PREFACE
March 26, 2019

In response to a request under the California Public Records Act, the City of Vallejo is exercising its discretion to make public the unfinished draft Final Environmental Impact Report (FEIR) for the VMT/Orcem project. The current version of this document is not ready for certification under the purposes of California Environmental Quality Act (CEQA). As of this date, clarification is needed as to who is the responsible party for certain indemnity and mitigation measures, and who has site control and ownership of the project site. While this clarification is obtained processing of the EIR has been paused.

As of March 26, 2019, the City, as lead agency, has determined that the VMT/Orcem project is not yet ready for approval and that the environmental documents that have been prepared do not yet achieve a compliance with CEQA (Cal. Code Regs, Titl. 14 Section 15090(a)(1)) Thus, the FEIR is not ready to be presented to the City Council for certification and project approval under CEQA (Cal. Code Regs, Titl. 14 Section 15090(a)(2)).

While the processing of the application has been paused, staff will endeavor to work with applicants to obtain an updated environmental justice analysis, and data, as well as commitments from the applicants to perform certain mitigation measure in order to present them as feasible. Feasible in this context means capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors (Cal. Code Regs, Titl.14 Section 15364).

Recognizing that the applicants and the public have requested release of the draft FEIR for public viewing, the City is accommodating these requests by posting the documents here. A progress report on this project is expected to be presented to Council by April 23, 2019.

DRAFT FEIR

FINAL

VALLEJO MARINE TERMINAL AND ORCEM PROJECT ENVIRONMENTAL IMPACT REPORT

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TABLE OF CONTENTS

Section **Page No.**

APPENDICES

FIGURES

EXHIBITS

TABLES

ACRONYMS AND ABBREVIATIONS

Acronym/Abbreviation	Definition
°F	degrees Fahrenheit
AB	Assembly Bill
ACM	Asbestos-containing materials
AFY	acre-feet per year
AMSL	above mean sea level
ATS	Active Treatment System
BAAQMD	Bay Area Air Quality Management District
BACT	Best Available Control Technology
BCDC	Bay Conservation and Development Commission
BMPs	best management practices
CAA	Clean Air Act (federal)
CAAQS	California Ambient Air Quality Standards
CalOSHA	California Occupational Safety and Health Administration
CalRecycle	California Department of Resources Recycling and Recovery
Caltrans	California Department of Transportation
CA-MUTCD	California Manual of Uniform Traffic Control Devices
CAP	Clean Air Plan
CARB	California Air Resources Board
CARE	Community Air Risk Evaluation
CBC	California Building Code
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code Federal Regulations
CGS	California Geological Survey
CH_4	methane
City	City of Vallejo
CMP	Congestion Management Plan
CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CNG	compressed natural gas
CO_2	carbon dioxide
CO_2E	carbon dioxide equivalent
CO-CAT	Coastal and Ocean Working Group of the California Climate Action Team
CPUC	California Public Utilities Commission
CREATE	Chicago Rail Efficiency and Transportation Efficiency
CRHR	California Register of Historical Resources
CUPA	Certified Unified Program Agency
CWA	Clean Water Act
CWR	Continuous Welded Rail

Acronym/Abbreviation	Definition
cyd	cubic yards
CZMA	Coastal Zone Management Act
dB	decibel
DFEIR	Draft Final Environmental Impact Report
DHS	California Department of Health Services
DPM	diesel particulate matter
DPS	distinct population segment
dscf	dry standard cubic foot
EIR	Environmental Impact Report
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FMP	fishery management plan
FOS	factor of safety
FTA	Federal Transit Administration
GBFS	granulated blast furnace slag
GGBFS	ground granulated blast furnace slag
GHG	greenhouse gas
GVRD	Greater Vallejo Recreation District
GWP	global warming potential
HAG	hot air generator
HARP	Hotspots Analysis Reporting Program
HCM	Highway Capacity Manual
HFC	hydroflourocarbon
HI	Hazard Index
HMBP	Hazardous Materials Business Plan
Hz	hertz
I-780	Interstate Highway 780
I-80	Interstate Highway 80
IEP	Interagency Ecological Program
IGP	Industrial General Permit
kHz	kilohertz
LAFCO	Solano County Local Agency Formation Commission
lbs/year	pounds per year
L_{dn}	day-night sound level
L_{eq}	equivalent sound level
L_{max}	maximum sound level
L_{min}	minimum sound level
LID	Low Impact Development
LOS	level of service
LTMS	Long-Term Management Strategy
LUST	Leaking Underground Storage Tank

Acronym/Abbreviation	Definition
MBTA	Migratory Bird Treaty Act
mgd	million gallons per day
MLLW	mean lower low water
MMPA	Marine Mammal Protection Act
MMT	million metric tons
mph	miles per hour
MMRP	Mitigation and Monitoring Reporting Program
MRP	Municipal Regional Permit
MMscf	million standard cubic feet
MSDS	materials safety data sheets
MT	metric tons
MTSA	Maritime Transportation Security Act
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NEPA	National Environmental Policy Act
nm	nautical mile
NOAA	National Oceanic and Atmospheric Administration
NOAA Fisheries	National Oceanic and Atmospheric Administration Marine Fisheries Service
NOP	Notice of Preparation
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NSL	noise-sensitive location
O_3	ozone
Orcem	Orcem California Inc.
OSHA	Occupational Safety and Health Administration
PAH	polycyclic aromatic hydrocarbons
PCB	polychlorinated biphenyls
PCE	passenger car equivalents
PFC	perfluorocarbon
PGA	peak ground acceleration
PG&E	Pacific Gas and Electric
ppt	parts per trillion
PPV	perturbation projection vector
PSD	Prevention of Significant Deterioration
PSHA	probabilistic seismic hazard assessment
QSD/QSP	Qualified SWPPP Developer/Qualified SWPPP Practitioner
RCNM	Roadway Construction Noise Model
RCRA	Resource Conservation and Recovery Act
REL	reference exposure level
ROA	Revised Operations Alternative
ROG	reactive organic gas
RPS	Renewable Portfolio Standard

Acronym/Abbreviation	Definition
RWQCB	Regional Water Quality Control Board
SAFE Port Act	Security and Accountability for Every Port Act
SAV	submerged aquatic vegetation
SB	Senate Bill
SF_6	sulfur hexafluoride
SFBAAB	San Francisco Bay Area Air Basin
SHPO	State Historic Preservation Office
SLR	sea level rise
SMP	Site Management Plan
SR	State Route
SRI	solar reflectance index
SSMP	Sanitary Sewer Management Plan
STA	Solano Transportation Authority
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TACs	Toxic Air Contaminants
TMDLs	total maximum daily loads
TOG	total organic gas
tpy	tons per year
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UWMP	Urban Water Management Plan
v/c	volume-to-capacity
VFD	Vallejo Fire Department
VMT	Vallejo Marine Terminal LLC
VPD	Vallejo Police Department
VRM	vertical roller mill
VCUSD	Vallejo City Unified School District
VSFCD	Vallejo Sanitation and Flood Control District
WDRs	Waste Discharge Requirements
WTP	water treatment plant
WWTP	Wastewater Treatment Plant

3.6 GREENHOUSE GAS EMISSIONS

This section analyzes the potential impacts of the Vallejo Marine Terminal (VMT) and Orcem project (proposed project) with respect to greenhouse gas (GHG) emissions, and recommends mitigation measures where necessary to reduce or avoid significant impacts. Information provided in this section was derived from technical studies prepared for the proposed project, provided as the following appendices:

- **Appendix D-1:** Ramboll Environ. 2015. *Orcem/VMT Project Air Quality and Greenhouse Gas Evaluation.*
- **Appendix D-2:** Moffatt & Nichol. 2015. *Technical Memorandum: Sea Level Rise Assessment.*

3.6.1 Regulatory Setting

Federal

Massachusetts vs. EPA. On April 2, 2007, in *Massachusetts vs. EPA*, the Supreme Court directed the U.S. Environmental Protection Agency (EPA) Administrator to determine whether GHG emissions from new motor vehicles cause or contribute to air pollution that may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision. In making these decisions, the EPA Administrator is required to follow the language of Section 202(a) of the Clean Air Act (CAA). On December 7, 2009, the EPA Administrator signed a final rule with two distinct findings regarding GHGs under Section 202(a) of the CAA:

- The EPA Administrator found that elevated concentrations of GHGs—carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6)—in the atmosphere threaten the public health and welfare of current and future generations. This is referred to as the "endangerment finding."
- The EPA Administrator further found that the combined emissions of GHGs CO_2, CH_4, N_2O, and HFCs from new motor vehicles and new motor vehicle engines contribute to the GHG air pollution that endangers public health and welfare. This is referred to as the "cause or contribute finding."

These two findings were necessary to establish the foundation for regulation of GHGs from new motor vehicles as air pollutants under the CAA.

Energy Independence and Security Act. On December 19, 2007, President George Bush signed the Energy Independence and Security Act of 2007. Among other key measures, this act legislated the following, which are intended to aid in the reduction of GHG emissions:

1. Increase the supply of alternative fuel sources by setting a mandatory Renewable Fuel Standard requiring fuel producers to use at least 36 billion gallons of biofuel by 2022.
2. Set a target of 35 miles per gallon for the combined fleet of cars and light trucks by model year 2020; direct the National Highway Traffic Safety Administration to establish a fuel economy program for medium- and heavy-duty trucks and create a separate fuel economy standard for work trucks.
3. Prescribe or revise standards affecting regional efficiency for heating and cooling products and procedures for new or amended standards, energy conservation, and energy efficiency labeling for consumer electronic products, residential boiler efficiency, electric motor efficiency, and home appliances.

State

Assembly Bill (AB) 1493. In a response to the transportation sector accounting for more than half of California's CO_2 emissions, AB 1493 (Pavley) was enacted on July 22, 2002. AB 1493 required the California Air Resources Board (CARB) to set GHG emissions standards for passenger vehicles, light-duty trucks, and other vehicles determined by CARB to be vehicles whose primary use is noncommercial personal transportation. The bill required that CARB set GHG emissions standards for motor vehicles manufactured in 2009 and all subsequent model years. CARB adopted the standards in September 2004. On March 29, 2010, the CARB Executive Officer approved revisions to the motor vehicle GHG standards to harmonize the state program with the national program for 2012–2016 model years. The revised regulations became effective on April 1, 2010.

Executive Order S-3-05. In June 2005, Governor Arnold Schwarzenegger established California's GHG emissions reduction targets in Executive Order S-3-05. The executive order established the following goals: reduce GHG emissions to 2000 levels by 2010, to 1990 levels by 2020, and to 80% below 1990 levels by 2050. The California EPA secretary is required to coordinate efforts of various agencies to collectively and efficiently reduce GHGs. The Climate Action Team is responsible for implementing global warming emissions reduction programs. Representatives from several state agencies comprise the Climate Action Team. The Climate Action Team fulfilled its report requirements through the *Final 2006 Climate Action Team Report to the Governor and Legislature* (CAT 2006).

The 2009 *Climate Action Team Biennial Report* (CAT 2010a), published in April 2010, expands on the policy outlined in the 2006 assessment. The 2009 report provides new information and scientific findings regarding development of new climate and sea level projections using new information and tools that recently became available. It also evaluates climate change within the context of broader social changes, such as land use changes and demographics. The 2009 report identifies the need for additional research in several areas related to climate change to support effective climate change strategies. The areas of climate change determined to require future research are vehicle and fuel technologies, land use and smart growth, electricity and natural gas, energy efficiency, renewable energy and reduced carbon energy sources, low GHG technologies for other sectors, carbon sequestration, terrestrial sequestration, geologic sequestration, economic impacts and considerations, social science, and environmental justice.

Subsequently, the 2010 *Climate Action Team Report to Governor Schwarzenegger and the California Legislature* (CAT 2010b) reviews past climate action milestones, including voluntary reporting programs; GHG standards for passenger vehicles; the Low Carbon Fuel Standard, a statewide renewable energy standard; and the cap-and-trade program. Additionally, the 2010 report includes a cataloguing of recent research and ongoing projects; mitigation and adaptation strategies identified by sector (e.g., agriculture, biodiversity, electricity, and natural gas); actions that can be taken at the regional, national, and international levels to mitigate the adverse effects of climate change; and today's outlook on future conditions.

AB 32. In furtherance of the goals established in Executive Order S-3-05, the legislature enacted AB 32 (Núñez and Pavley), the California Global Warming Solutions Act of 2006, which Governor Schwarzenegger signed on September 27, 2006. The GHG emissions limit is equivalent to the 1990 levels, which are to be achieved by 2020.

CARB has been assigned to carry out and develop the programs and requirements necessary to achieve the goals of AB 32. Under AB 32, CARB must adopt regulations requiring the reporting and verification of statewide GHG emissions. This program is used to monitor and enforce compliance with the established standards. CARB is also required to adopt rules and regulations to achieve the maximum technologically feasible and cost-effective GHG emissions reductions. AB 32 allows CARB to adopt market-based compliance mechanisms to meet the specified requirements. Finally, CARB is ultimately responsible for monitoring compliance and enforcing any rule, regulation, order, emissions limitation, emissions reduction measure, or market-based compliance mechanism adopted.

The first action under AB 32 resulted in the adoption of a report listing early action GHG emissions reduction measures on June 21, 2007. The early actions included three specific GHG control rules. On October 25, 2007, CARB approved an additional six early action GHG reduction measures under AB 32. The three original early action regulations meeting the narrow legal definition of "discrete early action GHG reduction measures" are as follows:

1. A low-carbon fuel standard to reduce the "carbon intensity" of California fuels.

2. Reduction of refrigerant losses from motor vehicle air conditioning system maintenance to restrict the sale of "do-it-yourself" automotive refrigerants.
3. Increased CH_4 capture from landfills to require broader use of state-of-the-art CH_4 capture technologies.

The additional six early action regulations, which were also considered "discrete early action GHG reduction measures," are as follows:

1. Reduction of aerodynamic drag, and thereby fuel consumption, from existing trucks and trailers through retrofit technology.
2. Reduction of auxiliary engine emissions of docked ships by requiring port electrification.
3. Reduction of PFCs from the semiconductor industry.
4. Reduction of propellants in consumer products (e.g., aerosols, tire inflators, and dust removal products).
5. Requirements that all tune-up, smog check, and oil change mechanics ensure proper tire inflation as part of overall service in order to maintain fuel efficiency.
6. Restriction on the use of SF_6 from non-electricity sectors if viable alternatives are available.

An additional five measures were recommended as additional early actions as follows:

1. Refrigerant Tracking, Reporting, and Recovery Program.
2. Cement (A): Energy Efficiency of California Cement Facilities; involves reducing CO_2 emissions from fuel combustion, calcination, and electricity use by converting to a low-carbon fuel-based production, decreasing fuel consumption, and improving energy efficiency practices and technologies in cement production.
3. Cement (B): Blended Cements; the addition of blending materials such as limestone, fly ash, natural pozzolan, and/or granulated blast furnace slag (GBFS) to replace some of the clinker in the production of portland cement.
4. Anti-idling enforcement.
5. Collaborative research to understand how to reduce GHG emissions from nitrogen land application.

As required under AB 32, on December 6, 2007, CARB approved the 1990 GHG emissions inventory, thereby establishing the emissions limit for 2020. The 2020 emissions limit was set at 427 million metric tons of CO_2 equivalent (MMT CO_2E). In addition to the 1990 emissions inventory, CARB also adopted regulations requiring mandatory reporting of GHGs for large facilities that account for 94% of GHG emissions from industrial and commercial stationary sources in California. Approximately 800 separate sources fall under the new reporting rules and include electricity generating facilities, electricity retail providers and power marketers, oil refineries, hydrogen plants, cement plants, cogeneration facilities, and other industrial sources that emit CO_2 in excess of specified thresholds.

On December 11, 2008, CARB approved the *Climate Change Proposed Scoping Plan: A Framework for Change* (Scoping Plan) (CARB 2008) to achieve the goals of AB 32. The Scoping Plan establishes an overall framework for the measures that will be adopted to reduce California's GHG emissions. The Scoping Plan evaluates opportunities for sector-specific reductions, integrates all CARB and Climate Action Team early actions and additional GHG reduction measures by both entities, identifies additional measures to be pursued as regulations, and outlines the role of a cap-and-trade program.

The key elements of the Scoping Plan are as follows:

- Expanding and strengthening existing energy efficiency programs, as well as building and appliance standards.
- Achieving a statewide renewables energy mix of 33%.
- Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system and to cap sources contributing 85% of California's GHG emissions.
- Establishing targets for transportation-related GHG emissions for regions throughout California, and pursuing policies and incentives to achieve those targets.
- Adopting and implementing measures pursuant to existing state laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard.
- Creating targeted fees, including a public goods charge on water use, fees on high global warming potential gases, and a fee to fund the administrative costs of California's long-term commitment to AB 32 implementation.

The First Update to the Climate Change Scoping Plan (Scoping Plan Update) was approved by the CARB Board on May 22, 2014. The Scoping Plan Update builds on the initial Scoping Plan with new strategies and recommendations. The update identifies opportunities to leverage existing and new funds to further drive GHG emissions reductions through strategic planning and targeted low-carbon investments. The Scoping Plan Update defines CARB's climate change priorities for the next 5 years, and sets the groundwork to reach California's long-term climate goals set forth in Executive Orders S-3-05 and B-16-2012. The update highlights California's progress toward meeting the near-term 2020 GHG emissions reduction goals defined in the initial Scoping Plan. These efforts were pursued to achieve the near-term 2020 goal, and created a framework for ongoing climate action that can be built upon to maintain and continue economic sector-specific reductions beyond 2020, as required by AB 32.

The Scoping Plan Update identifies key focus areas or sectors (energy, transportation, agriculture, water, waste management, and natural and working lands), along with short-lived climate pollutants, "green" buildings, and the cap-and-trade program (CARB 2014a). The update also recommends that a statewide mid-term target and mid-term and long-term sector targets be established toward meeting the 2050 goal established by Executive Order S-3-05 to reduce California's GHG emissions to 80% below 1990 levels, although no specific recommendations are made.

Executive Order S-13-08. Governor Schwarzenegger issued Executive Order S-13-08 on November 14, 2008. The executive order is intended to hasten California's response to the impacts of global climate change, particularly sea level rise. It directs state agencies to take specified actions to assess and plan for such impacts. It directed that the California Natural Resources Agency, in cooperation with the California Department of Water Resources, the California Energy Commission (CEC), California's coastal management agencies, and the Ocean Protection Council, request that the National Academy of Sciences prepare a Sea Level Rise Assessment Report by December 1, 2010. The Ocean Protection Council, California Department of Water Resources, and CEC, in cooperation with other state agencies, were required to conduct a public workshop to gather information relevant to the Sea Level Rise Assessment Report. The Business, Transportation, and Housing Agency was ordered to assess, within 90 days of the order, the vulnerability of the state's transportation systems to sea level rise. The Office of Planning and Research and the California Natural Resources Agency were required to provide land use planning guidance related to sea level rise and other climate change impacts. The order also required other state agencies to develop adaptation strategies by June 9, 2009, to respond to the impacts of global climate change that are predicted to occur over the next 50 to 100 years. A discussion draft Adaptation Strategies Report was released in August 2009, and the final Adaption Strategies Report was issued in December 2009. To assess the state's vulnerability, the report summarizes key climate change impacts for the following areas: public health, ocean and coastal resources, water supply and flood protection, agriculture, forestry, biodiversity and habitat, and transportation and energy infrastructure. The report recommends strategies and specific responsibilities related to water supply, planning and land use, public health, fire protection, and energy conservation.

Executive Order S-14-08. On November 17, 2008, Governor Schwarzenegger issued Executive Order S-14-08. This executive order focuses on the contribution of renewable energy sources to meet the electrical needs of California while reducing GHG emissions from the electrical sector. The governor's order requires that all retail suppliers of electricity in California serve 33% of their load with renewable energy by 2020. Furthermore, the order directs state agencies to take appropriate actions to facilitate reaching this target. The California Natural Resources Agency, through collaboration with the CEC and California Department of Fish and Wildlife, is directed to lead this effort. Pursuant to a Memorandum of Understanding between the CEC and the California Department of Fish and Wildlife creating the Renewable Energy Action Team, these agencies create a "one-stop" process for permitting renewable energy power plants.

Executive Order S-21-09. On September 15, 2009, Governor Schwarzenegger issued Executive Order S-21-09. This executive order directed CARB to adopt regulation consistent with the goal of Executive Order S-14-08 by July 31, 2010. CARB was further directed to work with the California Public Utilities Commission (CPUC) and CEC to ensure that the regulation builds on the Renewable Portfolio Standard (RPS) program and is applicable to investor-owned utilities, publicly owned utilities, direct access providers, and community choice providers. Under this order, CARB is to give the highest priority to those renewable resources that provide the greatest environmental benefits with the least environmental costs and impacts on public health, and can be developed the most quickly in support of reliable, efficient, cost-effective electricity system operations. On September 23, 2010, CARB adopted regulations to implement a Renewable Electricity Standard, which would achieve the goal of Executive Order S-21-09 with the following intermediate and final goals: 20% for 2012–2014, 24% for 2015–2017, 28% for 2018–2019, and 33% for 2020 and beyond. Under the order, wind; solar; geothermal; small hydroelectric; biomass; ocean wave, thermal, and tidal; landfill and digester gas; and biodiesel would be considered sources of renewable energy. The regulation would apply to investor-owned utilities and public (municipal) utilities.

Executive Order B-30-15. On April 29, 2015, Governor Jerry Brown issued an executive order which identified an interim GHG reduction target in support of targets previously identified under S-3-05 and AB 32. Executive Order B-30-15 set an interim target goal of reducing GHG emissions to 40% below 1990 levels by 2030 to keep California on its trajectory toward meeting or exceeding the long-term goal of reducing GHG emissions to 80% below 1990 levels by 2050 as set forth in S-3-05. To facilitate achievement of this goal, B-30-15 calls for an update to CARB's Scoping Plan to express the 2030 target in terms of million metric tons of carbon dioxide equivalent. The Executive Order also calls for state agencies to continue to develop and implement GHG emission reduction programs in support of the reduction targets. Sector-specific agencies in transportation, energy, water, and forestry will be required to prepare GHG reduction plans by September 2015, followed by a report on actions taken in relation to these plans in June 2016. The Executive Order does not require local agencies to take any action to meet the new interim GHG reduction threshold. It is important to note that Executive Order B-30-15 was not adopted by a public agency through a public review process that requires analysis pursuant to CEQA Guidelines section 15064.4 and that it has not been subsequently validated by a statute as an official GHG reduction target of the State of California. The Executive Order itself states it is "not intended to create, and does not, create any rights of benefits, whether substantive or procedural, enforceable at law or in equity, against the State of California, its agencies, departments, entities, officers employees, or any other person."

Senate Bill (SB) 1368. In September 2006, Governor Schwarzenegger signed SB 1368, which requires the CEC to develop and adopt regulations for GHG emissions performance standards for the long-term procurement of electricity by local, publicly owned utilities. These standards must be consistent with the standards adopted by CPUC. This effort will help protect energy customers from financial risks associated with investments in carbon-intensive electricity generation by allowing new capital investments in power plants whose GHG emissions are as low as or lower than new combined-cycle natural gas plants. SB 1368 requires imported electricity to meet GHG performance standards in California, and requires that those standards be developed and adopted in a public process.

SB X1 2. On April 12, 2011, Governor Jerry Brown signed SB X1 2 in the First Extraordinary Session, which expanded the RPS by establishing a goal of 20% of the total electricity sold to retail customers in California per year by December 31, 2013, and 33% by December 31, 2020. Under the bill, a renewable electrical generation facility is one that uses biomass, solar thermal, photovoltaic, wind, geothermal, fuel cells using renewable fuels, small hydroelectric generation of 30 megawatts or less, digester gas, municipal solid waste conversion, landfill gas, ocean wave, ocean thermal, or tidal current and that meets other specified requirements with respect to its location. In addition to the retail sellers covered by SB 107, SB X1 2 adds local, publicly owned electric utilities to the RPS. By January 1, 2012, CPUC was required to establish the quantity of electricity products from eligible renewable energy resources to be procured by retail sellers to achieve targets of 20% by December 31, 2013; 25% by December 31, 2016; and 33% by December 31, 2020. The statute also requires that the governing boards for local, publicly owned electric utilities establish the same targets, with the governing boards responsible for ensuring compliance with these targets. CPUC is responsible for enforcement of the RPS for retail sellers, and CEC and CARB enforce the requirements for local, publicly owned electric utilities.

AB 900. On September 27, 2011, Governor Jerry Brown signed AB 900, the Jobs and Economic Improvement Through Environmental Leadership Act. Under AB 900, specific projects may be qualified for expedited and streamlined environmental review under the California Environmental Quality Act (CEQA). As stated in Section 21183 of AB 900, a project that is identified as an "environmental leadership project" under AB 900 may be certified for streamlining if the project applicant invests $100 million in California following construction, creates high-wage jobs, would not result in any net additional GHG emissions from employee transportation, and mitigation measures identified under environmental review become conditions of approval for the project, among others.

California Air Pollution Control Officers Association. The California Air Pollution Control Officers Association is the association of Air Pollution Control Officers representing all 35 air quality agencies in California. The California Air Pollution Control Officers Association is not a regulatory body, but has been an active organization in providing guidance in addressing the CEQA significance of GHG emissions, climate change, and other air quality issues.

Local

Bay Area Air Quality Management District

In relation to the Bay Area Air Quality Management District (BAAQMD), a climate protection program to reduce pollutants that contribute to global climate change and affect air quality was established. The program includes measures that promote energy efficiency, reduce vehicle miles traveled, and develop alternative sources of energy.

City of Vallejo Climate Action Plan

The City of Vallejo Climate Action Plan (CAP) was published in 2012 and created a road map to enable Vallejo to reduce GHG emissions between now and 2035. The CAP outlines a range of actions, including policies relating to green building practices, energy efficiency, transit-orientated development, mixed-use higher-density development, recycling and composting, water conservation, and renewable energy.

Operation of the Orcem project component is intended to reduce GHG emissions over the next 20 years, by providing for a partial replacement for portland cement. The average percentage reduction of CO_2E emissions compared to portland cement production is anticipated to be greater than 90%. This amounts to approximately 9 million metric tons (MT) of CO_2E over the first 20 years of operation. Through the manufacturing of a partial replacement for portland cement, the Orcem project component would be consistent with the CAP's long-term objective of reducing City-wide GHG emissions through the year 2035.

City of Vallejo General Plan

The City of Vallejo adopted the Vallejo General Plan 2040 in August 2017 (City of Vallejo 2017a). The General Plan 2040 Land Use Map was adopted in November 2017 (City of Vallejo 2017b). The previous draft of this EIR was based on the General Plan adopted in July 1999. However, the General Plan 1999 did not contain specific policies pertaining to GHG emissions. This EIR, where necessary and appropriate, incorporates these updated goals and policies from General Plan 2040. This discussion is shown in underline and/or strikeout in this document for ease of review.

The following Vallejo General Plan 2040 goals and policies are applicable to the GHG emissions of the proposed project.

