05	2.80282E-05	1.26228E-05	1.11491E-05	44318.14386	26546.487	24.096449	2409627.666
San Joaquin Valley Unified APCD	2018	ConstMin - Rubber Ti	2017	175	Diesel	0.000325273	0.00039358	0.000468393	0.01618736	0.001487491	2.9611486	5.40196E-05	4.96981E-05	5.40196E-05	2.73675E-05	2.41685E-05	96071.20468	34821.534	30.743746	5153900.776
San Joaquin Valley Unified APCD	2018	ConstMin - Rubber Ti	2017	300	Diesel	0.000521436	0.000630937	0.000750867	0.008841372	0.002384554	4.7469328	8.40967E-05	7.7369E-05	8.40967E-05	4.38721E-05	3.87438E-05	154009.0063	39736.736	30.189804	8285291.703
San Joaquin Valley Unified APCD	2018	ConstMin - Rubber Ti	2017	600	Diesel	0.000515292	0.000623503	0.00074202	0.008595657	0.002356458	4.6910016	8.31059E-05	7.64574E-05	8.31059E-05	4.33552E-05	3.82873E-05	152194.3803	25616.226	19.110977	8071709.824
San Joaquin Valley Unified APCD	2018	ConstMin - Rubber Ti	2017	750	Diesel	9.62183E-05	0.000116424	0.000138554	0.001605031	0.000440011	0.8759309	1.5518E-05	1.42766E-05	1.5518E-05	8.09553E-06	7.14923E-06	28418.61309	2284.0806	2.2157654	1526051.328
San Joaquin Valley Unified APCD	2018	ConstMin - Rubber Ti	2017	9999	Diesel	6.69269E-05	8.09815E-05	9.63747E-05	0.001116417	0.002667258	0.6092744	2.22297E-05	2.04514E-05	2.22297E-05	5.63104E-06	4.97282E-06	19767.23815	1292.9667	0.830912	1068852.502
San Joaquin Valley Unified APCD	2021	ConstMin - Rubber Ti	2017	50	Diesel	1.72652E-05	2.08909E-05	2.48619E-05	0.000305282	0.000213666	0.0404327	1.02371E-06	9.41811E-07	1.02371E-06	3.73303E-07	3.30006E-07	1311.795141	1351.0311	1.9187738	63723.63245
San Joaquin Valley Unified APCD	2021	ConstMin - Rubber Ti	2017	100	Diesel	0.000453812	0.000549113	0.000653489	0.012583468	0.005092783	1.8703436	4.96497E-05	4.56777E-05	4.96497E-05	1.72786E-05	1.52655E-05	60681.23721	36583.625	36.776497	3300479.24
San Joaquin Valley Unified APCD	2021	ConstMin - Rubber Ti	2017	175	Diesel	0.000707307	0.000855842	0.001018523	0.025187667	0.00222802	4.231617	8.94586E-05	8.23019E-05	8.94586E-05	3.91022E-05	3.45379E-05	137290.1517	49228.15	51.1673	7359300.709
San Joaquin Valley Unified APCD	2021	ConstMin - Rubber Ti	2017	300	Diesel	0.001016726	0.001230238	0.001464085	0.012334877	0.003202688	6.0827765	0.000120982	0.000111304	0.000120982	5.62078E-05	4.96468E-05	197348.9848	50756.454	43.492205	10585706.33
San Joaquin Valley Unified APCD	2021	ConstMin - Rubber Ti	2017	600	Diesel	0.001140773	0.001380335	0.001642712	0.013350697	0.003593436	6.824914	0.000135743	0.000124883	0.000135743	6.30655E-05	5.5704E-05	221426.8196	36992.328	32.93895	11834312.77
San Joaquin Valley Unified APCD	2021	ConstMin - Rubber Ti	2017	750	Diesel	0.000260442	0.000315135	0.000375037	0.00304801	0.000820394	1.5581512	3.09905E-05	2.85113E-05	3.09905E-05	1.43981E-05	1.27174E-05	50552.50033	3990.9935	3.8375475	2710882.307
San Joaquin Valley Unified APCD	2021	ConstMin - Rubber Ti	2017	9999	Diesel	0.000119808	0.000144967	0.000172523	0.001402135	0.003276533	0.7167752	3.0306E-05	2.78815E-05	3.0306E-05	6.62335E-06	5.85022E-06	23254.98305	1520.7223	0.9593869	1257130.445
San Joaquin Valley Unified APCD	2026	ConstMin - Rubber Ti	2017	50	Diesel	3.24643E-05	3.92818E-05	4.67486E-05	0.00047669	0.000276752	0.0478786	1.63893E-06	1.50781E-06	1.63893E-06	4.41687E-07	3.90778E-07	1553.36742	1598.8705	2.1440186	75413.3934
San Joaquin Valley Unified APCD	2026	ConstMin - Rubber Ti	2017	100	Diesel	0.000636057	0.000769629	0.000915923	0.013126557	0.005059285	1.7472178	6.13841E-05	5.64733E-05	6.13841E-05	1.61348E-05	1.42606E-05	56686.55683	33566.596	38.592335	3044925.392
San Joaquin Valley Unified APCD	2026	ConstMin - Rubber Ti	2017	175	Diesel	0.000984311	0.001191017	0.001417408	0.026287761	0.002219478	3.9565165	9.99762E-05	9.19781E-05	9.99762E-05	3.65504E-05	3.22926E-05	128364.821	46156.28	53.957802	6883704.865
San Joaquin Valley Unified APCD	2026	ConstMin - Rubber Ti	2017	300	Diesel	0.001361873	0.001647867	0.001961098	0.012389768	0.003070826	5.4741578	0.000125826	0.00011576	0.000125826	5.05704E-05	4.46793E-05	177603.0202	45637.921	44.667054	9508752.172
San Joaquin Valley Unified APCD	2026	ConstMin - Rubber Ti	2017	600	Diesel	0.001333211	0.001613186	0.001919824	0.011428174	0.003006197	5.3589478	0.000123178	0.000113324	0.000123178	4.95061E-05	4.3739E-05	173865.1588	29016.321	31.802943	9335104.688
San Joaquin Valley Unified APCD	2026	ConstMin - Rubber Ti	2017	750	Diesel	0.000404609	0.000489577	0.000582637	0.003468274	0.000912334	1.6263579	3.73826E-05	3.4392E-05	3.73826E-05	1.50243E-05	1.32741E-05	52765.39255	4068.5507	3.9307008	2809519.205
San Joaquin Valley Unified APCD	2026	ConstMin - Rubber Ti	2017	9999	Diesel	0.000146389	0.000177131	0.0002108	0.001254835	0.002851977	0.5884227	2.97374E-05	2.73584E-05	2.97374E-05	5.43587E-06	4.80263E-06	19090.72553	1237.1561	1.0720093	1022715.69
San Joaquin Valley Unified APCD	2036	ConstMin - Rubber Ti	2017	25	Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Joaquin Valley Unified APCD	2036	ConstMin - Rubber Ti	2017	50	Diesel	2.73998E-05	3.31538E-05	3.94557E-05	0.000395775	0.000225167	0.0385154	1.36401E-06	1.25489E-06	1.36401E-06	3.55272E-07	3.14357E-07	1249.589556	1407.5772	2.3603007	60995.01209
San Joaquin Valley Unified APCD	2036	ConstMin - Rubber Ti	2017	100	Diesel	9.1553E-05	0.000110779	0.000131836	0.001834381	0.000702861	0.2408243	8.73541E-06	8.03658E-06	8.73541E-06	2.22379E-06	1.96558E-06	7813.280766	4560.029	7.4742854	404642.5723
San Joaquin Valley Unified APCD	2036	ConstMin - Rubber Ti	2017	175	Diesel	0.000157846	0.000190994	0.000227299	0.004095381	0.000343838	0.6079779	1.56962E-05	1.44405E-05	1.56962E-05	5.61632E-06	4.96223E-06	19725.17363	7195.6775	11.40812	1055035.196
San Joaquin Valley Unified APCD	2036	ConstMin - Rubber Ti	2017	300	Diesel	0.000152652	0.000184709	0.00021982	0.00134916	0.000332524	0.5879728	1.37566E-05	1.26561E-05	1.37566E-05	5.43152E-06	4.79896E-06	19076.13078	4780.0685	5.9007517	1015923.888
San Joaquin Valley Unified APCD	2036	ConstMin - Rubber Ti	2017	600	Diesel	0.000241182	0.00029183	0.000347302	0.002002813	0.000525369	0.9289632	2.17347E-05	1.99959E-05	2.17347E-05	8.58149E-06	7.58207E-06	30139.18853	5143.4232	8.2610523	1620178.3

Table E2.52.
Indirect GHG Emissions, Electricity Use

	Product Throughput (mty)	Electricity Use (kW-hr)	CO2 (mty)	CH4 (mty)	N2O (mty)	CO2e (mty)
Baseline	801,764	2,828,535.00	677	0.04	0.01	680
Year 1	1,382,096	5,268,588.49	1,262	0.08	0.01	1,266
Year 5	2,526,510	12,278,573.66	2,940	0.18	0.02	2,951
Year 15	3,215,971	15,230,653.04	3,647	0.23	0.03	3,660

Source: Stockton Estimated Electrical Consumption 12-30-2019.pdf. Provided by Lehigh in e-mail: From: Richardson, Ted <tkrichardson@edg.net>; Sent: Monday, December 30, 2019 1:48 PM; To: Lora Granovsky <lora.granovsky@ilancoenvironmental.com>; Subject: RE: throughput.

Notes:

mty is metric tons per year

Table E2.53.
GHG Emission Factors, Electricity Use

	CO2	CH4	N2O
	(lb CO2/MWhr)	(lb CO2/GWhr)	(lb CO2/GWhr)
electricity generation[1]	527.9	33	4

Notes:

[1] 2019 Climate Registry Default Emission Factors, Table 3.1, Default Factors for Calculating Emissions from Grid Electricity by eGrid Subregion. CAMX subregion. May 29, 2019.

Table E2.54.
Global Warming Potentials (GWP)

CO2	CH4	N2O
1	21	310

Source: The Climate Registry, General Protocols, v. 2.0, Table B.2. March 2013.

Appendix F
Special-Status Species Potentially Present in the Project Area

Table F-1
Special-Status Species Potentially Present in the Project Area

Species	Federal	State	Habitat Association	Potential to Occur
Invertebrates				
Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*)	T	-	Riparian scrub in association with blue elderberry (*Sambucus mexicana*)	No potential to occur. Habitat not present.
Vernal pool tadpole shrimp (*Lepidurus packardi*)	E	-	Valley and foothill grassland; vernal pool; wetland	No potential to occur. Habitat not present.
Amphibians				
California tiger salamander (*Ambystoma californiense*)	T	T	Cismontane woodland; meadow and seep; riparian woodland; valley and foothill grassland	No potential to occur. Habitat not present.
Western pond turtle (*Emys marmorata*)	-	SSC	Aquatic; flowing waters; standing waters; wetland	Moderate potential to occur on shoreline banks.
Birds				
Tricolored blackbird (*Agelaius tricolor*)	-	CE; SSC	Freshwater marsh; marsh and swamp; swamp; wetland	No potential to occur. Habitat not present.
Burrowing owl (*Athene cunicularia*)	-	SSC	Prairie; scrub; grassland	No potential to occur. Habitat not present.
White-tailed kite (*Elanus leucurus*)	-	FP	Open grasslands; savanna; open woodlands; marshes; desert grassland; partially cleared lands; cultivated fields	Very low potential to occur in trees near the project site.
Swainson's hawk (*Buteo swainsoni*)	-	T	Great basin grassland; riparian forest; riparian woodland; valley and foothill grassland	Very low potential to occur in trees near the project site.
Least Bell's vireo (*Vireo bellii pusillus*)	E	E	Riparian forest; riparian scrub; riparian woodland	No potential to occur. Habitat not present.
California black rail (*Laterallus jamaicensis coturniculus*)	-	T; FP	Brackish marsh; freshwater marsh; marsh and swamp; salt marsh; wetland	No potential to occur. Habitat not present.
Song sparrow ("Modesto" population) (*Melospiza melodia*)	-	SSC	Riparian shrub-scrub	No potential to occur. Habitat not present.
Yellow-headed blackbird (*Xanthocephalus xanthocephalus*)	-	SSC	Marsh and swamp; wetland	No potential to occur. Habitat not present.

Species	Federal	State	Habitat Association	Potential to Occur
Loggerhead shrike (*Lanius ludovicianus*)	-	SSC	Broadleaved upland forest, Desert wash, Joshua tree woodland, Mojavean desert scrub, Pinon and juniper woodlands, Riparian woodland, Sonoran desert scrub	No potential to occur. Habitat not present.
Mammals				
Riparian brush rabbit (*Sylvilagus bachmani riparius*)	E	E	Riparian forest	No potential to occur. Habitat not present.
American badger (*Taxidea taxus*)	-	SSC	Variety of terrestrial habitats	No potential to occur. Habitat not present.
Fish				
Green sturgeon – Southern DPS (*Acipenser medirostris*)	E	-	Aquatic; estuary	Moderate potential to occur in San Joaquin River.
Delta smelt (*Hypomesus transpacificus*)	T	E	Aquatic; estuary	Very low potential to occur in San Joaquin River.
Steelhead - Central Valley DPS (*Oncorhynchus mykiss irideus*)	T	-	Aquatic; Sacramento/San Joaquin flowing waters	Moderate potential to occur in San Joaquin River.
Chinook salmon – Central Valley spring run ESU (*Oncorhynchus tshawytscha*)	T	-	Aquatic; estuary	Moderate potential to occur in San Joaquin River.
Longfin smelt (*Spirinchus thaleichthys*)	C	T; SSC	Aquatic; estuary	Moderate potential to occur in San Joaquin River.
Reptiles				
Giant garter snake (*Thamnophis gigas*)	T	T	Marsh and swamp; riparian scrub; wetland	No potential to occur. Habitat not present.
Plants				
Palmate-bracted salty bird's-beak (*Chloropyron palmatum*)	E	E; 1B.1	Chenopod scrub; meadow and seep; valley and foothill grassland; wetland	No potential to occur. Habitat not present.
Delta button-celery (*Eryngium racemosum*)	-	E; 1B.1	Riparian scrub; wetland	No potential to occur. Habitat not present.

Notes:
Sources:
California Natural Diversity Database 2019 search of Project area and surrounding quadrangles (Stockton West, Terminous, Lodi South, Waterloo, Stockton East, Manteca, Lathrop, Union Island, and Holt).
Anchor QEA, LLC, 2019. *Lehigh Southwest Stockton Terminal Project Biological Assessment*. November 2019
C: candidate
E: endangered
FP: California Department of Fish and Wildlife fully protected
T: threatened
SSC: state species of special concern
DPS: Distinct Population Segment
ESU: Evolutionary Significant Unit

Rare Plant Rank 1B.1 – rare, threatened, or endangered in California and elsewhere; seriously threatened in California (more than 80% of occurrences threatened/high degree and immediacy of threat)

Appendix G
CNPS List Plant Species with the Potential to Occur in the Study Area

Table G-1
CNPS List Plant Species with the Potential to Occur in the Study Area

Common Name	Scientific Name	California Rare Plant Rank
Alkali milk-vetch	*Astragalus tener var. tener*	1B.2
Heartscale	*Atriplex cordulata var. cordulata*	1B.2
Big tarplant	*Blepharizonia plumosa*	1B.1
Watershield	*Brasenia schreberi*	2B.3
Bristly sedge	*Carex comosa*	2B.1
Palmate-bracted salty bird's-beak	*Chloropyron palmatum*	1B.1 (Federal Endangered; State Endangered)
Slough thistle	*Cirsium crassicaule*	1B.1
Recurved larkspur	*Delphinium recurvatum*	1B.2
Delta button-celery	*Eryngium racemosum*	1B.1 (State Endangered)
San Joaquin spearscale	*Extriplex joaquinana*	1B.2
Woolly rose-mallow	*Hibiscus lasiocarpos var. occidentalis*	1B.2
Delta tule pea	*Lathyrus jepsonii var. jepsonii*	1B.2
Mason's lilaeopsis	*Lilaeopsis masonii*	1B.1
Delta mudwort	*Limosella australis*	2B.1
Sanford's arrowhead	*Sagittaria sanfordii*	1B.2
Side-flowering skullcap	*Scutellaria lateriflora*	2B.2
Suisun Marsh aster	*Symphyotrichum lentum*	1B.2
Wright's trichocoronis	*Trichocoronis wrightii var. wrightii*	2B.1
Saline clover	*Trifolium hydrophilum*	1B.2
Caper-fruited tropidocarpum	*Tropidocarpum capparideum*	1B.1

Notes:
Source: California Department of Fish and Wildlife, 2019. California Native Diversity Database Rarefind 5 Program Search of Stockton West Terminous, Lodi South, Waterloo, Stockton East, Manteca, Lathrop, Union Island, and Holt quadrangles.
Rare Plant Rank 1B.1: rare, threatened, or endangered in California and elsewhere; seriously threatened in California (over 80% of occurrences threatened/high degree and immediacy of threat)
Rare Plant Rank 1B.2: rare, threatened, or endangered in California and elsewhere; fairly threatened in California (20-80% occurrences threatened/moderate degree and immediacy of threat)
Rare Plant Rank 2B.1: rare, threatened, or endangered in California, but more common elsewhere; seriously threatened in California (over 80% of occurrences threatened/high degree and immediacy of threat)
Rare Plant Rank 2B.2: rare, threatened, or endangered in California, but more common elsewhere; moderately threatened in California (20-80% occurrences threatened/moderate degree and immediacy of threat)
Rare Plant Rank 2B.3: rare, threatened, or endangered in California, but more common elsewhere; not very threatened in California (less than 20% of occurrences threatened/low degree and immediacy of threat or no current threats known)

Appendix H
Biological Assessment

November 2019
Lehigh Southwest Stockton Terminal Project

Biological Assessment

Prepared for Lehigh Hanson

November 2019
Lehigh Southwest Stockton Terminal Project

Biological Assessment

Prepared for
Lehigh Hanson
3000 Executive Parkway, Suite 240
San Ramon, California 95835

Prepared by
Anchor QEA, LLC
130 Battery Street, Suite 400
San Francisco, California 94111

Project Number: 170377-01.01

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ABBREVIATIONS

BA	Biological Assessment
BMP	best management practice
CDFW	California Department of Fish and Wildlife
cy	cubic yard
Delta	Sacramento-San Joaquin River Delta
DPS	distinct population segment
DWSC	Deep Water Ship Channel
EFH	Essential Fish Habitat
ESA	Endangered Species Act
ESU	evolutionarily significant unit
Fed. Reg.	Federal Register
FMP	Fisheries Management Plan
FMWT	Fall Midwater Trawl
ITMM	incidental take minimization measures
Magnuson-Stevens Act	Magnuson-Stevens Fishery Conservation and Management Act of 1997
MHHW	mean higher high water
NA	not applicable
NMFS	National Marine Fisheries Service
O&M	operations and maintenance
Port	Port of Stockton
PSU	Practical Salinity Units
sf	square foot
SJCOG	San Joaquin Council of Governments
SJMSCP	San Joaquin County Multi-Species Habitat Conservation and Open Space Plan
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service

1 Introduction

This Biological Assessment (BA) has been prepared to meet consultation requirements under Section 7 of the Endangered Species Act (ESA). The purpose of this BA is to analyze the potential effects of the proposed action, the Lehigh Southwest Stockton Terminal Project, on listed threatened or endangered species and on designated critical habitat within the proposed action's area of effect (action area). In addition, this BA is intended to fulfill consultation requirements under the Magnuson-Stevens Fishery Conservation and Management Act of 1997 (Magnuson-Stevens Act; 62 Federal Register [Fed. Reg.] 2343).

Section 7 and Magnuson-Stevens Act consultation with the National Marine Fisheries Service (NMFS) and Section 7 consultation with the U.S. Fish and Wildlife Service (USFWS) will be initiated by the U.S. Army Corps of Engineers (USACE). These agencies will determine the need for informal or formal consultation.

2 Action Area

Lehigh operates an existing bulk cementitious material receiving and distribution terminal at 205 Port Road 1 and at Berth 2 along the San Joaquin River within the Port of Stockton (Port). The proposed action entails rehabilitating Berth 2 to support a new ship unloader and replacing a portion of an existing rail trestle (Figure 1). These activities are required to address substantial structural deficiencies. Berth 2 rehabilitation would entail installing new piles (dock support and fender piles) and replacing a floating fender and decking. Repairing and reconstructing the rail trestle would entail removing the existing wooden deck and piles and installing replacement piles and decking. The footprint of the Berth 2 dock would not be modified as part of the proposed action; however, there would be a minor increase in in-water fill from the new piles. The replacement rail trestle would have reduced overwater coverage and in-water fill compared to the existing structure. Overall, the proposed action would result in reduced overwater coverage and a minor increase in in-water fill from piles.

The action area includes all areas to be affected directly or indirectly by the proposed action and not only the immediate area involved in the action. For the proposed action, the action area includes the replacement Berth 2 and rail trestle footprints, as well as areas of the San Joaquin River where impacts from construction noise are anticipated to occur (Figure 2). This action area also includes areas where potential water quality impacts such as turbidity may occur. Impacts from the proposed action are not anticipated to extend beyond the action area.

The proposed action also includes upland renovations, which would not affect special status species. Those components are therefore not included in the action area and are not analyzed in this BA.

2.1 Port of Stockton (Berth 2 and Rail Trestle) and the San Joaquin River

The Port is located in the City of Stockton, San Joaquin County, approximately 75 miles east of San Francisco and 40 miles southeast of Sacramento. The Port is bisected by the San Joaquin River and subsequently divided into the following two areas along the Stockton Deep Water Ship Channel (DWSC): the East Complex and the West Complex (Rough and Ready Island). The East Complex encompasses approximately 680 acres bounded to the north by the Stockton DWSC and turning basin; to the east and south by the Port's Public Beltline Railroad main lead and Atchison, Topeka, and Santa Fe Railroads; and to the west by the San Joaquin River. The West Complex encompasses approximately 1,460 acres bounded to the north by the Stockton DWSC, to the east by the San Joaquin River, to the south by Burns Cutoff, and to the west by agricultural lands and the Port's dredged material placement site on Roberts Island. The East Complex includes Docks 2 through 13 and the West Complex includes Docks 14 through 20.

The immediate footprint of the action area includes Berth 2 and the adjacent existing wooden rail trestle on the Port's East Complex. These structures are components of Lehigh's existing facility, which receives, stores, and ships cementitious construction materials to the local Stockton area and regional Northern California building industry from its terminal at the Port. Cementitious material is received via ships at Berth 2, and empty rail cars are stored on the existing wooden rail trestle (it is not currently used for railcar loading). The existing Berth 2 dock and wooden rail trestle were constructed in the 1930s. The Berth 2 dock is composed of nearly 1,000 timber piles that support concrete beams and a concrete sub-deck, with above water line columns and beams supporting the existing rails and main platform deck. The existing wood trestle spans 180 feet between the existing Berth 2 dock and land, is supported by 55 timber piles located in the water, and is also supported by an additional 15 wooden piles placed in the slope of the bank.

The action area also includes a portion of the ship turning basin within the San Joaquin River, a portion of the Stockton DWSC, and adjacent shoreline areas (Figure 2). The Stockton DWSC is a portion of the San Joaquin River, maintained by USACE to a depth of -35 feet mean lower low water, which begins in San Francisco Bay and terminates in Stockton. It is used as a shipping channel to provide access to the interior of the Central Valley from the open sea for large hauling vessels. The San Joaquin River turning basin is located on the eastern end of the Stockton DWSC, in an area where the river widens, which allows vessels to reverse orientation prior to departure. The remainder of the shoreline in the action area shoreline is also developed or armored with rock riprap and berthing infrastructure. The shoreline contains a very small area of riparian vegetation adjacent to the existing wooden trestle, including several small (less than 6 inches in diameter at breast height) walnut trees.

The San Joaquin River channel substrate in the action area contains mud and silt, and water quality is characterized by low dissolved oxygen levels and high water temperatures during the late summer and early fall. Water quality monitoring and elutriate toxicity testing results from past Port maintenance dredging sediment characterization efforts have not indicated toxicity concerns (ERS 2012, 2013; Anchor QEA 2017) for sediments within the action area.

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Figure 1
Vicinity Map
Lehigh Southwest Stockton Terminal Project
Port of Stockton

LEGEND:

Action Area

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ANCHOR QEA

Figure 2
Action Area
Lehigh Southwest Stockton Terminal Project
Port of Stockton

3 Description of the Proposed Action

Lehigh is proposing to modify and rehabilitate an existing bulk cementitious material receiving and distribution terminal (Photograph 1) located at 205 Port Road 1 and at Berth 2 within the Port's East Complex (pages 1 and 2 in Appendix A). As part of the proposed project, Berth 2 would be rehabilitated to support a new ship unloader with a greater capacity and the reach to more effectively service wider vessels. Berth 2 in-water rehabilitation activities include installation of new concrete support piles, concrete beams which will support new crane rail, and a replacement fender system. The proposed project also includes replacing a portion of an existing rail trestle (Photograph 2), which is supported by wooden piles with limited weight bearing capacity (page 3 in Appendix A). The replacement rail trestle would be supported by concrete piles and able to accommodate full rail cars and an engine.

Photograph 1
Existing Bulk Cementitious Material Terminal

Photograph 2
Existing Wooden Rail Trestle with Empty Rail Cars

3.1 Purpose and Need

Lehigh currently receives, stores, and ships cementitious construction materials to the local Stockton area and regional Northern California building industry from its terminal at the Port. Cementitious material is received via ships, rail, or truck at the terminal, unloaded, then stored at the terminal before being shipped to the local and regional market by truck and rail. The current berth capacity and channel depth accommodate 35,000 deadweight ton vessels. Because of a change in the size of vessels available in the world's shipping fleet, Lehigh has been chartering longer and wider vessels; thus, the existing ship unloader's horizontal arm is too short to reach effectively across the ship's hold.

The purpose of the proposed project is to upgrade the existing Lehigh facility and the Port (including dock and upland areas) in order to handle a heavier replacement unloader and improve rail and truck loading and unloading systems in anticipation of an increased future cementitious materials supply and market demand. The proposed new ship unloader would be supplied with a longer arm for greater reach that allows operations at a higher capacity, thereby minimizing the possibility of dust emissions, reducing berthing time, and allowing greater dock utilization. Because a new unloader would be significantly heavier, the existing rail support beams and narrow rail gauge would not be adequate. In addition, the existing berth was constructed in the 1930s and was not constructed to current seismic design. In order to accommodate the replacement ship unloader, the structure would be rehabilitated. The existing wooden rail trestle immediately east of Berth 2 was also built in the 1930s, and it lacks the structural integrity needed to support full and optimal facility operation. Repair and replacement of the rail trestle is needed to accommodate movement of full cars and engines required for full and optimal facility operation. Upland improvements to the storage, rail, and truck systems are also proposed to handle cementitious material more efficiently. While these upland improvements are outside the scope of the project proposed for approval, they are important components for achieving the overall project purpose and need and are therefore briefly described herein.

3.2 Proposed Project Construction and Operations

Proposed project construction would consist of the following improvements with in-water components:

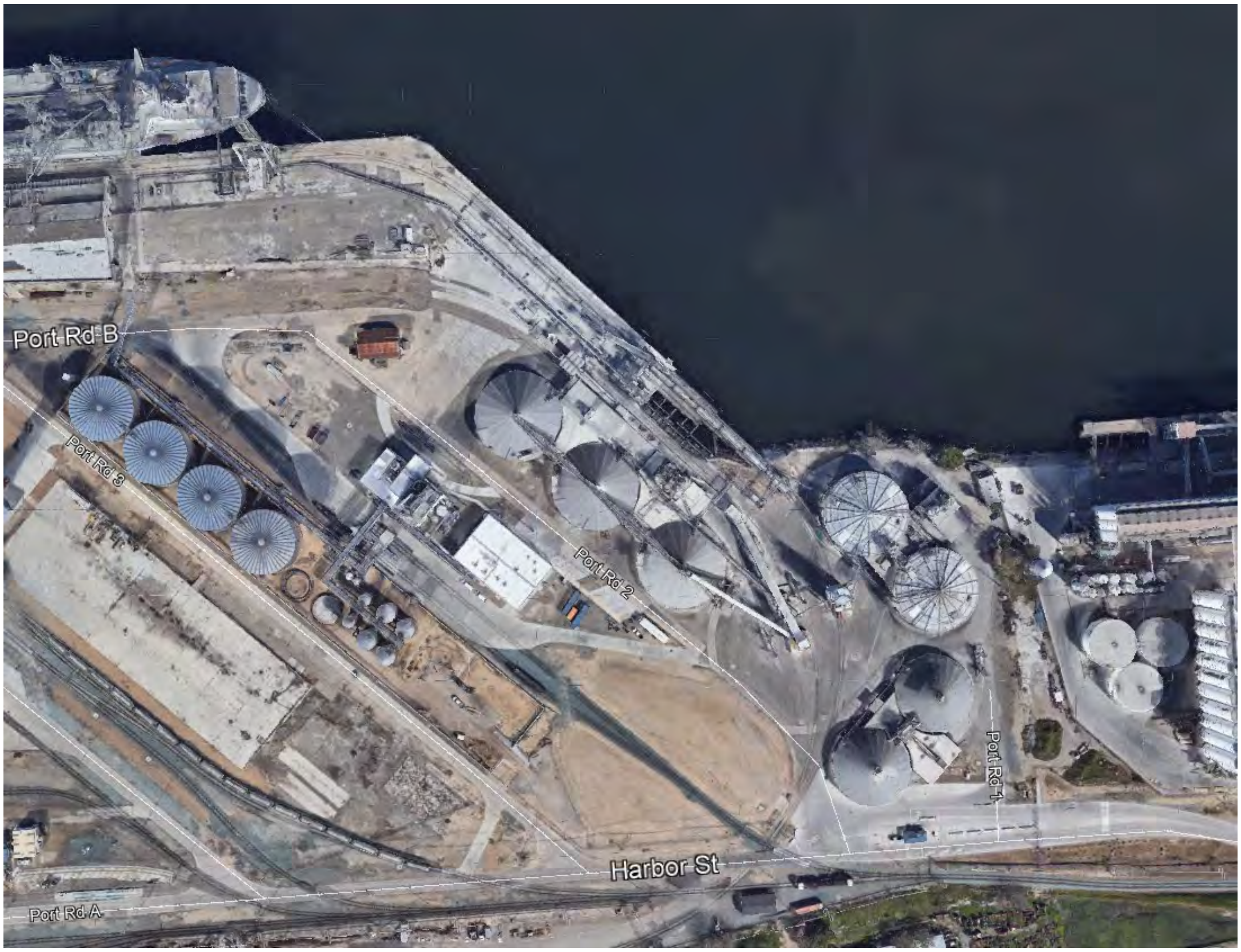
- Berth 2 rehabilitation
- Rail trestle replacement

These project elements are described in detail in the following sections. A detailed description is also provided for work outside but above waters of the United States and state, including installation of a new ship unloader and barge loading equipment.

The proposed project does not include removal of any vegetation. The Lehigh facility, including Berth 2, is entirely devoid of vegetation with the exception of some small potted ornamental landscaping. The shoreline adjacent to the existing wooden rail trestle has several small riparian trees (approximately 6-inches in diameter at breast height walnut trees; Photograph 4), which would not be affected by proposed project construction.

Photograph 3

Aerial Photograph of Project Site



Source: Google Earth imagery

Photograph 4
View of Small Walnut Trees on Shoreline Across from Existing Wooden Rail Trestle

3.2.1 Berth 2 Rehabilitation

In-water improvements to rehabilitate Berth 2 would include installation of new concrete support pilings and a replacement ship fendering system (pages 4 and 5 in Appendix A). Additional rehabilitation activities include installation of new concrete support beams, new gantry rails, a new stowage mast, and structural rehabilitation of the base dock structure; these features would not result in any in-water fill or additional overwater coverage.

A maximum of one hundred and forty-four 18-inch octagonal concrete piles would be installed to support the ship unloader gantry rail beams, and a maximum of twenty 14-inch-square concrete piles would be driven to support the replacement fender system. Slots would be cut in the Berth 2 deck to accommodate piles being driven through the structure. Installation would occur using a single impact hammer mounted to a crawler crane operating atop the Berth 2 deck. If the existing dock structure cannot support this type of crane, a floating derrick barge crane set-up would be used. In addition to the fender piles, the replacement fender system would include four 5-foot by 10-foot floats fixed to the dock face. Table 1 identifies the proposed pile and float quantities and overwater coverage impacts from Berth 2 rehabilitation. The locations of the proposed Berth 2 beam support piles, fender piles, and fender floats are depicted in Figures 1 and 2 in Appendix B.

Table 1
Berth 2 Rehabilitation Pile Quantities and Overwater Coverage

Project Component	Pile or Fender Type	Fill and Area Quantities			Overwater Coverage (Net)
		Number of Piles or Float Quantity	Total Area	Total Volume	
Seaside Rail Support Piles	18-inch Octagonal Concrete	72	134 sf	203.48 cy	0 (piles beneath existing deck footprint)
Landside Rail Support Piles	18-inch Octagonal Concrete	72	134 sf	104.22 cy	0 (piles beneath existing deck footprint)
Floating Fender Piles	14-inch square	20	27 sf	41.34 cy	27 sf
Fender Floats	5 feet by 10 feet	5	250 sf	0 cy	250 sf

Additional Berth 2 rehabilitation activities would occur above the mean higher high water (MHHW) line, including installation of new concrete beams, new gantry rails, and concrete repairs. New concrete beams would be installed with below-deck ties to the existing dock structure, and new gantry rails would be installed at the appropriate rail gauge. Similar to the support piles, these features would be constructed using slots cut in the existing deck. The slots in the concrete deck would be formed and filled with concrete to complete the deck surface. Forms would be supported by the new piling and the existing concrete structure. A hydraulic crane would be used to support the forming and placement of the reinforced cast-in-place beams. Concrete repairs would be completed to provide structural integrity, including repair of damage to existing concrete columns, spalled concrete on beams, and to the underside of the deck. Additional piles would be installed at the face of the dock to allow installation and attachment of the floating pneumatic fender system.

Construction of the in-water and out-of-water improvements described above would occur in compliance with established best management practices (BMPs) in order to avoid or minimize impacts to water quality or the aquatic environment (Section 3.6).

3.2.2 Rail Trestle Replacement

Rail trestle replacement would include removal of the 180-foot wooden rail trestle deck, partial removal of wooden support piles, installation of replacement concrete piles, and installation of replacement decking (composed of concrete beams, track, and access walkways) with a reduced overwater footprint (page 7 in Appendix A).

Construction would begin with demolition of existing wooden rail trestle components. Fifty-six in-water 14-inch creosote-treated wood piles would be cut off at the mudline and left in place below the surface. Fifteen 14-inch creosote-treated wood piles located on the bank slope (10 above MHHW and 5 below MHHW) would be removed, and the void space caused by the removal would be filled (page 7 in Appendix A). Table 2 identifies the overwater coverage and fill values for the existing wooden rail trestle components planned for demolition. The existing gantry rail support beams, including fifty 17-inch timber support piles, would remain in place and would be integrated with the replacement rail trestle design. The locations of the existing wooden rail trestle components (piles and gantry rail) are depicted in Figures 3 and 4 in Appendix B.

Table 2
Existing Wooden Rail Trestle Overwater Coverage and Pile Quantities for Demolition

Pile or Feature Location	Pile Type	Above or Below MHHW	Proposed Removal	Fill and Area Quantities		
				Pile Quantity	Total Area	Total Volume (Mudline to MHHW)
In-water	14-inch creosote-treated wood	Below	Cut at mudline	56	59.92 sf	55.48 cy
Bank Slope	14-inch creosote-treated wood	Below	Pulled with excavator	10	10.7 sf	2.34 cy
Bank Slope	14-inch creosote-treated wood	Above	Pulled with excavator	5	5.35 sf.	0
Trestle Deck	NA	Above	Remove all decking; keep gantry rail support beams	NA	4,800 sf	NA

Following rail trestle demolition, a maximum of thirty 18-inch octagonal concrete support piles would be installed beneath MHHW. Piles would be installed using an impact hammer operating from a floating derrick barge crane set-up.

Once piles have been installed, the contractor would construct forms atop the piles, place reinforcement, then cast in place concrete beams and structural ties, constituting the replacement trestle. After this portion of the installation is complete, new track would be installed, as well as an access walkway alongside the rail. These improvements would be constructed above the MHHW. The replacement deck would have a smaller overwater coverage area compared to the existing wooden rail trestle, as the portion southeast of the gantry rails would be narrower.