> POLICY CP-1.12 Clean Air. Protect the community from harmful levels of air pollution.
>
> POLICY MTC-2.12 Resource Efficiency. Facilitate use of emerging vehicle technology to help reduce vehicle miles travelled and greenhouse gas emissions.
>
> POLICY EET-4.1 City-led Sustainability. Pursue programs that enable the City to contribute meaningfully to economic development and diversification efforts by retaining, attracting and promoting green and sustainable businesses.
>
> POLICY EET-4.2 Responsible Development. Favor residential, commercial, and industrial development that can mitigate or avoid environmental impacts.

3.6.2 Existing Conditions

The Greenhouse Gas Effect and Greenhouse Gases

Climate change refers to any significant change in measures of climate, such as temperature, precipitation, or wind, lasting for an extended period (decades or longer).

Gases that trap heat in the atmosphere are often called "greenhouse gases" (GHGs). The greenhouse effect traps heat in the troposphere through a threefold process, as follows: Short-wave radiation emitted by the sun is absorbed by the Earth; the Earth emits a portion of this energy in the form of long-wave radiation; and GHGs in the upper atmosphere absorb this long-wave radiation and emit it into space and toward the Earth. This "trapping" of the long-wave (thermal) radiation emitted back toward the Earth is the underlying process of the greenhouse effect. Principal GHGs are CO_2, CH_4, N_2O, ozone (O_3), and water vapor. Some GHGs, such as CO_2, CH_4, and N_2O, occur naturally and are emitted to the atmosphere through natural processes and human activities. Of these gases, CO_2 and CH_4 are emitted in the greatest quantities from human activities. Emissions of CO_2 are largely by-products of fossil fuel combustion, and CH_4 results mostly from off-gassing associated with agricultural practices and landfills. Human-created GHGs, which have a much greater heat-absorption potential than CO_2, include fluorinated gases such as HFCs, PFCs, sulfur SF_6, and nitrogen trifluoride, which are associated with certain industrial products and processes (CAT 2006).

The greenhouse effect is a natural process that contributes to regulating the Earth's temperature. Without it, the temperature of the Earth would be about 0 degrees Fahrenheit (°F) (−18°C) instead of its present 57°F (14°C). Global climate change concerns are focused on whether human activities are leading to an enhancement of the greenhouse effect (National Climatic Data Center 2009).

The effect that each GHG has on climate change is measured as a combination of the mass of its emissions and the potential of a gas or aerosol to trap heat in the atmosphere, known as its "global warming potential" (GWP). GWP varies between GHGs; for example, the GWP of CH_4 is 21, and the GWP of N_2O is 310. Total GHG emissions are expressed as a function of how much warming would be caused by the same mass of CO_2. Thus, GHG gas emissions are typically measured in terms of pounds or tons of "CO_2 equivalent" (CO_2E).[1]

Contributions to Greenhouse Gas Emissions

In 2012, the United States produced 6,525 MMT CO_2E (EPA 2014). The primary GHG emitted by human activities in the United States was CO_2, representing approximately 82.5% of total GHG emissions. The largest source of CO_2, and of overall GHG emissions, was fossil-fuel combustion, which accounted for approximately 94.2% of the CO_2 emissions (EPA 2014).

According to the 2012 GHG inventory data compiled by CARB for the California Greenhouse Gas Inventory for 2000–2012, California emitted 459 MMT CO_2E of GHGs, including emissions resulting from out-of-state electrical generation (CARB 2014b). The primary contributors to GHG emissions in California are transportation; industry; electric power production from both in-state and out-of-state sources; agriculture; and other sources, including commercial and residential activities. These primary contributors to California's GHG emissions and their relative contributions in 2012 are presented in Table 3.6-1, GHG Sources in California.

Table 3.6-1
Greenhouse Gas Sources in California

Source Category	Annual GHG Emissions (MMT CO_2E)	Percent of Total[a]
Agriculture	37.86	8.3%
Commercial uses	14.20	3.1%
Electricity generation	95.09[b]	20.7%
Industrial uses	89.16	19.4%
Recycling and waste	8.49	1.9%
Residential uses	28.09	6.1%
Transportation	167.38	36.5%
High global warming potential substances	18.41	4.0%
Totals[c]	458.68	100%

Source: CARB 2014b.
Notes:
a Percentage of total has been rounded.
b Includes emissions associated with imported electricity, which account for 44.07 MMT CO_2E annually.
c Totals may not sum due to rounding.

1 The CO_2E for a gas is derived by multiplying the mass of the gas by the associated GWP, such that MT CO_2E = (metric tons of a GHG) × (GWP of the GHG). For example, the GWP for CH_4 is 21. This means that emissions of 1 metric ton of methane are equivalent to emissions of 21 metric tons of CO_2.

Potential Effects of Human Activity on Climate Change

According to CARB, some of the potential impacts in California of global warming include loss in snow pack, sea level rise, more extreme-heat days per year, more high-O_3 days, more large forest fires, and more drought years (CAT 2010b). Several recent studies have attempted to explore the possible negative consequences that climate change, left unchecked, could have in California. These reports acknowledge that understanding of the complex global climate system by climate scientists, and the interplay of the various internal and external factors that affect climate change, remain too limited to yield scientifically valid conclusions on a localized scale. Substantial work has been done at the international and national levels to evaluate climatic impacts, but far less information is available on regional and local impacts.

Although climate change is driven by global atmospheric conditions, climate change impacts are felt locally. Climate change is already affecting California: average temperatures have increased, leading to more extreme-hot days and fewer cold nights; shifts in the water cycle have been observed, with less winter precipitation falling in the form of snow, and both snowmelt and rainwater running off earlier in the year; sea levels have risen; and wildland fires are becoming more frequent and intense due to dry seasons that start earlier and end later (CAT 2010b). Climate change modeling using 2000 emissions rates shows that further warming would occur, which would induce further changes in the global climate system during the current century. Changes to the global climate system and ecosystems, and to California, would include the following:

- Changes in precipitation or melting snow and ice that are altering hydrological systems and affecting water resources in terms of quantity and/or quality (IPCC 2014).
- Changes in terrestrial, freshwater and marine specific as to their geographic ranges, seasonal activities, migration patterns, and species interactions (IPCC 2014).
- Negative impacts on agricultural crop yields (IPCC 2014).
- Impacts from climate-related extremes such as heat waves, droughts, floods, wildfires, and other natural disasters (IPCC 2014).
- A decline of Sierra snowpack, which is one of three primary water sources in California (in addition to reservoirs and groundwater). The Sierra Nevada snowpack is currently at 14% of normal (California Department of Water Resources 2015).
- Rising regional sea level increases high-tide water levels and augments extreme storm-forced sea-level fluctuations, allowing more wave energy to reach farther shoreward and thus increasing the potential for coastal flooding (CEC 2012a).

3.6.3 Thresholds of Significance

The following criteria, included in Appendix G of the CEQA Guidelines (14 CCR 15000 et seq.), will be used to determine the significance of potential GHG emissions impacts. Impacts to GHG emissions would be significant if the proposed project would:

A) Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; or

B) Conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

A recent judicial decision holds that a lead agency is not required to analyze the impacts of sea level rise on a proposed project because CEQA does not require an analysis of "impacts of the environment on the project" (see *Ballona Wetland Foundation v. City of Los Angeles* (2011) 201 Cal. App. 4th 455). Nonetheless, an analysis of sea level rise as it relates to global climate change is included, because the project site includes an area subject to the California State Lands Commission Public Trust Doctrine and is also within the jurisdiction of the Bay Conservation and Development Commission, which are agencies subject to Executive Order S-13-08. This analysis is intended to disclose current research on sea level rise and discuss the potential effects this trend may have on the proposed project following project completion. The following threshold regarding impacts as a result of sea level rise provides that a project would have a significant environmental impact if it would:

C) Expose property and persons to the physical effects of climate change, including but not limited to flooding, public health, wildfire risk, or other impacts resulting from climate change.

Bay Area Air Quality Management District

The BAAQMD's approach to developing a threshold of significance for GHG emissions is to identify the emissions level for which a project would not be expected to substantially conflict with existing California legislation adopted to reduce statewide GHG emissions. If a project would generate GHG emissions above this threshold, the project would be considered to contribute substantially to a cumulative impact and would be considered significant.

The BAAQMD's June 2010 CEQA Guidelines suggest that for stationary source projects, GHG emissions would be considered significant if the project were to exceed 10,000 MT CO_2E per year. However, as reflected in the BAAQMD's updated May 2012 CEQA Guidelines, due to a court challenge, BAAQMD cannot recommend specific thresholds of significance for use by local governments at this time. BAAQMD has stated that lead agencies may still rely on its

CEQA Guidelines for assistance in calculating air pollution emissions, obtaining information regarding the health impacts of air pollutants, and identifying potential mitigation measures.

City of Vallejo Climate Action Plan

The March 2012 City of Vallejo CAP provides a comprehensive local GHG inventory and forecast, establishes GHG emission reduction targets, and identifies a GHG reduction strategy for the City of Vallejo. The reduction strategy provides specific methods for reducing Vallejo's GHG emissions consistent with the direction of the State of California through the Global Warming Solutions Act (AB 32), Executive Order S-03-05, California Public Resources Code Section 21083.3, and BAAQMD's CEQA Air Quality Guidelines for a qualified GHG reduction strategy. The CAP and its supporting CEQA documentation establish a basis for the City to: "use the Climate Action Plan to streamline the environmental review of most developments and improvements in Vallejo. In essence, the CAP is an umbrella for all future actions that ensures Vallejo's consistency with state GHG reduction priorities. As long as future development is consistent with the goals and measures of this Plan, it is consistent with state GHG reduction targets. This consistency will allow future improvements in Vallejo to move faster and be more cost effective, saving the City and community time and money" (City of Vallejo 2012).

The forecast in the CAP utilizes the years 2020 and 2035 as target dates for overall reductions in GHG emissions in Vallejo. The CAP analysis in Chapter 3 applied community-wide growth indicators from 2008, including anticipated industrial growth and employment, to define a business-as-usual growth scenario. Under this scenario, community-wide emissions would have grown by approximately 11% by the year 2020 to 650,340 MT CO_2E and by 24% by 2035 to 728,170 MT CO_2E. Growth during these periods from the "Commercial/Industrial" sector was estimated at between 15,710 MT CO_2E (by 2020) and 42,840 MT CO_2E (by 2035). The City established a reduction target of 15% below existing emission levels by 2020 in conformance with the State of California's recommended reduction target. To attain this reduction target, the City's CAP sets forth measures to reduce emissions by 23% below the City's business-as-usual emissions, and further includes measures to achieve a 64% reduction below present levels by 2035 in order to achieve conformance with the state goal of 80% below 1990 levels by 2050. The State of California's long-term goal to reduce emissions to 80% below 1990 levels by 2050 is included in the CAP's forecast emissions (City of Vallejo 2012).

The reduction strategy contained in Chapter 4 of the City's CAP addresses specific measures to be implemented, both with respect to City operations and in guidance of private development throughout the community, in order to achieve the targeted GHG reduction goals. The CAP's detailed Implementation Actions as outlined in Chapter 5 outlines the ways in which the City plans to reduce GHG emissions 15% below baseline levels through changes in land use and travel behaviors, more efficient and cleaner energy use, and additional conservation of natural resources.

3.6.4 Impact Discussion

A) Would the project generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?

Construction Impacts

The BAAQMD does not specify a significance threshold for construction GHG emissions; however, the BAAQMD 2010 Guidelines recommend quantifying and disclosing construction GHG emissions, as provided below.

VMT Analysis

Detailed equipment utilization associated with VMT construction is included in Appendix D-1. In summary, the VMT component would replace the deteriorated timber wharf with a concrete pile supported wharf with structural concrete deck, and associated mooring and fender system~~,~~ ~~and related improvements for deep-water marine transportation operations~~. This would include the following:

- Approximately 10,300 cubic yards (cyd) of fill, the majority of which would be placed within the footprint of the existing wharf.
- Approximately 10,900 cyd of fill, to bring the finished elevation to +11.5 feet mean lower low water as needed for the proposed stormwater control plan.
- Approximately 89,800 cyd of dredging, to a design depth of 38 feet below mean lower low water (MLLW). The dredged material may be reused on site as engineered backfill, or would be transported from the site via barges and associated tugboats and disposed of in a marine disposal site within 3 miles of the project site. Dredging activities would be subject to a permit from the U.S. Army Corps of Engineers.
- Installation of a steel maintenance shed.
- Upgrading and realignment of the existing rail service.
- Demolition of an existing warehouse building and site improvements.

VMT construction is anticipated to begin in mid-2020~~17~~ and would require 4 to 6 months to complete. The VMT project component would be constructed simultaneously with the Orcem project component.

Sources of emissions from construction would include off-road construction equipment exhaust, on-road vehicles exhaust and entrained road dust (i.e., haul trucks, concrete trucks, worker vehicles), exhaust from tugboats used to position dredging barges, fugitive dust associated with site preparation and grading activities, and paving and architectural coating activities.

In addition, although construction is not expected to begin until ~~2017~~2020, the construction analysis, which was completed in August 2014, assumes a construction start date of January 2015, as well as the simultaneous construction of the Orcem portion of the project. Because construction equipment fleets become cleaner over time, due to regulatory requirements, the analysis of construction emissions based on a 2015 starting year conservatively overestimates ~~2017~~2020 construction impacts.

Table 3.6-2 shows the GHG emissions anticipated for construction of the VMT project component.

Table 3.6-2
VMT Construction Greenhouse Gas Emissions

Source	GHG Emissions (MT CO_2E/year)
2015 (CalEEMod)	68
2015 (Tug operations)	26
Total Phase 1	*94*

Source: Appendix D-1

Orcem Analysis

Development of the Orcem project component would involve construction and operation of an industrial facility for the production of a high performance, less polluting replacement for the traditional portland cement material used in most California construction projects. In particular, Orcem is proposing to construct and operate a plant on the site which focuses primarily on production of ground granulated blast furnace slag (GGBFS). However, the Orcem Plant may also produce cement from clinker. The Orcem Plant would involve construction of approximately 73,000 square feet of buildings and equipment, together with outdoor storage areas, on a 4.88-acre portion of the former General Mills plant site leased from VMT. Several of the buildings and equipment previously used by General Mills within the Orcem Site would be demolished in order to accommodate construction and operation of the proposed cement products production facility. The project would be constructed in phases to coincide with the growth in demand for Orcem's products. Orcem would import most of the raw materials used in the proposed plant via the proposed wharf on the adjoining VMT Site.

The Orcem Plant would be constructed in phases to coincide with the growth in demand for Orcem's products. As described in the VMT construction discussion, although Orcem construction is not expected to begin until ~~2017~~2020, the construction analysis, which was completed in August

2014, assumes a construction start date of January 2015, as well as the simultaneous construction of the VMT project component. Because construction equipment fleets become cleaner over time, due to regulatory requirements, the analysis of construction emissions based on a 2015 starting year conservatively overestimates ~~2017~~2020 construction emissions.

Table 3.6-3 shows the GHG emissions anticipated for the construction of the Orcem Plant.

Table 3.6-3
Orcem Construction Greenhouse Gas Emissions

	GHG Emissions (MT CO_2E/year)
2015	369
2016	62
Total	431

Source: Appendix D-1

Combined VMT and Orcem Project Analysis

Table 3.6-4 shows the GHG emissions anticipated for construction of both the Orcem and VMT project components. Although the proposed project would generate GHG emissions during construction, construction would be temporary and would not exceed a significance threshold since BAAQMD has not identified a threshold for construction. Therefore, the impact would be **less than significant**.

Table 3.6-4
Combined VMT and Orcem Construction Greenhouse Gas Emissions

	GHG Emissions (MT CO_2E)
VMT	199
Orcem	431
Total	630

Source: Appendix D-1

Operational Impacts

Orcem would import its raw materials (GBFS, clinker, portland cement, gypsum, limestone, and pozzolan) for production via several methods of transport including ocean-going vessels which would berth at the VMT wharf. The raw materials would be unloaded and transported to open or covered stockpiles on the site, as appropriate, to fully contain fugitive dust. The raw materials would then be reclaimed from these stockpiles by front-end loaders to be transported by conveyors into sealed processing equipment for milling into fine powders (the finished products). The finished products would be transported in sealed conveyance systems into storage silos, for subsequent loading into truck or rail tankers for distribution to customers in the region.

GGBFS is manufactured by recycling a byproduct, GBFS, from the steel industry. It is used as a partial replacement for traditional cement, also known as portland cement.

The operational phase of the development would include both Orcem and VMT operating their respective areas of the site simultaneously.

Emissions sources during operation of the facilities would include the following:

- Transportation
  - Terminal activity (ship exhaust emissions, tug boats, vessel loading/unloading)
  - Truck movements both on site and on the local road network
  - Rail activity
  - Barge activity
  - Off-road vehicle movements on site including operation of front-end loaders and forklifts
- Material handling emissions generated from stockpiling, unloading of material, material drop points, etc.
- Fugitive dust emissions from hopper and bag filters
- Air emissions from point P-1 (main stack)

The material throughput for both the Orcem and VMT projects would increase over time, as shown in Table 3.6-5. The greatest air quality impacts would result from the activities described in scenario number 3, where the maximum material is moved through the facilities via trucks and rail. This maximum transportation mode would not occur until at least 2020. Accordingly, the emissions are analyzed for 2020 fleet year for the shipping scenario where 160,000 MT of material is shipped to the facility monthly via four vessels, and of that, 91,900 MT is shipped off site by truck, and 68,100 MT is shipped off site by rail. As described in Chapter 2, Project Description, the maximum train size would be 77 cars; however, this analysis evaluates the impacts of 100-car trains, which is a conservative estimate. As described in Chapter 2, the number of rail cars in any given month and week will fluctuate based on the type of product that is being transported from the project site to market, but the average number of rail cars is anticipated to be 800 to 1,200 per month limited to no more than 14,400 project-related rail cars per year.

Table 3.6-5
VMT and Orcem Operational Throughput

Average Monthly Transportation Activity	Ships (#)	Barge (MT/month)	Trucks (MT/month)	Rail (MT/month)	Total (MT/month)
1) Orcem Phase 1 GBFS + VMT Truck Only	2	0	81,700	0	81,700

Source: Appendix D-1

VMT Analysis

The proposed VMT project component would include a multi-phased bulk and break-bulk aggregate import and distribution facility on the existing terminal footprint. The general transportation method would be to unload dry bulk or break-bulk cargo from vessels, temporarily store, and reclaim from storage to cargo trucks and railcars for local and regional distribution. In addition, the terminal design would allow reloading of cargo to barges, enabling VMT to engage in short sea shipping initiatives with other California and West Coast ports and terminals. As an operational deep draft facility, the VMT Terminal would handle a wide range of commodities including, but not limited to, the following:

- Feed grains
- Manufactured steel
- Timber/lumber
- Rock, aggregate, ores, and related materials (including GBFS, clinker, pozzolan, gypsum, limestone, and related materials used as part of the Orcem project component)
- Project-based break-bulk items (e.g., heavy lift transport, large construction assemblies)
- Marine construction materials
- Portland cement
- Gypsum

The VMT operational analysis reflects operation of the VMT Terminal without barge access; this scenario represents the greatest impacts because it requires the transport of all products from the facility via truck and rail, which would result in greater impacts than barge transport. The emissions analysis is based on detailed calculations and engineering data. Emissions were calculated using industry-accepted sources including CARB's Off-Road Emission Inventory, EMFAC2014, EPA AP-42, and vendor data. Complete details regarding the derivation of emission rates for various sources at the VMT component are provided in Appendix D-1.

An estimate of the maximum annual GHG emissions from operation of the VMT project component is outlined in Table 3.6-6.

Table 3.6-6
VMT Operational GHG Emissions

Operations	CO_2 (MT/yr)	CH_4 (MT/yr)	N_2O (MT/yr)
Shipping (sea buoy to dock)	1,253	0.122605997	0.07008
Barge	0	0	0
Unpaved Road (forklift)	38	0	0
Unpaved Road (front-end loader and excavator)	548	0	0
Industrial Paved Road (finished product)	34	0	0
Public Paved Road	2,312	0	0
Rail	380	0.030299965	0.0099337
On-site GHG Emissions (CalEEMod)	269	0	0
Total MT per year	4,835	0.152860602	0.0798322
Total CO_2E per year	4,835	3.21	24.75
Total MT CO_2E per year	4,863		

Source: Appendix D-1

Orcem Analysis

The primary raw material utilized at the Orcem Plant would be GBFS, a recycled by-product from the first stage in the production of steel. GBFS has the appearance and handling characteristics of coarse beach sand. At the Orcem Plant, GBFS would be dried and ground to a very fine GGBFS powder.

Operational activities at the Orcem Facility that would generate GHG emissions include ship/barge unloading, material unloading and handling, off-road equipment operations, process building operations, truck movements on the local road network, and rail movement accessing the Orcem Facility.

Estimates of the CO_2, CH_4, and N_2O emissions from Orcem operations are presented in Table 3.6-7. The Orcem operational analysis reflects operation at a maximum production rate of up to 900,000 MT per year of which 760,000 MT per year would be milled. The emissions analysis is based on detailed calculations, engineering data, and an operating schedule of 365 days per year. Emissions were calculated using industry-accepted sources including CARB's Ocean Going Vessels Marine Emissions Model, CARB's California Harbor Craft Emissions Inventory Database, CARB's OFFROAD2011 off-road equipment inventory, CARB's EMFAC2014 on-road vehicle emissions inventory, EPA AP-42, and vendor data. Detailed calculations are presented in Appendix D-1.

In particular, emissions of CO_2, CH_4, and N_2O from the hot air generator, used in the drying process, would be released via a 50-meter (164 feet) stack. Emissions were calculated based on vendor data and default EPA AP-42 emission rates and additional conservative assumptions related to emission variability.

Complete details regarding the derivation of emission rates for various activities at the Orcem Plant are provided in Appendix D-1. GHG emissions are estimated based on the same operational parameters that were used to estimate criteria air pollutants as described in Section 3.2, Air Quality.

Table 3.6-7
Orcem Plant Operational GHG Emissions

Operations	CO_2 (MT/yr)	CH_4 (MT/yr)	N_2O (MT/yr)
Shipping (from the sea buoy)	810	0.08	0.05
Hopper/Conveyor	129	0	0
Unpaved Road (front-end loader and excavator)	873	0	0
Industrial Paved Road (finished product)	53	0	0
Public Paved Road	2,908	0	0
Stack (natural gas)	13,899	0.56	0.15
Electricity (production)	7,357	0	0
Rail	117	0.01	0.00
On-site GHG Emissions (CalEEMod)	379	0	0
Total MT per year	26,524	0.65	0.20
Total MT CO_2E per year	26,524	13.55	63.27
Total MT CO_2E per year	26,601		

Source: Appendix D-1

Proposed Orcem Operations Compared with Traditional Cement Production GHG Emissions

Operational emissions of the Orcem Plant would exceed BAAQMD's threshold of 10,000 MT CO_2E per year. However, while the estimates in Table 3.6-7 take into account shipping and on-site emission sources from proposed operations, they do not take into account the reductions in GHG emissions associated with use of the Orcem product (GGBFS) in lieu of traditional portland cement. As documented in Chapter 2.0, Project Description, use of GGBFS would reduce CO_2 and other GHG component emissions by a larger corresponding annual amount. Emissions estimates shown in Table 3.6-7 conservatively exclude the GHG emission reductions associated with GGBFS utilization in construction projects because of the possibility that the Orcem Plant may produce either blended GGBFS or portland cement products.[2]

[2] When operating in Mode 2.

CARB identified the cement industry as a significant source of GHGs and placed the industry on its list of areas for development of early action measures to reduce such emissions. The major opportunities for GHG emission reductions involved replacing some of the traditional portland cement with other materials including GGBFS.

Table 3.6-8 presents a comparison between annual CO_2E emissions for Orcem operations and comparable cement production. Table 3.6-8 shows that GGBFS production would contribute to much lower GHG impacts than cement production.

Table 3.6-8
Annual CO_2E Reductions Associated with Production of GGBFS by Orcem (MT)

	GGBFS Tonnage Produced (MT)	Equivalent CO_2E Emissions Associated with Traditional Cement Production (MT)[1]	CO_2E Emissions Associated with GGBFS (MT)	Net Reduction in CO_2E Emissions
Mode 1	582,928	501,320	48,581	452,737 (90% reduction)
Mode 2	844,444	726,222	699,149	27,073 (3.7% reduction)
Mode 3	702,928	604,518	148,240	456,278 (75% reduction)

Source: Appendix D-1
Notes:
Mode 1: Importation of GBFS and grinding it to produce GGBFS.
Mode 2: Importation of clinker and grinding to produce traditional cement. Clinker is the raw material that is ground to produce cement
Mode 3: Importation of GBFS and grinding it to produce GGBFS (Mode 1) + importation of traditional cement
[1] 0.86 ton of CO_2E/MT of cement (Pyle 2008).

In relation to the production of GGBFS by Orcem, the GHG emission reductions that are realized when compared to GHG emissions from traditional cement production are substantial. As shown in Table 3.6-8, the average percentage decrease in emissions compared to portland cement production is greater than 90% and amounts to approximately 450,000 MT of CO_2E for Mode 1, Milestone 5.

In relation to Mode 2, the production of cement from clinker by Orcem would lead to a more modest reduction in GHG emissions when compared to GHG emissions generated from traditional cement production. The average percentage reduction compared to portland cement production is greater than 3% and amounts to approximately 27,000 MT of CO_2E for Mode 2.

Mode 3 operations would involve the production of primarily GGBFS from GBFS with some additional cement imported/exported from the facility. Under this mode of operation, GHG emission savings when compared to GHG emission from purely traditional portland cement production would be substantial. The average percentage reduction compared to portland cement production is greater than 70% and amounts to approximately 450,000 MT of CO_2E for Mode 3.

In summary, all proposed modes of operation at the Orcem Plant would lead to GHG emission reductions when compared to traditional portland cement production. Although the reduction in GHG emissions with regard to Mode 2 are modest, it is the intention of Orcem to primarily operate in either Mode 1 or Mode 3, with Mode 2 available under circumstances that the principle raw material, GBFS, is not available.

It is anticipated that the Orcem Plant would primarily operate in GGBFS production and not in cement production mode. However, estimated Orcem GHG emissions would exceed the BAAQMD threshold of 10,000 MT CO_2E per year in Mode 1, Mode 2, and Mode 3. Orcem is committed to reducing GHG as much as is feasible and would be fully consistent with all applicable reduction measures of the CAP and by extension the CARB Scoping Plan.

Combined VMT and Orcem Project Analysis

Table 3.6-9 shows the combined emissions from operation of the VMT and Orcem project components, including on-site electricity consumption.

Table 3.6-9
Annual CO_2E Emissions from Combined VMT and Orcem Operations

Scenario	Operational Phase	CO_2 (MT/yr)	CH_4 (MT/yr)	N_2O (MT/yr)
Orcem Mode 1, Milestone 5 and VMT	Shipping	2,022	0.20	0.12
	Hopper Conveyor	129	0	0
	Unpaved Road (forklift)	38	0	0
	Unpaved Road (front loader and excavator)	1,421	0	0
	Industrial Paved Road (finished product)	87	0	0
	Public Paved Road	5,220	0	0
	Stack (natural gas)	13,899	0.56	0.15
	Electricity (production)	7,357	0	0
	Rail	498	0.04	0.01
	On-site GHG Emissions (CalEEMod)	647	0	0
	Total MT per year	31,358	0.80	0.28
	Total MT CO_2E per year	31,358	16.76	88.16
	Total MTs CO_2E per year	31,464		

Source: Appendix D-1

As shown in Table 3.6-9, combined emissions from operation of the VMT and Orcem project components would result in approximately 31,464 MT CO_2E per year, which does not account for savings through the production of GGBFS in lieu of traditional portland cement. Although life-cycle emissions would result in a reduction in GHG emissions, the stationary source emissions of the proposed project would be greater than the BAAQMD's threshold of 10,000 MT CO_2E/year. Impacts would therefore be considered **significant** (**Impact 3.6-1).**

B) Would the project conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs?

VMT and Orcem Project Analysis

The Climate Change Scoping Plan approved by CARB on December 12, 2008, and updated in May 2014 provides an outline for actions to reduce California's GHG emissions. The Scoping Plan requires CARB and other state agencies to adopt regulations and other initiatives to reduce GHGs.

Additionally, the City of Vallejo adopted the City of Vallejo Climate Action Plan, which focuses on reducing GHG emissions through the following topics: green building practices, energy efficiency, transit-oriented development, mixed-use and higher-density development, recycling and composting, water conservation, and renewable energy. Because the proposed project would include upgrading an existing inactive marine terminal and reactivating a previous industrial facility, the proposed project would not conflict with or obstruct the goals and measures provided in the City of Vallejo Climate Action Plan. In addition, both the VMT and Orcem project components would incorporate measures to achieve consistency with all applicable Reduction Strategies and Implementation Actions contained in the 2012 CAP as described in Table 3.6-10, helping to achieve the overall City-wide GHG reduction goals as outlined previously.

Table 3.6-10 demonstrates the proposed project's consistency with various strategies of the CAP.

Table 3.6-10
Proposed Project Consistency with City of Vallejo Climate Action Plan

Strategy	Definition	Project Consistency
City Government Operations (CG) Strategies		
Strategy – CG-3 (Lighting)	Retrofit City-owned or -operated lighting and related mechanical systems.	• Orcem would install street/outdoor lighting with high-efficiency lights such as light-emitting diode (LED) or induction lighting. • Orcem would customize their lighting schedule for exterior lighting to minimize the use of lighting during unnecessary and underutilized times.
Strategy – CG-8 (Employee Commute Alternatives)	Provide information and incentives for City staff to carpool, use public transportation, walk, or bike to work.	• Orcem would encourage, where possible, employee commute alternatives such as carpooling and biking options.
Energy (E) Strategies		
Strategy – E-2 (Building Standards)	Require all new development to meet the minimum California Title 24 and California Green Building Standards Code requirements, as amended, and encourage new	• Orcem and VMT would ensure that all new buildings on site adopt the California Title 24 minimum requirements, and that new construction would adhere to Tier 1 or Tier 2 standards of the CALGreen Code

Table 3.6-10
Proposed Project Consistency with City of Vallejo Climate Action Plan

Strategy	Definition	Project Consistency
	development to exceed the minimum requirements.	requirements.
Strategy – E-3 (Smart Meters)	Increase the community's awareness and utilization of real-time energy consumption data available through PG&E's SmartMeter™ program.	• Orcem would install PG&E's SmartMeters™ on site for the control room, maintenance shop and offices, and other nonproprietary process-related equipment. Also, indoor real-time energy monitors would be installed. In addition, rebate programs that give priority to appliances with smart grid technology would be used, when possible.
Strategy – E-4 (Cool Roofs and Pavements)	Increase tree planting and the use of cool roofs and cool pavement materials to reduce the urban heat island effect and corresponding energy consumption. Implement tree replacement policy for projects where tree removal is necessary.	• Orcem would meet new building Title 24 requirements for cool roofs, which require a minimum solar reflectance index (SRI) of 10 for steep-slope roofs and 64 for low-slope roofs. • Orcem would reduce exterior heat gain for 50% of non-roof impervious site surfaces (roads, sidewalks, parking lots, driveways) through one or both of the following mechanisms: o Achieve 50% paved surface shading within 5 to 10 years by planting trees and other vegetation and/or installing solar panels or shading structures above parking. o Use paving materials with an SRI of at least 29 for all surfaces. Where appropriate, Orcem's GGBFS product may be used to achieve SRI values of up to 60 in exchange for flexibility in other areas. • Orcem is committed to planting trees on site to the greatest extent feasible while allowing for operational flexibility.
Renewable Energy (RE) Strategies		
Strategy – RE-1 (Renewable Energy Usage)	Support the installation of small-scale renewable energy systems including solar photovoltaic, solar thermal, and wind, river current, and tidal energy conversion systems.	• Orcem would investigate the option of installing solar energy panels on site. Orcem would also pre-wire and pre-plumb the facility for solar and solar thermal installations.
Transportation Demand Management (TDM) Strategies		
Strategy – TDM-1 (Local Businesses)	Promote buy local and related initiatives that support local commerce and reduce the need for extensive transport.	• Orcem would actively investigate options to buy local goods, food supplies, and services. • Orcem would participate in award programs that recognize local employers who provide outstanding contributions to the quality of life in the community, including "green" businesses. • Orcem would support strategies to increase

Table 3.6-10
Proposed Project Consistency with City of Vallejo Climate Action Plan

Strategy	Definition	Project Consistency
		local business-to-business commerce.
Strategy – TDM-4 (Parking)	Revise parking requirements for new commercial and multifamily projects and implement the Downtown Parking Meter Installation Plan.	• Orcem would provide accommodations for employees and visitors using bicycles, based on actual demand.
Strategy – TDM-7 (Commute Behavior)	Reduce emissions from commute travel to and from schools and workplaces.	• Orcem would support guaranteed ride home programs, including preferential parking spaces, employer-assisted ride-matching databases, recognition programs, and other incentives.
Strategy – TDM-8 (Jobs/Housing Balance)	Plan for an improved jobs/housing balance in order to reduce the need for long-distance travel from residences to places of work.	• Orcem would support the City's General Plan and corresponding regulations by providing jobs and economic revitalization that improves Vallejo's jobs/housing balance.
Optimized Travel (OT) Strategies		
Strategy – OT-3 (Anti-Idling and Traffic Calming)	Support anti-idling and traffic calming infrastructure and enforcement.	• Orcem would ensure that Commercial Vehicle Idling Regulations as adopted by the California Air Resources Board for heavy-duty vehicles are complied with on site.
Water, Wastewater, and Solid Water (W) Strategies		
Strategy – W-1 (Water Conservation Efforts)	Promote and require water conservation through outreach and pricing.	• Orcem would investigate options for conservation techniques, services, devices, and rebates.
Strategy – W-2 (Development Standard for Water Conservation)	Require water conservation in all new buildings and landscapes.	• Orcem, per the minimum requirements of the 2010 CALGreen Code, would install individual water meters for each space projected to consume more than 100 gallons per day. • Orcem, per the minimum requirements of the 2010 CALGreen Code, would install an additional water meter or sub-meter for landscaping uses. • Orcem would investigate the feasibility of using greywater, recycled water, and rainwater catchment systems.
Strategy – W-4 (Development Standard for Recycling and Composting)	Require waste diversion and use of recycled materials in new development.	• Orcem would investigate the feasibility of using recycled content products during construction, based on a minimum of 10% of total products used for on-site construction.
Off-Road Equipment (OR) Strategies		
Strategy – OR-1 (Lawn and Garden Equipment)	Encourage the use of electrified and higher efficiency lawn and garden equipment.	• Orcem would investigate the feasibility of using native vegetation in lieu of high-maintenance landscapes (such as grass turf) to reduce the need for gas-powered lawn and garden equipment.

Table 3.6-10
Proposed Project Consistency with City of Vallejo Climate Action Plan

Strategy	Definition	Project Consistency
Strategy – OR-2 (Construction Equipment)	Reduce emissions from heavy-duty construction equipment by limiting idling and utilizing cleaner fuels, equipment, and vehicles.	• Orcem and VMT would strictly enforce idling restrictions for heavy-duty vehicles in line with the Commercial Vehicle Idling Regulations as adopted by the California Air Resources Board. • Clear signage would be provided at all access points to remind construction workers of idling restrictions. • All construction equipment would be maintained per manufacturer specifications. • Orcem and VMT would investigate the options for limiting GHG emissions from construction equipment through use of the following measures: o Substituting electrified equipment for diesel- and gasoline-powered equipment where practical. o Using alternatively fueled construction equipment on site, where feasible, such as compressed natural gas, liquefied natural gas, propane, biodiesel, or ultra-efficient diesel.

Although the proposed project would not directly conflict with or obstruct implementation of the City of Vallejo CAP, the CAP does not include port/maritime or rail-related emissions as part of its GHG inventory or forecast assessment. Regarding rail and port emissions, the CAP states:

> For rail and port emissions, the California Air Resources Board OFFROAD 2007 software provides emissions from rail and port activities; however, these numbers are aggregated for the entire Solano County area, which includes incorporated, unincorporated, and state or federally owned land. Without data specific to the City of Vallejo and without a reasonable methodology for attributing these activities to the city, these emissions cannot be accurately included in the community-wide GHG inventory (City of Vallejo 2012).

As such, GHG emissions associated with these sources have not been accounted for in the CAP, and port/maritime and rail-related emissions associated with the proposed project cannot be adequately analyzed for consistency with the CAP. Additionally, although it is the intent of the proposed project to provide a partial replacement for portland cement, which would result in the manufacturing of a more environmentally sound product (and in turn would result in fewer GHG emissions than the production of traditional portland cement), production of GGBFS is dependent on future market demand; therefore, it cannot be guaranteed that the Orcem project component would operate in Mode 1 or Mode 3 under which reductions shown in Table 3.6-8 would be realized. For these reasons, it cannot be guaranteed that the proposed project would be consistent with the overarching objective of the City's CAP to achieve the reduction targets as established for 2020 and 2035. Impacts would be considered **significant (Impact 3.6-2)**.

Horizon Years 2030 and 2050

As described previously, Executive Order B-30-15 established a statewide emissions reduction target of 40% below 1990 levels by 2030. This interim measure was identified to keep the state on a trajectory needed to meet the 2050 goal of reducing GHG emissions to 80% below 1990 levels by 2050 pursuant to Executive Order S-3-05. CARB has already identified the target 2050 emission levels of 431 MMT CO_2E. Executive Order B-30-15 instructs CARB to similarly express the 2030 target in terms of million metric tons of carbon dioxide equivalent (MMT CO_2E).

CARB has indicated it is on track to meeting both the 2030 and 2050 goals. It states in the *First Update to the Climate Change Scoping Plan* that "California is on track to meet the near-term 2020 greenhouse gas limit and is well positioned to maintain and continue reductions beyond 2020 as required by AB 32" (see CARB 2014a, p. ES2.) With regard to the 2050 target for reducing GHG emissions to 80% below 1990 levels, the *First Update to the Climate Change Scoping Plan* (CARB 2014a, p. 34) states:

> This level of reduction is achievable in California. In fact, if California realizes the expected benefits of existing policy goals (such as 12,000 megawatts [MW] of renewable distributed generation by 2020, net zero energy homes after 2020, existing building retrofits under AB 758, and others) it could reduce emissions by 2030 to levels squarely in line with those needed in the developed world and to stay on track to reduce emissions to 80% below 1990 levels by 2050. Additional measures, including locally driven measures and those necessary to meet federal air quality standards in 2032, could lead to even greater emission reductions.

In other words, CARB has indicated the state is on a trajectory to meet the 2020, 2030, and 2050 GHG reduction targets set forth in AB 32, Executive Order B-30-15, and Executive Order S-3-05.

Regarding energy efficiency and compliance with AB 758, the project would not interfere with the state's implementation of building retrofits to further energy efficiency for existing buildings under AB 758. AB 758, the Comprehensive Energy Efficiency in Existing Buildings Law, tasked the CEC with developing and implementing a comprehensive program to increase energy efficiency in existing residential and nonresidential buildings that "fall significantly below the current standards in Title 24" (California Public Resources Code, Section 25943(a)(1)).

Approximately 50% of existing residential and nonresidential buildings in California were constructed before California Building Energy Efficiency Standards went into effect in 1978 (CEC 2015, *Existing Buildings Energy Efficiency Action Plan* (hereafter Draft AB 758 Plan), Chapter. 1, p. 5 [also noting that existing buildings represent 20% of all GHG emissions]). Other buildings constructed after 1978 also fall below current Title 24 standards and present significant opportunities for energy efficiency improvements (CEC 2015). Pursuant to AB 758, the CEC is in the process of developing an Existing Building Energy Efficiency Action Plan that identifies strategies to implement energy efficient renovations for such existing commercial, residential, and publicly owned buildings. Strategies include making information about a building's energy efficiency more readily available, educating the public about the cost benefit of energy upgrades, making attractive financing more readily available, educating the public and contractors about available energy upgrades and code compliance requirements, and educating a work force capable of implementing energy upgrades. (CEC 2015, Ch. 4, pp. 91–102). Structures built as part of the project would be constructed in compliance with current Title 24 standards and therefore would not interfere with CEC or other initiatives implemented to increase energy efficiency and reduce GHG emissions associated with existing buildings that do not adhere to Title 24 standards.

As discussed previously, although the proposed project would not directly conflict with or obstruct implementation of the City of Vallejo CAP, and thus targets set forth in AB 32, Executive Order B-30-15, and Executive Order S-3-05, the CAP does not include port/maritime or rail-related emissions as part of its GHG inventory or forecast assessment. As such, GHG emissions associated with these sources have not been accounted for in the CAP, and port/maritime and rail-related emissions associated with the proposed project cannot be adequately analyzed for consistency with the CAP. Additionally, although it is the intent of the proposed project to provide a partial replacement for portland cement which would result in fewer GHG emissions than the production of traditional portland cement, production of GGBFS is dependent on future market demand; therefore, it cannot be guaranteed that the Orcem project component would operate in Mode 1 or Mode 3 under which reductions shown in Table 3.6-8 would be realized. For these reasons, it cannot be guaranteed that the proposed project would be consistent with the overarching objective of the City's CAP to achieve the reduction targets as established for 2020 and 2035, or the state's GHG reduction goals for 2030 and 2050. Impacts would be considered **significant (Impact 3.6-3)**.

C) Would the project expose property and persons to the physical effects of climate change, including but not limited to flooding, public health, wildfire risk, or other impacts resulting from climate change?

VMT and Orcem Project Analysis

The proposed project would be subject to climate change impacts caused by GHG emissions, as described in detail in Section 3.6.2, Existing Conditions. Although it is difficult to determine scientifically valid impacts from climate change on a localized scale, some regional and global impacts could include an increase in sea level; reduced potable water supply from decreased mountain snowpack; an increase in the number of days conducive to O_3 formation; variations in weather that include changes to precipitation, ocean salinity, and wind patterns; and more extreme weather including droughts, heavy precipitation, heat waves, extreme cold, and the intensity of tropical cyclones.

Due to the location of the project site on the San Francisco Bay, sea level rise is considered the greatest impact of concern relative to climate change.

In March 2013, the Sea-Level Rise Task Force of the Coastal and Ocean Working Group of the California Climate Action Team (CO-CAT) released their State of California Sea-Level Rise Guidance Document based on the recently published (June 2012) National Research Council (NRC) Sea-Level Rise for the Coasts of California, Oregon, and Washington. Table 3.6-11 summarizes the sea level rise (SLR) projections, including the low and high range values, for the San Francisco Bay area. Further, the CO-CAT guidance recommends that sea level rise values for planning be selected based on risk tolerance and adaptive capacity. See Appendix D-2 for details.

Table 3.6-11
Sea Level Rise Projections for San Francisco, California (NRC 2012 Report)

Time Period	Low (inches)	Projected (inches)	High (inches)
2000-2050	4.5	11.0	23.8
2000-2070	8.4	18.5	38.5
2000-2100	16.5	36.0	66.0

Source: Appendix D-2

The proposed facility is expected to have a top of deck elevation of 11.86 feet NAVD88[3] (11.50 feet MLLW). Based on the flooding elevations discussed previously, there would be 2.36 feet (28 inches) of freeboard initially after construction. This would accommodate all projections of SLR through 2050 shown in Table 3.6-11, and falls midway between the "projected" and "high" estimates of SLR for year 2070 (Appendix D-2).

This impact analysis focuses on the "projected" SLR values. These values have been reasonable guides for policy determinations on recent relevant projects similar to the VMT project component. The interpolation tool provided by the City and County of San Francisco's SLR

3 North American Vertical Datum of 1988 – A vertical datum is a surface of zero elevation to which heights of various points are referred in order that those heights be in a consistent system. More broadly, a vertical datum is the entire system of the zero elevation surface and methods of determining heights relative to that surface (NOAA 2015).

Guidance document was used to determine the number of years that 28 inches of freeboard could theoretically protect from SLR. The anticipated SLR that is estimated for year "t" (years after 2000) can be calculated by:

SLR Projection (most likely, in) = [0.000045t3 +0.00037t2 + 0.428t]/2.54

Based on an initial freeboard of 28 inches, the "t" is calculated as 88 corresponding to year 2088. This provides for 73 years of SLR from the time of preparation of this EIR (Appendix D-2).

The proposed Orcem project component would be located upland from the shoreline and would not be subjected to the effects of SLR. The proposed VMT project component would include construction of a superstructure with a 2-foot-thick deck over 2-foot-deep pile caps. The outer edge of the platform would have a 6.5-foot-deep beam supporting the fender system. Due to their depths, the edge beam and pile caps would both extend below the 100-year water surface elevation, and may be subjected to buoyancy and uplift forces during extreme tidal events. The edge beam would be submerged daily by high tides, and eventually (after SLR occurs) the pile cap would also be submerged daily by high tides (Appendix D-2). Therefore, impacts to the VMT project component related to SLR would be **potentially significant (Impact 3.6-4)**.

3.6.5 Mitigation Measures

Mitigation for Impact 3.6-1: The proposed project would exceed the BAAQMD CEQA level of significance of 10,000 MT CO_2E per year. Unmitigated emissions from the proposed project would be approximately 31,464 MT CO_2E per year.

MM-3.6-1 The following measures are required to be implemented to reduce greenhouse gas emissions associated with operation of the proposed project:

- Fuel used in all on-site equipment shall initially consist of 20% biodiesel (a fuel blend of 20% biodiesel in 80% petroleum diesel). As production increases, the biodiesel content of the fuel shall be increased as feasible. The applicants shall conduct annual reviews regarding the availability of technically equivalent or better technologies and report to the City of Vallejo. If the technology is determined to be feasible in terms of cost and technical and operational feasibility, the applicants shall implement such technology.
- Fuel supply shall consist of compressed natural gas for forklifts and front-end loaders.

Mitigation for Impact 3.6-2 and Impact 3.6-3: Although the proposed project would not directly conflict with or obstruct implementation of the City of Vallejo CAP, it cannot be guaranteed that the proposed project would be consistent with the overarching objective of the

City's CAP to achieve the reduction targets as established for 2020 and 2035, or the state's target reduction goals in 2030 and 2050.

MM-3.6-2a Orcem and VMT shall encourage employee commute alternatives such as carpooling and biking options by providing information to employees about alternative transportation, providing subsidized bus passes, and including employee showers on site. As part of this effort, Orcem and VMT shall implement an employee worker ridership program to encourage alternative work commute options to reduce single-occupancy vehicle trips during project operation. A commute program manager shall be designated to provide information to employees using the Bay Area Air Quality Management District 511 services (accessed at www.511.org) or a similar Bay Area transit information provider.

The program shall include a provision to notify all future employees of the worker ridership program prior to the start of project operations and shall notify employees of the 511 RideMatch Service (available at https://www.ridematch.511.org/SanFrancisco/TDMRegistration.jsp?idScreen=REGISTRN1), or similar communication method, to ensure personnel can identify potential carpooling program participants. All Orcem and VMT employees shall be encouraged through the program to create an account with 511 (at https://my511.org/) or create an account with a similar transit information provider. Personal accounts will allow employees to log their commute activity, identify rideshare options, use alternative transportation features and trip planning services, and other features to encourage alternative commute methods. Additional resources Orcem and VMT may utilize for the implementation of an alternative commute program can be found at: http://rideshare.511.org/employers/downloads.aspx.

MM-3.6-2b Orcem and VMT shall either eliminate the use of turf in landscaping, or landscape the site with native vegetation and minimize the use of turf, in order to reduce the need for gas-powered lawn and garden equipment.

MM-3.6-2c Orcem and VMT shall use drought-tolerant plant types, where landscaping is proposed, in order to minimize the use of water.

MM-3.6-2d Orcem and VMT shall use greywater, recycled water, and rainwater catchment systems for irrigation, if feasible, for proposed landscape areas. If at least one of these alternative water sources are not employed, Orcem and VMT shall demonstrate infeasibility to the City.

Mitigation for Impact 3.6-4: The VMT project component would be subjected to buoyancy/uplift forces during extreme tidal events, as well as daily or permanent submergence during high tides, as proposed in the project, as a result of projected SLR.

MM-3.6-3 Structural members associated with the VMT deep-water terminal construction, including wharf improvements and other components that would be affected by sea level rise, shall be designed to resist extreme tidal event loads and continual salt water submergence to the satisfaction of the City engineer.

3.6.6 Level of Significance After Mitigation

Impact 3.6-1: Implementation of MM-3.6-1 would require fuel supply measures to reduce GHG emissions associated with operation of the proposed project; however, because the City's adopted CAP does not extend fully to marine and rail operations, there is no assurance that emissions will be reduced to below a level of significance. Impact 3.6-1 would therefore remain **significant and unavoidable**.

Impacts 3.6-2 and 3.6-3: Implementation of MM-3.6-2a through 3.6-2d would require the applicants to encourage employee commute alternatives, and reduce the amount of energy used for landscaping maintenance and irrigation. However, because the City's adopted CAP does not extend fully to marine and rail operations, there is no assurance that emissions will be reduced to a level that would ensure the project would be consistent with the overarching objective of the City's CAP to achieve the reduction targets as established for 2020 and 2035, or the state's target reduction goals in 2030 and 2050. Impacts 3.6-2 and 3.6-3 would therefore remain **significant and unavoidable**.

Impact 3.6-4: Implementation of MM-3.6-3 would require the VMT project component to be designed to resist the effects of SLR to the satisfaction of the City Engineer. Impact 3.6-4 would be reduced to a **less-than-significant** level.

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3.7 HAZARDS AND HAZARDOUS MATERIALS

This section analyzes the potential impacts of the Vallejo Marine Terminal (VMT) and Orcem project (proposed project) with respect to hazards and hazardous materials and recommends mitigation measures where necessary to reduce or avoid significant impacts. Sources reviewed to prepare this section include the following, which are provided in Appendix I:

- **Appendix I-1:** Malcolm Pirnie. 2006. *Site Investigation Report*.
- **Appendix I-2:** Northgate Environmental Management, Inc. 2006. *Phase I Environmental Site Assessment (ESA).*
- **Appendix I-3:** Northgate Environmental Management Inc. 2007. *Phase II Soil and Groundwater Quality Investigation*.
- **Appendix I-4:** Solano County Department of Resource Management. 2007. *Solano County Remedial Action Completion Certification*. March 2007.
- **Appendix I-5:** Environmental/Remediation Resources Group Inc. 2007. *Final Backfill Report*.
- **Appendix I-6:** Duncklee and Dunham. 2008. *Environmental Audit Summary.*
- **Appendix I-7:** Malcolm Pirnie. 2008. *Fourth Quarter 2007 Groundwater Monitoring Report*.
- **Appendix I-8:** ProTech Consulting and Engineering, 2014. *Asbestos Report*.
- **Appendix I-9:** AWN Consulting, 2014. *Hazards and Hazardous Materials Report for Orcem California Proposed Ground Granulated Blast Furnace Slag Manufacturing Plant*.
- **Appendix I-10:** Malcolm Pirnie. 2013. *Fourth Quarter 2012 Groundwater Monitoring Report, Leasehold Property*.
- **Appendix I-11:** Kennedy/Jenks Consultants. 2014, *Covenant and Environmental Restrictions and Revised Site Management Plan*.

All figures referenced in this section are provided at the end of the section.

3.7.1 Regulatory Setting

Hazardous materials and wastes are identified and defined by federal and state regulations for the purpose of protecting public health and the environment. Hazardous materials contain certain chemical, physical, or infectious properties that cause them to be considered hazardous. Hazardous wastes are defined in the Code of Federal Regulations (CFR) Title 40, Parts 260–265 and in the California Code of Regulations (CCR), Title 22, Section 66261. Over the years, these laws and regulations have evolved to deal with different aspects of the handling, treatment, storage, and disposal of hazardous substances.

Federal

Federal Toxic Substances Control Act and Resource Conservation and Recovery Act (1976)

The Federal Toxic Substances Control Act of 1976 and the Resource Conservation and Recovery Act (RCRA) of 1976 established a program administered by the U.S. Environmental Protection Agency (EPA) for the regulation of the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA was amended in 1984 by the Hazardous and Solid Waste Act, which affirmed and extended the "cradle-to-grave" system of regulating hazardous wastes. The use of certain techniques for the disposal of some hazardous wastes was specifically prohibited by the Hazardous and Solid Waste Act (EPA 2014a).

Hazardous waste generators are regulated based on the amount of hazardous waste produced each month. Large quantity generators are facilities that generate greater than or equal to 1,000 kilograms (kg) of hazardous waste per month; small quantity generators generate between 100 and 1,000 kg of hazardous waste per month; and conditionally exempt small quantity generators generate less than 100 kg of hazardous waste per month and are subject to significantly reduced requirements for managing hazardous waste (EPA 2014b).

Comprehensive Environmental Response, Compensation, and Liability Act (1980)

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as "Superfund," was enacted by Congress on December 11, 1980. This law provided broad federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment. CERCLA established requirements concerning closed and abandoned hazardous waste sites, provided for liability of persons responsible for releases of hazardous waste at these sites, and established a trust fund to provide for cleanup when no responsible party could be identified. CERCLA also enabled the revision of the National Contingency Plan. The National Contingency Plan provided the guidelines and procedures needed to respond to releases and threatened releases of hazardous substances, pollutants, or contaminants. The National Contingency Plan also established the National Priorities List, which is a list of contaminated sites warranting further investigation by the EPA. CERCLA was amended by the Superfund Amendments and Reauthorization Act in 1986 (EPA 2014b).

Code of Federal Regulations – Title 33: Navigation and Navigable Waters

Title 33 of the CFR governs the navigation of navigable waters as enforced by the U.S. Department of Homeland Security and U.S. Coast Guard. Specifically, Section 165.1181 covers the navigation rules for the San Francisco Bay Region. Given the range of uses within the San Francisco Bay Region, regulations are in place to ensure safety and security related to commercial, industrial, military, and recreational navigation.