The locations of the proposed rail trestle components (piles, support beams, and decking) are depicted in Figures 2 and 4 in Appendix B. Table 3 identifies overwater coverage and pile fill values for the proposed replacement structure.

Table 3
Proposed Rail Trestle Overwater Coverage and Pile Quantities

Project Component	Pile Type	Above or Below MHHW	Fill and Area Quantities		
			Number of Piles	Total Area	Total Volume
Row 1 (Closer to Channel)	18-inch Octagonal Concrete	Below	15	28 sf (below trestle decking)	25.85 cy
Row 2 (Closer to Shore)	18-inch Octagonal Concrete	Below	15	28 sf (below trestle decking)	25.85 cy
Trestle Deck	NA	Above	NA	3,800 sf	NA

3.2.3 Ship Unloader Replacement

The existing ship unloader would be replaced with a new ship unloader inclusive of a completely enclosed conveying system (page 6 in Appendix A). The ship unloader components would be delivered to the site by ship from various international locations in large pre-assembled pieces and multiple shipping containers. A designated area of the dock would be used for assembling the unloader upon the new gantry rails.

3.2.4 Barge Loading Component Installation

Barge loading components, such as pneumatic transport piping and connection hoses, would be installed that allow for future barge loading of cementitious materials for water-based shipping. Specific designs for this proposed project element have not yet been completed, but would occur entirely above MHHW.

3.2.5 *Upland Improvements*

Proposed project improvements that would occur entirely in uplands include the following:

- Replacement of Bunker 7 with a monolithically constructed concrete storage dome to handle Portland cement or other cementitious materials more efficiently (The new storage dome would have a storage capacity of 40,000 metric tons and would include air pollution control devices.)
- Upgrades to existing bunkers and addition of dust filter systems
- Modifications to the existing truck loading stations, including more efficient and higher capacity truck loading systems
- Rail loading station to allow more efficient and greater throughput of rail car shipping

3.3 Construction Staging

The project site is accessible from Harbor Street, Port Road 1, or from the San Joaquin River (within which runs the Stockton DWSC). Staging of materials and construction equipment would be coordinated with the Port to minimize disruptions to existing Port operations and would generally be limited to areas within the Lehigh terminal or directly adjacent space near Berths 3 and 4. Open areas near Berth 3, directly adjacent to Berth 2, would be used for staging the parts and containers for the replacement ship unloader. Barges may also be positioned just off the dock in the San Joaquin River for potential use as lay-down areas or for operation of equipment such as cranes.

3.4 Construction Schedule

All in-water construction would be confined to the annual July 1 to November 30 in-water work window. Construction would be phased over 18 months, with certain project components to be constructed concurrently. Assuming installation of six piles per day, pile driving is expected to take approximately 35 days. Construction and rehabilitation of Berth 2 and replacement of the rail trestle are expected to take 4 to 5 months while working around ship schedules. Assembly of the new unloader is expected to take 3 to 4 months.

While overall total proposed project construction is anticipated to be phased over 18 months, regulatory permits are being requested for a period of 5 years to allow for flexibility in construction timing.

3.5 Summary of In-Water Fill and Overwater Coverage

The proposed project would result in a minor net increase in in-water fill and a reduction in overwater coverage. The increase in fill would result entirely from installation of new support piles at Berth 2. Pile removal and replacement at the rail trestle would result in a reduction in net fill. The decrease in overwater coverage would occur entirely from the narrowing of the rail trestle; this reduction would offset the minor increase in overwater coverage from installation of the new floating fender system (floats and float support piles). Table 4 provides a summary of net changes to in-water fill, and Table 5 provides a summary of net changes to overwater coverage.

Table 4
Net Change in In-Water Fill

Project Component	Number of Piles	Total Area	Total Volume
Proposed for Removal			
Existing Wooden Rail Trestle	66	70.62 sf	57.82 cy
Proposed for Installation			
Berth 2 Rehabilitation	164	295 sf	349.04 cy
Rail Trestle Replacement	30	56 sf	51.7 cy
Net Total	**128**	**280.38 sf**	**342.92 cy**

Table 5
Existing and Proposed Overwater Coverage

Project Component	Overwater Coverage Area
Proposed for Removal	
Existing Wooden Rail Trestle Deck	4,800 sf
Proposed for Installation	
Proposed Rail Trestle Deck	3,800 sf
Proposed Berth 2 Fender (Floats and Piles)	277 sf
Net Total	**-723 sf**

3.6 Avoidance and Minimization of Impacts

Environmental protection measures have been integrated into the proposed project to avoid potential adverse effects to the environment. These measures are considered an integral part of the proposed project and would be implemented by Lehigh or its contractors during, prior to, or after the execution of the proposed project:

- General BMPs are as follows:
  - The contractor would fully understand and adhere to the terms and conditions of approvals and permits obtained, as well as all project BMPs.
  - All construction activities would occur within the designated project footprint.
- Debris-related BMPs are as follows:
  - Closed debris containment booms, floating debris screens, and/or absorbent booms would be positioned beneath and alongside work areas whenever possible. During construction, the barges performing the work would be moored in a position to capture

and contain the debris generated during any sub-structure or in-water work. Care would be taken to minimize debris falling into the water.

  - In the event that debris reaches the water, personnel in workboats would immediately retrieve the debris for proper handling and disposal. For small-scale overwater repairs and maintenance, tarps, tubs, or vacuums would be used as appropriate to catch sawdust, debris, or drips.
  - All debris and trash would be regularly collected and disposed of in appropriate waste containers. Discharge of hazardous materials into the project site would be prohibited.
- Stormwater BMPs are as follows:
  - Construction material that could wash or blow away would be covered every night and during any rainfall event.
  - Construction materials would be stored in an area that does not freely drain to the water, is free from standing water and wet soil, and protected from rain. If necessary, materials would be stored on skids or support timbers to keep them off the ground.
  - Adequate erosion control supplies would be kept on site and during all construction activities to ensure materials are kept out of waterbodies.
- Spill prevention and response BMPs are as follows:
  - All construction-related equipment would be inspected daily and maintained in good working order to minimize the potential for hazardous waste spills. Current hazardous material spill prevention and cleanup plans would be maintained on site. Hammers and other hydraulic attachments would be placed on plywood and covered prior to the onset of rain to prevent run-on and runoff.
- Special status species and habitat BMPs are as follows:
  - Pile driving would only occur between July 1 and November 30.
  - The contractor would be required to bring all impact hammer pile driving equipment online slowly (employ a "soft-start").

The proposed project would obtain coverage under and adhere to the requirements of the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (SJMSCP), which is administered by the San Joaquin Council of Governments (SJCOG). Lehigh would submit an application for coverage to the SJCOG within 60 days of proposed project construction. SJCOG would review the application, prepare a staff report, and submit the report to the SJMSCP Habitat Technical Advisory Committee, who approves of projects to be covered under the SJMSCP. A SJCOG biologist would then conduct a site visit to determine which incidental take minimization measures (ITMMs) included in the SJMSCP are applicable to the proposed project. SJCOG would then execute a final summary of applicable ITMMs for the proposed project and Lehigh would implement all required ITMMs identified by the SJCOG.

4 Federally Protected Species and Critical Habitat

This BA considers all federal ESA-listed aquatic species regulated by NMFS and USFWS, in addition to any critical habitat and Essential Fish Habitat (EFH) present in the action area. Federally listed aquatic special status species, critical habitat, and EFH occurring or potentially occurring within the action area were identified from the following sources:

- Species observation records in the California Natural Diversity Database for the 7.5-minute U.S. Geological Survey quadrangle for the action area and adjacent quadrangles, including Stockton West, Terminous, Lodi South, Waterloo, Stockton East, Manteca, Lathrop, Union Island, and Holt (CDFW 2019a)
- NMFS's EFH Mapper (NMFS 2019)
- California Department of Fish and Wildlife (CDFW) Fall Midwater Trawl (FMWT) survey results (CDFW 2019b)
- USACE entrainment and community monitoring performed during annual Stockton and Sacramento DWSC operations and maintenance (O&M) dredging since 2005 (USACE 2015; ICF 2019)
- Site visit by Anchor QEA biologist (Anchor QEA 2019)

According to these sources and habitat conditions within the action area, the following federally listed species may occur in the action area:

- Southern distinct population segment (DPS) green sturgeon (*Acipenser medirostris*): federal threatened
- Delta smelt (*Hypomesus transpacificus*): federal threatened
- Central Valley spring-run evolutionarily significant unit (ESU) Chinook salmon (*Oncorhynchus tshawytscha*): federal threatened
- Central Valley DPS steelhead (*O. mykiss irideus*): federal threatened
- Longfin smelt (*Spirinchus thaleichthys*): federal candidate

The action area additionally includes critical habitat for southern DPS green sturgeon, delta smelt, and Central Valley DPS steelhead and EFH for the Pacific Coast salmon and Pacific groundfish Fisheries Management Plans (FMPs).

This section describes the federally listed species that occur or may occur in the action area. A discussion of existing species threats and any critical habitat designations (if applicable) is also provided. Recorded species occurrences at or near the action area are identified in Section 5, while potential effects of the proposed action are discussed in Section 6.

4.1 Southern Distinct Population Segment of Green Sturgeon

4.1.1 Species Description

The southern DPS of green sturgeon includes fish that inhabit the San Francisco Bay and Sacramento-San Joaquin River Delta (Delta) and spawn in the Sacramento River basin. Sub-adults and adults of this species inhabit near-shore oceanic waters, bays, and estuaries, while also migrating to and from freshwater habitats. Freshwater occurrence of this species occurs during the early life history stage (less than 4 years old), and later when adults return to freshwater to spawn (spawn age range of 10 to 15 years old). Spawning occurs in the spring and summer, as recorded in the upper Sacramento River and tributaries such as the Feather, Yuba, and American rivers. During the juvenile stage, green sturgeon can be distributed throughout the freshwater portions of their habitat the entire year. Juveniles of two apparent size groups (fork length range of 20 to 58 centimeters) have been collected in the Sacramento and San Joaquin rivers and Suisun Bay. However, there are substantial gaps regarding knowledge of this species' biology, ecology, and habitat within the San Francisco Bay and Delta (USACE 2015).

4.1.2 Existing Threats

A primary factor for the decline of the green sturgeon is the restriction of spawning habitat to a limited area below Keswick Dam. Insufficient flow velocities to initiate the upstream spawning migration also contribute to this decline (Kohlhorst et al. 1991 as cited in CDFG 2002; NMFS 2008). Reduced flows have been identified as a factor in weakened year class recruitment in the white sturgeon (*Acipenser transmontanus*) population and are believed to have the same effect on green sturgeon recruitment. In addition to the adverse effects of impassable barriers, numerous agricultural water diversions exist in the Delta along the migratory route of larval and juvenile sturgeon. Entrainment and impingement on in-water pumps and screens are considered serious threats to sturgeon during their downstream migration. Sturgeon are also susceptible to uptake of contaminants from contaminated sediments through dermal contact and incidental ingestion of sediments while feeding. Bioaccumulation is also a concern due to their long life. All of the aforementioned threats were identified by the NMFS Biological Review Team within the Fed. Reg. as potentially affecting the continued existence of the southern DPS of green sturgeon (70 Fed. Reg. 17386).

4.1.3 Critical Habitat

In California, critical habitat for green sturgeon in the Delta includes nearly all waterways up to the elevation of MHHW within the area defined in California Water Code 12220, which includes the action area.

4.2 Delta Smelt

4.2.1 Species Description

The delta smelt is a euryhaline fish with a habitat range extending from the lower reaches of the Sacramento and San Joaquin rivers, through the Delta, and into Suisun Bay. This Delta-endemic species is currently found in very low abundance within the Sacramento and Stockton DWSCs. Delta smelt was listed as a threatened species under the ESA on March 5, 1993 (58 Fed. Reg. 12854). Final critical habitat designation for delta smelt (59 Fed. Reg. 65256, published December 19, 1994) includes the Stockton and Sacramento DWSCs. The state status of delta smelt under the California ESA was elevated from threatened to endangered on March 4, 2009. On March 24, 2009, USFWS initiated a 5-year status review of delta smelt. As of April 7, 2010, and as reconfirmed on December 5, 2014 (79 Fed. Reg. 72450), reclassification status of delta smelt to endangered was found warranted but precluded by other higher-priority ESA listing actions (75 Fed. Reg. 17667).

Presence and abundance of delta smelt is strongly associated with salinities between 0 and 7 practical salinity units (PSU). The upper salinity tolerance for this species is 19 PSU, with a strong preference for habitat near or upstream of the 2 PSU isohaline. Delta smelt are not present in waters with temperatures over 25°C and are rarely found in water temperatures above 22°C. Spawning habitat is present in dead-end sloughs, near inshore areas of the Delta, and in willow freshwater channels of the Delta and Suisun Bay, all areas away from the action area. During the fall prior to spawning, delta smelt congregate in upper Suisun Bay and the lower reaches of the Delta. The spawning period is estimated to be from February to June. Delta smelt may prefer spawning over vegetation if present. However, they often deposit their eggs over submerged tree branches and stems, in open water over sandy and rocky substrate, or the shallower areas of Delta levees. Delta smelt eggs are demersal and adhesive, and newly hatched larvae float near the surface of the water with movements following tides and discharge. Sommer and Meija (2013) state that delta smelt are more commonly associated with lower salinities and higher turbidities, moderate temperatures, and some tidal influence (USACE 2015).

Larger juveniles and adults are most abundant during the spring and summer in Suisun Bay and the Delta, as evidenced from trawl and trap net catch data. Seasonal migrations occur within a short section of the upper estuary. Juvenile smelt move downstream to San Pablo Bay and Carquinez Strait before turning back to Suisun Bay or upstream sloughs for spawning. During average and high outflow years, delta smelt congregate from upper Suisun Bay to the Sacramento River near Decker Island. During low outflow and drought years, their pre-spawning congregations are centered in the channel of the Sacramento River and are rarely found further downstream in Suisun Bay (USACE 2015).

4.2.2 Existing Threats

Delta smelt are threatened by loss of estuarine habitat; entrainment during water diversion operations for the Central Valley Project, State Water Project, and the myriad of agricultural diversions; pulses of pesticides; food shortages; and predation by and competition from invasive species (Bennett 2005; SWCA 2009). In 2004, scientific monitoring of aquatic organisms and water quality in the San Francisco estuary revealed a synchronous decline of several pelagic fish species (delta smelt, longfin smelt, striped bass [*Morone saxatilis*], and threadfin shad [*Dorosoma petenense*]; Baxter et al. 2008). This pelagic organism decline is being investigated to better understand how stock-recruitment effects, declines in habitat quality, increased mortality rates, and reduced food availability due to invasive species may be working separately or cumulatively to cause pelagic organism decline.

4.2.3 Critical Habitat

Delta smelt critical habitat includes the Delta west to the Carquinez Bridge, which includes the action area.

4.3 Chinook Salmon (Central Valley Spring-Run Evolutionarily Significant Unit)

4.3.1 Species Description

The Central Valley spring-run ESU of Chinook salmon is one of four distinct runs of salmon that spawn in the Sacramento-San Joaquin River system. The Chinook was historically the most abundant salmon species in the Central Valley. Populations remain in some tributaries of the Sacramento River, including Butte, Mill, Deer, Antelope, and Beegum creeks, and the Yolo Bypass. In general, spring-run Chinook salmon are found in the Suisun Marsh/North San Francisco Bay, Delta, Sacramento River, Feather River/Sutter Basin, Butte Basin, and North Sacramento Valley Ecological Zones (CDFG 1998). Spring-run Chinook adults typically migrate upstream to spawn from April to October and spawn from August through October. Chinook alevins have been collected from Suisun Bay in January and February. Larger parr juveniles have been found from April to June. Juvenile life stages are commonly found inshore, in willow water, and throughout estuarine habitat. Some Chinook salmon delay their downstream migration until the early smolt stage. Juvenile outmigration peaks from May to June (USACE 2015).

4.3.2 Existing Threats

Factors that limit productivity of salmonid populations include periodic reversed flows due to high water exports (drawing juveniles into large diversion pumps); loss of fish into unscreened agricultural diversions; predation by introduced species; and reduction in the quality and quantity of rearing habitat due to channelization, pollution, riprapping, and other factors (Dettman et al. 1987; CACSST 1988; Kondolf et al. 1996a, 1996b as cited in NMFS 2006).

4.3.3 Critical Habitat

Central Valley spring-run ESU Chinook salmon critical habitat is present within the San Francisco-San Pablo-Suisun Bay complex. The action area does not include critical habitat for this species.

4.4 Steelhead (Central Valley Distinct Population Segment)

4.4.1 Species Description

The Central Valley DPS of steelhead includes all populations in the Sacramento and San Joaquin rivers and their tributaries. The current distribution ranges from Keswick Dam in the Upper Sacramento River to the Merced River in the San Joaquin River Basin, with distribution primarily limited by impassable dams. Anadromous adults of the Central Valley steelhead ESU make their upstream spawning migrations beginning in July (peaking in September and October) after residing in the ocean for 2 to 3 years. Spawning occurs from December through April. Spawning, incubation, and the majority of rearing occurs away from the action area. Juveniles reside in freshwater from 1 to 3 years, primarily near the surface and in the water column above the benthos when over deeper waters. Juveniles feed on diverse aquatic and terrestrial insects and other small invertebrates. Most juvenile Central Valley steelhead are found migrating through the San Francisco Bay and Delta during the spring, although outmigration occurs from December through August (USACE 2015).

4.4.2 Existing Threats

Factors that limit productivity of steelhead populations include periodic reversed flows due to high water exports (drawing juveniles into large diversion pumps); loss of fish into unscreened agricultural diversions; predation by introduced species; and reduction in the quality and quantity of rearing habitat due to channelization, pollution, riprapping, and other factors (Dettman et al. 1987; CACSST 1988; Kondolf et al. 1996a, 1996b as cited in NMFS 2006).

4.4.3 Critical Habitat

Central Valley DPS steelhead critical habitat includes the San Joaquin Delta Hydrological Unit, including the action area.

4.5 Longfin Smelt

4.5.1 Species Description

Longfin smelt, a small sized euryhaline and anadromous fish that was historically among the most abundant fish in the San Francisco estuary and the Delta, is a federal candidate species. Significant declines in longfin smelt abundance have occurred throughout its range during the past quarter century. Longfin smelt are distinguished by their long pectoral fins, which reach or nearly reach the base of their pelvic fins. They reach a maximum size of about 150 millimeters (total length) and reach maturity near the end of their second year. As they mature in the fall, adults found throughout San Francisco Bay migrate to brackish or freshwater in Suisun Bay, Montezuma Slough, and the lower reaches of the Sacramento and San Joaquin rivers. Spawning adults congregate at the upper end of Suisun Bay and in the lower and middle Delta, especially in the Sacramento River channel and adjacent sloughs (USACE 2015). Spawning occurs primarily from January through March, after which most adults die (CDFG 2009a). In April and May, juveniles are believed to migrate downstream to San Pablo Bay. Juvenile longfin smelt are collected throughout the Bay during the late spring, summer, and fall, and occasionally venture offshore as far as the Gulf of the Farallones. Juveniles typically inhabit the middle and lower portions of the water column (USACE 2015).

4.5.2 Existing Threats

The annual abundance of longfin smelt is significantly and positively correlated with the amount of freshwater flow during spawning and larval periods (Stevens and Miller 1983; Hieb and Baxter 1993; Jassby et al. 1995; Baxter 1999). Three factors have been identified as potentially responsible for this significant correlation: 1) a reduction in predation during high flows; 2) increased habitat availability that may improve survival by reducing intraspecies competition; and 3) an increase in nutrients stimulating the base of the food chain (Stevens and Miller 1983). However, the relationship changed to substantially lower longfin smelt abundance after the introduction of the invasive Amur River clam in the late 1980s. This corresponded with a decline in phytoplankton and zooplankton abundance due to grazing by the Amur River clam (Bennett et al. 2002). Other introduced species such as striped bass and inland silversides have had an impact on longfin smelt populations due to predation (CDFG 2009b). In 2004, numbers of longfin smelt (along with other pelagic species, including delta smelt, striped bass, and threadfin shad) exhibited a sharp decline in abundance that continues to the present. The pelagic organism decline phenomenon is currently under investigation to better understand how stock-recruitment effects, declines in habitat quality, increased mortality rates, and reduced food availability due to invasive species may be working separately or together to contribute to declining abundance of longfin smelt and other pelagic species.

4.6 Essential Fish Habitat

The Magnuson-Stevens Act was enacted to maintain healthy populations of commercially important fish species. Under the Magnuson-Stevens Act, the eight regional Fishery Management Councils are responsible for developing FMPs to manage these species. The 1996 provisions to the Magnuson-Stevens Act included protecting the habitats of species for which there is an FMP; these habitats are designated as EFH. EFH is defined as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity" (United States Code 1802). EFH can consist of both the water column and the underlying surface (e.g., seafloor) of a particular area, and it includes those habitats that support the different life stages of each managed species. A single species may use many different habitats throughout its life to support breeding, spawning, nursery, feeding, and protection functions. The action area is within the EFH for Pacific salmon and Pacific groundfish.

The Pacific salmon FMP includes Chinook and coho salmon (*O. kisutch*) and occasionally includes pink salmon (*O. gorbuscha)*, sockeye (*O. nerka*), and chum (*O. keta*). The Pacific groundfish FMP is designed to protect habitat for more than 90 species of fish, including rockfish, flatfish, groundfish, some sharks and skates, and other species that associate with the underwater substrate (e.g., rocky and soft substrates).

5 Environmental Baseline

This section describes habitats present in the action area and identifies recorded occurrences of special status species. Existing uses of the action area are also described. The environmental baseline provides information necessary to determine whether the proposed action would jeopardize the continued existence of species being considered, and whether the proposed action can support long-term survival of these species in the action area.

5.1 Action Area Habitats

The structures and features within the action area are described in detail in Section 2.1. As described, the turning basin and Stockton DWSC are maintained to a depth of -35 feet mean lower low water. The action area includes the bank of the San Joaquin River below Berth 2 and immediately west of the existing wooden rail trestle as well as a small area of shoreline developed with berthing infrastructure or armored with rock riprap. Mud and silt characterize the channel substrate. Low dissolved oxygen levels and high water temperatures characterize the water quality during the late summer and early fall. Water quality monitoring and elutriate toxicity testing results from past Port maintenance dredging sediment characterization efforts have not indicated toxicity concerns (ERS 2012, 2013) for sediments within the action area.

5.2 Aquatic Special Status Species and Habitats in the Action Area

This section describes the potential presence of federally listed aquatic special status species and habitats (critical habitat and EFH) within the action area during the proposed in-water work window of July 1 through November 30. Potential species presence has been determined based on recorded occurrences in or near the action area (including fish surveys) and based on species habitat requirements and distribution trends. Fish surveys have been completed during previous O&M dredging episodes completed by USACE (USACE 2015; ICF 2019) and as part of CDFW's FMWT Program (CDFW 2019b). These surveys are described as follows:

- **USACE Entrainment and Community Monitoring.** USACE has conducted entrainment and community monitoring during annual O&M dredging of the Stockton and Sacramento DWSCs since 2005 (USACE 2015; ICF 2019). Monitoring occurs at dredging locations throughout the Stockton and Sacramento DWSCs, which change annually, as well as at dredged material placement sites. Monitoring locations are detailed in the entrainment and community monitoring reports from each respective year. Monitoring methods include bottom trawling against the current to monitor the fish community in the active dredge area, and entrainment monitoring using a mobile entrainment monitoring screen. Monitoring requirements are focused on state and federally listed threatened and endangered species, as well as CDFW species of special concern, although all fish encountered were counted and identified to the species level (with some exceptions). USACE entrainment and community monitoring within the action area has occurred at the Stockton DWSC turning basin and adjacent to Rough and Ready Island. No federally listed special status species have been encountered during USACE surveys at these locations.

- **CDFW FMWT.** CDFW's FMWT began in 1967 and has sampled every year except 1974 and 1979 (Stevens and Miller 1983; Feyrer et al. 2007; CDFW 2019b). The FMWT samples at more than 100 stations from San Pablo Bay landward into the Delta. Each station is typically sampled once per month from September through December. The FMWT was designed to index the year-to-year relative abundance of juvenile (age 0) striped bass (*Morone saxatilis*; Stevens and Miller 1983). However, all captured species are identified and measured and the FMWT has become a long-term indicator of population trajectories for several small, pelagic fish, including delta smelt (Moyle et al. 1992; Sommer et al. 2007). FMWT sampling methods are less likely to encounter mature individuals of larger species such as green sturgeon, salmonids, and striped bass.

  FMWT review was focused on the two stations nearest the action area: stations 911 (immediately downstream of Roberts Island, outside the action area) and 912 (adjacent to Port Dock 20, outside of the action area). Very few special status species have been encountered at these locations during the FMWT during the proposed July through November work window; species encountered include two delta smelt, one longfin smelt, and 13 Chinook salmon (ESU not specified). No steelhead or green sturgeon have been encountered, although the FMWT is less likely to catch adult individuals of these species due to their size.

5.2.1 Southern Distinct Population Segment of Green Sturgeon

Within the action area at monitoring stations adjacent to Rough and Ready Island or within the turning basin and during the proposed in-water construction window of July 1 through November 30, green sturgeon were not encountered during entrainment and community monitoring by USACE. Green sturgeon have, however, been encountered elsewhere in the Stockton DWSC (outside of the action area) during entrainment and community monitoring by USACE (USACE 2015). Between 2005 and 2014, four green sturgeon individuals were encountered during community monitoring (none were entrained) at Decker and Bradford islands, more than 21 miles northwest of the action area. Prior to 2005, no green sturgeon had ever been documented in the San Joaquin River or its tributaries, although there is not sufficient information to establish whether the San Joaquin River system has historically supported a viable green sturgeon population (NMFS 2005).

Based on past historical conditions, monitoring data, and this species' characteristics, there exists a small potential for green sturgeon to be present in the action area during the in-water construction window.

5.2.2 Delta Smelt

At stations nearest to the action area (i.e., FMWT stations 911 and 912) and during the proposed in-water construction window of July 1 through November 30, two delta smelt have been encountered during the FMWT, and no delta smelt have been encountered during entrainment and community monitoring by USACE in the Stockton DWSC adjacent to Rough and Ready Island or within the turning basin. Delta smelt have, however, been encountered in greater abundances during surveys throughout the Sacramento and Stockton DWSCs (outside of the action area). Between 2005 and 2014, 52 individuals were encountered during USACE entrainment and community monitoring near the Antioch Bridge, Decker Island, and the Sacramento DWSC, more than 21 miles northwest of the action area. Since 2010, 473 individuals have been encountered during the FMWT, with the nearest delta smelt encountered at sampling station 807 near Big Break, approximately 22 miles west of the action area.

The currently authorized work window for delta smelt is from August 1 to November 30, which largely overlaps with the July 1 to November 30 in-water work window for the proposed action. Delta smelt typically spawn in Suisun Bay during late June and early July after moving downstream from the upper estuary (Solano County 2012). After hatching, larvae are dispersed throughout low salinity habitats, generally moving into Suisun Bay, Montezuma Slough, and upriver to the lower Sacramento River below Rio Vista as they mature (U.S. Department of the Interior 2008). Water clarity and water temperature conditions are unfavorable for delta smelt in the central and southern Delta during the summer (Nobriga et al. 2008; Sommer et al. 2011). Based on past monitoring data and this species' characteristics and the proposed in-water work window, delta smelt are highly unlikely to be present in the action area during the in-water construction window.

5.2.3 Chinook Salmon (Central Valley Spring-Run Evolutionarily Significant Unit)

At stations nearest to the action area (i.e., FMWT stations 911 and 912) and during the proposed in-water construction window of July 1 through November 30, 13 Chinook salmon have been encountered during the FMWT, and no Chinook salmon have been encountered during entrainment and community monitoring by USACE within the Stockton DWSC adjacent to Rough and Ready Island or within the turning basin. Very few additional Chinook salmon have been discovered during USACE entrainment and community monitoring throughout the Stockton and Sacramento DWSCs. A single dead Chinook (of unknown ESU) was encountered during community monitoring in 2011 and a hatchery fall-run fish was encountered during community monitoring in 2012 (USACE 2015).

The currently authorized work window for Chinook salmon is from June 1 to November 30. Based on the past monitoring data and the fact that the proposed work window overlaps with the currently authorized work window for this species, this species is highly unlikely to be present in the action area during the in-water construction window.

5.2.4 Steelhead (Central Valley and Central Coast Distinct Population Segments)

No steelhead have been encountered during entrainment and community monitoring by USACE. The currently authorized work window for steelhead is from June 1 to November 30. However, steelhead have been observed as occurring in the San Joaquin River outside their typical migration period (Hampton 2018). Based on the past monitoring data and the fact that the proposed work window overlaps with the currently authorized work window for this species, there exists a very small potential for this species to be present in the action area during the in-water construction window.

5.2.5 Longfin Smelt

At stations nearest to the action area (i.e., FMWT stations 911 and 912) and during the proposed in-water construction window of July 1 through November 30, one longfin smelt has been encountered during the FMWT, and no longfin smelt have been encountered during entrainment and community monitoring by USACE within the Stockton DWSC adjacent to Rough and Ready Island or within the turning basin. Longfin smelt have, however, been encountered in greater abundances during surveys throughout the Sacramento and Stockton DWSCs (outside of the action area). Between 2005 and 2014, 919 individuals were encountered during USACE entrainment and community monitoring near the Antioch Bridge, Decker Island, and the Sacramento DWSC, more than 21 miles northwest of the action area. Since 2010, 643 individuals have been encountered during the FMWT, with the nearest longfin smelt encountered at sampling station 807 near Big Break, approximately 22 miles northwest of the action area.

Based on the past monitoring data and this species' characteristics, this species is highly unlikely to be present in the action area.

5.2.6 Pacific Salmon Fisheries Management Plan

As described, the action area is within the EFH for Pacific salmon. The Pacific salmon FMP includes Chinook and coho salmon and occasionally includes pink salmon (*O. gorbuscha*), sockeye (*O. nerka*), and chum (*O. keta*).

At stations nearest to the action area (i.e., FMWT stations 911 and 912) and during the proposed in-water construction window of July 1 through November 30, 13 Chinook salmon have been encountered during the FMWT, and no Chinook salmon have been encountered during entrainment and community monitoring by USACE. No other Pacific salmon FMP species have been encountered during entrainment and community monitoring by USACE or during the FMWT. For the same reasons as those noted for Chinook salmon, there exists a very small potential for Pacific salmon FMP species to occur in the action area during the proposed in-water construction window.

5.2.7 Pacific Groundfish Fisheries Management Plan

As described, the action area is within the EFH for Pacific groundfish. The Pacific groundfish FMP is designed to protect habitat for more than 90 species of fish, including rockfish, flatfish, groundfish, some sharks and skates, and other species that associate with the underwater substrate.

No Pacific groundfish FMP species were encountered during entrainment and community monitoring by USACE within the Stockton DWSC adjacent to Rough and Ready Island or within the turning basin. Although the action area occurs within EFH for Pacific groundfish, it is very unlikely that any Pacific groundfish species are present in the action area.

6 Potential Effects of the Proposed Action

The proposed action, including the in-water and upland improvements, would result in a minor increase in vessels calling on Berth 2, but would not otherwise alter in-water operations within the action area. Therefore, impacts from the proposed action would largely be temporary and limited to within the proposed annual in-water work window of July 1 through November 30. Long-term adverse changes would be limited to modest loss of benthic habitat from pile installation and minor increases in vessel traffic. The proposed action would result in a permanent minor decrease in overwater shading, which may enhance aquatic vegetation productivity, benefitting special status fish species.

6.1 Aquatic Special Status Species Effects

Aquatic species potentially present in the action area may experience impacts from construction-related water quality impacts (e.g., turbidity, sediment suspension, pollutant dispersion, or accidental spills), underwater noise, impediment of localized movement, loss of benthic habitat, and increased vessel traffic. A general description of these impacts and their effects on aquatic species is provided in the following subsection and includes consideration of interrelated actions. Special status species and habitat-specific impact evaluations are provided under their respective headings.

6.1.1 Effects Common to All Aquatic Species

6.1.1.1 Construction-related Water Quality Impacts (Turbidity, Suspended Sediments, Pollutant Dispersion, and Accidental Spills)

Pile driving may temporarily disturb benthic sediments and increase turbidity and suspended sediment levels in the immediate vicinity of the action area during construction. Turbidity resulting from construction may affect marine organisms and aquatic wildlife during various life stages by affecting respiration (clogging gills), reducing visibility and the ability to forage or avoid predators, and altering movement patterns (due to avoidance of turbid waters). Suspended sediments have been shown to affect fish behavior, including avoidance responses, territoriality, feeding, and homing behavior. Generally, bottom-dwelling fish species are the most tolerant of suspended solids, and filter feeders are the most sensitive. Motile organisms can generally avoid unsuitable conditions in the field.

Increases in turbidity and suspended sediment levels from of pile driving would be substantially less significant than similar effects from regular USACE and Port maintenance dredging in the action area. The USACE Waterways Experiment Station Technical Report DS-78-5 (Hirsch et al. 1978), *Effects of Dredging and Disposal on Aquatic Organisms*, states that: “Most organisms tested are very resistant to the effects of sediment suspensions in the water, and aside from natural systems requiring clear water such as coral reefs and some aquatic plant beds, dredging induced turbidity is not a major ecological concern." Proposed turbidity and suspended sediment effects to fish from pile driving are expected to be less than these minor effects from dredging.

Pile driving has the potential to release sediment-associated metals and other pollutants by dispersion within the resulting sediment plume. Water quality monitoring and elutriate toxicity testing results from past Port maintenance dredging sediment characterization efforts have not indicated toxicity concerns (ERS 2012, 2013; Anchor QEA 2017) for sediments within the action area. Impacts to fish from uptake of pollutants in disturbed sediment is therefore not anticipated.

Construction has the potential to result in accidental spills, if improperly managed. Various contaminants, such as fuel oils, grease, and other petroleum products used in construction activities, could be introduced into the system either directly or through surface runoff. Contaminants may be toxic to fish or cause altered oxygen diffusion rates and acute and chronic toxicity to aquatic organisms, thereby reducing growth and survival. To ensure that contaminants are not accidentally introduced into the waterway, the Port would require the contractor to adhere to the water quality BMPs noted in Section 3.6.

6.1.1.2 Underwater Noise

Underwater noise from construction, particularly from pile installation, has the potential to adversely affect fish. Comprehensive bioacoustics modeling was performed to identify proposed action impact radiuses (for injury and behavior effects) from impact pile driving and to assess potential impacts to special status fish species (Appendix C).

As detailed in the preceding section, delta smelt and longfin smelt are not anticipated to be present in the action area and would therefore not be affected by impact pile driving noise. Similarly, impacts to salmonids (steelhead and salmon) would be avoided by conducting any impact pile driving during the proposed July 1 to November 30 work window, when these species are not expected to be present. Although some steelhead may migrate early, their likelihood of occurring in the action area during construction remains very low and would be confined to the latter portion of the in-water construction window.

There is a small potential for green sturgeon to be present in the action area during pile driving, and there is very low risk for green sturgeon injury from pile driving. These impacts are discussed in greater detail in the Bioacoustics Evaluation (Appendix C), and in Section 6.1.2.

6.1.1.3 Localized Movement and Migration

Proposed action construction, primarily pile driving, may impeded localized movement or migration of special status fish (if present). This would be limited to impediment within the action area depicted in Figure 2; passage within the San Joaquin River north of the action area would remain unaffected, and fish would therefore remain able to move up and downstream. As described in Section 5.2, most federally listed fish species are unlikely to be present in the action area during construction and impacts to movement and migration therefore are not anticipated. Green sturgeon, however, have a low to moderate potential to occur; therefore, pile driving may temporarily impede their movement or migration. This would include displacement from within the action area during pile driving. There is also a very small potential for early migrating steelhead to be present, although such presence would be confined to the latter portion of the in-water construction window. Impacts specific to these two species are provided in Sections 6.1.2 and 6.1.5, respectively.

6.1.1.4 Loss of Benthic Habitat

Benthic habitat can provide important foraging areas for special status species, especially for steelhead, Chinook salmon, green sturgeon, and longfin smelt, which forage in the benthos. Because delta smelt feed in the water column, benthic habitat is less important for this species. During construction, benthic habitat in the action area would be largely unavailable for fish foraging. Some permanent loss of benthic habitat would also result from installation of piles (280.38 square feet [sf] of permanent loss).