Per 33 CFR 66.01 Aids to Navigation Other Than Federal or State, the U.S. Coast Guard Commander shall be notified no less than 5 days prior to commencing work within navigable waters. Should any federal aids to navigation require removal or relocation in order to implement a project, or should a project require the temporary placement and use of private aids to navigation, a request for removal shall be submitted in writing to the U.S. Army Corps of Engineers (USACE) Regulatory Division as well as the U.S. Coast Guard, Aids to Navigation office. Within 30 days of completion of a project, a post-project survey indicating changes to structures and other features in navigable waters shall be completed and a copy of the survey shall be sent to the USACE Regulatory Division and to the National Oceanic and Atmospheric Administration (NOAA) for chart updating.

Maritime Transportation Security Act of 2002

The Maritime Transportation Security Act of 2002 amends the Merchant Marine Act of 1936 to establish a program to ensure greater security for U.S. ports and waterways. The act, which implements the International Ship and Port Facility Security Code, creates a consistent security program for all U.S. ports. The act requires vessels and port facilities to conduct vulnerability assessments and develop security plans that address security patrols, restricted areas, personnel identification procedures, access control measures, and surveillance equipment.

State

California Oil Spill Prevention and Response Act (1990)

The goal of the Oil Spill Prevention and Response Act is to improve the prevention, removal, abatement, response, containment, clean up, and mitigation of oil spills in the marine waters of California. The Oil Spill Prevention and Response Act and its implementing regulations (14 CCR 800–802) created harbor safety committees for the major harbors of California to plan for the safe navigation and operation of tankers, barges, and other vessels within each harbor by preparing a harbor safety plan encompassing all vessel traffic within the harbor.

California Environmental Protection Agency

The California Environmental Protection Agency (CalEPA) implements and enforces a statewide hazardous materials program established by Senate Bill 1802 to consolidate, coordinate, and make consistent the administrative requirements, permits, inspections, and enforcement activities for the following environmental and emergency management programs for hazardous materials:

- Hazardous Materials Release Response Plans and Inventories (Business Plans)
- California Accidental Release Prevention Program
- Underground Storage Tank Program

- Aboveground Petroleum Storage Act Requirements for Spill Prevention, Control, and Countermeasure Plans
- Hazardous Waste Generator and On-Site Hazardous Waste Treatment Programs
- California Uniform Fire Code, Hazardous Materials Management Plans, and Hazardous Material Inventory Statements

California Hazardous Waste Control Law

The California Hazardous Waste Control Law is administered by CalEPA to regulate hazardous wastes. While the Hazardous Waste Control Law is generally more stringent than the RCRA, until the EPA approves the California hazardous waste control program (which is charged with regulating the generation, treatment, storage, and disposal of hazardous waste), both the state and federal laws apply in California. The Hazardous Waste Control Law lists 791 chemicals and approximately 300 common materials that may be hazardous; establishes criteria for identifying, packaging, and labeling hazardous wastes; prescribes management controls; establishes permit requirements for treatment, storage, disposal, an_d transportation; and identifies some wastes that cannot be disposed of in landfills.

CCR, Title 22, Section 66261.10, provides the following definition for hazardous waste:

> [A] waste that exhibits the characteristics may: (1) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible or incapacitating reversible, illness; or (2) pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported, or disposed or otherwise managed.

According to CCR Title 22, substances having a characteristic of toxicity, ignitability, corrosivity, or reactivity are considered hazardous waste. Hazardous wastes are hazardous substances that no longer have a practical use, such as material that has been abandoned, discarded, spilled, contaminated, or is being stored prior to proper disposal.

Toxic substances may cause short-term or long-lasting health effects, ranging from temporary effects to permanent disability or death. For example, toxic substances can cause eye or skin irritation, disorientation, headache, nausea, allergic reactions, acute poisoning, chronic illness, or other adverse health effects if human exposure exceeds certain levels (the level depends on the substance involved). Carcinogens (substances known to cause cancer) are a special class of toxic substances. Examples of toxic substances include most heavy metals, pesticides, and benzene (a carcinogenic component of gasoline). Ignitable substances (e.g., gasoline, hexane, and natural gas) are hazardous because of their flammable properties. Corrosive substances (e.g., strong acids and bases such as sulfuric (battery) acid or lye) are chemically active and can damage other materials or cause severe burns upon contact. Reactive substances (e.g., explosives, pressurized canisters, and pure sodium metal, which react violently with water) may cause explosions or generate gases or fumes.

Other types of hazardous materials include radioactive and biohazardous materials. Radioactive materials and wastes contain radioisotopes, which are atoms with unstable nuclei that emit ionizing radiation to increase their stability. Radioactive waste mixed with chemical hazardous waste is referred to as "mixed wastes." Biohazardous materials and wastes include anything derived from living organisms. They may be contaminated with disease-causing agents, such as bacteria or viruses (22 CCR 66261.1 et seq.).

California Accidental Release Prevention Program

Similar to the Federal Risk Management Program, the California Accidental Release Prevention Program includes additional state requirements as well as an additional list of regulated substances and thresholds. The regulations of the program are contained in CCR Title 19, Division 2, Chapter 4.5. The intent of the California Accidental Release Prevention Program is to provide first responders with basic information necessary to prevent or mitigate damage to public health, safety, and the environment from the release or threatened release of hazardous materials.

California Department of Toxic Substances Control

The California Department of Toxic Substances Control (DTSC) administers the transportation of hazardous materials throughout the state. Regulations applicable to the transportation of hazardous waste include Title 22, Division 4.5, Chapter 13 and Chapter 29 of the CCR and Division 20, Chapter 6.5, Articles 6.5, 6.6, and 13 of the California Health and Safety Code (California DTSC 2007). The California DTSC requires that drivers transporting hazardous wastes obtain a certificate of driver training that shows the driver has met the minimum requirements concerning the transport of hazardous materials, including proper labeling and marking procedures, loading/handling processes, incident reporting and emergency procedures, and appropriate driving and parking rules.

California Health and Safety Code

In California, the handling and storage of hazardous materials is regulated by Division 20, Chapter 6.95 of the California Health and Safety Code. Under Sections 25500–25543.3, facilities handling hazardous materials are required to prepare a Hazardous Materials Business Plan. Hazardous Materials Business Plans contain basic information on the location, type, quantity, and health risks of hazardous materials stored, used, or disposed of in the state.

Chapter 6.95 of the Health and Safety Code establishes minimum statewide standards for Hazardous Materials Business Plans. Each business shall prepare a Hazardous Materials Business Plan if that business uses, handles, or stores a hazardous material (including hazardous waste) or an extremely hazardous material in quantities greater than or equal to the following:

- 500 pounds of a solid substance
- 55 gallons of a liquid
- 200 cubic feet of compressed gas
- A hazardous compressed gas in any amount (highly toxic with a Threshold Limit Value of 10 parts per million or less)
- Extremely hazardous substances in threshold planning quantities

In addition, in the event that a facility stores quantities of specific acutely hazardous materials above the thresholds set forth by California law, facilities are also required to prepare a Risk Management Plan and California Accidental Release Plan. The Risk Management Plan and Accidental Release Plan provide information on the potential impact zone of a worst-case release and require plans and programs designed to minimize the probability of a release and mitigate potential impacts.

California Occupational Safety and Health Administration

The California Occupational Safety and Health Administration is the primary agency responsible for worker safety in the handling and use of chemicals in the work place. California Occupational Safety and Health Administration standards are generally more stringent than federal regulations. The employer is required to monitor worker exposure to listed hazardous substances and notify workers of exposure (8 CCR 337 et seq.). The regulations specify requirements for employee training, availability of safety equipment, accident prevention programs, and hazardous substance exposure warnings.

Local

Solano County Department of Resource Management, Environmental Health Services Division

The Solano County Department of Resource Management, Environmental Health Services Division is the Certified Unified Program Agency (CUPA) for all cities and unincorporated areas in Solano County. The CUPA is responsible for regulating hazardous materials business plans and chemical inventory, hazardous waste permitting, underground storage tanks (USTs), and risk management plans, including the Solano County Hazardous Material Area Plan (Solano County 2014). The Hazardous Material Area Plan describes the County's planning and preparedness for hazardous materials releases, clarifies the role of various agencies during a hazardous materials incident, and describes the County's hazardous materials incident response program, training, communications, and post-incident recovery procedures (Solano County 2014).

San Francisco Bay Conservation and Development Commission

The San Francisco Bay Conservation and Development Commission (BCDC) oversees and regulates any dredging and disposal activities in the San Francisco Bay and associated water bodies, including the Mare Island Strait.

San Francisco, San Pablo, and Suisun Bays Harbor Safety Plan

The San Francisco, San Pablo, and Suisun Bays Harbor Safety Plan, approved in June 2013, is intended to provide mariners with a guide to navigation issues and vessel safety to ultimately prevent pollution and protect the region's valuable resources. The plan was developed by the Harbor Safety Committee of the San Francisco Bay Region as required by the California Oil Spill Prevention and Response Act of 1990. The Harbor Safety Plan includes Best Maritime Practices, which provide important information necessary for safe, reliable and environmentally sound vessel movements in and around San Francisco Bay, including speed restrictions, navigation guidelines, and traffic routing protocols (HSC 2013).

The San Francisco Harbor Safety Committee consists of representatives from the following: ports, dry cargo vessel operators, tank ship operators, oil marine terminal operators, tug operators, tank barge operators, passenger ferry or excursion vessel operators, the regional pilot organization, the vessel labor union, commercial fishing representatives, recreational boaters, environmental organizations, the U.S. Coast Guard Captain of the Port, USACE, NOAA, and the San Francisco BCDC (HSC 2013).

San Francisco Bay Area Water Emergency Transportation Authority's Plans

The Water Emergency Transportation Authority replaced the San Francisco Bay Area Water Transit Authority, which was a regional agency authorized by the State of California to operate a comprehensive San Francisco Bay Area public water transit system. In 2003, the Water Transit Authority issued a Final Implementation and Operations Plan, which provides a strategy to improve public transit with an environmentally friendly ferry system. In 2009, the Water Emergency Transportation Authority adopted the Emergency Water Transportation System Management Plan, which complements and reinforces other transportation emergency plans that will enable the Bay Area to restore mobility after a regional disaster (WETA 2009).

City of Vallejo General Plan

The City of Vallejo adopted General Plan 2040 in August 2017 (City of Vallejo 2017a). The General Plan 2040 Land Use Map was adopted in November 2017 (City of Vallejo 2017b). The previous draft of this EIR was based on the General Plan adopted in July 1999. The General Plan 1999 contained the "Household Hazardous Waste Element," published under a separate cover. This EIR, where necessary and appropriate, incorporates the updated goals and policies from General Plan 2040. This discussion is shown in underline and/or strikeout in this document for ease of review.

The following Vallejo General Plan 2040 goals and policies are applicable to the hazards and hazardous materials of the proposed project.

- *Action NBE-5.3B Continue to require development to comply with building and safety codes and continue to route plans and drawings to all relevant City departments for review.*
- *Action NBE-5.10A Continue to require remediation of hazardous material releases from previous land uses as part of any redevelopment activities.*

  POLICY NBE-5.11 Risk Reduction. Reduce the risk of hazardous materials accidents, spills, and vapor releases, and minimize the effects of such incidents if they occur.

  - *Action NBE-5.11A Continue to require the preparation of Hazardous Materials Business Plans for new uses that will handle hazardous materials, including inventory of materials by type, quantities, and conditions of storage and transportation, assessment of potential hazards associated with the materials, and steps to be taken to minimize risks and in the event of a spill.*
  - *Action NBE-5.11B Continue to require that businesses using hazardous materials maintain safe distances from sensitive uses, such as homes and schools.*
  - *Action NBE-5.11C Work with appropriate State and federal agencies to designate and periodically update official routes for the transportation of hazardous materials.*
  - *Action NBE-5.11D Continue to require compliance with all hazardous waste transport standards established by State and federal agencies.*
  - *Action NBE-5.11E Continue to require that all facilities where hazardous materials are used, handled, or stored are designed and constructed to minimize the possibility of environmental contamination and off-site impacts.*
  - *Action NBE-5.11F Collaborate with county, State, and federal agencies to ensure that facilities where hazardous materials are used, handled, or stored are regularly inspected and that applicable regulations are enforced.*

POLICY NBE-5.12 Public Awareness. Ensure that residents and businesses can obtain up-to-date information about hazardous materials handling, storage, and regulations in the community.

- *Action NBE-5.12B Enforce community disclosure (Right to Know) laws that inform property owners of the presence of hazardous materials nearby.*
- *Action NBE-5.12C Work with rail and waterborne cargo transporters and the California Public Utilities Commission (CPUC) to ensure safe conditions for the loading, unloading, and transport of hazardous materials through Vallejo.*

3.7.2 Existing Conditions

Existing and past land use activities are potential indicators of hazardous material storage and use. For example, many industrial sites, historic and current, are known to have soil or groundwater contamination by hazardous substances. Other hazardous materials sources include leaking underground storage tanks, surface runoff from contaminated sites, and migration of contaminated groundwater plumes.

Setting

The project site consists of a 31.4-acre site located along Derr Street in Vallejo, California. The majority of the project site consists of the former General Mills flour mill plant which operated at the site from 1869 until 2004. The former flour mill plant is currently unoccupied and consists of 12 structures associated with the former flour mill plant operations, along with a single residence and associated accessory buildings. The former flour mill plant site has been the subject of prior environmental investigations, some of which were divided into two different areas: the eastern portion is referred to as the Fee Property and the western portion along the waterfront is referred to as the Leasehold area. As shown on Figure 3.7-1, the VMT Site and the Orcem Site both include portions of the Fee Property and the Leasehold areas.

The approximately 5-acre plot of vacant land east of Derr Street in the northern portion of the project site (outside of the VMT Terminal and Orcem Sites) appears to have been historically vacant (based on review of aerial photographs from 1948, 1968, 980, 1987, 1988, 1993, 2002, and 2005 on www.historicaerials.com). Dudek did not review any prior investigations that covered the approximately 5-acre vacant area.

The project site is bordered to the east and southeast by residential development. An industrial and rail area are located to the north, and Mare Island Strait lies to the west of the project site.

Many types of marine vessels call at terminals in the Bay Area. 2010 is the most recent year of available data and is generally representative of the baseline conditions for the proposed project.

Annually, approximately 3,195 commercial vessels transit into Carquinez Bay, however, very few of these vessels actually transit through Mare Island Straits (Pinhey, pers. comm. 2014; USCG 2014).

Groundwater has been measured at between 3.8 to 5.9 feet below ground surface (Appendix I-1). The site is predominantly underlain by artificial fills thought to have been derived from the adjacent hillside. Geology, soils and topography on site are described in detail in Section 3.5, and shown in Figure 3.5-1.

Surface water is present in the western portion of the project site as part of the Mare Island Strait. Mare Island Strait receives flow from the Napa River and discharges to San Pablo Bay. Surface water and groundwater features are described in detail in Section 3.8. Several industrial facilities have flanked Mare Island Strait, including the Mare Island Naval Shipyard, Kaiser Steel, and the PG&E Manufactured Gas Plant. Some industrial sites located along the Mare Island Strait, including Mare Island Naval Shipyard, have discharged wastewater to the strait.

Limited sediment sampling data for Mare Island Strait were identified in past studies. The data included a 1988–1990 study by NOAA and dredged material sampling from 2005. Dudek reviewed a report estimating the extent and magnitude of adverse biological effects associated with chemical contaminants throughout the San Francisco Bay estuary, which included Mare Island Strait. Reportedly, concentrations of silver, chromium, and lead were detected, and the majority of the sediment samples from Mare Island Strait were found to be toxic to bivalve larvae (NOAA 1992). Table 3.8-3 in Section 3.8 provides water quality monitoring results in the Mare Island Strait for selected contaminants.

Dudek also reviewed an Environmental Impact Report (EIR) for the Mare Island dredged material disposal ponds at the Former Mare Island Naval Shipyard. Dredged material from Mare Island Strait was discharged to the ponds between 1982 and 1994. The dredged material in the ponds were allowed to settle before the excess water was discharged in tidal wetlands, and when capacity was met, the ponds were left to dry. As part of remedial investigations at the Naval Shipyard, subsurface sediments from the disposal ponds and dredged material from the levees in Mare Island Strait were collected (City of Vallejo and USACE 2005). The data is presented in Table 3.7-1.

Table 3.7-1
Subsurface Sediments in Mare Island Strait

	Screening Guidelines for Beneficial Reuse, (mg/kg)		Dredged Material 50th Percentile	Dredged Material Upper 99th Percentile
	Surface Wetlands	*Upland Fill or Wetland Foundation Soils*		
Inorganic Elements (mg/kg)				
Arsenic	15.3	70	15	37.9
Chromium	112	370	94	217
Lead	43.2	218	39	292

Table 3.7-1
Subsurface Sediments in Mare Island Strait

	Screening Guidelines for Beneficial Reuse, (mg/kg)		Dredged Material 50th Percentile	Dredged Material Upper 99th Percentile
	Surface Wetlands	*Upland Fill or Wetland Foundation Soils*		
Silver	0.58	3.7	0.54	3.7
Zinc	158	410	156	595
Organic Compounds (mg/kg)				
Total PAH	3.39	44.8	0.1	0.8
Total PCBs	0.023	0.18	0.03	0.5

Notes:
mg/kg= milligrams per kilogram.
PAH = polycyclic aromatic hydrocarbon
PCB = polychlorinated biphenyls

Based on the historic concentrations detected in the sediment from Mare Island Strait, current sediment in the Mare Island Strait may have elevated concentration of contaminants. Sediment screening and testing guidelines for beneficial reuse of dredged materials indicate up to 50% of the samples measured would not be suitable for reuse as wetland surface material. The samples measured would pass most criteria for reuse as upland fill or wetland foundation material; although some concentrations of lead, silver, zinc and total polychlorinated biphenyls (PCBs) indicate reuse even as upland or foundational material may not be permitted. It should also be noted that it is unknown whether the statistics in Table 3.7-1, while in fairly close proximity to the project, are representative of the tidal sediments within the project site specifically.

Prior Investigations

Prior investigations of the former General Mills flour mill occurred between 1987 and 2014. The prior investigations were associated with investigation and remediation/closure of 13 underground storage tanks (USTs), 7 aboveground storage tanks (ASTs), and other industrial uses (machine shop, print shop, garage, dumping area, fumigant storage) at the site. Ten of the former USTs were located on the Fee Property (eastern portion of the General Mills site), and three of the former USTs were located on the Leasehold (western portion of the General Mills site). A large soil excavation occurred on the Leasehold property in 2006. The large soil excavation area was investigated further, and land use restrictions were placed on the former excavation area, now referred to as the Site Management Plan (SMP) area and buffer, in 2014. The locations of the former USTs and ASTs, the locations of the Fee Property and Leasehold, and the location of the large soil excavation (included within the SMP area and buffer) are shown on Figure 3.7-1.

2006 Site Investigation Report

Malcolm Pirnie conducted site investigation work during January and February of 2006 (see Appendix I-1), including the installation of five groundwater monitoring wells and one geotechnical boring as well as the removal of five USTs (eight USTs had been previously removed or closed). Soil testing and subsurface investigation was performed in the locations of the 13 former USTs and 7 former ASTs at the site as well as other areas to determine the extent to which petroleum hydrocarbons were present.

Malcolm Pirnie proposed site-specific remediation goals to the Solano County Resource Management Environmental Health Division. The remediation goals for the eastern portion of the site (Fee Property) were based on a residential use scenario, while the goals for the western portion of the site (Leasehold) were based on a commercial end use.

Remediation efforts included excavation, on-site ex-situ chemical oxidation treatment, and reuse (backfill) of the treated soil. Remediation activities were located in the areas associated with the USTs, ASTs, machine shop, print shop, fill material and fumigant use and storage. Five USTs were identified through record review and were removed. The large excavation area in the Leasehold property area is discussed further in the 2007 ERRG Final Backfill Report (Appendix I-5).

The 2006 Site Investigation Report (Appendix I-1) referenced 2005 Phase I and II ESAs by Clayton Group Services. The soil boring investigations by Clayton Group Services in 2005 had detected total petroleum hydrocarbons (TPH)-diesel in groundwater at up to 220,000 micrograms per liter (μg/L); TPH-gas was detected at up to 370 μg/L; and TPH-motor oil was detected at up 89,000 μg/L in the vicinity of the future excavation area.

During the 2006 soil boring investigation by Malcolm Pirnie on the leasehold portion of the project site in the vicinity of the future large excavation area, PCE was detected at 0.18 milligrams per kilogram (mg/kg), vanadium at 280 mg/kg, and lead at 180 mg/kg. TPH-gas was detected at up to 860 mg/kg and TPH-diesel was detected at up to 53,000 mg/kg in soil. TPH was detected in groundwater at concentrations ranging from 9,100 μg/L) to 34,000 ug/L. 2-butanone was detected at 3.7 μg/L. Soil in the area of these samples was excavated and remediated in 2006, as discussed in the 2007 ERRG Final Backfill Report section later in this analysis.

Confirmation sampling was conducted by Malcolm Pirnie after the UST removal activities with concentrations of TPH-diesel detected at up to 1,800 mg/kg, TPH-gas at up to 100 mg/kg, and TPH-motor oil at up to 580 mg/kg.

2006 Phase I Environmental Site Assessment

A Phase I Environmental Site Assessment (ESA) was prepared in accordance with American Society for Testing and Materials (ASTM) Standard E-1527-05 in 2006 by Northgate (Appendix I-2). The Phase I ESA indicates that the project site was used as a flour mill from 1869 until 2004. The project site was described as occupied by an old flour mill, two warehouses, other structures associated with the processing and storage of flour and flour products, a plant residence, and other associated structures; ten buildings in total. A single residence with garage, barn, and chicken coop was located on the project site. The Phase I ESA indicated the potential for petroleum hydrocarbons to be present in shallow soils and groundwater due to the former presence of USTs and ASTs on the site. The subject property has undergone remediation and monitoring associated with the removal of 13 USTs. Five groundwater wells had been constructed on the subject property.

Northgate commissioned an agency database search, which indicated that the project site was listed in nine regulatory databases with entries relating to former fuel storage and emissions. A review of off-site sources listed within the report did not show any likely impacts to the project site from off-site sources.

Additionally, Northgate conducted file reviews at several local/regional agencies as well as on site. These file reviews yielded permits for demolition, permits for building, permits for electrical, permits for roofing, permits for UST removal, code enforcement, fire inspection reports, sprinkler checks, UST and AST installation permits, hazardous materials inventories, fumigation notices, fire incident report, investigation and remediation reports, work plans, particulate emissions documents, and hazardous waste manifests. Hazardous waste manifests were for waste oil, mineral oil, cleaning solutions, and PCB light ballasts. Fumigation and chemical storage records indicated the following fumigants were stored and/or used at the site: phostoxin, magnesium phosphide, and methyl bromide.

As part of this investigation, Northgate also reviewed several previous environmental reports for the subject site. Based on this research, the Northgate Phase I ESA identified 13 USTs and 7 ASTs that had been located on the project site, as well as other potential sources of release. The assessment further concluded that the chemicals used at the site were mostly petroleum hydrocarbons in the form of fuel, lubricants, and machine oils, but also included printing materials, bleaching agents, organic solvents and fumigants. The assessment also noted that 12 of the 13 USTs were removed, and the thirteenth tank was closed in place. The Phase I ESA noted that investigation and remediation of USTs and ASTs had occurred over a period of some decades but the potential for materials containing petroleum hydrocarbons to remain at the project site persisted. Additional issues identified during the Phase I ESA included potential impacts from the machine shops and fumigants and detections of arsenic on the project site.

Furthermore, the Phase I ESA noted that the proposed demolition of existing structures on the project site may involve the removal of hazardous building materials.

2007 Phase II Soil and Groundwater Quality Investigation Report

Northgate conducted a Phase II soil and groundwater quality investigation (Appendix I-3) at the project site in December 2006 to evaluate the former machine shop, former print shop and dump/debris area near the former wharf. Soil and groundwater samples were collected from 11 soil borings.

TPH-diesel results ranged from non-detect to 34 mg/kg. TPH-motor oil soil sampling results ranged from non-detect to 330 mg/kg. Cis-1,2-dichloroethylene was detected in groundwater at 0.87 μg/L. Arsenic soil sampling results ranged from 1.6 to 23 mg/kg.

The report concluded that conditions at the areas investigated did not exceed the site-specific environmental screening levels.

2007 Solano County Remedial Action Completion Certification

In March 2007 the Solano County Department of Resource Management (County) issued a letter acknowledging completion of corrective action for the eastern portion of the site (Fee Property) and stating no further action relating to the release of petroleum at that portion of the project site is required (Appendix I-4). The closure letter noted that groundwater at the Fee Property site should not be used without prior concurrence from the County. Additionally, the County noted that precautions should be taken during site construction to appropriately handle impacted soil and avoid groundwater. The closure letter noted that approximately 500 cubic yards of soil were removed during removal of 3 USTs from the Fee Property in 2006. An unknown quantity of soil was removed during removal of 7 other USTs from the Fee Property. The locations of the former USTs and known associated clean-up areas are shown on Figure 3.7-2.

The Fee Property site concentrations in Table 3.7-2 were included in the closure letter, before and after remediation.

Table 3.7-2
Maximum Documented Soil Concentrations – Before and After Cleanup

Constituent	Initial Concentration (mg/kg)	Residual Concentration (mg/kg)
TPH-gas	300	<1
TPH-diesel	3,900	94
TPH-motor oil	7,500	280
Benzene	0.011	<0.005
Tetrachloroethylene	64	<2
Trichloroethylene	42	<2

Table 3.7-2
Maximum Documented Soil Concentrations – Before and After Cleanup

Constituent	Initial Concentration (mg/kg)	Residual Concentration (mg/kg)
Lead	170	61
Arsenic	19	25
Vanadium	91	95

2007 Final Backfill Report

The 2007 Final Backfill Report (Appendix I-5) prepared by ERRG details the large excavation in the Leasehold area (located within the SMP area and buffer shown on Figure 3.7-1). The excavation area was approximately 30,000 square feet at the ground surface. The upper 5 feet of soil (approximately 5,000 cubic yards) from the excavation were determined to be overburden and were stockpiled and later used for backfill. The excavation extended to 18 feet below ground surface at the deepest area. More than 1,000,000 gallons of groundwater were extracted from the pit for treatment and discharge.

Approximately 9,000 cubic yards of petroleum hydrocarbon-impacted soil were excavated, treated on site using chemical oxidation, and used to backfill the excavation. A 1-foot cap of clean imported soil was placed on top of the backfilled site soil to bring the excavation to grade.

2008 Environmental Audit Summary Report

Duncklee & Dunham, P.C. performed an environmental audit of the former General Mills flour mill in 2008 (Appendix I-6). The audit noted the following information about the 13 former site USTs.

- The USTs included:
  - Four diesel fuel tanks 1,000 – 5,000 gallons in size (removed 1987–1988)
  - One waste oil tank (250 gallons, removed in 1988)
  - Two heating oil tanks 250 – 32,000 gallons in size (one removed in 1988 and one closed in place)
  - Two 100-gallon fuel oil tanks (removed in 2006)
  - Three gasoline tanks 280 – 10,000 gallons in size (removed in 2006)
  - One 1,000-gallon tank (either gasoline or diesel, removed in 1988)

The audit noted that due to the presence of arsenic (naturally occurring), engineering controls may be needed for residential development.

2012 Groundwater Monitoring Report

A February 2013 groundwater monitoring report for the fourth quarter 2012 by Malcolm Pirnie (Appendix I-10) describes monitoring activities over the prior 5-year period on the Leasehold portion of the project site. A request for No Further Action is made in the report. The report references a 2007 Groundwater Monitoring Plan, which establishes nuisance conditions and site-specific environmental screening levels (ESL) as the water quality objectives. Fifteen quarterly groundwater monitoring events had been conducted at the time the 2013 report was submitted.

Fifteen groundwater samples were collected across the Leasehold portion of the project site and three samples were collected within the former excavation limits. One sample detected TPH-diesel at 290 µg/L within the former large excavation area. All other samples were below the detection or reporting limit.

2014 Revised Site Management Plan

A 2014 Site Management Plan (Appendix I-11) discussed the management of soil and groundwater in the immediate vicinity of the 2006 large excavation area on the Leasehold property. The plan noted that residual soils remain with TPH and polycyclic aromatic hydrocarbons (PAHs). The plan noted that the objective of the 2006 excavation was to remove soils impacted with TPH at concentrations greater than the site-specific remediation levels developed at that time. However, those site-specific remediation levels were higher than the Regional Water Quality Control Board (RWQCB) ESL and are therefore considered unacceptable for unrestricted land use. Therefore, the Site Management Plan lists site activity and use restrictions for the portion of the Leasehold property in the immediate vicinity of the former excavation area. The plan stated that monument markers would be placed around the former excavation area to note the area to not be disturbed. The plan notes restrictions for any future excavation and dewatering work in this area of the site. The plan also notes requirements for maintaining a soil cap over this area. Lastly, the plan notes that new buildings in this area shall include vapor intrusion mitigation measures. This restricted area and associated buffer are referred to as the SMP Area and Buffer on Figure 3.7-1.

2014 Asbestos Report

In March of 2014, Protech conducted a survey, sampling and analysis of building materials to characterize asbestos for demolition and confirmed its presence on the project site (Appendix I-8). Asbestos-containing materials (ACMs) were found in roofing material, flooring, and exterior and interior walls in the silo building, mill building, bulkhouse building, and warehouse/loading building. No suspect ACMs were identified in the outbuildings located south of the mill building.

3.7.3 Thresholds of Significance

The following criteria, included in Appendix G of the California Environmental Quality Act (CEQA) Guidelines (14 CCR 15000 et seq.), will be used to determine the significance of potential hazards and hazardous materials impacts. Impacts to hazards and hazardous materials would be significant if the proposed project would:

A) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;

B) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;

C) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school;

D) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment; or

E) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

3.7.4 Impact Discussion

A) Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

VMT and Orcem Project Analysis

Construction Impacts

<u>Hazardous Materials Use During Construction</u>

It is anticipated that construction of the proposed project would require the temporary use of hazardous materials, such as diesel fuels, lubricants, solvents, and asphalt during construction activities. The proposed project would be required to comply with all applicable requirements of the Solano County Department of Resource Management, Environmental Health Services Division, as well as federal, state, and local laws and regulations pertaining to the handling, storage, transport, disposal, and use of such materials. For example, if the amount of fuel stored on site exceeds 1,320 gallons, the applicant will be required to prepare and implement a Spill Prevention, Control, and Countermeasure plan. Furthermore, the best management practices for the purpose of stormwater pollution prevention discussed in Section 3.8, Hydrology and Water Quality (Criterion A), would include measures to prevent the release of hazardous materials used in construction activities. Adherence to the construction specifications and applicable regulations regarding hazardous materials and hazardous waste, including disposal, would reduce impacts during construction of the proposed project. However, impacts would be **significant (Impact 3.7-1)**, and mitigation is provided in Section 3.7.5.

Dredging During Construction

Based on the limited historic sediment sampling data readily available for Mare Island Strait (as discussed in Section 3.7.2, Setting), current sediment in the Mare Island Strait may have elevated concentration of metals contaminants. The proposed dredging activities would be required to adhere to San Francisco BCDC and the Dredged Material Management Office requirements, including obtaining a BCDC permit and submitting a sediment quality sampling plan. The dredging activities would also be required to adhere to applicable California Department of Fish and Wildlife requirements under Fish and Game Code Sections 1601 and 1603. Transportation and/or disposal of the potentially contaminated dredged material as fill material could result in a **significant** impact **(Impact 3.7-2)**. The impacts related to reuse of dredged materials and on-site processing and reuse of demolition debris (riprap and Class II aggregate) for engineered fill are discussed in greater detail in Section 3.3.4 (which specifically addresses impacts to aquatic resources) and Section 3.8.4 (which discusses how such activities might violate water quality standards).

Hazardous Building Materials During Demolition

As described in Existing Conditions, ACMs were found in several buildings within the project site, which would be demolished during construction of the proposed project. ACMs were identified in roofing material, flooring, and exterior and interior walls in the silo building, mill building, bulkhouse building, and warehouse/loading building (see Appendix I-8). In addition to ACMs, the following hazardous materials may also be present in the buildings that would be demolished: lead-based paints, PCB-containing equipment, mercury-containing equipment, mold growth, and chemical supplies. The proposed project also includes recycling of some building materials for use as engineered fill material. Disposal and/or transport of these materials during construction could result in a **significant** impact **(Impact 3.7-3)**, and mitigation is provided in Section 3.7.5.

Hazardous Materials During On-Shore Excavation and Grading

Based on prior investigation and remediation reporting described in Existing Conditions, it is likely that residual concentrations of petroleum hydrocarbons, PAHs, fumigants, volatile organic compounds, and metals remain at the project site. It is possible that unknown features, such as additional USTs, underground pipelines, or other unknown impacts, are also present at the project site.

Based on the *Covenant and Environmental Restrictions and Revised Site Management Plan* (SMP) for a portion of the Leasehold area (located in both the VMT and Orcem Sites), prior site remediation levels were found to be insufficient for unrestricted use by the County (Appendix I-11). Based on historical remediation activities (which placed a 1-foot cap of clean soils over a contaminated area on the VMT Site), groundwater monitoring data, and the County-approved 2007 exposure assessment, the area does not pose a significant human health or environmental risk under the restricted land use (which allows only industrial and certain commercial land uses and prohibits groundwater supply wells). However, there is a potential for construction workers installing foundations or underground utilities (which in the affected area of the VMT Site would be the storm drain system), to become exposed to residual contaminants.

The 2015 SMP (Appendix I-11) outlines existing activity and use restrictions for the site. It describes procedures to be followed when conducting subsurface construction activities below a depth of 1 foot in the SMP area, or below a depth of 5 feet in the buffer zone. The SMP area and buffer are shown on Figure 3.7-1, and identified on site by 1-foot by 1-foot flush-mounted concrete monuments with brass markers. The SMP requires excavations below these depths to comply with specific procedures for loading and transportation of soil; construction equipment decontamination; soil stockpile management; soil reuse, recycling, treatment, and/or disposal guidelines; restrictions on the reuse of impacted site soils; and requirements for handling shallow groundwater from construction dewatering activities. Vapor intrusion mitigation is required for buildings in a portion of the Leasehold property. The SMP also outlines recordkeeping, inspection procedures, and reporting requirements to ensure compliance with the SMP. Because the SMP is an attachment to the property's land use covenant, the procedures and requirements are mandatory and thus are considered to be part of the proposed project.

The SMP only covers the portion of the VMT Site shown in Figure 3.7-1 (labeled SMP Area and Buffer), and there is the potential for contaminated soils or groundwater to be encountered by workers during excavation and grading in other parts of the project site. Therefore, impacts would be **significant (Impact 3.7-4)**, and mitigation is provided in Section 3.7.5.

Operational Impacts

<u>VMT Project Component</u>

The VMT project component would primarily service dry bulk and break-bulk cargos. Liquid bulk cargos or large-scale container operations are not envisioned to be handled through the VMT Terminal. While the primary focus of VMT operations would be aggregates, the terminal would be designed to include both shipping and receiving of a wide range of products through the wharf, including loading and unloading of larger vessels. With the exception of cargos that do not release fugitive dust or airborne/soluble toxic materials when handled in the open, all cargo received or shipped through the VMT Terminal will be handled through enclosed transport devices (for example, the granulated blast furnace slag (GBFS) material received and transported directly to the Orcem Site). In addition, dry soils will be wetted during loading operations, and any construction vehicles or equipment that may come in contact with potentially impacted materials shall be decontaminated prior to leaving the site. Please refer to Section 3.2, Air Quality, for an analysis of air quality impacts and a discussion of how such impacts would be minimized. The VMT Terminal will include fueling stations for mobile equipment and associated spillage protection systems, which will require periodic replenishment.

The State of California's hazardous waste regulation, the RCRA, and other applicable waste management regulations have requirements and procedures for the handling of hazardous and regulated wastes. The regulations regarding disposal of wastes to land are overseen by the California Department of Toxics Substances Control and the RWQCB. Generators of waste resulting from site activities shall be responsible for characterizing the waste according to federal regulations (41 CFR 261), California regulations (CCR Title 22), and local requirements. Non-hazardous wastes that contain site contaminants of concern may be recycled, at the discretion of the recycler, or disposed of at an accepting licensed disposal facility. Hazardous wastes, if encountered, must be disposed at a permitted facility in accordance with state and federal regulations. On-site treatment is not acceptable for impacted soils unless it is approved by the County or RWQCB, and appropriately permitted.

As such, impacts related to the potential transport, use, or disposal of hazardous materials during operation of the VMT project component would be **less than significant**.

Orcem Project Component

Once operational, the Orcem project component would produce ground granulated blast furnace slag (GGBFS) on site, via the following major steps:

1. Receive via several alternative transport modes, various raw materials, including, GBFS, clinker, Portland cement clinker, pozzolan, gypsum, and limestone.
2. Store the GBFS, clinker, Portland cement clinker, pozzolan, gypsum, and limestone on the site.
3. Process, by milling within a closed system, the GBFS granulate and gypsum into GGBFS powder, and all the materials into a variety of hydraulic cements.
4. Store the GGBFS and cement products within enclosed storage facilities on the site.

5. Distribute the GGBFS and cement from the enclosed storage facilities on the site for use in construction projects throughout California and neighboring states.

GBFS, the raw material used in the process, is the principal material which would be stored, used and processed on the Orcem Site. GBFS has a low solubility in water and has an inherent free moisture content, from 8% to 12%. The glassy nature of the granules and the moisture of the GBFS minimize the dust created in either handling or storage. It is nonflammable, nontoxic and nonexplosive. Laboratory analysis of a GBFS sample, undertaken by Weck Laboratories, California, is provided as Attachment A of the Orcem Hazards and Hazardous Materials Report (Appendix I-9).

The finished product GGBFS is finely ground GBFS, sometimes with minor additions to enhance performance. GGBFS, as a finely ground powder, is capable of emitting fugitive dust particles if not properly contained within closed processing, storage and loading facilities. Other materials which may be used on site include limestone, pozzolan rock, and gypsum. Materials safety data sheets (MSDS) for each of these materials are provided as attachments to the Orcem Hazards and Hazardous Materials Report (Appendix I-9).

- *Limestone,* a natural rock (composed mainly of calcium carbonate) which is mined and crushed for use as an aggregate in the construction industry, maybe be used on site in small quantities. Limestone is classified as nonhazardous substance. The MSDS notes that limestone may produce a nuisance dust, which does not have health impacts for workers provided it is kept below occupational exposure limits.
- *Pozzolan Rock* is a naturally occurring material derived from volcanic rock and ash deposits, used as an additive in small quantities to improve the performance of cement. Pozzolan is classified as nonhazardous substance. The MSDS for pozzolan notes that it contains crystalline silica, which may produce silicosis in susceptible persons. Crystalline silica is also listed as a human carcinogen.
- *Gypsum* is a natural material (composed of calcium sulphate) which is mined and processed for use in the construction industry. Gypsum is classified as nonhazardous substance. The MSDS notes that gypsum may produce a nuisance dust, which does not have health impacts for workers provided it is kept below occupational exposure limits.

The production plant may also process clinker only, depending on market and economic conditions. Portland cement clinker is a common construction material manufactured by blending materials including limestone, shale and clay in a kiln and processing at temperatures in excess of 1800° Fahrenheit (°F). Portland cement clinker is classified as a hazardous substance. The MSDS for Portland cement clinker notes that it contains crystalline silica, which may cause silicosis in susceptible persons. It also notes that crystalline silica is listed as a human carcinogen. Review of the analytical laboratory report for the Portland cement sample indicates the presence of hexavalent chromium in the sample at a concentration of 16 mg/kg (Appendix I-9). Hexavalent chromium is a human carcinogen. The hexavalent chromium content in cement varies based on the raw materials used, the grinding process, and the kiln conditions, among other factors (NIOSH 2013). Worker airborne and dermal exposure to hexavalent chromium shall be limited to levels below the California Occupational Safety and Health Administration (OSHA) permissible exposure limits (PELs) using engineering controls and monitoring. The project is designed to utilize engineering controls most likely to reduce employee exposure to airborne hexavalent chromium such as local exhaust ventilation, process enclosure, process modification, and improved general dilution ventilation (NIOSH 2013).

The proposed milling process, whether undertaken for GGBFS or portland cement clinker, would be carried out in a closed circuit system under negative pressure (no outlet to the exterior, except through high performance filters). Likewise, fully sealed finished product storage in silos would be provided. Facility operations will require a permit from the Bay Area Air Quality Management District (BAAQMD), as discussed in Section 3.2, as well as mitigation for air quality that would reduce the potential for fugitive emissions and toxic air contaminants (including hexavalent chromium) from the Orcem facility.

Lubricants, oils, and greases, common in any manufacturing or industrial facility, would also be stored and used on site in small quantities. All liquids of this nature would be stored on spill pallets and would have associated drip trays to catch and retain any drips during use. These materials would be stored in very small quantities, in individual packaged containers received from suppliers. Because the quantity of fuel/oil storage on the project site is greater than 55 gallons in one container during operation, a Hazardous Materials Business Plan (HMBP) must be prepared, pursuant to Chapter 6.95, Division 20 of the California Health and Safety Code. The completed HMBP would be submitted to the CUPA (i.e., the Solano County Department of Resource Management, Environmental Health Services Division) via the California Environmental Reporting System.

Compliance with laws and regulations governing hazardous waste (see Section 3.7.1), BAAQMD and BCDC permits, local requirements, and implementation of the mitigation measures in Section 3.7.6 would ensure the impacts of routine transport, use, or disposal of hazardous materials would be **less than significant**.

~~**Off-Site Improvements**~~

~~The proposed project includes two off-site improvements (public access improvements and removal of existing deteriorated docks) that would take place at the City of Vallejo Municipal Marina located approximately 2 miles north of the project site. The public access improvements would involve installation of a new self-propelled personal watercraft launch ramp just north of the access ramp to K Dock at the south end of the marina. The proposed launch would consist of~~

~~a pre-cast articulated concrete mat, approximately 10 feet wide by 60 feet long over a geotextile fabric. Approximately eighty (80) 14-inch-diameter creosote timber piles and deteriorated dock facilities would be removed from the northern portion of the marina. Timber removed from the existing docks and the creosote timber piles would be separated based on recyclability. Recyclable and non-recyclable material would be sent to the closest appropriate facility. The proposed off-site impacts would therefore not create a significant hazard to the use, transport, or disposal of hazardous materials. Impacts would be **less than significant.**~~

B) 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?

VMT Analysis

As described earlier, the VMT project component would involve the construction of a new wharf structure along the shoreline. As discussed in Section 3.8, Hydrology and Water Quality, the use of excavators, backhoes, and other mechanical means to physically grab onto and attempt to free derelict creosote pilings from the seafloor may result in the piling disintegrating into a multitude of wood fragments, exposing previously unweathered polycyclic aromatic hydrocarbons (PAH)-laden creosote to the marine environment. These construction-related effects would present a **significant impact** due to the potential release of hazardous materials into the environment (**Impact 3.7-5**) and mitigation is provided in Section 3.7.5.

It is unlikely that the proposed structures would pose any navigation hazard in the immediate project area because they: (1) would be located adjacent to the existing shoreline, in the same general vicinity of the existing wharf; and (2) would not extend into Mare Island Strait. Therefore, the limited number of large vessels traveling through Mare Island Strait would not be navigating through the area where the proposed VMT wharves would be constructed, which would further reduce the possibility for potential vessel collisions with the structures and corresponding releases of hazardous materials, such as oil and petroleum. In accordance with USACE requirements (33 CFR 66.01), a notice would be published in the Local Notice to Mariners notifying small pleasure craft of changes to navigational hazards caused by the VMT project component.

The VMT project component would primarily service dry bulk and break-bulk cargos. Liquid bulk cargos or large-scale container operations are not envisioned to be handled through the VMT Terminal. While the primary focus of VMT operations would be aggregates, the terminal would be designed to include both shipping and receiving of a wide range of products through the wharf, including loading and unloading of vessels through the wharf.

Operations at the VMT Site would include rail, cargo ship, truck traffic, and worker vehicles, which if involved in an accident could cause the release of fuels and/or commercial products (potentially containing hazardous materials) to the environment. Therefore, impacts would be **significant (Impact 3.7-6)**, and mitigation is provided in Section 3.7.5. The mitigation measures include the preparation of an Emergency Response Plan to ensure that first responders are adequately trained, that local and regional emergency services are aware of the location and operational profile of the facility, and that spills or leaks are assessed and remediated.

Orcem Analysis

As described earlier, the proposed Orcem operations would involve the production of GGBFS. During Orcem operation, the only hazardous material that would be handled in unit quantities of more than small packaged units is portland cement clinker, which would be present in the form of uncrushed clinker and may be ground into powder form on site. Even if clinker were to leak or spill during handling, it would form a mound in the location in which it leaks and would be readily cleaned up by the site operations team.

However, operations at the Orcem Site would include truck traffic and worker vehicles, and industrial processes which if involved in an accident could cause the release of fuels and/or commercial products (potentially containing hazardous materials) to the environment. Therefore, impacts would be **significant (Impact 3.7-7)**, and mitigation is provided in Section 3.7.5.

~~Off-Site Improvements~~

~~As described earlier, the proposed project includes two off-site improvements that would take place at the City of Vallejo Municipal Marina located approximately 2 miles north of the project site. The public access improvements would involve installation of a new self-propelled personal watercraft launch ramp just north of the access ramp to K Dock at the south end of the marina. The project would also involve the removal of existing deteriorated dock improvements within the water area at the north end of the marina. Approximately eighty (80) 14-inch-diameter creosote timber piles and deteriorated dock facilities would be removed from this portion of the marina. Timber removed from the existing docks and the creosote timber piles would be separated based on recyclability. Recyclable and non-recyclable material would be sent to the closest appropriate facility.~~

~~The use of excavators, backhoes, and other mechanical means to physically grab onto and attempt to free the piling from the seafloor generally results in the piling disintegrating into wood fragments, exposing previously unweathered PAH-laden creosote to the marine environment. Prior to demolition of the deteriorated dock improvements, the work area would be secured with a temporary debris boom to prevent debris from entering the waters of the marina. The entire in-water work area would be surrounded by a silt curtain to control~~

~~turbidity. The unused section of deteriorated walkway floats would be removed and transported to shore. Upon completion of the in-water work, the silt curtain would be removed and the site demobilized. The equipment proposed for removal of deteriorated dock facilities within the northerly mitigation site includes an excavator equipped with a hydraulic breaker, a debris boom, a silt curtain, and a skiff. All in-water construction activities would be required to comply with USACE, EPA, RWQCB, and BCDC regulations and provisions in issued permits including BMPs for avoiding or reducing potential impacts related to resuspended sediments. However impacts related to the potential release of PAH-laden creosote piling fragments would be **significant** without mitigation **(Impact 3.7-8)** and mitigation is provided in Section 3.7.5.~~

C) Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

VMT and Orcem Project Analysis

The nearest school to the project site, Grace Patterson Elementary School, is located approximately 0.3 mile southeast of the VMT Terminal Site and Orcem Site. The project would not result in any hazardous emissions or handling of hazardous materials within 0.25-mile of Grace Patterson Elementary or any other schools. **No impact** would occur as a result of the proposed project.

~~Off-Site Improvements~~

~~As described earlier, the proposed project includes two off-site improvements that would take place at the City of Vallejo Municipal Marina located approximately 2 miles north of the project site. The nearest school to the site of the proposed improvements is the private elementary Saint Vincent Ferrer School located approximately 0.75 mile south and east. **No impact** would occur as a result of the proposed project.~~

D) Would the project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

VMT and Orcem Project Analysis

Government Code Section 65962.5 requires the California Environmental Protection Agency to compile and update the hazardous waste and substances sites list (Cortese List). While the Cortese List is no longer maintained as a single list, the following databases provide information regarding sites identified as meeting the Cortese List requirements:

1. List of Hazardous Waste and Substances sites from the DTSC Envirostor database (Health and Safety Codes 25220, 25242, 25356, and 116395)
2. List of Leaking Underground Storage Tank (LUST) Sites by County and Fiscal Year from the State Water Resources Control Board GeoTracker database (Health and Safety Code 25295)
3. List of solid waste disposal sites identified by the Water Board with waste constituents above hazardous waste levels outside the waste management unit (Water Code Section 13273 subdivision (e) and California Code of Regulations Title 14 Section 18051))
4. List of "active" Cease and Desist Orders (CDO) and Cleanup and Abatement Orders (CAO) from the State Water Resources Control Board (Water Code Sections 13301 and 13304)
5. List of hazardous waste facilities subject to corrective action pursuant to Section 25187.5 of the Health and Safety Code, identified by DTSC.

Based on a review of the State Water Resources Control Board's on-line Geotracker database, the former General Mills flour mill plant is a LUST cleanup site. Therefore, the project site is included in the list compiled pursuant to Government Code Section 65962.5.

As discussed in the Existing Conditions, Section 3.7.2, various prior investigations have occurred at the project site to investigate, remediate, and manage contamination associated with former LUSTs and other site releases. Based on prior investigations, it is likely that residual concentrations of petroleum hydrocarbons, PAHs, fumigants, volatile organic compounds, and metals remain at the project site. These residual contaminants could present a **significant** impact **(Impact 3.7-9)** during construction and operation of the proposed project. Mitigation measures are provided in Section 3.7.5.

~~**Off-Site Improvements**~~

~~As described earlier, the proposed project includes two off-site improvements that would take place at the City of Vallejo Municipal Marina located approximately 2 miles north of the project site. These improvements would not occur on a site included in a list of hazardous materials site. Therefore, **no impact** would occur.~~

*E) **Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?***

VMT and Orcem Project Analysis

As described in Section 3.12 of this EIR, Public Services and Recreation, the proposed project is projected to have a significant impact on emergency access, based on the potential delays generated by train crossings at the grade crossings in Vallejo, American Canyon, and crossings further north. However, with implementation of mitigation measure MM-3.12-4 in Section 4.12, Transportation and Traffic, impacts to emergency access due to traffic would be reduced to **less than significant**.

The San Francisco Bay Harbor Safety Committee reviews and updates a Harbor Safety Plan each year. This plan provides mariners using the waters of the San Francisco Bay a guide to critical navigation issues that will enhance vessel safety and reduce degradation of critical resources. The VMT project component would not interfere with provisions of the plan. In addition, as described previously, in accordance with USACE requirements (33 CFR 66.01), a notice will be published in the Local Notice to Mariners notifying small pleasure craft of changes to navigational hazards in the bay caused by the VMT project component. Therefore, impacts would be **less than significant**.

~~**Off-Site Improvements**~~

~~As described earlier, the proposed project includes two off-site improvements that would take place at the City of Vallejo Municipal Marina located approximately 2 miles north of the project site. The proposed addition of a new personal water craft access ramp within the existing Municipal Marina and the removal of deteriorating dock structures would not impact or interfere with an adopted emergency response plan or emergency evacuation plan. Therefore, **no impact** would occur as a result of the off-site improvements.~~

3.7.5 Mitigation Measures

Mitigation for Impact 3.7-1: Construction of the proposed project would require the temporary use of hazardous materials, such as diesel fuels, lubricants, solvents, and asphalt. Although adherence to the construction specifications and applicable regulations regarding hazardous materials would reduce impacts during construction of the proposed project, impacts would be significant without proper mitigation.

MM-3.7-1a Hazardous materials shall not be disposed of or released onto the ground, the underlying groundwater, or any surface water. Totally enclosed containment shall be provided for all trash. All construction waste, including trash and litter, garbage, other solid waste, petroleum products, and other potentially hazardous materials, shall be removed to a waste facility permitted to treat, store, or dispose of such materials.

MM-3.7-1b A Hazardous Materials Management Plan shall be prepared to discuss hazardous materials management, handling, storage, disposal, and emergency response planning to be implemented during construction. Hazardous materials used and stored on site for the proposed construction activities — as well as hazardous wastes generated on site as a result of the proposed construction activities — shall be managed according to the specifications outlined below.

Hazardous Materials and Hazardous Waste Handling: A project-specific hazardous materials management and hazardous waste handling program shall be developed prior to initiation of the project. The program will include the following components: (1) proper hazardous materials use, storage, and disposal requirements as well as hazardous waste management procedures; (2) the program shall identify types of hazardous materials to be used during the project and the types of wastes that would be generated; and (3) all project personnel shall be provided with project-specific training to ensure that all hazardous materials and wastes associated with the project are handled in a safe and environmentally sound manner and disposed of according to applicable rules and regulations. Specifically, employees handling wastes shall have or receive hazardous materials training and shall be trained in hazardous waste procedures, spill contingencies, waste minimization procedures and treatment, storage and disposal facility (TSDF) training in accordance with current OSHA Hazard Communication Standard and Title 22 CCR.

Transport of Hazardous Materials: Hazardous materials that would be transported by truck include fuel (diesel fuel and gasoline) and oil and lubricants for equipment. Containers used to store hazardous materials would be properly labeled and kept in good condition. Written procedures for the transport of hazardous materials used would be established in accordance with U.S. Department of Transportation and California Department of Transportation (Caltrans) regulations. A qualified transporter would be selected to comply with U.S. Department of Transportation and Caltrans regulations.

Fueling and Maintenance of Construction Equipment: Written procedures for fueling and maintenance of construction equipment would be prepared prior to construction. Procedures will require the use of drop cloths made of plastic, drip pans, and trays to be placed under refilling areas to ensure that chemicals do not come into contact with the ground. Refueling would be located in areas where absorbent pad and trays would be available. The fuel tanks would also contain a lined area to ensure that accidental spillage does not occur. Drip pans or other collection devices would be placed under the equipment at night to capture drips or spills. Equipment would be inspected daily for potential leakage or failures. Hazardous materials such as paints, solvents, and penetrants would be kept in an approved locker or storage cabinet.