Recent examination of benthic invertebrate communities in the Stockton and Sacrament DWSCs shows strong dominance of Asian clams (USACE 2015), which are a less favorable prey species. Additionally, the benthic environment in the action area has been severely impacted by historic Port and military operations, USACE O&M dredging of the Stockton DWSC, and urban development throughout the City of Stockton. It is therefore unlikely to offer high-quality foraging opportunities to special status species.

Following sediment-disturbing activities such as pile driving, disturbed areas are usually recolonized quickly by benthic organisms (Newell et al. 1998). However, permanent loss of benthic habitat would occur from installing permanent piles (loss of 280.38 sf). Given the small areas of permanent and temporary benthic impact and the San Joaquin River's disturbed conditions, impacts to benthic habitat are unlikely to adversely affect special status fish species. Furthermore, the proposed piles would provide additional encrusting habitat, which may support fish foraging.

6.1.1.5 Increased Vessel Traffic

The proposed action would result in a minor increase in the number of vessels calling on Berth 2, although changes to the size or type of vessels are not anticipated. Currently, a number of additional vessels calling on the Port pass by the action area to use the adjacent turning basin. The minimal increase in vessel traffic at Berth 2 resulting from the proposed action would have a negligible effect on aquatic habitat when accounting for existing fluctuations in vessel traffic from ships using the existing Berth 2 and the turning basin. In addition, adverse environmental effects from propeller wash and vessel strikes are not among the primary existing threats identified for fish evaluated in this document. Therefore, operational changes associated with the proposed action are unlikely to result in adverse impacts.

6.1.1.6 Interrelated Actions

USACE conducts annual O&M dredging in the Stockton DWSC, and the Port conducts regular maintenance dredging of its docks within the action area. It is anticipated that these dredging projects would have similar impacts as the proposed action in terms of effects related to construction water quality impacts and localized movement. Maintenance dredging would have nominal underwater noise impacts (similar to existing vessel activity in the channel) and would not result in permanent shading or loss of benthic habitat. Maintenance dredging may also potentially result in special status fish species entrainment. When considered cumulatively with the proposed action, these impacts are not anticipated to adversely affect aquatic special status species or habitats.

USACE and the Port use the same dredging contractor, so dredging of the Stockton DWSC and Port docks does not overlap. In the unlikely event that either USACE or Port maintenance dredging is conducted concurrently with the proposed action, maintenance dredging may result in construction water quality, underwater noise, or localized movement impacts that overlap with the effects of the proposed action. Similar to the proposed action, all maintenance dredging would be conducted with environmental controls to limit these effects. Generally, logistical constraints (e.g., vessel movement and placement of the dredge pipeline) would preclude a dredge and dock construction equipment from working in close proximity to each other, and the potential for overlapping effects is therefore significantly reduced. Dredge plumes are typically confined to the 300-foot mixing zone, and underwater noise from dredging would be minor and comparable to small vessel activity in the channel.

Given the likely timing differences and logistical challenges to working in the same area, maintenance dredging is unlikely to contribute to cumulative direct construction impacts to special status fish or habitats from concurrent project construction.

6.1.2 Southern Distinct Population Segment Green Sturgeon

As described in Section 5.2.1, recent monitoring data suggest that green sturgeon have a low potential to be present in the action area. There is currently no work window approved for green sturgeon, and this species is presumed to be present throughout the Delta year-round. As with other fish species, green sturgeon (if present) may be temporarily affected by construction water quality impacts. These impacts would be short-term and minor. Turbidity impacts to fish are generally not regarded as major, and BMPs would be implemented to avoid or minimize water quality impacts.

In-water construction would temporarily impact potential low-quality green sturgeon foraging habitat, and pile installation would remove a very small area of benthic habitat (280.38 sf). Construction impacts would be short-term and localized, and any impacted benthic areas would be recolonized following construction. Although minor loss of benthic habitat would occur, it is anticipated that the additional encrusting habitat provided by the proposed piles would offset any loss of foraging opportunities. The proposed action would also result in a decrease in overwater coverage, which may encourage growth of aquatic vegetation potentially used for foraging.

Green sturgeon movement within or migration through the action area would be temporarily impeded by construction of the proposed action. However, the remainder of the San Joaquin River would remain available for this species, and habitat in the action area is generally low value compared to the larger Delta ecosystem. The northern portion of the Stockton DWSC and San Joaquin River would remain unaffected by proposed action activities (i.e., they would be outside of action area), and passage past the action area would remain possible. Given these conditions and the temporary duration of construction, effects on green sturgeon migration and movement are anticipated to be minimal.

As detailed in the bioacoustics evaluation (Appendix C), there is a very low potential for green sturgeon occurrence within the onset of physical injury zones during the pile driving period. This would likely be limited to transitory presence during migration or foraging. The potential risk of injury and mortality from pile driving to green sturgeon that may be present is extremely low, and behavioral effects would be negligible. These conclusions are based on the small area of effect, the limited duration of construction, the availability of suitable habitat in surrounding areas, the mobility of green sturgeon, and in consideration of soft-start techniques for impact pile driving (as described in Section 3.6) that would encourage any individual fish within the action area to flee to adjacent suitable habitat.

In summary, there is a low potential for any green sturgeon to be transitorily present within the small action area during the temporary construction period. If present, green sturgeon may experience negligible effects from increased turbidity, loss of foraging opportunities, and impediment of movement during in-water construction. The very low potential for pile driving noise to result in injury of green sturgeon that may be transitorily present in the action area would be avoided or minimized through implementing soft-start techniques (see Section 3.6). As noted, minor loss of benthic habitat would be offset by the increase in foraging opportunities from newly created encrusting habitat and decrease in overwater shading. Operational changes, including minor increases in vessel traffic, would be negligible compared to typical existing fluctuations, and vessel activity is not a primary threat to green sturgeon. Therefore, the proposed action *may affect but is not likely to adversely affect* green sturgeon and green sturgeon critical habitat.

6.1.3 Delta Smelt

An in-water construction work window of July 1 through November 30 is proposed for the proposed action, which largely overlaps with the existing authorized work window for delta smelt (August 1 through November 30). As described in Section 5.2.2, recent monitoring data suggest that delta smelt are highly unlikely to be present in the action area during the proposed work window.

Temperatures in the action area would also be unsuitable for this species. Therefore, delta smelt are unlikely to be affected by temporary construction impacts to water quality, underwater noise, or localized movement. Although installing piles would remove a very small area of benthic habitat and displace associated species (both permanently and temporarily), delta smelt do not forage in the benthos. Furthermore, the proposed piles would provide additional encrusting habitat, which could benefit fish foraging. Therefore, removal of benthic habitat is unlikely to affect this species. Operational changes, including minor increases in vessel traffic, would be negligible compared to typical existing fluctuations, and vessel activity is not a primary threat to delta smelt.

In summary, the proposed action is unlikely to affect delta smelt during construction or result in permanent impacts that would adversely affect this species or its critical habitat. Therefore, it is anticipated that the proposed action *may affect but is not likely to adversely affect* delta smelt or delta smelt critical habitat.

6.1.4 Chinook Salmon (Central Valley Spring-Run Evolutionarily Significant Unit)

An in-water construction window of July 1 through November 30 is planned for the proposed action, which overlaps with the established work window for Chinook salmon (June 1 through November 30). By complying with this existing work window, Chinook salmon are unlikely to be affected by temporary construction impacts to water quality, underwater noise, or localized movement. Installing piles would permanently remove a very small area of benthic habitat, which may function as low-quality Chinook salmon foraging habitat. However, it is anticipated that the additional encrusting habitat provided by the proposed piles would offset any loss of foraging habitat. The decrease in overwater coverage may also promote aquatic vegetation growth, which could also improve foraging conditions. Operational changes, including minor increases in vessel traffic, would be negligible compared to typical existing fluctuations, and vessel activity is not a primary threat to salmonids.

In summary, the proposed action is unlikely to affect Chinook salmon during construction or result in permanent impacts that would adversely affect this species or its critical habitat. Therefore, it is anticipated that the proposed action *may affect but is not likely to adversely affect* Central Valley spring-run ESU Chinook salmon. Central Valley spring-run ESU Chinook salmon critical habitat, which is outside the action area, would be unaffected.

6.1.5 Steelhead (Central Valley Distinct Population Segment)

An in-water construction work window of July 1 through November 30 is planned for the proposed action, which overlaps with the established work window for steelhead (June 1 through November 30). By complying with this existing work window, steelhead are unlikely to be affected by temporary construction impacts to water quality, underwater noise, or localized movement. The likelihood of early migration during the proposed in-water construction window remains extremely low. As with Chinook salmon, there may be negligible loss of low-quality benthic foraging habitat from installing piles, which would be offset by the addition of encrusting habitat provided by piles and aquatic vegetation growth benefits from decreased overwater shading. Operational changes, including minor increases in vessel traffic, would be negligible compared to typical existing fluctuations, and vessel activity is not a primary threat to salmonids.

Therefore, it is anticipated that the proposed action *may affect but is not likely to adversely affect* Central Valley DPS steelhead and its critical habitat.

6.1.6 Longfin Smelt

As described in Section 6, longfin smelt are highly unlikely to be present in the action area during the proposed in-water work window (USACE 2015). Although there is currently no work window approved for longfin smelt, most of the population is concentrated in the Suisun, San Pablo, and Central bays, as well as nearshore waters, during the summer months when in-water construction would occur. The nearest occurrence of this species since 2010 was more than 22 miles away. Therefore, longfin smelt are unlikely to be affected by temporary construction impacts to water quality, underwater noise, or localized movement. Permanent loss of benthic foraging habitat from installing piles may negligibly affect longfin smelt foraging, which would be offset by establishment of pile encrusting habitat and aquatic vegetation growth benefits from decreased overwater shading. Operational changes, including minor increases in vessel traffic, would be negligible compared to typical existing fluctuations, and vessel activity is not a primary threat to longfin smelt.

Therefore, it is anticipated that the proposed action *may affect but is not likely to adversely affect* longfin smelt. Note that longfin smelt remains a federal candidate species.

6.1.7 Essential Fish Habitat (Pacific Salmon and Pacific Groundfish)

As described in Section 6, no Pacific groundfish FMP species were encountered during the 2014 entrainment and community monitoring by USACE (USACE 2015). Therefore, there is a very low likelihood of Pacific groundfish EFH species occurrence in the action area, and they are unlikely to be affected by temporary construction impacts or negligible permanent loss of benthic habitat.

In the case of Pacific salmon species, construction impacts to Chinook salmon would be avoided by confining in-water work to the July 1 to November 30 work window, and permanent habitat impacts would be limited to legible loss of benthic habitat and minor increases in vessel traffic, which would be negligible compared to typical existing fluctuations. Any non-Chinook Pacific salmon potentially present during construction would incur similar effects as green sturgeon. This includes negligible effects from increased turbidity and from loss of foraging opportunities during in-water construction;

minor effects from impeding movement within or through the action area during construction; and low to moderate potential for pile driving noise to result in injury of Pacific salmon individuals that may be transitorily present in the action area. Given the low abundances of Pacific salmon potentially present in the action area during construction and the limited extent of permanent impacts, the proposed action is expected to have temporary and minimal effects on Pacific salmon EFH.

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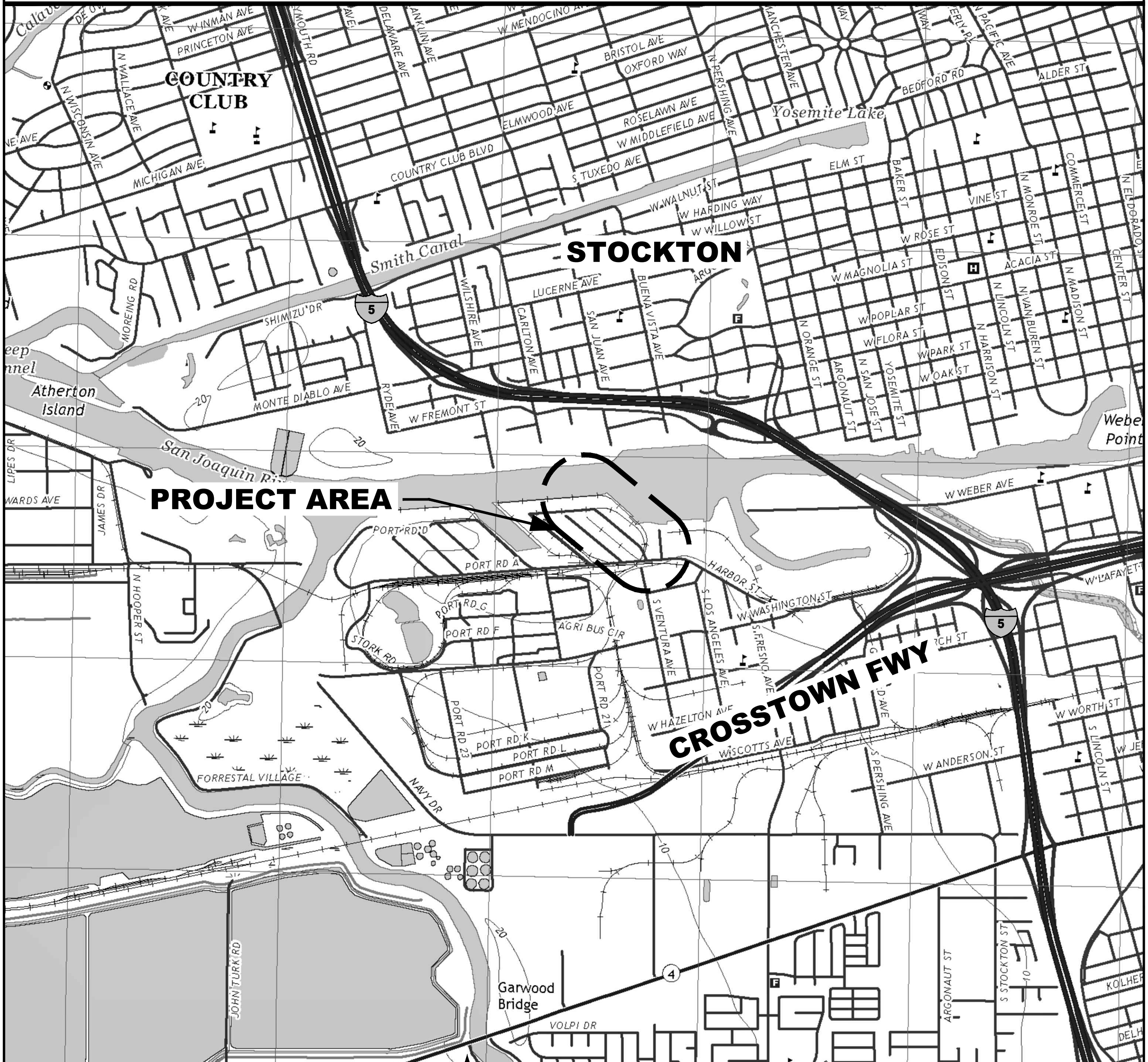
Appendix A
Project Figures



N

VICINITY MAP

SCALE 1"=2000'

0 2000' 4000'

SCALE 1"=2000'

BACKGROUND IMAGE SOURCE:
USGS STOCKTON WEST QUADRANGLE
CALIFORNIA 7.5-MINUTE SERIES (2018)

EDG DOCUMENT NO: 7473103-70215-00501 REV A

FILE #: NAN-

APPLICANT: LEHIGH SOUTHWEST STOCKTON

ADJACENT PROPERTY OWNERS:

1. WILMAR OILS AND FATS LLC
2. PENNY NEWMAN GRAIN CO.
3. PORT OF STOCKTON, CA.

LOCATION: 205 PORT ROAD 1
STOCKTON, CA 95203

NEAR. INT: PORT RD 1 & PORT RD A

PARCEL#: PARCEL 1, 2 & 3

LAT/LONG: 37°56'56"N, 121°19'7"W

PAGE: 1 of 9 DATE: 10/14/2019

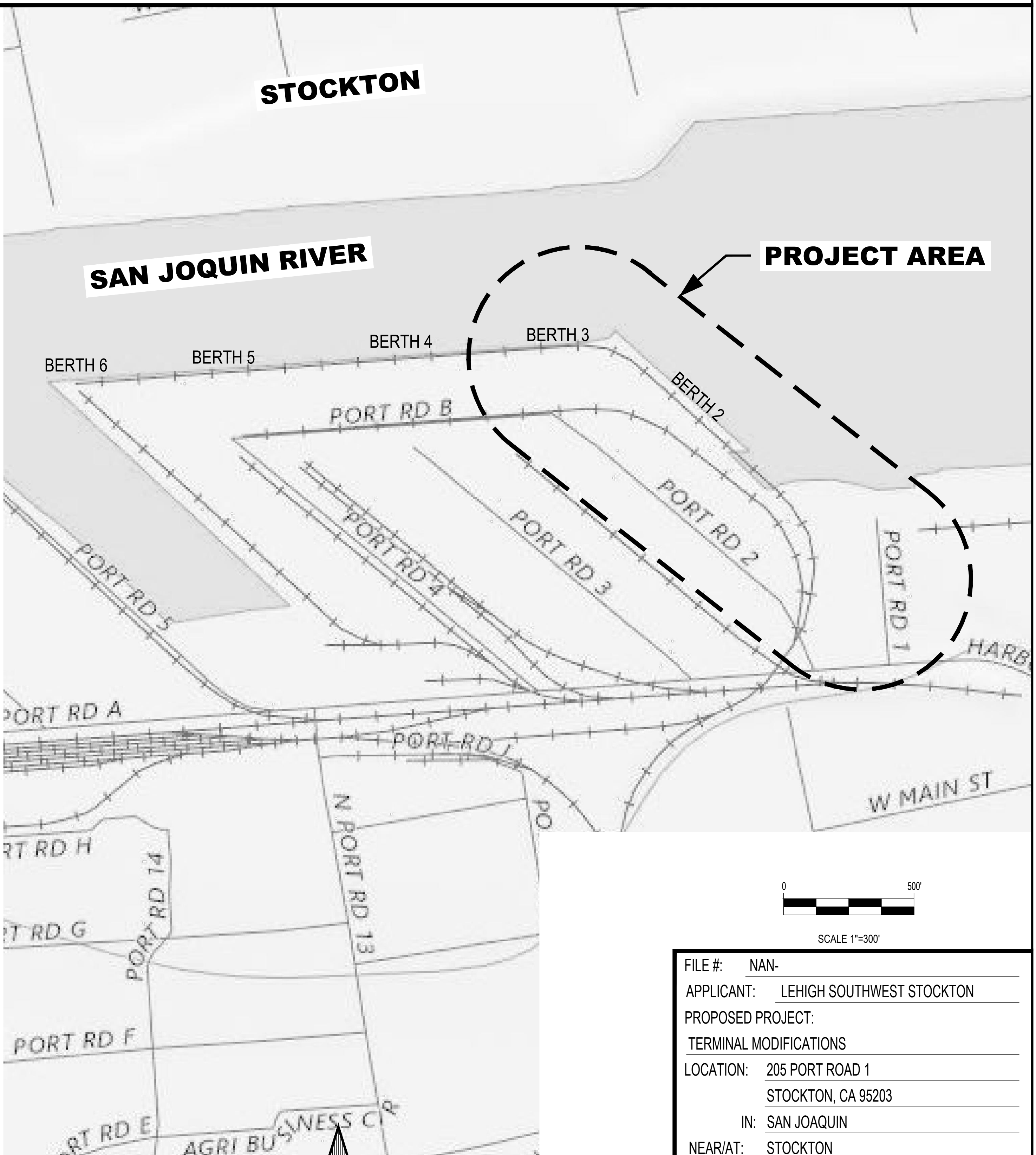
PROPOSED PROJECT:
TERMINAL MODIFICATIONS

IN: SAN JOAQUIN RIVER

NEAR/AT: STOCKTON

COUNTY: SAN JOAQUIN

STATE: CALIFORNIA

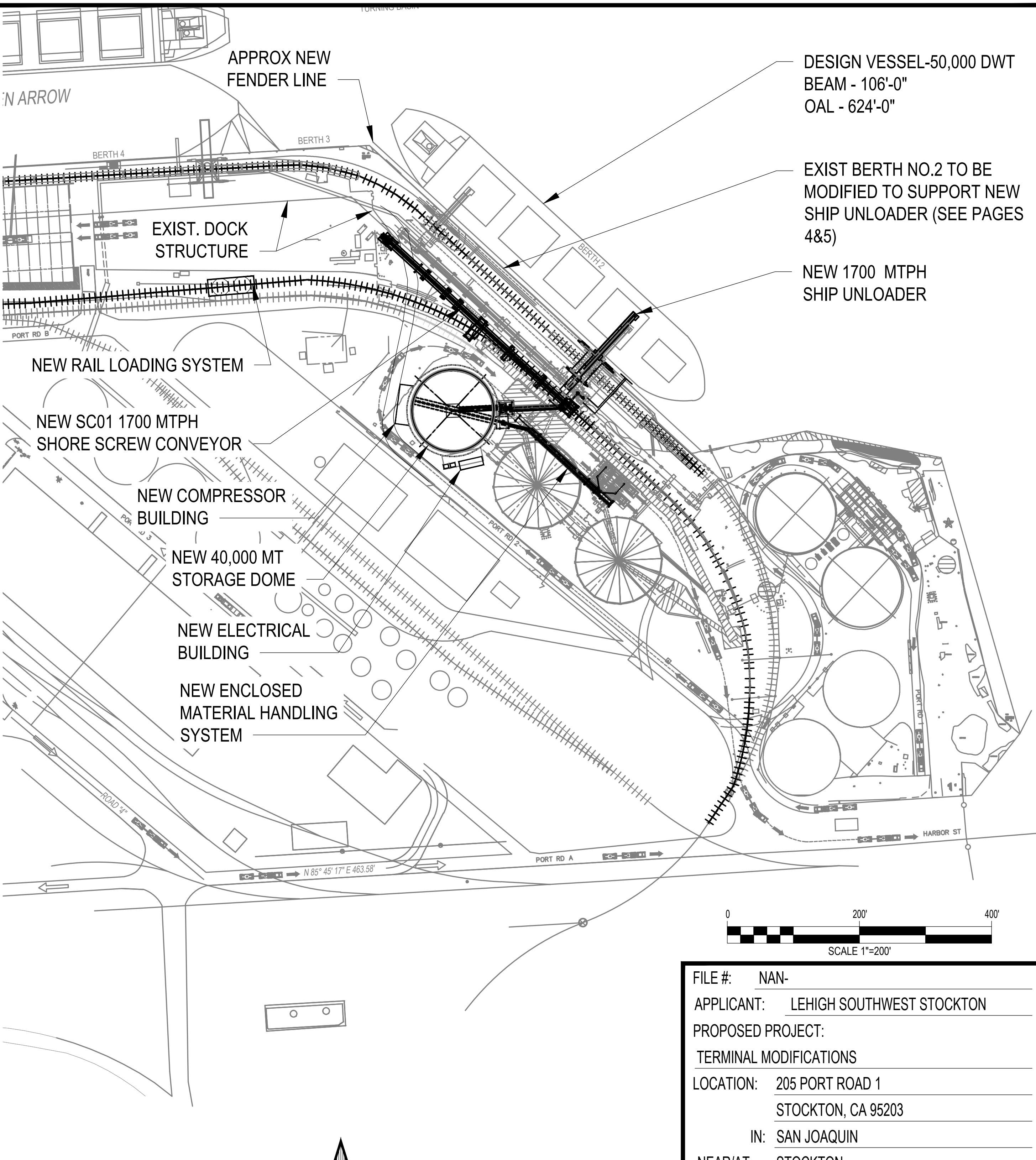


AREA MAP

SCALE 1"=300'

FILE #:	NAN-
APPLICANT:	LEHIGH SOUTHWEST STOCKTON
PROPOSED PROJECT:	
TERMINAL MODIFICATIONS	
LOCATION:	205 PORT ROAD 1
	STOCKTON, CA 95203
IN:	SAN JOAQUIN
NEAR/AT:	STOCKTON
COUNTY:	SAN JOAQUIN
STATE:	CALIFORNIA
PAGE: 2 of 9	DATE: 10/14/2019

EDG DOCUMENT NO: 7473103-70215-00502 REV A



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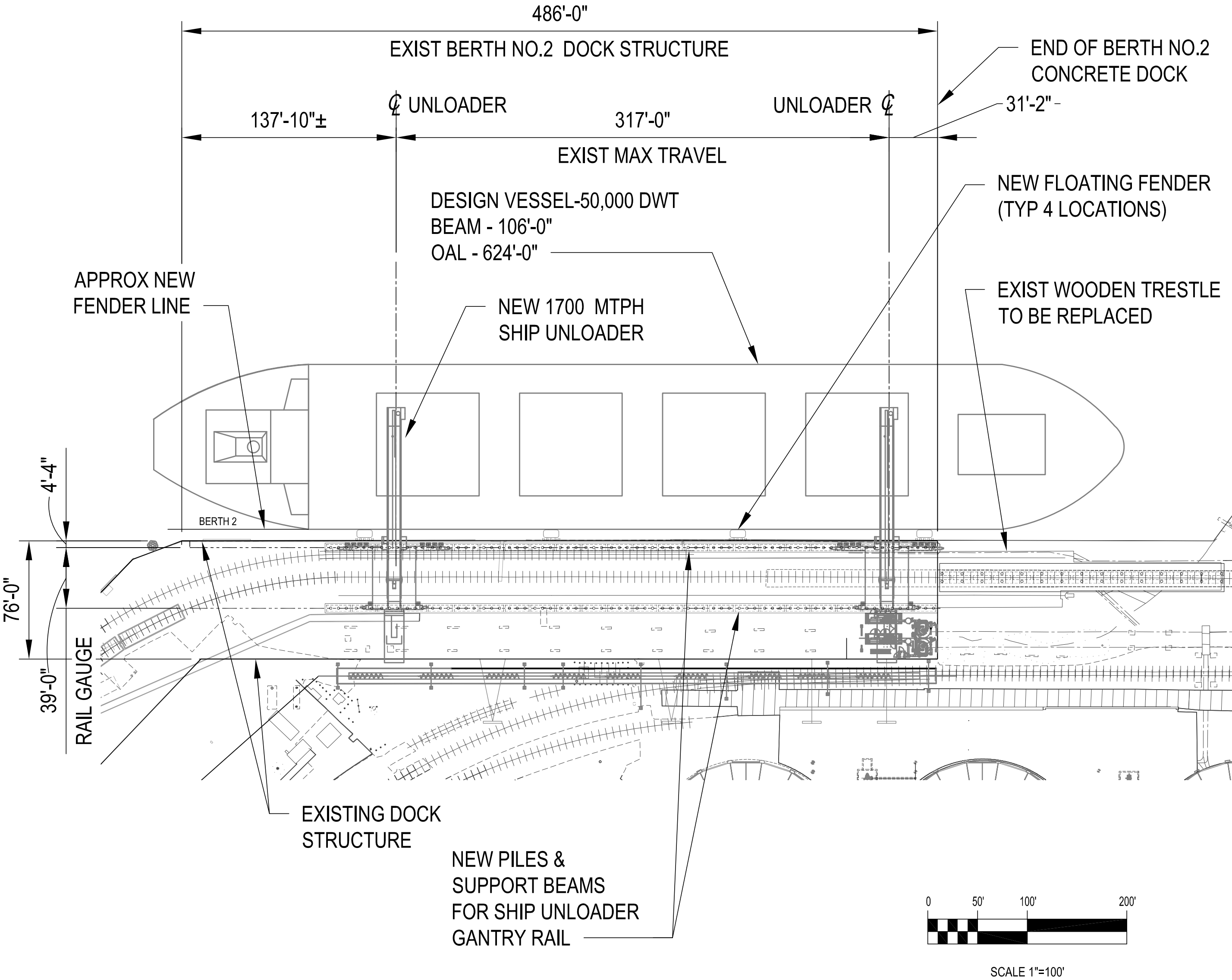
PROJECT SITE PLAN

SCALE 1"=200'

EDG DOCUMENT NO: 7473103-70215-00503 REV A

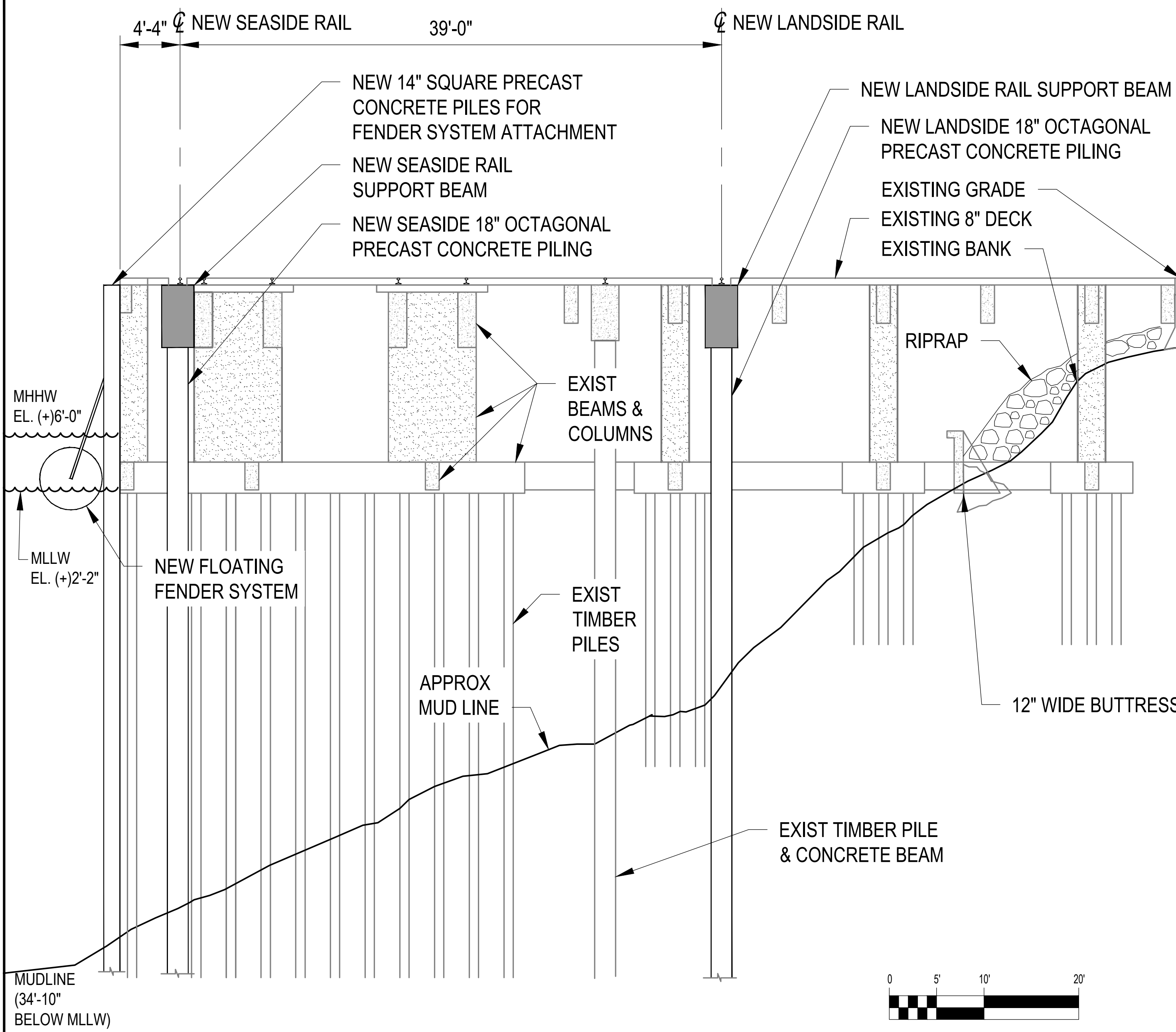
FILE #:	NAN-
APPLICANT:	LEHIGH SOUTHWEST STOCKTON
PROPOSED PROJECT:	
TERMINAL MODIFICATIONS	
LOCATION:	205 PORT ROAD 1
	STOCKTON, CA 95203
IN:	SAN JOAQUIN
NEAR/AT:	STOCKTON
COUNTY:	SAN JOAQUIN
STATE:	CALIFORNIA
PAGE: 3 of 9	DATE: 10/14/2019



PLAN AT BERTH NO. 2
SCALE 1"=100'

EDG DOCUMENT NO: 7473103-70215-00504 REV A

FILE #:	NAN-
APPLICANT:	LEHIGH SOUTHWEST STOCKTON
PROPOSED PROJECT:	
TERMINAL MODIFICATIONS	
LOCATION:	205 PORT ROAD 1
	STOCKTON, CA 95203
IN:	SAN JOAQUIN
NEAR/AT:	STOCKTON
COUNTY:	SAN JOAQUIN
STATE:	CALIFORNIA
PAGE: 4 of 9	DATE: 10/14/2019

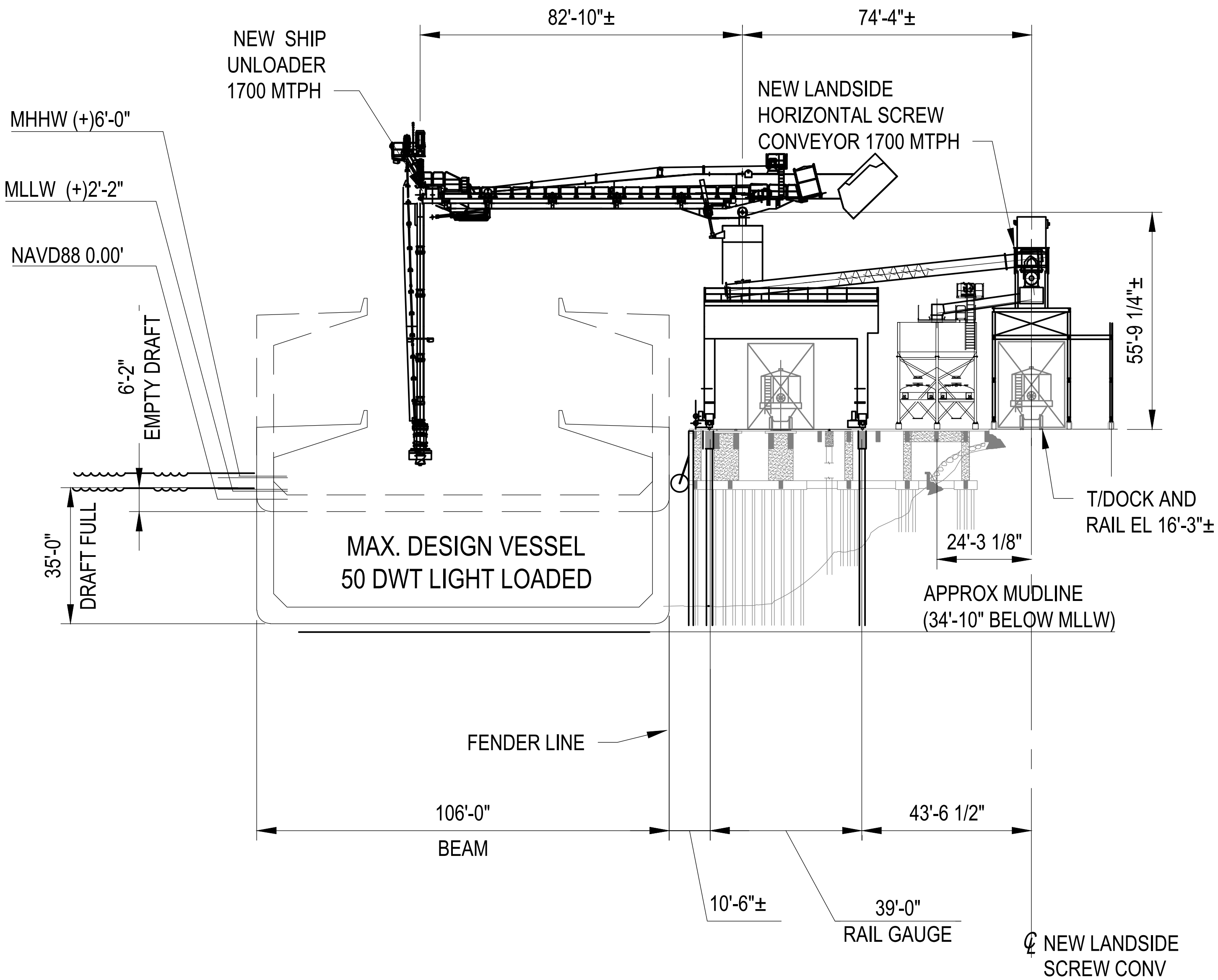


SECTION AT BERTH NO 2 (BENTS 5 THRU 24)

SCALE 3/32"=1'-0"