Emergency Release Response Procedures: An Emergency Response Plan detailing responses to releases of hazardous materials would be developed prior to construction activities. The plan must prescribe hazardous materials handling procedures for reducing the potential for a spill during construction, and would include an emergency response program to ensure quick and safe cleanup of accidental spills. Hazardous materials shall not be stored near drains or waterways. Fueling shall not take place within 200 feet of drains or waterways with flowing water or within 75 feet of drains or waterways that are dry. All construction personnel, including environmental monitors, would be made aware of state and federal emergency response reporting guidelines for accidental spills.

The Plan shall be submitted to Division and Building & Safety Department and the Fire Department 30 days prior to the start of construction for review and approval.~~Hazardous materials spill kits shall be maintained on site for small spills.~~

Mitigation for Impact 3.7-2: Since the VMT component of the project would require the transportation and/or disposal of potentially contaminated dredged material from Mare Island Strait, impacts would be significant without mitigation.

Refer to **MM-3.8-1** in Section 3.8, Hydrology and Water Quality.

Mitigation for Impact 3.7-3: Due to the potential presence of ACMs, lead-based paints, PCB-containing equipment, mercury-containing equipment, mold growth, and chemical supplies within the project site, project construction could result in a significant impact due to the transport and/or disposal of these materials.

Refer to **MM-3.8-2** in Section 3.8, Hydrology and Water Quality.

MM-3.7-2a An abatement work plan shall be prepared in compliance with local, state, and federal regulations for any necessary removal of such materials. The work plan shall include a monitoring plan to be conducted by a qualified consultant during abatement activities to ensure compliance with the work plan requirements and abatement contractor specifications. Demolition plans and contract specifications shall incorporate any necessary abatement measures for the removal of materials containing asbestos. The measures shall be consistent with the abatement work plan prepared for the project and conducted by a licensed lead/asbestos abatement contractor. Asbestos abatement shall be conducted in coordination with the Bay Area Air Quality Management District, in accordance with District Regulation 11-2-401.3.

MM-3.7-2b A California Department of Health Services (DHS)-certified lead inspector shall survey the buildings for the presence of lead-based paint. Additionally, a qualified environmental specialist shall inspect the site buildings for the presence of polychlorinated biphenyls (PCBs), mercury, and other hazardous building materials prior to demolition. If found, these materials shall be managed in accordance with the Metallic Discards Act and other state and federal guidelines and regulations. Demolition plans and contract specifications shall incorporate any necessary abatement measures in compliance with the Metallic Discards Act of 1991 (Public Resource Code Sections 42160–42185), particularly Section 42175, Materials Requiring Special Handling for the removal of mercury switches, PCB-containing ballasts, and refrigerants. Lead abatement shall be conducted in accordance with California DHS requirements.

MM-3.7-2c A Waste Management and Reuse Plan shall be prepared to discuss the types of wastes anticipated to be generated during construction and operation, the proposed waste handling procedures, proposed waste storage locations, inspection procedures, and proposed waste disposal. The Waste Management and Reuse Plan will also discuss waste minimization and the reuse of demolished site building materials on site. The plan shall discuss estimated quantities of on-site building materials to be reused, the proposed processing of such materials, the proposed disposition of such materials, and the proposed screening and testing procedures to be used to ensure the material reuse will not impact human health or the environment. Material screening shall include visual observation for the presence of oil-stained concrete. Oil-stained concrete shall be disposed of off-site and excluded from on-site reuse.

Mitigation for Impacts 3.7-4 and 3.7-9: Due to the potential for contaminated soils or groundwater to be encountered by workers during excavation and grading in other parts of the project site, impacts during construction would be significant without mitigation.

MM-3.7-3 In the event that site grading activities will encounter evidence of contamination or other environmental concerns, a Hazardous Materials Contingency Plan shall be followed during excavation at the subject property. The plan shall (1) specify measures to be taken to protect worker and public health and safety and (2) specify measures to be taken to identify, manage and remediate wastes. The plan should include the following:

- Identification of the known former storage tank and soil contamination areas.
- Information on how to identify suspected contaminated soil.
- Worker health and safety monitoring procedures, including monitoring for organic vapors using a photoionization detector or other organic vapor analyzer and monitoring dust levels. Organic vapor action levels will be established based on OSHA permissible exposure limits (PELs). Dust action levels will be established based on use of the known arsenic soil concentrations, the PEL, and a factor of safety.
- Procedures for temporary cessation of construction activity and evaluation of the level of environmental concern.
- Procedures for limiting access to the contaminated area to properly trained personnel.
- Procedures for notification and reporting, including internal management and local agencies (fire department, Department of Environmental Health, Air Pollution Control District, etc.), as needed.
- A worker health and safety plan for excavation of contaminated soil.
- Procedures for characterizing and managing excavated soils.
- Procedures for certification of completion of remediation.

Mitigation for Impact 3.7-5: The use of excavators, backhoes, and other mechanical means to physically grab onto and attempt to free derelict creosote pilings from the seafloor may result in the piling disintegrating into a multitude of wood fragments, exposing previously unweathered PAH-laden creosote to the marine environment, which would present a **significant impact** due to the potential release of hazardous materials into the environment.

Refer to **MM-3.3-3** in Section 3.3, Biological Resources.

Mitigation for Impacts 3.7-6 and 3.7-7: VMT and Orcem operations would include transportation of materials by rail, ship, and trucks, as well as industrial processes that could cause the release of hazardous materials in the event of an accident. Therefore, impacts would be **less than significant** without mitigation.

MM-3.7-4 **Emergency Response Plan.** Both the Orcem and VMT facilities shall prepare an emergency response plan for project operations which establishes responsibilities, procedures, and a chain of command to follow in the event of a fire, vehicle/truck collision, train derailment, or cargo ship incident. The plan shall include general notification requirements to local and regional agencies with emergency response capabilities of the location and operational profile of the project, including address, directions, lists of hazardous materials stored on site, and access information. Information must be sufficient in detail to allow quick recognition and access in the event of an emergency. The plan shall require coordination with local first responders and emergency planning agencies (e.g., Water Emergency Transportation Authority (WETA), U.S. Army Corps of Engineers (USACE), fire department, medical facilities, City/County emergency operations center, and County hazardous materials teams) in the event of an emergency situation. The plan shall outline responsibilities and notification requirements for each type of accident or upset condition that may occur on site. The plan shall designate staff persons responsible for addressing and immediately responding to hazardous materials leaks or spills, and shall establish training and record keeping requirements to ensure such teams are qualified and trained in the OSHA Hazardous Waste Operations and Emergency Response Standard. The plan shall include procedures for the assessment and cleanup of any on-site spills or leaks resulting from emergency or upset conditions. Finally, Orcem and VMT personnel shall assist the Environmental Health Services Division, as the CUPA in revising the Solano County Hazardous Materials Area Plan to address the response during the marine, truck and rail traffic transportation of materials to or from the project location.

~~**Mitigation for Impact 3.7-8:** The removal of the deteriorated docks located at the northern end of the City of Vallejo Municipal Marina could result in the release of PAH in the water, which would constitute a **significant impact**.~~

~~Refer to **MM-3.3-3** in Section 3.3, Biological Resources.~~

3.7.6 Level of Significance After Mitigation

Impact 3.7-1: Implementation of mitigation measures MM-3.7-1a and MM-3.7-1b would reduce impacts related to temporary use of hazardous materials, such as diesel fuels, lubricants, solvents, and asphalt during construction to a **less-than-significant** level.

Impact 3.7-2: Implementation of mitigation measure MM-3.8-1 would reduce impacts related to the transportation and/or disposal of potentially contaminated dredged material from Mare Island Strait during construction of the VMT component of the project to a **less-than-significant** level.

Impact 3.7-3: Implementation of mitigation measures MM-3.7-2a through MM-3.7-2c, and MM-3.8-2, would reduce impacts related to the transport and/or disposal of ACMs, lead-based paints, PCB-containing equipment, mercury-containing equipment, mold growth, and chemical supplies within the project site during project construction to a **less-than-significant** level.

Impacts 3.7-4 and 3.7-9: Implementation of mitigation measure MM-3.7-3 would reduce impacts related to contaminated soils or groundwater encountered by workers during excavation and grading in other parts of the project site to **less-than-significant** levels.

Impact 3.7-5: Implementation of MM-3.3-3 would reduce impacts related to potential hazards due to the removal of creosote pilings to a **less-than-significant** level.

Impacts 3.7-6 and 3.7-7: Implementation of mitigation measure MM-3.7-4, Impacts 3.7-6 and 3.7-7 would reduce impacts related to the release of hazardous materials in the event of an accident during transportation of materials by rail, ship, or truck, or industrial operations associated with VMT and Orcem operations to **less-than-significant** levels.~~**Impact 3.7-8:** Implementation of MM-3.3-3 would reduce impacts related to potential hazards due to the removal of creosote pilings to a **less-than-significant** level.~~

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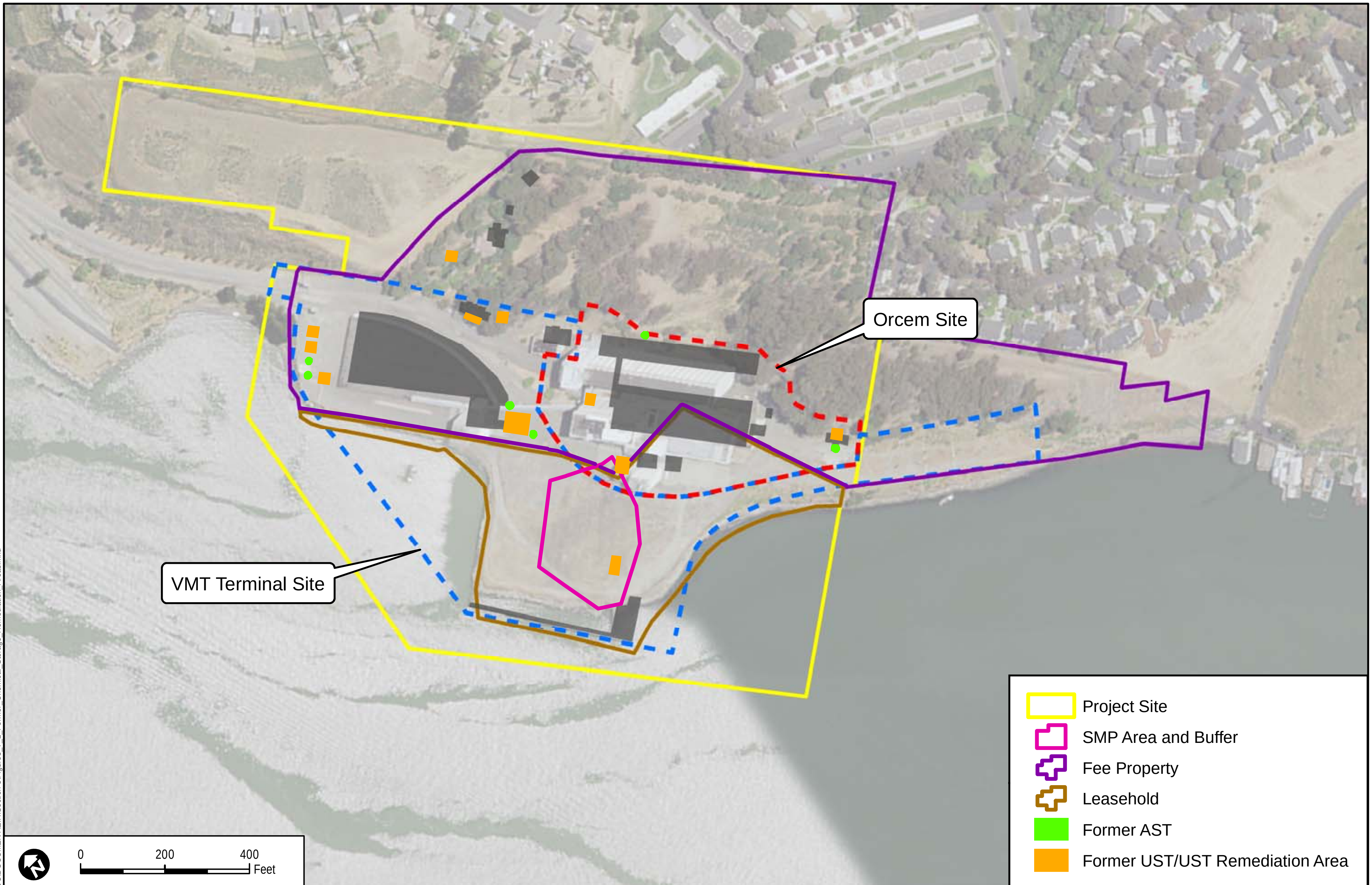

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SOURCE: ESRI 2014, Northgate Environmental Management, Inc, Kennedy/Jenks Consultants 2014, Malcolm Pirnie 2006

FIGURE 3.7-1

Former Chemical Storage and Remediation Areas

VALLEJO MARINE TERMINAL AND ORCEM PROJECT

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3.8 HYDROLOGY AND WATER QUALITY

This section analyzes the potential impacts of the Vallejo Marine Terminal (VMT) and Orcem project (proposed project) with respect to hydrology and water quality and recommends mitigation measures where necessary to reduce or avoid significant impacts. The primary information sources used to support this analysis include:

- **Appendix J-1:** Meridian Associates Inc. 2016. *Stormwater Control Plan for Vallejo Marine Terminal, 780 & 790 Derr Street, Vallejo, CA*. Prepared for Vallejo Marine Terminal. Job No. 04-39-10. January 18, 2016.
- **Appendix J-2:** KPFF Consulting Engineers. 2014. *Ecocem/Orcem Hydrology and Water Quality Narrative for Section 4 of the Project's Environmental Impact Report (EIR)*. March 11, 2014.
- **Appendix J-3:** KPFF Consulting Engineers. 2015. *Stormwater Management & Treatment Facilities Design Summary for Orcem Project.* January 16, 2015.
- **Appendix J-4:** KPFF Consulting Engineers. 2016. Preliminary Stormwater Control Plan for Orcem California. March 2016.

Additional information from public agency information sources—such as the State Water Resources Control Board (SWRCB), the San Francisco Bay Regional Water Quality Control Board (RWQCB), the U.S. Geological Survey (USGS), and the Federal Emergency Management Agency (FEMA)—was gathered where necessary to supplement the analysis. All figures referenced in this section are provided at the end of the section.

3.8.1 Regulatory Setting

Federal

The Clean Water Act

The Clean Water Act (CWA) (33 U.S.C. 1251 et seq.), as amended by the Water Quality Act of 1987, is the major federal legislation governing water quality. The objective of the CWA is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." Important sections of the act are as follows:

- Sections 303 and 304 provide for water quality standards, criteria, and guidelines.
- Section 401 (Water Quality Certification) 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.

- Section 402 establishes the National Pollutant Discharge Elimination System (NPDES), a permitting system for the discharge of any pollutant (except for dredged or fill material) into waters of the United States. This permit program is administered by the State Water Resources Control Board (SWRCB). The various stormwater programs (e.g., for construction activities, industrial activities and municipal systems) administered by the SWRCB (and the nine Regional Water Quality Control Boards ~~[RWQCBs]~~) are carried out under the authority of this section of the CWA.
- Section 404 establishes a permit program for the discharge of dredged or fill material into waters of the United States. This permit program is jointly administered by the U.S. Army Corps of Engineers (USACE) and the U.S. Environmental Protection Agency (EPA).

Federal Antidegradation Policy

The federal antidegradation policy is designed to protect water quality and water resources. The policy directs states to adopt a statewide policy that includes the following primary provisions: (1) existing instream uses and the water quality necessary to protect those uses shall be maintained and protected; (2) where existing water quality is better than necessary to support fishing and swimming conditions, that quality shall be maintained and protected unless the state finds that allowing lower water quality is necessary for important local economic or social development; and (3) where high-quality waters constitute an outstanding national resource, such as waters of national and state parks, wildlife refuges, and waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected.

Federal Emergency Management Agency

FEMA oversees floodplains and administers the National Flood Insurance Program adopted under the National Flood Insurance Act of 1968. The program makes federally subsidized flood insurance available to property owners within communities that participate in the program. Areas of special flood hazard (i.e., subject to inundation by a 100-year flood) are identified by FEMA through regulatory flood maps titled Flood Insurance Rate Maps. The National Flood Insurance Program mandates that development cannot occur within the regulatory floodplain (typically the 100-year floodplain) if that development results in more than 1 foot increase in flood elevation.

State

Porter–Cologne Water Quality Control Act

The Porter–Cologne Water Quality Control Act (California Water Code Section 13000 et seq.) provides the basis for water quality regulation within California. The act requires a "Report of

Waste Discharge" for any discharge of waste (liquid, solid, or otherwise) to land or surface waters that may impair a beneficial use of surface or groundwater of the state.

State Water Resources Control Board and Regional Water Quality Control Board

The SWRCB administers water rights, water pollution control, and water quality functions throughout the state, while the RWQCBs conduct planning, permitting, and enforcement activities. The proposed project area lies within the jurisdiction of the San Francisco Bay RWQCB.

The San Francisco Bay RWQCB uses planning, permitting, and enforcement authorities to meet this responsibility, and has adopted the fourth edition of the Water Quality Control Plan (Basin Plan) for the San Francisco Bay Basin (San Francisco Bay RWQCB 2011) to implement plans, policies, and provisions for water quality management. The Basin Plan was prepared in compliance with the federal CWA and the state Porter–Cologne Water Quality Control Act. The Basin Plan establishes beneficial uses for major surface waters and their tributaries, water quality objectives that are intended to protect the beneficial uses, and implementation programs to meet stated objectives.

State and federal laws mandate the protection of designated beneficial uses of water bodies. State law defines beneficial uses as "domestic; municipal; agricultural and industrial supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves" (Water Code Section 13050[f]). The Basin Plan contains specific numeric and narrative water quality objectives applicable to ambient surface and groundwater resources and for a number of physical parameters, chemical inorganic and organic constituents, biological factors, and toxic priority trace metal and organic compounds. Water quality objectives for toxic pollutants in the Basin Plan complement the federal water quality standards adopted in the California Toxics Rule in May 2000.

NPDES Program – Construction Activity

The NPDES program regulates municipal and industrial stormwater discharges under the requirements of the CWA. California is authorized to implement a state industrial stormwater discharge permitting program, with the SWRCB and San Francisco Bay RWQCB as the permitting agencies.

The City must comply with the requirements of the NPDES permit for Discharges of Storm Water Runoff associated with Construction Activity (Order No. 2009-0009-DWQ, as amended by 2010-0014-DWQ and 2012-006-DWQ). This permit (i.e., the Construction General Permit) regulates discharges from construction sites that disturb 1 acre or more of total land area. By law, all stormwater discharges associated with construction activity where clearing, grading, and excavation results in soil disturbance must comply with the provisions of this NPDES permit. The permitting process requires the development and implementation of an effective Storm Water Pollution Prevention Plan (SWPPP). The project applicant must submit a Notice of Intent to the San Francisco Bay RWQCB to be covered by an NPDES permit and prepare the SWPPP prior to the beginning of construction.

The SWPPP must include best management practices (BMPs) to reduce pollutants and any more stringent controls necessary to meet water quality standards. A SWPPP describes the site, erosion and sediment controls, means of waste disposal, implementation of local plans, control of post-construction sediment and erosion control measures and maintenance responsibilities, and non-stormwater management control. Dischargers are also required to inspect construction sites before and after storms to identify stormwater discharge from construction activity, and to identify and implement controls where necessary. Dischargers must also comply with water quality objectives as defined Basin Plan. If Basin Plan objectives are exceeded, corrective measures would be required.

Implementation of the SWPPP starts with the commencement of construction and continues through completion of the project. Upon completion of the project, the applicant must submit a Notice of Termination to the San Francisco Bay RWQCB to indicate that construction is completed.

NPDES Program – Industrial Activity

In California, cement manufacturing (40 CFR Part 411) and marine cargo handling (standard industrial classification [SIC] code 4491) are facilities covered by the *NPDES General Permit for Stormwater Discharges Associated with Industrial Activities* (i.e., the Industrial General Permit, or IGP). The IGP is issued by the SWRCB and implemented and enforced by the nine RWQCBs. The IGP requires the implementation of management measures that will achieve the performance standard of best available technology economically achievable and best conventional pollutant control technology. The most recent IGP (SWRCB Order No. 2014-0057-DWQ) was adopted April 1, 2014 and became effective on July 1, 2015; it replaces the previous 1997 statewide permit for industrial storm water (SWRCB Order No. 2014-0057-DWQ).

The IGP requires stormwater dischargers to eliminate unauthorized non-stormwater discharges; develop and implement SWPPPs; implement BMPs; conduct monitoring; compare monitoring results to numeric action levels; perform appropriate exceedance response actions when numeric action levels are exceeded; and certify and submit all permit registration documents. Changes under the new IGP compared to the IGP issued in 1997 are that stormwater dischargers are required to implement minimum BMPs; electronically file all permit registration documents via the SWRCB's Storm Water Multiple Application and Report Tracking System; comply with new training expectations and roles for qualified industrial stormwater practitioners; sample to detect exceedance of annual and instantaneous numeric action levels; develop and implement exceedance response actions if annual or instantaneous numeric action levels are exceeded; monitor for parameters listed under CWA Section 303(d); design treatment control BMPs for flow- and volume-based criteria; and understand new criteria, sampling protocols, and sampling frequency for qualifying storm events. The new general order also defines design storm standards for treatment control BMPs, qualifying storm events, and sampling protocols to follow during a design storm event.

Statewide General Waste Discharge Requirements for Discharges to Land with a Low Threat to Water Quality, Water Quality Order No. 2003-0003-DWQ

Among other types of discharges, this general order applies to small/temporary construction-related dewatering discharges to land (i.e., discharges that would evaporate or infiltrate into the ground and would not flow into a surface water body). General waste discharge requirements (WDRs) require dischargers to comply with all applicable Basin Plan provisions, including any prohibitions and water quality objectives governing the discharge. As part of the standard provisions in the order, the discharger is required to develop a discharge management plan incorporating contingency measures, should sampling results show violation of water quality standards. In no case shall the discharge continue to impair beneficial uses or violate water quality standards or cause a possible nuisance condition. A Negative Declaration in compliance with the California Environmental Quality Act (CEQA) has been adopted for these General WDRs. The environmental impacts from new discharges authorized by these General WDRs have been found to be less than significant.

State Nondegradation Policy

In 1968, as required under the federal antidegradation policy described previously, the SWRCB adopted a nondegradation policy aimed at maintaining high quality for waters in California. The nondegradation policy states that the disposal of wastes into state waters shall be regulated to achieve the highest water quality consistent with maximum benefit to the people of the state and to promote the peace, health, safety, and welfare of the people of the state. The policy provides as follows:

> Where the existing quality of water is better than required under existing water quality control plans, such quality would be maintained until it has been demonstrated that any change would be consistent with maximum benefit to the people of the state and would not unreasonably affect present and anticipated beneficial uses of such water.
>
> Any activity which produces waste or increases the volume or concentration of waste and which discharges to existing high-quality waters would be required to meet waste discharge requirements which would ensure (1) pollution or nuisance would not occur, and (2) the highest water quality consistent with the maximum benefit to the people of the state would be maintained.

California Toxics Rule

In May 2000, the SWRCB adopted and the California Environmental Protection Agency approved the California Toxics Rule, which establishes numeric water quality criteria for approximately 130 priority pollutant trace metals and organic compounds. The SWRCB subsequently adopted its

State Implementation Policy of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries. The State Implementation Policy outlines procedures for NPDES permitting for toxic pollutant objectives that have been adopted in basin plans and in the California Toxics Rule.

Local

Municipal Stormwater Management Requirements

Pursuant to Section 402 of the CWA and the Porter–Cologne Water Quality Control Act, municipal stormwater discharges in the City of Vallejo (City) are regulated under the San Francisco Bay Region Municipal Regional Stormwater NPDES Permit, Order No. R2-2015-0049, NPDES Permit No. CAS612008, adopted November 19, 2015 (Municipal Regional Permit, or MRP). The most relevant requirement that pertains to the project is Provision C.3.

MRP Provision C.3 addresses *post-construction* stormwater management requirements for new development and redevelopment projects. Currently, the City of Vallejo requires project applicants to install hydrodynamic devices, or other BMPs, to remove pollutants such as floating liquids and solids, trash and debris, and coarse sediment from stormwater runoff, and to show the locations of such controls on plans submitted with the building permit application. In addition, the City requires implementation of Low Impact Development (LID) strategies, preventative source controls, and additional stormwater treatment measures to minimize the discharge of pollutants in stormwater runoff and non-stormwater discharge of certain industrial projects, as well as prevention of increase in runoff flows. The MRP requires that LID methods shall be the primary mechanism for implementing such controls. Because the project replaces more than 50% (nearly 100%) of the impervious surface of a previously existing development that was not subject to Provision C.3, all impervious surfaces must be included in the stormwater treatment system design.

The required incorporation of stormwater treatment systems designed per the following hydraulic sizing criteria (Appendix J-1):

- Volume Hydraulic Design Basis – Treatment systems whose primary mode of action depends on volume capacity shall be designed to treat stormwater runoff equal to: (a) the maximized stormwater capture volume for the area, on the basis of historical rainfall records, determined using the formula and volume capture coefficients set forth in Urban Runoff Quality Management, Water Environment Federation Manual of Practice No. 23/American Society of Civil Engineers Manual of Practice No. 87, (1998), pages 175–178 (e.g., approximately the 85th percentile 24-hour storm runoff event); or (b) the volume of annual runoff required to achieve 80% or more capture, determined in accordance with the methodology set forth in Section 5 of the California Stormwater Quality Association's Stormwater Best Management Practice Handbook, New Development and Redevelopment (2003), using local rainfall data;

- Flow Hydraulic Design Basis – Treatment systems whose primary mode of action depends on flow capacity shall be sized to treat: (a) 10% of the 50-year peak flow rate; (b) the flow of runoff produced by a rain event equal to at least two times the 85th percentile hourly rainfall intensity for the applicable area, based on historical records of hourly rainfall depths; or (c) the flow of runoff resulting from a rain event equal to at least 0.2 inches per hour intensity; or
- Combination Flow and Volume Design Basis – Treatment systems that use a combination of flow and volume capacity shall be sized to treat at least 80% of the total runoff over the life of the project, using local rainfall data.

Projects must treat 100% of runoff (based on the selected calculation described above) with LID treatment measures that include harvesting and reuse, infiltration, evapotranspiration, or biotreatment (biotreatment may only be used if the other options are infeasible; MRP permittees, working collaboratively or individually, shall submit a report to the RWQCB on the criteria and procedures that will be used to determine when certain LID measures are infeasible). Biotreatment areas shall be designed to have a long-term infiltration rate of 5 to 10 inches per hour. Furthermore, MRP permittees implementing biotreatment LID measures, working collaboratively or individually, shall submit for RWQCB approval, a proposed set of model biotreatment soil media specifications and soil infiltration testing methods.

The City also requires development projects to incorporate the following source control and site design measures:

- Minimize stormwater pollutants of concern through measures that may include plumbing dumpster drips from covered trash, food waste, and compactor enclosures to the sanitary sewer;
- Properly design covers, drains, and storage precautions for outdoor material storage areas and loading docks;
- Properly designed trash storage areas;
- Minimize stormwater runoff by implementing one or more site design measures, which include directing roof runoff into cisterns or rain barrels for reuse, or directing roof runoff to vegetated areas.

The City also has a performance standard for hydromodification management; however, these standards do not apply to the proposed project because it is mapped as draining to a continuously hardened surface (Geosyntec 2013).

Vallejo Municipal Code – Water Efficient Landscaping Requirements

Section 16.71.055 of the Vallejo Municipal Code (Title 16, Zoning; 16.71, Water Efficient Landscaping Requirements; 16.71.055 Stormwater Management) encourages implementation of stormwater BMPs into the landscape and grading design plans to minimize runoff and to increase on-site retention and infiltration.

Vallejo Municipal Code – Excavation, Grading, and Filling

Chapter 12.40 of the Vallejo Municipal Code (Ordinance 400 N.C.(2d) section 1 (part), 1977) establishes rules and regulations for excavation, grading, and filling activities intended to preserve and enhance the natural beauty of the land, streams, and shorelines, and to reduce or eliminate the hazards of earthslides, mud flows, rock falls, undue settlement, erosion, siltation, and flooding. To obtain a grading permit, plans and specifications prepared by a licensed engineer must be submitted to the city engineer/director of public works for review and approval. Plans and specification, among many things, must show:

- A vicinity sketch or other data adequately indicating the site location;
- Property lines of the property on which the work is to be performed;
- Location of any buildings or structures within 50 feet of the proposed work;
- Accurate contours showing the topography of the existing ground;
- Elevations, dimensions, location, extent, and the slopes of all proposed grading shown by contours and/or other means; and
- Details of all drainage devices, walls, or other protective devices to be constructed in connection with, or as a part of, the proposed work.

In addition, the application must also contain the following:

- Erosion control methods and details, including schedule for installation. Erosion control plans for large-scale projects (50 acres or 200 lots, whichever is less) shall be prepared by a hydrologist specializing in erosion control.
- A map showing the drainage area and estimated runoff of the work and adjacent areas.
- A soils investigation report, including data regarding the nature, distribution, and strength of existing soils, conclusions, and recommendations for grading procedures and design criteria.
- A geological report, including an adequate description of the geology of the site and conclusions and recommendations regarding the effect of geologic conditions on the proposed work.

No permit shall be granted until all of the required data has been submitted for the application; the city engineer/director of public works has approved the plans; and all required fees have been paid.

City of Vallejo General Plan

The City of Vallejo adopted General Plan 2040 in August 2017 (City of Vallejo 2017). The General Plan 2040 Land Use Map was adopted in November 2017. The previous draft of this EIR was based on the General Plan adopted in July 1999. This EIR, where necessary and appropriate, incorporates the updated goals and policies from General Plan 2040. This discussion is shown in redline and/or strikeout in this document for ease of review.

The following goals and policies are applicable to the hydrology and water quality of the proposed project.

POLICY CP-1.7 Green Space. Promote community physical and mental health through provision and preservation of the urban forest, natural areas, and "green" infrastructure (i.e., best practices water management).

- *Action CP-1.7E Continue to implement green infrastructure practices that draw upon natural processes to address storm water drainage and flood control and potentially add to Vallejo's network of green spaces.*

POLICY CP-1.13 Clean Water. Provide a safe, adequate water supply citywide.

- *Action CP-1.13E Support the efforts of federal, State, regional, and local agencies to clean up impaired water bodies in Vallejo.*

POLICY CP-1.15 Water Quality. Maintain and improve water quality in a way that provides public and environmental health benefits.

- *Action CP-1.15A Require new development to incorporate site design, source control, and treatment measures to keep pollutants out of stormwater during construction and operational phases, consistent with City of Vallejo Municipal Ordinance.*
- *Action CP-1.15B Encourage new development to incorporate low impact development strategies, such as rain gardens, filter strips, swales, and other natural drainage strategies, to the greatest extent feasible, in order to reduce stormwater runoff levels, improve infiltration to replenish groundwater sources, reduce localized flooding, and reduce pollutants close to their source.*
- *Action CP-1.15C Consult with appropriate regional, State, and federal agencies to monitor water quality and address local sources of groundwater and soil contamination, including possible underground storage tanks, septic tanks, and industrial uses, as necessary, to achieve State and federal water quality standards.*

- *Action CP-1.15D Require new development to connect to the Vallejo Sanitation and Flood Control District sewer system for treatment of wastewater rather than septic systems, which are not allowed.*

POLICY NBE-1.1 Natural Resources. Protect and enhance hillsides, waterways, wetlands, and aquatic wildlife habitat through land use decisions that avoid and mitigate potential environmental impacts on these resources to the extent feasible.

- *Action NBE-1.1A Cooperate with federal, State, and local regulatory and stewardship agencies to promote the restoration and long-term sustainability of local natural resources, including wetlands and wildlife habitat at River Park.*

- *Action NBE-1.1G Avoid potential impacts on jurisdictional wetlands and other waters as part of new development to the maximum extent feasible. This should include streams and associated riparian habitat and coastal salt marsh habitat along the Vallejo shoreline. Where complete avoidance is not possible, require that appropriate authorizations be secured from State and federal jurisdictional agencies and that adequate replacement mitigation be provided to ensure there is no net loss in habitat acreage or values.*

POLICY NBE-1.4 Waterway Restoration. Restore riparian corridors and waterways throughout the city.

- *Action NBE-1.4B Work with the U.S. Environmental Protection Agency (USEPA), Regional Water Quality Control Board (RWQCB), Solano County, and neighboring jurisdictions in efforts to reduce pollution in local waterbodies*.

POLICY NBE-1.7 Green Infrastructure. Encourage the installation of green infrastructure, including tools such as permeable pavement, rain gardens, constructed wetlands, grassy swales, rain barrels and cisterns, and green roofs, to treat stormwater, attenuate floods, increase groundwater recharge, and reduce urban heat islands.

- *Action NBE-1.7A Continue to administer urban greening requirements to help extend the life of public improvements such as curbs, gutters, and sidewalks, and to help ensure that trees removed due to age, health, or potential to damage property are replaced in kind with new trees that are appropriate for their locations.*

POLICY NBE-1.14 Water Conservation. Promote water conservation through a range of proactive City efforts.

POLICY NBE-5.6 Flood Control Planning. Protect the community from potential flood events.

- *Action NBE-5.6D Continue to enforce City regulations that prohibit development, grading, and land modification activities that would adversely affect the local drainage system or create unacceptable erosion impacts.*
- *Action NBE-5.6E Continue to require that new or modified structures within the 100-year floodplain comply with the City's Flood Management Regulations, including elevation of building pads above the floodplain and flood-proofing of buildings, and continue to prohibit permanent structures in designated floodways.*

POLICY NBE-5.7 Design for Stormwater Control. Encourage new development and redevelopment to minimize the area of new roofs and paving.

- *Action NBE-5.7B Continue to manage and maintain City-owned storm drainage infrastructure to avoid flooding and reduce the negative effects of stormwater runoff*

POLICY NBE-5.10 Site Safety. Ensure that affected soil, groundwater, or buildings will not have the potential to adversely affect the environment or the health and safety of site occupants.

3.8.2 Existing Conditions

Climate

Typical of the western portions of Solano County in the vicinity of the Napa River and San Pablo Bay, Vallejo has a Mediterranean climate with cool summers (Geosyntec 2013). Average annual precipitation in the City is approximately 20 to 26 inches according to the Solano County Water Agency isohyetal map, is derived from frontal storms originating over the Pacific Ocean (Geosyntec 2013). A vast majority of this rain falls between October and May.

Watershed Description

The project site is on the shore of the Mare Island Strait (also referred to as the tidal section of the Napa River) and is backed by hillsides. According to the USGS National Hydrography Dataset, there are no rivers or creeks flowing into, through or near the project site. Drainage maps prepared for the City of Vallejo indicate the project is situated within an area draining through "continuously hardened conveyances" directly to Mare Island Strait and into San Pablo Bay, at its confluence with Carquinez Strait (Geosyntec 2013). This means that stormwater runoff in the vicinity enters storm drain systems instead of creeks or stream channels. According to the Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) (San Francisco RWQCB 2011), beneficial uses of the San Pablo Bay include the following: municipal and domestic supply; agricultural supply, industrial service supply, water contact recreation, non-contact water recreation, commercial and sport fishing, shellfish harvesting, estuarine habitat, fish migration, preservation of rare and endangered species, fish spawning, wildlife habitat, and navigation.

Topography, Stormwater Runoff, and Drainage

The site is the former General Mills plant fronting the Mare Island Strait at the end of Derr Avenue, and is bounded by undeveloped, vegetated slopes. To the southeast (beyond the slope) are residential homes and a school (Grace Patterson Elementary). The site topography ranges from approximately 145 feet above mean sea level (amsl) at the top of the slope at the southeastern boundary of the site, approximately one-quarter mile from the school, to 18 feet amsl at the northeast limit of the operations area (see Appendix J-1). From there, the ground slopes southwesterly to the strait at 11 feet amsl, with surface slopes ranging from 1% to 7%. At the shoreline, the ground locally has steeper slopes (10% to 60%) over short distances as the land enters the water surface, which has an elevation of approximately 4.2 feet amsl at low tide (Appendix J-1).

The project site has an existing stormwater drainage system consisting of a series of earthen and lined ditches, drop inlets, and underground pipe conveyance system (Appendix J-2). A 30-inch storm drain culvert discharges site's runoff directly into Mare Island Strait northwest of the site (Appendix J-2).

Flooding, Dam Inundation, and Coastal Hazards

Based on the FEMA Flood Insurance Rate Map (Panel 0630E for Solano County California), the Orcem Site is not located within a Special Flood Hazard Area subject to a 1% annual chance of flooding (often referred to as a 100-year flood). However, as shown in Figure 3.8-1, the majority of the VMT Site is within a Special Flood Hazard Area (Zone AE; at or below 9 feet amsl).

The project site is not located within a dam failure inundation hazard area, as determined by the California Office of Emergency Services and mapped by the Association of Bay Area Governments (ABAG 2014). In addition, a tsunami inundation map for the project area, prepared as part of a statewide multi-agency effort, shows that the Orcem Site is outside the zone of tsunami inundation (CalEMA 2009a). The VMT Site is within a tsunami inundation zone, but the extent of tsunami inundation is less than the anticipated extent of the 100-year flood.

Groundwater Basin and Groundwater Quality

The project site is located within the Napa-Sonoma Volcanic Highlands groundwater source area. The Basin Plan does not currently provide beneficial uses of the groundwater and indicates that the beneficial uses will be provided at a later date; in the interim, groundwater beneficial uses are determined on a site-by-site basis. Local groundwater is not used for water supply by the City of Vallejo (City of Vallejo 2006). Groundwater quality in the project area was characterized as exceeding the EPA's Specific Environmental Screening Levels for arsenic and metal concentrations in analyzed samples; overall, the site's groundwater was determined to be unsuitable for a potential source of drinking water (Appendix I-3). The groundwater was encountered at the project site at depths ranging from approximately 3.8 to 5.9 feet below ground surface; groundwater levels are expected to vary by season and by location within the site. According to a groundwater monitoring report and tidal survey conducted by Malcolm Pirnie (Appendix I-1), groundwater generally flows towards the west of the site.

Surface Water Quality

The quality of surface water in the vicinity of the project is affected by past and current land uses in the watershed, as well as local geology. Surface water quality is regulated by the SWRCB and San Francisco Bay RWQCB. Table 3.8-1 lists the beneficial uses of the water bodies relevant to the proposed project (because stormwater runoff would enter the Mare Island Strait, which discharges to the Carquinez Strait, San Pablo Bay, and the Central San Francisco Bay).

Table 3.8-1
Existing Beneficial Uses of Relevant Water Bodies

Category	Beneficial Use	Mare Island Strait	Carquinez Strait	San Pablo Bay	San Francisco Bay (Central)
Human Consumptive Uses	Agricultural Supply (AGR)				
	Municipal and Domestic Supply (MUN)				
	Freshwater Replenishment (FRSH)				
	Groundwater Recharge (GWR)				
	Industrial Service Supply (IND)		E	E	E
	Industrial Process Supply (PROC)				E
	Commercial and Sport Fishing (COMM)	E	E	E	E
	Shellfish Harvesting (SHELL)			E	E
Aquatic Life Uses	Cold Water Habitat (COLD)				
	Estuarine Habitat (EST)	E	E	E	E
	Marine Habitat (MAR)				
	Fish Migration (MIGR)	E	E	E	E
	Preservation of Rare and Endangered Species (RARE)	E	E	E	E
	Fish Spawning (SPWN)		E	E	E
	Warm Freshwater Habitat (WARM)				
Wildlife Uses	Wildlife Habitat (WILD)	E	E	E	E
Recreational Uses	Water Contact Recreation (REC1)	E	E	E	E
	Noncontact Water Recreation (REC2)	E	E	E	E
	Navigation (NAV)		E	E	E

Source: San Francisco Bay RWQCB 2011.
E = Existing beneficial use;

The CWA Section 303(d) Impairments in Northern San Francisco Bay-Delta are listed in Table 3.8-2. Under Section 303(d) of the CWA, the State of California is required to develop a list of water-quality limited (i.e., impaired) waters that do not meet water quality standards and objectives. Being "water quality limited" means that a water body is "not reasonably expected to attain or maintain water quality standards" without additional regulation. The law requires that the EPA develop total maximum daily loads (TMDLs) for each impaired water body in the nation, which specifies the maximum amount of a pollutant that a water body can receive and still meet water quality standards. A total maximum daily load may also include a plan for bringing an impaired water body back within standards. None of the water quality impairments listed in Table 3.8-2 have approved TMDLs, with the exception of mercury.

Table 3.8-2
CWA Section 303(d) Impairments in Northern San Francisco Bay-Delta

Water Bodies	Pollutant/Stressor	Potential Sources	TMDL Status	Year
Carquinez Strait; San Pablo Bay; and San Francisco Bay (Central)	Chlordane	Nonpoint Source	Scheduled	2013
	DDT	Nonpoint Source	Scheduled	2013
	Dieldrin	Nonpoint Source	Scheduled	2013
	Dioxin Compounds	Atmospheric Deposition	Scheduled	2019
	Furan Compounds	Atmospheric Deposition	Scheduled	2019
	Invasive Species	Ballast Water	Scheduled	2019
	Mercury	Atmospheric Deposition; Industrial Point Sources; Natural Sources; Nonpoint Sources; Resource Extraction	Approved	2008
	PCBs	Unknown Nonpoint Source	Scheduled	2008
	Selenium	Industrial Point Sources	Scheduled	2010
San Francisco Bay (Central)	Trash	Illegal dumping, Urban runoff/storm sewers	Scheduled	2021

Source: SWRCB 2014.
TMDL = total maximum daily load; DDT = dichlorodiphenyltrichloroethane; PCB = polychlorinated biphenyl

The Bay Regional Monitoring Program ~~(RMP)~~ provides water quality regulators and policy-makers with information they need to manage the Bay effectively. The program is an innovative collaborative effort between the San Francisco Estuary Institute, the San Francisco Bay RWQCB, and the regulated discharger community. Table 3.8-3 lists selected monitoring results for constituents of concern from a station along the Mare Island Strait, located about a mile northeast of the project site.

Table 3.8-3
Mare Island Strait Water Quality Monitoring Results

Medium	Pollutant/Stressor	Date Range	No. of Samples	Average Value	Unit
Water	Mercury, dissolved	1993 – 2001	23	0.002	µg/L
Water	Methylmercury, dissolved	2000 – 2001	2	0.0087	ng/L

Table 3.8-3
Mare Island Strait Water Quality Monitoring Results

Medium	Pollutant/Stressor	Date Range	No. of Samples	Average Value	Unit
Water	DDT (sum), dissolved	1995 – 1997	9	1.78	pg/L
Water	PCBs (sum of 40)	1993 – 2001	21	138.04	pg/L
Water	Selenium, dissolved	1993 – 2001	25	0.159	pg/L
Sediment	Mercury	1993 – 2001	13	0.33	mg/kg
Sediment	Methylmercury	2000 – 2001	3	0.1528	µg/kg
Sediment	DDT (sum)	1993 – 2001	19	4.81	µg/kg
Sediment	PCBs (sum of 40)	1993 – 2001	18	5.26	µg/kg
Sediment	Selenium	1993 – 2012	18	0.518	mg/kg

Source: SFEI 2014.

3.8.3 Thresholds of Significance

The following criteria, included in Appendix G of the CEQA Guidelines (14 CCR 15000 et seq.), will be used to determine the significance of potential hydrology and water quality impacts. Impacts to hydrology and water quality would be significant if the proposed project would:

A) Violate any water quality standards or waste discharge requirements;

B) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted);

C) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site;

D) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;

E) 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;

F) Otherwise substantially degrade water quality;

G) Place within a 100-year flood hazard area structures which would impede or redirect flood flows;

H) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam; or

I) Inundation by seiche, tsunami, or mudflow.

This analysis assumes that construction and design of proposed facilities would implement standard BMPs for the control of stormwater and prevention of pollutant discharges, as required under required NPDES permits (construction and industrial), Waste Discharge Requirements, and the regional municipal stormwater permit (see Section 3.8.1). This analysis also assumes that the Stormwater Control Plans developed by Meridian and Associates Inc. (2014, Appendix J-1) and KPFF Consulting Engineers (2015, Appendix J-3 and Appendix J-4), refined as necessary according to final designs, would be implemented as part of the VMT and Orcem project components and incorporated into their final designs.

3.8.4 Impact Discussion

A) Would the project violate any water quality standards or waste discharge requirements?

VMT Analysis

Construction Impacts

VMT construction activities would include existing on-site structure demolition, grading (both cut and fill), vegetation removal, and new building construction, as well as other on-site improvements (parking areas, landscaping, and driveways). Construction period activities could generate stormwater runoff that could cause or contribute to a violation of water quality standards or waste discharge requirements, provide substantial additional sources of polluted runoff, or otherwise substantially degrade the water quality of Mare Island and/or San Pablo Bay. In areas of active construction, soil erosion may result in discharges of sediment-laden stormwater runoff into the water bodies, if not properly controlled. Additional sediment input to the shoreline from construction of the VMT project component could contribute to degradation of downstream water quality and impairment of the beneficial uses identified in Section 3.8.1. Sediment can also be a carrier for other pollutants, such as heavy metals, nutrients, pathogens, oil and grease, fuels and other petroleum products. In addition to sediment, other pollutants associated with the various phases of construction, such as trash, paint, solvents, sanitary waste from portable restrooms, and concrete curing compounds, can discharge into and impair receiving waters if released during construction.

As part of VMT permitting and approval, the applicants will be required to develop and implement a SWPPP in accordance with SWRCB and San Francisco Bay RWQCB requirements (as described in Section 3.8.1). The SWPPP must specify the location, type, and maintenance requirements for BMPs necessary to prevent stormwater runoff from carrying construction-related pollutants into nearby receiving waters (in this case, the Bay-Delta). BMPs must be implemented to address potential release of fuels, oil, and/or lubricants from construction vehicles and equipment (e.g., drip pans, secondary containment, washing stations); release of sediment from material stockpiles and other construction-related excavations (e.g., sediment barriers, soil binders); and other construction-related activities with the potential to adversely affect water quality. The number, type, location, and maintenance requirements of BMPs to be implemented as part of the SWPPP depend on site-specific risk factors such as soil erosivity factors, construction season/duration, and receiving water sensitivity.

SWPPPs must be developed and implemented by a Construction General Permit Qualified SWPPP Developer (QSD)/Qualified SWPPP Practitioner (QSP). The QSD/QSP is tasked with determining the receiving water risks (including beneficial uses and CWA Section 303d impairments), monitoring site activities that could pose risks to water quality, and developing a comprehensive strategy to control construction-related pollutant loads in site runoff. Minimum standard BMPs include erosion and sediment controls; site management/ housekeeping/waste management; management of non-stormwater discharges; runon and runoff controls; and BMP inspection, maintenance, and repair activities. A rain event action plan must also be prepared by the QSD/QSP to outline the procedures to prepare the construction site for rain events and minimize the potential release of construction-related contaminants. The following are the types of BMPs that are typically included in a construction SWPPP (subject to review and approval by the RWQCB).

Erosion Control BMPs

- *Scheduling*. To reduce the potential for erosion and sediment discharge, construction shall be scheduled to minimize ground disturbance during the rainy season. The project applicant shall:
  - Sequence construction activities to minimize the amount of time that soils remain disturbed.
  - Stabilize all disturbed soils as soon as possible following the completion of ground-disturbing work.
  - Install erosion and sediment control BMPs prior to the start of any ground-disturbing activities.
- *Preservation of Existing Vegetation*. Where feasible, existing vegetation shall be preserved to provide erosion control.
- *Stabilize Soils*. Hydroseeding, geotextile fabrics and mats, mulch, or soil binders shall be used, as appropriate, to reduce erosion on exposed soil surfaces.
- *Earth Dikes, Drainage Swales and Slope Drains*. Earth dikes, drainage swales, or slope drains shall be constructed to divert runoff away from exposed soils and stabilized areas, and redirect the runoff to a desired location, such as a sediment basin.
- *Outlet Protection and Velocity Dissipation Devices*. Rock, concrete rubble, or grouted riprap shall be installed at culvert and pipe outlets to drainage conveyances, to prevent scour of the soil caused by concentrated high-velocity flows.

Sediment Control BMPs

- *Silt Fence/Fiber Roll*. Silt fences or fiber rolls shall be installed around the perimeter of the areas affected by construction, at the toe of slopes, around storm drain inlets, and at outfall areas, to prevent off-site sedimentation.
- *Street Sweeping and Vacuuming*. Areas with visible sediment tracking shall be swept or vacuumed daily to prevent the discharge of sediment into the stormwater drainage system or creeks.
- *Storm Drain Inlet Protection*. Storm drains shall be protected using a filter fabric fence, gravel bag barrier, or other methods, to allow sediments to be filtered or settle out before runoff enters drain inlets.
- *Check Dams*. Barriers shall be constructed of rock, gravel bags, sand bags, or fiber rolls across a constructed swale or drainage ditch, to reduce the effective slope of the channel. This reduces the velocity of runoff, which allows sediment to settle and reduces erosion.
- *Sediment Traps*. Sediment traps shall be constructed where sediment-laden runoff may enter the stormwater drainage systems or creeks. Sediment traps are appropriate for drainage areas less than 5 acres.
- *Sediment Basins*. If used on site, sediment basins shall be designed according to the method provided in the California Stormwater Quality Association Stormwater BMP Handbook – Construction. Sediment basins are appropriate for drainage areas of 5 acres or greater.

Wind Erosion Control BMPs

- *Dust Control*. Potable water shall be applied using water trucks to alleviate nuisance caused by dust. Water application rates shall be minimized to prevent erosion and runoff.
- *Stockpile Management*. Silt fences shall be used around the perimeter of stockpiles, and stockpiles shall be covered to prevent wind dispersal of sediment.

Tracking Control BMPs

- *Stabilized Construction Entrance/Exit*. Construction site entrances and exits shall be graded and stabilized to reduce the tracking of mud and dirt onto public roads by construction vehicles.
- *Stabilized Construction Roadway*. Access roads, parking areas, and other on-site vehicle transportation routes shall be stabilized immediately after grading is completed, and frequently maintained to prevent erosion and to control dust.

- *Tire Wash*. A tire washing facility shall be installed at stabilized construction access points to allow for tire washing when vehicles exit the site to prevent tracking of dirt and mud onto public roads.

Non-stormwater Control BMPs

- *Dewatering*. The SWPPP shall include a dewatering plan for non-contaminated groundwater specifying methods of water collection, transport, treatment, and discharge. The discharger shall consult with the RWQCB regarding any required permit (other than the Construction General Permit) or Basin Plan conditions prior to initial dewatering activities to land, storm drains, or receiving waters. Water produced by dewatering shall be impounded in holding tanks, sediment basins, or other holding facilities to settle the solids and provide other treatment as necessary prior to discharge to receiving waters. Discharges of water produced by dewatering shall be controlled to prevent erosion.
- *Illicit Connection/Discharge Detection and Reporting*. Contractors shall regularly inspect the site for evidence of illicit connections, illegal dumping, or discharges. Such illicit activities shall immediately be reported to the Vallejo Sanitation and Flood Control District (VSFCD).
- *Vehicle and Equipment Cleaning*. Construction equipment shall be washed regularly in a designated stabilized area on site or off site. Steam cleaning will not be performed on site. Phosphate-free, biodegradable soaps shall be used for on-site activities. Wash water from on-site activities shall be contained and infiltrated to avoid discharges to drain inlets and creeks.
- *Vehicle and Equipment Fueling and Maintenance*. Vehicles and equipment shall be inspected daily for leaks. Perform vehicle maintenance and fueling off site whenever possible. If maintenance and fueling must take place on site, designated areas shall be located at least 50 feet away from storm drain inlets, drainage courses, and receiving waters. Fueling areas shall be protected with berms and dikes to prevent runon, runoff, and to contain spills. Fueling shall be performed on level grade. Nozzles shall be equipped with automatic shutoffs to control drips. Stored fuel shall be enclosed or covered. Drip pans shall be used for all vehicle and equipment maintenance activities. Spill kits shall be available in maintenance and fueling areas, and spills shall be removed with absorbent materials and not washed down with water. If spills or leaks occur, contaminated soil and cleanup materials shall be properly disposed.
- *Paving and Grinding Operations*. Proper practices shall be implemented to prevent run-on and runoff, and to properly dispose of waste. Paving and grinding activities shall be avoided during the rainy season, when feasible.

Waste Management and Materials Pollution Control BMPs

- *Material Delivery and Storage and Use*. Materials such as detergents, concrete compounds, petroleum products, and hazardous materials shall be stored in a designated area away from vehicular traffic, drain inlets, and creeks. The materials shall be stored on pallets with secondary containment. Spill clean-up materials, material safety data sheets, a material inventory, and emergency contact numbers shall be maintained in the storage area.
- *Spill Prevention and Control*. Proper procedures shall be implemented to contain and clean up spills and prevent material discharges into the storm drain system.
- *Waste Management*. Solid waste shall be collected in designated areas and stored in watertight containers located in a covered area or with secondary containment. Waste shall be removed from the site regularly. Hazardous wastes shall be stored and disposed in accordance with applicable regulatory requirements.
- *Sanitary/Septic Waste Management*. Portable toilets shall be located at least 50 feet away from drain inlets and water bodies and away from paved areas.
- *Stockpile Management*. Stockpiles shall be surrounded by sediment controls, covered, and located at least 50 feet from concentrated flows of stormwater, inlets, and creeks.
- *Concrete Waste Management*. Concrete washout shall be performed off site or in a designated area at least 50 feet away from storm drain inlets or creeks. A temporary pit or bermed area shall be constructed where the waste can be discharged and allowed to set for proper disposal.
- *Training*. Construction site personnel shall receive training on implementing all BMPs included in the SWPPP. A Qualified SWPPP Practitioner shall perform all BMP inspection/maintenance/repair and site-monitoring activities.