FILE #:	NAN-
APPLICANT:	LEHIGH SOUTHWEST STOCKTON
PROPOSED PROJECT:	
TERMINAL MODIFICATIONS	
LOCATION:	205 PORT ROAD 1
	STOCKTON, CA 95203
IN:	SAN JOAQUIN
NEAR/AT:	STOCKTON
COUNTY:	SAN JOAQUIN
STATE:	CALIFORNIA
PAGE: 5 of 9	DATE: 10/14/2019

EDG DOCUMENT NO: 7473103-70215-00505 REV A



CROSS - SECTION THROUGH DOCK & EQUIPMENT

SCALE 1"=40'

0 50' 100'

SCALE 1"=40'

FILE #: NAN-

APPLICANT: LEHIGH SOUTHWEST STOCKTON

PROPOSED PROJECT:

TERMINAL MODIFICATIONS

LOCATION: 205 PORT ROAD 1

STOCKTON, CA 95203

IN: SAN JOAQUIN

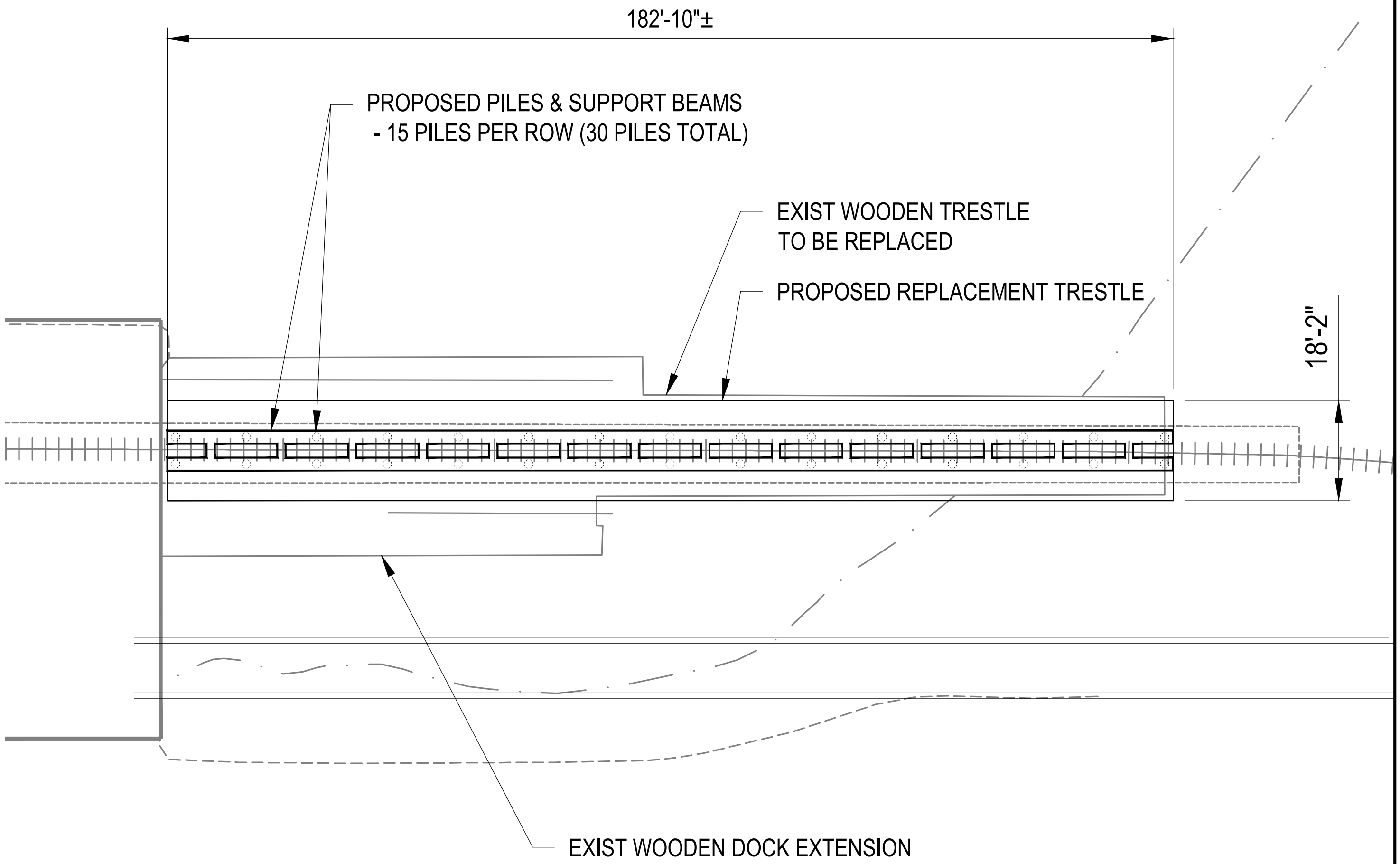
NEAR/AT: STOCKTON

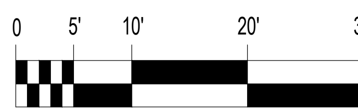
COUNTY: SAN JOAQUIN

STATE: CALIFORNIA

EDG DOCUMENT NO: 7473103-70215-00506 REV A

PAGE: 6 of 9 DATE: 10/14/2019



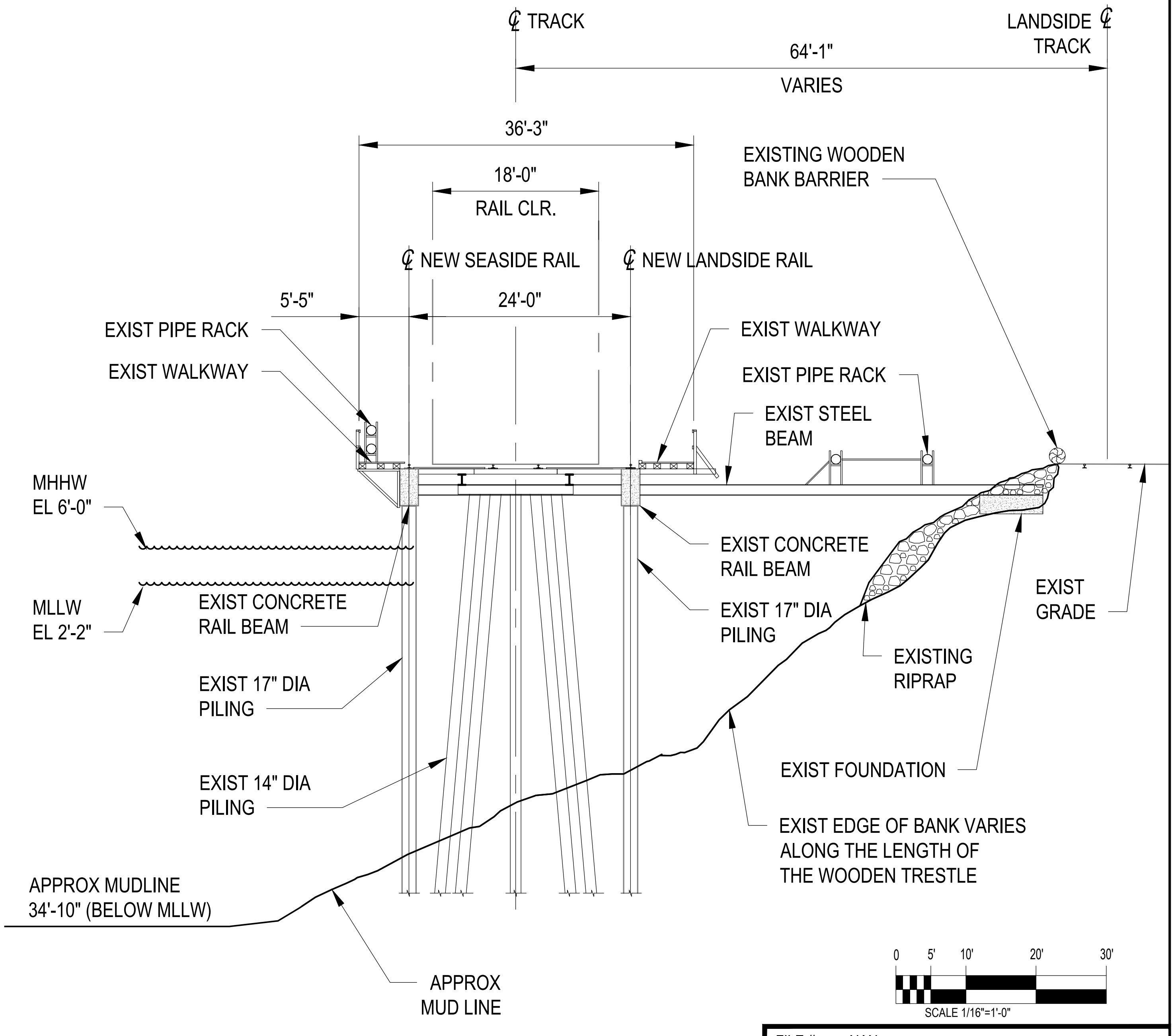


PLAN VIEW REPLACEMENT TRESTLE AT BERTH NO 2

SCALE 1/16"=1'-0"

EDG DOCUMENT NO: 7473103-70215-00507 REV A

FILE #:	NAN-
APPLICANT:	LEHIGH SOUTHWEST STOCKTON
PROPOSED PROJECT:	
TERMINAL MODIFICATIONS	
LOCATION:	205 PORT ROAD 1
	STOCKTON, CA 95203
IN:	SAN JOAQUIN
NEAR/AT:	STOCKTON
COUNTY:	SAN JOAQUIN
STATE:	CALIFORNIA
PAGE: 7 of 9	DATE: 10/14/2019

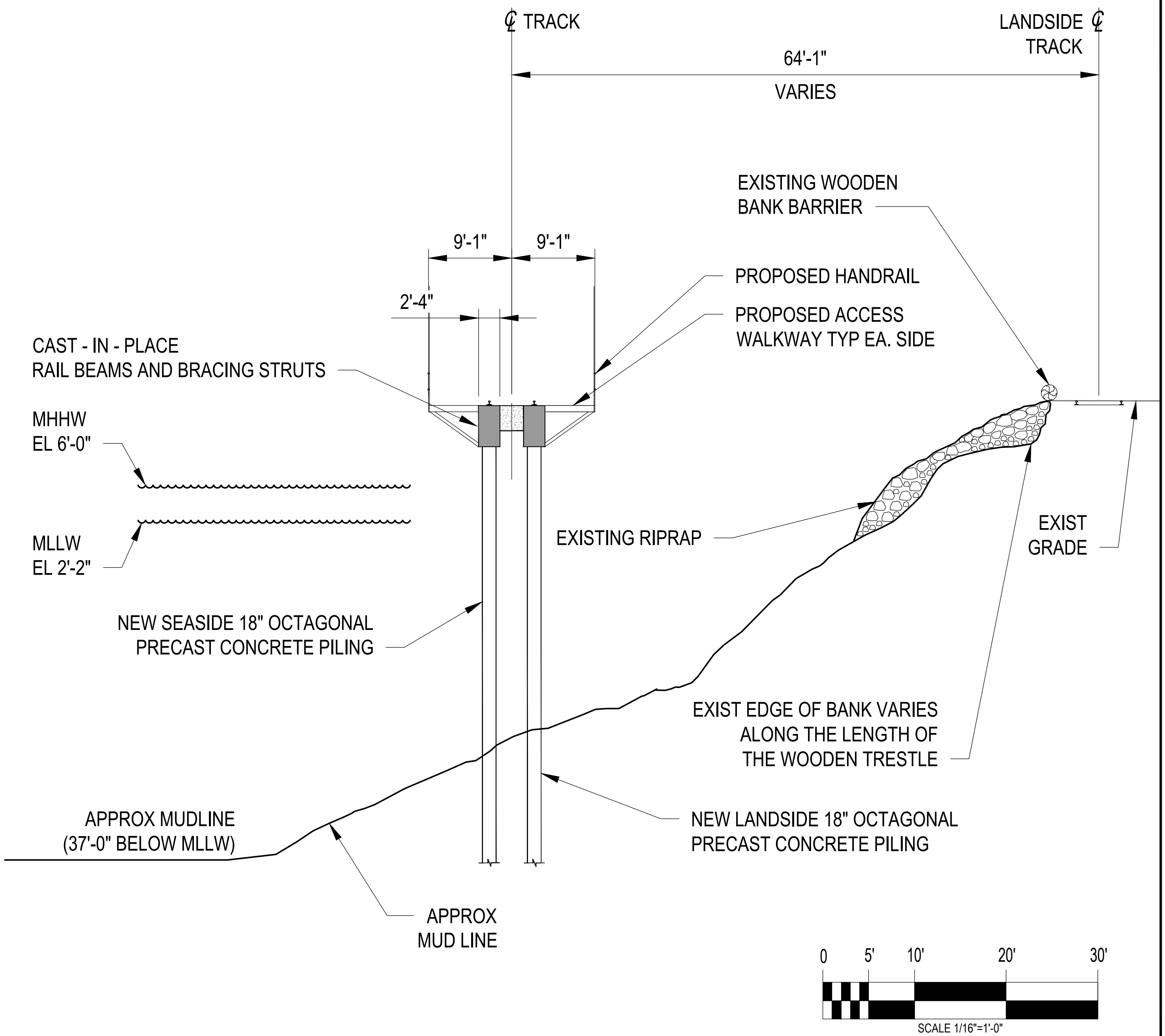


FILE #:	NAN-
APPLICANT:	LEHIGH SOUTHWEST STOCKTON
PROPOSED PROJECT:	
TERMINAL MODIFICATIONS	
LOCATION:	205 PORT ROAD 1
	STOCKTON, CA 95203
IN:	SAN JOAQUIN
NEAR/AT:	STOCKTON
COUNTY:	SAN JOAQUIN
STATE:	CALIFORNIA
PAGE: 8 of 9	DATE: 10/14/2019

SECTION THROUGH EXISTING DOCK EXTENSION AT BERTH NO. 2

SCALE 1/16"=1'-0"

EDG DOCUMENT NO: 7473103-70215-00508 REV A



SECTION THROUGH PROPOSED REPLACEMENT TRESTLE AT BERTH NO. 2

SCALE 1/16"=1'-0"

FILE #:	NAN-
APPLICANT:	LEHIGH SOUTHWEST STOCKTON
PROPOSED PROJECT:	
TERMINAL MODIFICATIONS	
LOCATION:	205 PORT ROAD 1
	STOCKTON, CA 95203
IN:	SAN JOAQUIN
NEAR/AT:	STOCKTON
COUNTY:	SAN JOAQUIN
STATE:	CALIFORNIA
PAGE: 9 of 9	DATE: 10/14/2019

Appendix B
Supplemental Project Figures

PROPOSED DOCK PILE LAYOUT

1" = 20'-0"

0 10' 20' 30' 40' 50' 100'

NO.	BY	REVISION	CHK'D	APP'D	DATE
A	---	---	---	---	XXAUG19

EDG CONSULTING ENGINEERS

CLIENT	-	-
PROJECT	-	-
CHECK	-	-
DRAFT	DEM	27AUG19

LEHIGH SOUTHWEST STOCKTON

TERMINAL MODIFICATIONS
STOCKTON, CA.

PROPOSED DOCK PILE LAYOUT

JOB NO. 7473.103 DWG. NO. FIGURE 6 A

7473103-70215-00106-A_PFSP-106.DWG - PLOTTED 10/22/2019 2:05 PM BY MATHIAS, DAVID

PLAN AT BERTH NO. 2
1" = 30'-0"

NOTE:
1. SHIP UNLOADER TRAVEL DEPICTED MAY VARY BASED ON FINAL WHEEL BOGIE ARRANGEMENT AND DOCK DESIGN

0 50' 100' 150'

DOCUMENT NO: 7473103-70215-00123

NO.	BY	REVISION	CHK'D	APP'D	DATE
A	---	ISSUED FOR	---	---	---

EDG CONSULTING ENGINEERS

CLIENT	-	-
PROJECT	-	-
CHECK	---	---
DRAFT	DEM	10OCT19

LEHIGH HANSON

FACILITY MODIFICATIONS
STOCKTON, CA

BERTH NO 2
PROPOSED PILES AND SUPPORT BEAMS

JOB NO. 7473.103 DWG. NO. FIGURE 23 A

7473103-70215-00123-A_PFSP-123.DWG - PLOTTED 10/24/2019 10:04 AM BY MATHIAS, DAVID

PLAN OF EXISTING WOODEN TRESTLE

3/32" = 1'-0"

DOCUMENT NO: 7473103-70215 00127

NO.	BY	REVISION	CHK'D	APP'D	DATE
A	-	-	-	-	-

EDG CONSULTING ENGINEERS

CLIENT	-	-
PROJECT	-	-
CHECK	-	-
DRAFT	DEM	09OCT19

LEHIGH SOUTHWEST STOCKTON

TERMINAL MODIFICATIONS
STOCKTON, CA

PLAN OF EXISTING WOODEN TRESTLE

JOB NO. 7473.103 DWG. NO. FIGURE 27 A

7473103-70215-00127-A_PFSP-127.DWG - PLOTTED 10/24/2019 3:53 PM BY MATHIAS, DAVID

N

PLAN OF REVISION TO TRESTLE
3/32" = 1'-0"

0 5' 10' 20' 30'

DOCUMENT NO: 7473103-70215 00119

NO.	BY	REVISION	CHK'D	APP'D	DATE
A	-	-	-	-	-

EDG CONSULTING ENGINEERS

CLIENT	-	-
PROJECT	-	-
CHECK	-	-
DRAFT	DEM	09OCT19

LEHIGH SOUTHWEST STOCKTON

TERMINAL MODIFICATIONS
STOCKTON, CA

PLAN OF REVISION TO TRESTLE

JOB NO. 7473.103 DWG. NO. FIGURE 19 A

7473103-70215-00119-A_PFSP-119.DWG - PLOTTED 10/21/2019 2:36 PM BY MATHIAS, DAVID

Appendix C

Bioacoustics Evaluation

130 Battery Street, Suite 400
San Francisco, California 94111
415.230.0862

ANCHOR QEA

Memorandum

November 21, 2019

To: Tina Lau, Lehigh

From: Nicolas Duffort, Anchor QEA, LLC

Re: Lehigh Southwest Stockton Terminal Project Bioacoustics Evaluation

Proposed Pile Driving Activities

The Lehigh Southwest Stockton Terminal Project (the proposed action) includes pile driving to modify and rehabilitate an existing receiving dock and adjacent wooden trestle, as described in the Permit Application Supplement. Pile driving is anticipated to be the most significant source of underwater noise resulting from the proposed action. This memorandum presents a summary of the bioacoustics evaluation conducted to assess the proposed action's potential underwater noise impacts from pile driving on federal Endangered Species Act-listed species.

As described in the Biological Assessment (BA), all piles would be installed with an impact hammer. Concrete piles of the type proposed must be struck to refusal or design bearing and friction value to obtain the desired receiving dock carrying capacity; vibratory installation is not possible.

Pile driving would occur only between July 1 and November 30. The bioacoustics evaluation presented herein is based on a worst-case scenario; it includes modeling the highest possible number of piles per day (maximum of six piles per day) and largest proposed pile size (18-inch octagonal concrete piles). A summary of piles planned for installation is presented in Table 1. The proposed receiving dock and adjacent trestle configurations, including the location of permanent piles, are shown on the plans included as Attachments 1 and 2 to the BA.

Table 1
Project Pile Details

Project Component	Pile Size	Pile Material	Installation Method	Number of Piles	Piles per Day[1]	Strikes per Pile[1]	Depth at Installation Location (feet)[2]
Receiving Dock	18-inch octagonal	Concrete	Impact Hammer	144 (permanent)	6 (sequentially)	600	41
	14-inch octagonal	Concrete	Impact Hammer	20 (permanent)		600	41
Trestle	18-inch octagonal	Concrete	Impact Hammer	30 (permanent)		600	43

Notes:
1. Piles per day and strikes per pile are approximate estimated maximums, based on input from Lehigh engineers.
2. Approximate water depth from mean higher high water to mudline.

A maximum of six piles per day would be installed sequentially (no simultaneous pile driving). Under the most intensive pile driving scenario (i.e., maximum number of piles per day), a total of 33 days of pile driving would be required. However, pile driving is estimated to require up to 35 days in consideration of potential contractor delays. Construction would be limited to the hours of 7:00 a.m. to 7:00 p.m.; the maximum daily duration of construction would therefore be 12 hours.

Avoidance and Minimization

The following avoidance and minimization measures would be implemented to address potential impacts to special status fish during periods of pile driving:

- The applicant would obtain all required resource agency permits and comply with all required resource agency permit conditions.
- Pile driving would occur only between July 1 and November 30.
- The applicant would ensure that the contractor does the following:
  - Conduct a visual scan before commencing any pile-driving operations to ensure no sensitive species are within the immediate vicinity of pile hammering.
  - Employ "soft start" techniques for any impact pile driving.

Methodology for Determining Pile Driving Noise Effects on Special-Status Fish Species

This section includes a description of special-status fish potentially affected by the proposed action, National Marine Fisheries Service (NMFS) impact thresholds for fish, and fish impact areas, as calculated using project variables and the NMFS pile driving acoustic impact worksheet for fish. An impact determination for the proposed action's effect on special status fish species is provided in consideration of these findings.

Species Potentially Affected

Listed salmonids, including Central Valley steelhead (*Oncorhynchus mykiss*) and spring-run Chinook salmon (*O. tshawytscha*), may be seasonally present in the San Joaquin River adjacent to the project site. As described in the preceding sections, pile driving would be restricted to the July 1 through November 30 work window. Although Central Valley steelhead have been observed migrating through the action area early (Hampton 2018), the likelihood of their presence remains very low. Therefore, the proposed action is not anticipated to result in impacts to listed salmonids from impact hammer pile driving.

Delta smelt (*Hypomesus transpacificus*) and longfin smelt (*Spirinchus thaleichthys*) are not likely to be present in the action area, and therefore would not be affected by the proposed action. This conclusion is based on trawl survey findings for both species and temperature preferences of delta smelt, as detailed in the BA.

Green sturgeon (*Acipenser medirostris*) are year-round residents in the San Joaquin River and may be present in waters adjacent to the project site during construction.

Acoustic Impact Thresholds and Areas

NMFS has established underwater noise impact thresholds for pile driving noise impacts to fish, as listed in Table 2.

Table 2
NMFS Fish Injury and Behavior Impact Thresholds (Pile Driving)

Injury		Behavior
Peak	**Cumulative SEL**	
206 dB (all fish)	• 187 dB (fish size of 2 grams or more) • 183 dB (fish size of less than 2 grams)	150 dB RMS (all fish)

The NMFS worksheet was completed for the proposed action's pile driving activities (Attachment 1). The following section describes how the required variables were determined for the proposed action.

Source Sound Levels

Source sound levels for pile driving were obtained from the *Technical Guidance for Assessment and Mitigation of the Hydroacoustic Effects of Pile Driving on Fish: Appendix I, Compendium of Pile Driving Sound Data* (compendium; Caltrans 2015). The compendium includes pile driving noise monitoring data for a variety of pile sizes installed at projects in California, Oregon, Washington, Alaska, Idaho, Hawaii, New York, Virginia, and Nebraska. The compendium was reviewed to identify projects with comprehensive noise monitoring data for pile driving most similar to that of the proposed action (i.e., projects in close proximity with similar pile driving depths and with comprehensive peak, Sound Exposure Level [SEL], and Root Mean Square [RMS] monitoring data). This analysis considers the "worst-case" or noisiest pile installation scenarios.

For the pile types proposed, the 18-inch octagonal concrete piles would generate higher levels of underwater noise than 14-inch octagonal concrete piles, as indicated by the compendium. As the proposed action entails installation of more 18-inch octagonal concrete piles than 14-inch piles, the evaluation presented in this memorandum conservatively examines the worst-case scenario of installing six 18-inch octagonal concrete piles in a single day.

The compendium (Caltrans 2015) provides a summary of observed project source noise levels from unattenuated pile driving, including for impact hammer installation of 18-inch octagonal concrete piles as presented in Table 3.

Table 3
18-Inch Octagonal Concrete Pile Source Sound Levels (Pile Driving with Impact Hammer, Unattenuated)

Pile Type	Source Sound (at 10 meters)		
	Peak Sound (dB)	SEL (single strike)	RMS (dB)
18-Inch Octagonal Concrete	185	155	166

Estimated Number of Pile Strikes per Day

Estimates of strike counts per pile and number of piles per day for the 18-inch octagonal concrete piles were provided by Lehigh's engineers. Approximately 600 strikes per pile would be required, with a maximum of six piles per day installed (sequential and nonsimultaneous), for a total maximum of 3,600 pile strikes per day. The proposed 14-inch octagonal concrete piles would be installed at the same rate with the approximate same strike count per pile. Under the most intensive pile driving scenario (i.e., maximum number of piles per day), a total of 33 days of pile driving would be required. However, pile driving is estimated to require up to 35 days in consideration of likely actual construction rates.

As noted, the modeling performed herein considers the worst-case (loudest) pile driving days, including sequential installation of six 18-inch octagonal piles in a single day. Installation of fewer piles per day or smaller piles (14-inch octagonal concrete) would likely reduce the proposed action's bioacoustics impacts on a given day.

Transmission Loss Constant

Site-specific transmission loss information was not available for the project site. Therefore, as recommended by the NMFS worksheet instructions, a transmission loss constant of 15 was used.

Note that this is a conservative estimate of the transmission loss constant. Due to channel bathymetry and ship traffic, riverine port environments typically have transmission loss constants of 17 or 18, and even as much as 30, which would result in a smaller area of exceedance of noise impact thresholds for fish.

Radii

The variables described above were entered into the NMFS worksheet to identify the distances to various fish injury and behavior thresholds for the proposed action's pile driving activities. These results are presented in Table 4. Figure 1 illustrates the sound pressure radii for physical injury or mortality and behavioral effects to fish from proposed pile driving activities. Note that the peak injury threshold of 206 decibels (dB) would not be exceeded by the proposed pile driving.

Table 4
Anticipated Underwater Noise Effects and Distances to Fish Injury and Behavior Thresholds (Pile Driving with Impact Hammer, Unattenuated)

Pile Type	Source Sound at 10 meters			Number of Strikes per Pile	Maximum Number of Piles per Day	Maximum Strikes per Day	SEL, accumulated at 10 meters	Distance to 206 dB peak (meters)	Distance to 187 dB SEL (meters)	Distance to 183 dB SEL (meters)	Distance to 150 dB RMS (meters)
	Peak Sound (dB)	SEL, single strike	RMS (dB)								
18-Inch Octagonal Concrete	185	155	166	600	6 (sequentially)	3,600	190.56	NA	17	22	117

Special-Status Fish Species Impact Assessment

As described in the preceding sections, using conservative "worst-case" assumptions, pile driving would result in underwater noise that would exceed fish injury and behavioral effects within the areas shown on Figure 1. As previously noted, pile driving would be confined to the July 1 to November 30 work window. Therefore, salmonids are presumed not to be present. Delta smelt and longfin smelt are also unlikely to be present based on trawl survey and entrainment data as well as temperature preferences. Green sturgeon are year-round residents in the San Joaquin River and may be present in waters adjacent to the project site during construction. Therefore, this section focuses on potential effects to green sturgeon. In the unlikely event that other federally listed fish species are present, they would incur similar impacts.

Injury or Mortality

Although green sturgeon could be in the vicinity of impact pile driving, the likelihood of injury or mortality is proportionate to the low likelihood of presence within the action area and the limit of effects to the relatively short duration of construction. Employment of soft-start techniques for impact pile driving would further limit the potential for injury. To experience injury from high sound pressure levels, exposed green sturgeon would need to remain within the onset of physical injury zones shown in Figure 1 during the 33 to 35 days of pile driving.

The likelihood of green sturgeon occurrence within the onset of physical injury zones shown in Figure 1 during pile driving is very low. Green sturgeon may occur in waters adjacent to the project site during the upstream migration of spawning adults and downstream migration, resting, and foraging of juveniles. There is no suitable spawning habitat for green sturgeon within the area potentially affected by pile driving. In addition, the action area lacks the quality forage and cover favored by green sturgeon, and existing Lehigh, Port of Stockton, and other industrial activity in the area that would be affected by pile driving likely further precludes the presence of this species within the physical injury zones shown on Figure 1. Notably, most of the physical injury zones are regularly occupied by large vessels calling.

Given the small area of impact and implementation of soft-start techniques for impact pile driving, any individual fish within the action area would be able to flee to adjacent suitable habitat. Soft-start techniques include bringing pile driving or other loud equipment online slowly (as described in the Avoidance and Minimization section), providing green sturgeon with the opportunity to disperse from the action area. The area of physical injury associated with increased SPLs during pile driving is relatively small in comparison to the size of the San Joaquin River.

Based on the analysis presented above, green sturgeon are not expected to be present or remain within the onset of physical injury zones during pile driving. Therefore, the potential risk of injury and mortality to green sturgeon is extremely low.

Behavioral Effects

Within the area shown on Figure 1, pile driving may result in behavioral impacts to green sturgeon. This may include temporary abnormal behavior indicative of stress or a startle response. These responses are likely to diminish after a few pile strikes or as fish leave the area (NMFS 2014).

The area of behavioral effects is relatively small in comparison to the size of the San Joaquin River. The northern portion of the river adjacent to the project site would not be subject to noise levels above behavioral thresholds, and fish could pass through this area unaffected. San Joaquin River areas upstream and downstream of the pile driving area of effect would also provide startled fish sufficient area to escape to open channel waters, and elevated sound levels should not result in significant effects on these individuals. Adjacent channel areas provide habitat of similar or higher quality and adequate carrying capacity to support individual green sturgeon that are temporarily displaced during the pile driving. As described in the Avoidance and Minimization section, construction equipment would be brought online slowly to further provide green sturgeon the opportunity to exit the pile driving area of effect. For these reasons, and because effects would be temporary and limited to the duration of pile driving, the behavioral effects to green sturgeon from pile driving are anticipated to be minimal.

References

Caltrans (California Department of Transportation), 2015. *Compendium of Pile Driving Sound Data*. October 2015.

Hampton, Douglas (National Marine Fisheries Service), 2018. Personal communication with Nicolas Duffort and Katie Chamberlin (Anchor QEA). April 17, 2018.

NMFS (National Marine Fisheries Service), 2014. *Biological Opinion for the Downtown San Francisco Ferry Terminal Expansion project, San Francisco, California*. June 30, 2014.

Figure

Figure 1 Fish Disturbance Zone, 18-Inch Octagonal Concrete Piles

Attachment

Attachment 1 National Marine Fisheries Service Pile Driving Acoustic Impact Worksheet for Fish

Figure

LEGEND:

- Pile Driving Location (approximate)
- Injury - Cumulative 187 dB (17 meters)
- Injury - Cumulative 183 dB (22 meters)
- Behaviorial Disturbance - 150 dB (117 meters)

NOTE:
Peak injury threshold of 206 decibels (dB) not exceeded by project

0 300
Feet

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ANCHOR QEA

Figure 1
Fish Disturbance Zones, 18-inch Octagonal Concrete Piles
Lehigh Southwest Stockton Terminal Project
Port of Stockton

Attachment 1
National Marine Fisheries Service Pile Driving Acoustic Impact Worksheet for Fish

Introduction

DISCLAIMER: This spreadsheet was developed by NMFS as an in-house tool for assessing the potential effect to fishes exposed to elevated levels of underwater sound produced during pile driving. NMFS assumes no responsibility for interpretation of the results of these models by non-NMFS users.

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This model is used to estimate the levels of underwater sound (peak and RMS pressure, as well as accumulated Sound Exposure Level [SEL]) received by fishes that are exposed to elevated levels of underwater sound produced during pile driving. It calculates the distance from the pile that the sound attenuates to threshold levels.

The criteria used for the onset of physical injury and adverse behavioral effects are listed in the table below. The onset of physical injury uses dual criteria - peak pressure and SEL. The onset of physical injury is expected if either of these criteria are exceeded. The criterion for accumulated SEL is based upon the mass of the fishes under consideration. If fishes smaller than 2 grams are present, then the more conservative 183 dB SEL criterion may be required.

Effect	Metric	Fish mass	Threshold
Onset of physical injury	Peak pressure	N/A	206 dB (re: 1 μPa)
	Accumulated Sound Exposure Level (SEL)	≥ 2 g	187 dB (re: 1μPa^2•sec)
		< 2 g	183 dB (re: 1μPa^2•sec)
Adverse behavioral effects	Root Mean Square Pressure (RMS)	N/A	150 dB (re: 1 μPa)

Assumptions

1) Estimates of underwater sound are based on measured levels from similar size and type of pile. Please refer to Caltrans' compendium (http://www.dot.ca.gov/hq/env/bio/files/pile_driving_snd_comp9_27_07.pdf).

2) Fish are assumed to remain stationary and the single strike SEL does not vary in magnitude between strikes. Cumulative SEL = single-strike SEL + 10*log(# strikes).

3) Currently there are no data to support a tissue recovery allowance between pile strikes. Therefore, all strikes in any given day are counted, regardless of time between strikes. However, generally the accumulated SEL can be reset to zero overnight (or after a 12 hour period), especially in a river or tidally-influenced waterway when the fish should be moving.

4) Effective Quiet. When the received SEL from an individual pile strike is below a certain level, then the accumulated energy from multiple strikes would not contribute to injury, regardless of how many pile strikes occur. This SEL is referred to as “effective quiet”, and is assumed, for the purposes of this spreadsheet, to be 150 dB (re: 1 μPa^2*sec). Effective quiet establishes a limit on the maximum distance from the pile where injury to fishes is expected – the distance at which the single-strike SEL attenuates to 150 dB. Beyond this distance, no physical injury is expected, regardless of the number of pile strikes. However, the severity of the injury can increase within this zone as the number of strikes increases.

5) NMFS recommends using the Practical Spreading Loss model (TL = 15*log(R_1/R_0)), unless data are available to support a different model.

Worksheet Calculator

Input: Fill in the green colored cells - NOTE: THERE ARE NO DEFAULT VALUES FOR THE GREEN CELLS

B10 is the estimated single strike peak pressure (dB re: 1μPa)

B11 is the distance (m) from the pile where peak pressure was measured

C10 is the estimated single strike SEL (dB re: 1$\mu Pa^2 s$). If no direct measurement available, then SEL = peak pressure minus 25.

C11 is the distance (m) from the pile where SEL was measured

D10 is the estimated single strike RMS pressure (dB re: 1μPa). If no direct measurement available, then RMS = peak pressure minus 15

D11 is the distance (m) from the pile where RMS pressure was measured

B13 is the expected number of pile strikes

A22 is the Transmission Loss Constant. Default is 15 unless site-specific transmission loss information is available.

A28 is for comments on assumptions, sources of estimates of metrics, pile size, etc.

Preset Values
E10 is the SEL for "effective quiet" (current set at 150 dB)
B21 is the peak pressure criteria (see table above)
C21 is the SEL criteria for when all fish are 2 grams or larger (see table above)
D21 is the SEL criteria for when fish smaller than 2 grams are present (see table above)
E21 is the RMS criteria for adverse behavioral disruption (see table above)

Output: Read the blue cells
A16 is the calculated cumulative SEL, in dB (re: $1\mu Pa^2 \bullet s$), at measured distance from pile
B22 is the distance (m) at which 206 dB peak is expected to be exceeded
C22 is the distance (m) at which 187 dB accumulated SEL is expected to be exceeded
D22 is the distance (m) at which 183 dB accumulated SEL is expected to be exceeded
E22 is the distance (m) at which 150 dB rms is expected to be exceeded

Cells in light green are for project identification, project specifics, and comments.

Project Title	Lehigh Hanson
Pile information (size, type, number, pile strikes, etc.)	18-inch octagonal, 6 piles per day maximum (non-additive, one pile at a time), 600 strikes per pile, impact hammer installation, unattenuated.

Fill in green cells: estimated sound levels and distances at which they were measured, estimated number of pile strikes per day, and transmision loss constant.

	Acoustic Metric			
	Peak	SEL	RMS	Effective Quiet
Measured single strike level (dB)	**185**	**155**	**166**	**150**
Distance (m)	**10**	**10**	**10**	

Estimated number of strikes	**3600**

Cumulative SEL at measured distance
190.56

	Distance (m) to threshold			
	Onset of Physical Injury			Behavior
	Peak	Cumulative SEL dB**		RMS
	dB	Fish ≥ 2 g	Fish < 2 g	dB
Transmission loss constant (15 if unknown)	206	187	183	150
15	**0**	**17**	**22**	**117**

** This calculation assumes that single strike SELs < 150 dB do not accumulate to cause injury (Effective Quiet)

Notes (source for estimates, etc.)
Source sound source: Caltrans 2015