Normally, the standard requirements contained in a SWPPP are sufficient to address a project's potential to violate water quality standards or waste discharge requirements, particularly when construction activities are land-based. In addition to stormwater runoff, construction activities can generate fugitive dust, which if not properly controlled, can be deposited in nearby waters. Note that this potential impact is addressed in Section 3.2, Air Quality — actions to mitigate adverse effects on air quality would likewise mitigate potential adverse effects on water quality from atmospheric deposition.

However, due to the general type and magnitude of in-water construction activities proposed on the VMT Site, as well as the applicant's proposal to reuse dredged sediments and to process on-site concrete for reuse as engineered backfill, implementation of a SWPPP alone may not be adequate to reduce the potential for project construction to violate water quality standards in the Mare Island Strait. Beneficial use of dredge material on site would be sought by the applicant, although any material unfit for reuse would be deposited at the Carquinez disposal site, or other approved location. Construction of the VMT Terminal would require approximately 50,453 square feet of solid fill (approximately 10,300 cubic yards), both engineered fill and riprap as slope protection, to the mean high water line. Additional grading fill, which occurs within the 100-foot Bay Conservation and Development Commission (BCDC) shoreline band, of approximately 100,452 square feet (approximately 10,900 cubic yards) would be needed to bring the laydown area, which would be located directly east of the wharf, to a finished grade of 11.5 feet above MLLW. On the water side of the wharf, the channel would be dredged to a depth of 38.0 feet below MLLW (approximately 89,800 cubic yards, subject to a permit from the USACE) to accommodate deep draft vessels and barges typically engaged in carrying bulk and break-bulk cargoes, as shown in Figure 2-4.

As discussed in Section 3.8.2, the applicable receiving waters (i.e., the Napa River, Carquinez Strait, San Pablo Bay, and San Francisco Bay) have a number of water quality impairments, including impairments for mercury and selenium, which in-water dredging and fill activities may affect. There are also numerous aquatic special-status species with the potential to occur in the area (discussed at length in Section 3.3). Dredge and fill activities could potentially remobilize pollutants absorbed onto fine sediments such as Bay mud and silt that would otherwise have remained trapped beneath the floor of the Bay. The re-suspension of dredged sediments may increase contaminant bioavailability in the water column. Furthermore, on-site materials, such as concrete foundations, if reused as riprap or processed as engineered aggregate, could introduce residual contaminants left over from former industrial uses into Bay-Delta waters. For example, use of excavators, backhoes, and other mechanical means to physically grab onto and attempt to free derelict creosote pilings from the seafloor may result in the piling disintegrating into a multitude of wood fragments, exposing previously un-weathered polycyclic aromatic hydrocarbons (PAH)-laden creosote to the marine environment. These construction-related effects would present a **potentially significant** impact with respect to water quality (**Impact 3.8-1**) and mitigation is provided in Section 3.8.5.

Operational Impacts

VMT would construct impervious surfaces such as roofs, driveways, and parking lots, upon which pollutants such as raw and finish material spills, metals, dust/sediment, oil and grease could accumulate and come into contact with rain and stormwater runoff, which would discharge into the downstream water bodies. Pollutants could also be generated from the loading, delivery, and trash pick-up areas, including through use of "clamshell grabs" and conveyors from docking ships to mobile hoppers, and the use of open storage areas to store bulk materials. In addition, industry specific higher levels of alkalinity (pH10 and above) and fine particles in materials handled by the proposed facility may contaminate stormwater runoff. If not properly controlled, the discharge of polluted stormwater runoff could adversely affect water quality and the beneficial uses of receiving waters.

Provision C.3 of the regional municipal stormwater permit addresses post-construction stormwater management requirements for new development and redevelopment projects. Currently, the City of Vallejo requires project applicants to install hydrodynamic devices or incorporate other BMPs to remove pollutants, such as floating liquids and solids, trash and debris, and coarse sediment, from stormwater runoff and to show the locations of such controls on plans submitted with the building permit application. In addition, the City requires implementation of LID strategies, preventative source controls, and additional stormwater treatment measures to minimize the discharge of pollutants in stormwater runoff and non-stormwater discharge of certain industrial projects, as well as prevention of an increase in runoff flows.

Appendix J-1 describes how the applicant intends to comply with NPDES-related stormwater permitting requirements, including measures to reduce development and minimize impervious area, measures to limit directly connected impervious areas, and specifics on the location and design of vegetated swales and bio-basins. Figure 3.8-2 includes a site plan showing the anticipated flow directions on site, the location of proposed stormwater drainage pipes, and the location and size of vegetated swales and bio basin (including a cross section). According to Appendix J-1, the proposed project would result in a decrease in impervious surface coverage and a reduction in the amount of water discharged into the Mare Island Strait compared to existing conditions. This is also shown in Table 3.8-4. Importantly, the wharf would be constructed in a manner that directs stormwater flow inland towards on-site storm drains and away from the tidal shoreline. Appendix J-1 and Figure 3.8-2 show that all stormwater on site would be directed to stormwater pipes, and eventually to vegetated swales and a bio-basin for retention and treatment through infiltration. The bio-basin has been designed so that direct discharges to the shoreline would only occur during prolonged and intense storms (i.e., greater than a 10-year storm), when the volume of the basin reaches capacity. At all other times stormwater would be treated through infiltration through a grassy basin designed to have a minimum infiltration rate of 5 inches per hour. Under existing conditions, stormwater runoff is not detained or treated prior to discharge.

Table 3.8-4
VMT Pre-Development and Post-Development Impervious Surfaces

Parameter	Pre-Development Condition	Post-Development Condition
Area	10.9 acres	10.9 acres
Impervious (building, roads and paved lots)	6.5 acres (60%)	2.3 acres (21%)
Semi Pervious (gravel and dock areas)	1 acres (9%)	7.1 acres (65%)
Landscape (incl. bio-basin, swales, open space, water)	3.4 acres (31%)	1.5 acres (14%)
Weighted Impermeability Factor	0.62	0.60

Source::Appendix J-1.

The stormwater system design described above is specific to the VMT project component and includes Phase II, which has been removed as a project component. However, the removal of Phase 2, and the new surface area it would have created, reduces the sizing requirements for the treatment area. The reduction is such that the basin alone (as shown on the SWMP) can provide the required treatment area without the need for roadside vegetated swales. Figure 3.8-2 also shows that the basin does not conflict in area with the existing warehouse, which may be utilized for some time prior to its demolition. The proposed drainage plan and required NPDES compliance would adequately address the potential for stormwater runoff to adversely affect water quality. As currently proposed, the bio-retention basin is design for a runoff of 13 cubic feet per second, which exceeds the 8.2 cfs that would be produced in a 10-year storm within the drainage areas associated with the VMT. In addition to stormwater runoff, operational activities could generate fugitive emissions, which if not properly controlled, could be deposited in nearby waters. Note that this potential impact is addressed in Section 3.2, Air Quality—actions to mitigate adverse effects on air quality would likewise mitigate potential adverse effects on water quality from atmospheric deposition.

Besides Provision C3 of the regional municipal stormwater permit, VMT is also subject to the newly adopted IGP (SWRCB Order No. 2014-0057-DWQ), as described in Section 3.8.1. Cement manufacturing (40 CFR Part 411) and marine cargo handling (standard industrial classification [SIC] code 4491) are two of the many categories of industrial activities covered by the IGP, which is designed to require applicants to address industry- and site-specific threats to water quality. The IGP requires permittees to identify, describe, and assess project-specific pollutant sources; to implement minimum and advanced BMPs designed for those pollutant sources and protective of receiving waters; and to conduct long-term monitoring and reporting to demonstrate the objectives of the IGP are being met and the quality of receiving waters are not being degraded. Performance standards for BMPs specified in the IGP include use of Best Available Technology Economically Achievable and Best Conventional Pollutant Control Technology to reduce or prevent pollutants in storm water discharges and authorized non-storm water discharges, and must be designed to meet discharge prohibitions, effluent and receiving water limitations, TMDLs, and water quality objectives in the Basin Plan.

The applicant will not be authorized to construct and operate the facility without first obtaining coverage under the IGP, which is accomplished by submitting to the San Francisco Bay RWQCB all required permit registration documents, including a Notice of Intent and an Industrial SWPPP. The Industrial SWPPP will contain, at a minimum, (1) the facility name and contact information, (2) a site map, (3) a list of industrial materials handled, (4/5) a description and assessment of pollutant sources, (6) minimum BMPs, (7) advanced BMPs, where applicable, (8) a monitoring and implementation plan, (9) an annual comprehensive facility compliance evaluation, and (10) the date that SWPPP was initially prepared and the date of each SWPPP amendment, where applicable.

The Industrial SWPPP would incorporate info as applicable from the VMT Stormwater Control Plan, and describe how stormwater discharged from material handling and storage areas would be routed and treated. This includes the type, characteristics, and quantity of industrial materials handled or stored; the shipping, receiving, and loading procedures; the spill or leak prevention and response procedures; and the areas protected by containment structures and the corresponding containment capacity. BMPs could include active treatment systems (ATS's) in addition to the vegetated swales and bio basin described above. Though the MRP dictates the use of LID stormwater treatment systems such as infiltration and bioretention to capture and treat stormwater before it is conveyed off-site, the IGP emphasizes use of ATS's (e.g., pre-settlement tank and multiple filtration systems, as necessary) that target industry and site specific pollutants prior to discharge, as well as stormwater effluent testing during each qualifying rainfall event. The requirements of the IGP, where more stringent than and/or more appropriate than those of the MRP, will govern. The Final SWCP for the VMT site will be submitted at the time of final engineering design and refined as necessary to show compliance with the IGP.

Because the drainage system has been adequately designed to handle runoff in a manner that would not violate water quality objectives, and because an Industrial SWPPP would be prepared for the operational phase of the project in compliance with NPDES permitting requirements (IGP 2014-0057-DWQ), the operational impacts of the VMT project component would be **less than significant**.

Orcem Analysis

Construction Impacts

The analysis of construction-related impacts of the Orcem project component is generally the same as provided above for VMT, except that there would be no in-water construction activities (which for VMT results in a potentially significant impact). The construction SWPPP would adequately address the potential for degradation of water quality from stormwater runoff on the construction site. Therefore, the construction-related impacts of the Orcem project component would be **less than significant**.

Operational Impacts

Orcem would construct impervious surfaces such as roofs, driveways, parking lots, and material storage facilities. Pollutants such as raw and finish material spills, metals, dust/sediment, oil, and grease could accumulate and come into contact with rain and stormwater runoff, which would discharge into the downstream waterbodies. In addition, pollutants related to the planned industrial activities on the site could produce industry-specific higher levels of alkalinity (pH10 and above), and fine particles including heavy metals may contaminate stormwater.

Provision C.3 of the regional municipal stormwater permit addresses post-construction stormwater management requirements for new development and redevelopment projects. Currently, the City of Vallejo requires project applicants to install hydrodynamic devices or incorporate other BMPs to remove pollutants, such as floating liquids and solids, trash and debris, and coarse sediment, from stormwater runoff and to show the locations of such controls on plans submitted with the building permit application. In addition, the City requires implementation of LID strategies, preventative source controls, and additional stormwater treatment measures to minimize the discharge of pollutants in stormwater runoff and non-stormwater discharge of certain industrial projects, as well as prevention of increase in runoff flows.

Appendix J-2 describes how the applicant intends to comply with NPDES-related stormwater permitting requirements. According to Appendix J-2, the project would result in an insignificant increase in the peak flowrate of water discharge off site. A portion of this increase would be mitigated by the addition of rainwater harvesting tanks, with stormwater reused to dampen material piles and limit fugitive dust. In addition, all stormwater that falls on site will be directed through a series of treatment facilities to control pH and reduce turbidity, sediment, heavy metals, and other targeted pollutants. Figure 3.8-3 includes a site plan showing the anticipated flow directions on site, the location of proposed stormwater drainage pipes, and the location and size of stormwater control BMPs.

As described in Appendix J-3 and Appendix J-4, each on-site drainage management area will be designed to direct drainage west to the storage and treatment area shown on Figure 3.8-3. The stormwater drainage system for the Orcem facility is completely separate from that of the VMT site, and is designed to handle all stormwater runoff from with the Orcem site boundary. Off-site stormwater runoff from the adjacent hillsides will be intercepted by drainage ditches on the upland side of the retaining walls, directed to inlets and storm drains that would bypass the Orcem site for discharge through the existing storm drain and outlet to the Bay, thereby avoiding comingling of off-site and on-site stormwater runoff. The on-site stormwater system includes a harvest and reuse system that will provide a portion of the demand for the dust suppression system. The harvest and reuse system will be capable of reusing 7,200 gallons of stormwater for the stockpile dust suppression system in a 72-hour period, accounting for about 8% of the MRP volume-based treatment requirement. Stormwater that is not captured for this use will continue on to the ATS consisting of an oil-water separator, a pH adjuster, a pre-settlement chamber (i.e., underground weir tank), sand filtration, and a granulated active carbon filter. Furthermore, a sampling and monitoring structure is required downstream of the ATS. Stormwater discharge downstream of the ATS will be monitored and tested to ensure treatment has been effective in reaching the testing requirements of the Industrial General Permit (IGP). Failure of a test will result in a violation of the IGP, in which case the ATS is highly customizable and will be modified to meet requirements.

The stormwater system design described previously is specific to the Orcem project component and would adequately address the potential for stormwater runoff to adversely affect water quality. In addition to stormwater runoff, operational activities could generate fugitive emissions, which if not properly controlled, could be deposited in nearby waters. Note that this potential impact is addressed in Section 3.2, Air Quality—actions to mitigate adverse effects on air quality would likewise mitigate potential adverse effects on water quality from atmospheric deposition. Besides Provision C3 of the regional municipal stormwater permit, VMT is also subject to the newly adopted IGP (SWRCB Order No. 2014-0057-DWQ), as described in Section 3.8.1 and above under the operational impact discussion for the VMT project. As indicated earlier, the stormwater control volume and/or methods may be updated or refined as necessary to reflect final facility designs and to comply with the most recent requirements of both the IGP and the MRP.

Because the drainage system has been adequately designed to handle runoff in a manner that would not violate water quality objectives, and because an Industrial SWPPP would be prepared for the operational phase of the project in compliance with NPDES permitting requirements (IGP 2014-0057-DWQ), the operational impacts of the Orcem project component would be **less than significant**.

~~Off-Site Improvements~~

~~The proposed project includes two off-site improvements that would take place at the City of Vallejo Municipal Marina located approximately 2 miles north of the project site (public access improvements and removal of existing deteriorated docks). The public access improvements would involve installation of a new self-propelled personal watercraft launch ramp just north of the access ramp to K Dock at the south end of the marina. The proposed launch would consist of a pre-cast articulated concrete mat, approximately 10 feet wide by 60 feet long over a geotextile fabric. Installation of the launch ramp would occur within the existing marina. The project would also involve the removal of existing deteriorated dock improvements within the water area at the north end of the marina. Approximately eighty (80) 14-inch-diameter creosote timber piles and deteriorated dock facilities would be removed from this portion of the marina. Timber removed from the existing docks and the creosote timber piles would be separated based on recyclability. Recyclable and non-recyclable material would be sent to the closest appropriate facility.~~

As described previously and in Section 3.3, Biological Resources, the removal of decaying creosote pilings would result in resuspended contaminated sediment and release of toxic piling fragments into the water column and exposing fish and invertebrate taxa which can be fatal and/or harmful to marine invertebrates, fish, and marine mammals. Use of excavators, backhoes, and other mechanical means to physically grab onto and attempt to free the piling from the seafloor generally results in the piling disintegrating into wood fragments, exposing previously unweathered PAH-laden creosote to the marine environment.

All in-water construction activities would be required to comply with USACE, EPA, RWQCB, and BCDC regulations and provisions in issued permits including BMPs for avoiding or reducing potential impacts related to resuspended sediments. However, impacts related to the potential release of PAH-laden creosote piling fragments would remain **significant (Impact 3.8-2),** and mitigation is provided in Section 3.8.5.

B) Would the project substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?

VMT and Orcem Project Analysis

Construction Impacts

The project would not use groundwater as a source of construction-related water supply (e.g., dust control, foundation preparations, worker needs). Although groundwater is not expected to affect project construction, dewatering during the construction period could be required. However, the dewatering would only result in a temporary and highly localized effect on the uppermost water-bearing zones related to near-surface excavations. This water-bearing zone is shallow, highly saline, and not accessed by adjacent property owners as a source of water supply. Therefore, the impacts of project construction with respect to groundwater would be **less than significant**.

Operational Impacts

The project would not use the groundwater for water supply. In the project operational phase, water supply would be provided by the City of Vallejo municipal water system. According to the City's Urban Water Management Plan, its supplies are derived solely from lakes, diversions, retail purchases and other surface water rights; none of the supply comes from groundwater (City of Vallejo 2006). Therefore, project operation would neither directly or indirectly affect groundwater supplies or lower the local groundwater table. Furthermore, as shown in Table 3.8-4, the weighted impermeability factor of the site would not substantially change. Because the project would include vegetated swales and promote stormwater infiltration over runoff, it would not interfere substantially with groundwater recharge. Therefore, the impacts of project operation with respect to groundwater would be **less than significant**.

~~**Off-Site Improvements**~~

~~The proposed project includes two off-site improvements that would take place at the City of Vallejo Municipal Marina located approximately 2 miles north of the project site (public access improvements and removal of existing deteriorated docks). Implementation of the proposed off-~~

~~site improvements would not result in the use of groundwater or interfere with groundwater recharge. **No impact** would occur.~~

C) 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, in a manner which would result in substantial erosion or siltation on- or off-site?

VMT Analysis

Construction and Operational Impacts

A new stormwater drainage system compliant with mandatory NPDES requirements is proposed to replace/abandon the existing non-compliant system. According to Appendix J-1, the VMT project component would result in a decrease in impervious surface coverage and a reduction in the amount of water discharged into the Mare Island Strait compared to existing conditions.

A 10-year storm event is expected to produce runoff of 8.2 cubic feet per second (cfs) at its peak (Appendix J-1). The proposed bio-basin has been sized for a capacity of 13.0 cfs (without consideration for infiltration). In the pre-development condition, sheet runoff flows directly to the banks of the Mare Island Strait. In the post-development condition, all on-site runoff is directed to the vegetated swales, storm drain system, and bio-basin for detention and filtration (see Figure 3.8-2). In the event that a storm occurs that is larger than the capacity of the stormwater drainage system (approximately a 10-year storm), stormwater runoff would be released overland from the project site and adjacent property and into Mare Island Straight. The wharf, along with the new area of engineered fill would not substantially change the course of the Mare Island Strait, because the proposed area of fill would be located on the shallow tidal flat and would not encroach upon the deep-water channel.

The VMT project component would change drainage patterns, but would do so in a manner that better handles stormwater runoff compared to existing conditions. The SWPPP discussed under criterion A discusses how the proposed project would minimize erosion or siltation. Therefore, the impacts with respect to alteration of drainage patterns would be **less than significant**.

Orcem Analysis

Construction and Operational Impacts

The Orcem project component would not significantly alter site drainage patterns. Runoff from the site would discharge into the stormwater drainage system, and locations of surface conveyance gutters and drain inlets would be modified to accommodate the grading and drainage for the new site design. The change in drainage patterns would not result in substantial erosion or siltation on site or off site. Project BMPs would prevent substantial erosion and siltation for the construction (e.g., erosion control requirements for earth-moving activities) and post-construction phases (e.g., stormwater runoff treatment before it discharges into the stormwater drainage system). In addition, the Orcem project component would comply with the City's requirement to submit a Grading and Erosion Control Plan, which would minimize erosion and siltation during construction. As described under criterion A, because the proposed Orcem drainage system has been adequately designed to handle runoff in a manner that would not violate water quality objectives, and because a SWPPP would be prepared for the operational phase of the project in compliance with NPDES permitting requirements (IGP 2014-0057-DWQ), the operational impacts of the Orcem project component would be less than significant.

~~Off-Site Improvements~~

~~As described earlier, the proposed project includes two off-site improvements associated with the VMT component of the project that would take place at the City of Vallejo Municipal Marina located approximately 2 miles north of the project site (public access improvements and removal of existing deteriorated docks). The installation of the ramp would involve the construction of a cast-in-place concrete apron that would provide the transition to the articulated concrete mat. The proposed cast-in-place and prefabricated improvements would replace primarily riprap and gravel surfaces and would result in a small area of cover. Removal deteriorated dock facilities would not result in changes to drainage patterns at the Municipal Marina. Since proposed off-site improvements would not significantly alter drainage patterns or result in siltation, impacts would be~~ ~~**less than significant.**~~ **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 substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?**

VMT and Orcem Project Analysis

As discussed under threshold C, the project would change drainage patterns, but would do so in a manner the better handles stormwater runoff compared to existing conditions.

The proposed project would allow for overland release of surface runoff in excess of design storm event, and/or in case that flooding occurs during a smaller storm resulting from debris clogging in the downstream stormwater drainage system. In the existing condition, overland release of such flows is conveyed through the adjacent property to the west and into Mare Island Strait. There would be no change in the drainage pattern for overland release of flood water with implementation of the proposed project. Furthermore, there would be no habitable structures, nor any bulky structures with significant cross-sectional area, within the 100-year flood plain on the VMT Site.

Therefore, the proposed project impacts on flooding as a result of changes in drainage patterns would be **less than significant**.

~~**Off-Site Improvements**~~

~~As described earlier, the proposed project includes two off-site improvements that would take place at the City of Vallejo Municipal Marina located approximately 2 miles north of the project site (public access improvements and removal of existing deteriorated docks). The public access ramp and dock removal improvements would not substantially alter existing drainage patterns through the alteration of a stream or river course or increase surface runoff in a way that could result in flooding on or off site. Impacts would be **less than significant.**~~

D) Would the project 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?

VMT and Orcem Project Analysis

The existing 30-inch discharge culvert and the entire site's storm drain system of unknown capacity would be abandoned or removed. Existing outfalls may be reused and/or upgraded as necessary, subject to current standards. According to Appendix J-2 and Appendix J-3, the system appears outdated and non-compliant with the current NPDES requirements described in Section 3.8.1. The Orcem project component would include appropriately sized storm drain systems with both volume- and flow-based design treatment systems (retaining media/sand filters), as well as rainwater harvesting/reuse LID tanks, which would decrease peak discharge rates compared with the existing system conditions. The potential for the project to provide additional sources of polluted runoff is discussed above under criterion A. Therefore, implementation of the proposed project would not exceed capacity of the existing or planned stormwater drainage system, and the impacts would be **less than significant**.

~~**Off-Site Improvements**~~

~~As described earlier, the VMT component of the proposed project includes two off-site improvements that would take place at the City of Vallejo Municipal Marina located approximately 2 miles north of the project site (public access improvements and removal of existing deteriorated docks). Removal of the deteriorating dock structures would not create or contribute any new sources of runoff. The proposed launch ramp would constitute a small surface area, the majority of which would be located below the surface of the Bay, and would not contribute surface runoff to any stormwater drainage system. Impacts would be **less than significant**.~~

E) Would the project otherwise substantially degrade water quality?

VMT and Orcem Project Analysis

Water quality issues associated with the project, including potential degradation of water quality, have been comprehensively addressed under criteria A–E. The proposed project would not otherwise degrade water quality, and **no impact** would occur.

~~Off-Site Improvements~~

~~The potential impact of the proposed off-site improvements to water quality is comprehensively addressed under thresholds A–E. The off-site improvements would not otherwise degrade water quality. Therefore, **no impact** would occur.~~

F) Would the project place within a 100-year flood hazard area structures which would impede or redirect flood flows?

VMT and Orcem Project Analysis

As indicated in Figure 3.8-1, the 100-year floodplain is limited to areas of the VMT Site where no permanent habitable structures are proposed. Although the project would place fill within the Mare Island Strait, it would not expose habitable structures to 100-year flood flows. Therefore, impacts would be **less than significant**.

~~Off-Site Improvements~~

~~As described earlier, the proposed project includes two off-site improvements that would take place at the City of Vallejo Municipal Marina located approximately 2 miles north of the project site (public access improvements and removal of existing deteriorated docks). The installation of the proposed personal watercraft ramp and removal of deteriorating dock structures would not impede or redirect flood flows. Impacts would be **less than significant**.~~

G) Would the project expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?

VMT and Orcem Project Analysis

As indicated under threshold G and depicted on Figure 3.8-1, the 100-year floodplain is limited to areas of the VMT Site where no permanent habitable structures are proposed. Although the project would place fill within the Mare Island Strait, it would not place people or the public at risk because it would consist of loading/unloading areas. Furthermore, the fill would be placed in the shallow tidal area and would not encroach upon the strait's deep-water channel. Impacts would therefore be **less than significant**.

~~**Off-Site Improvements**~~

~~The proposed project includes two off-site improvements that would take place at the City of Vallejo Municipal Marina located approximately 2 miles north of the project site (public access improvements and removal of existing deteriorated docks). The proposed public launch ramp would be located partially in the water, and any potential flooding could reduce the area available for launching boats. However, given the proposed use of the ramp as a watercraft launching facility, potential flooding would not expose people or structures to significant risk. Similarly, the removal of the existing docks would not expose people or structures to risk from flooding. The proposed off-site improvements would therefore not expose people or structures to risk related to flooding including the failure of a levee or dam. Impacts would be **less than significant**.~~

H) Would the project be at risk for inundation by seiche, tsunami, or mudflow?

VMT and Orcem Project Analysis

As discussed in Section 3.8.2, the extent of inundation from a tsunami is expected to be less than that of a 100-year flood. The site would not be subject to seiche because is it not next to an enclosed body of water (e.g., lake or pond). Mudflow is not expected to be an issue on the site due to the character of soil and rock slopes adjacent to the site; the potential for landslides and rockfalls are addressed in Section 3.5, Geology and Soils. The impact is therefore **less than significant**.

~~**Off-Site Improvements**~~

~~The proposed project includes two off-site improvements that would take place at the City of Vallejo Municipal Marina located approximately 2 miles north of the project site (public access improvements and removal of existing deteriorated docks). The site would not be subject to seiche because is it not next to an enclosed body of water (e.g., lake or pond). The Municipal Marina is located within a Tsunami Inundation Area and would be at risk of inundation in the event of a tsunami (CalEMA 2009b). However, since the proposed off-site improvements would be located partially under water and would be used for water access, the risks associated with tsunami would not be significant. Mudflow is not expected to be an issue on the site due to the character of soil and rock slopes adjacent to the site. Impacts would therefore be **less than significant**.~~

3.8.5 Mitigation Measures

Mitigation for Impact 3.8-1: Construction of the VMT component of the project would result in a significant impact due to potential impacts on marine water quality from material dredging, removal of creosote pilings, reuse of materials from on-site demolition activities, and use of Class II aggregate for riprap.

MM-3.8-1 **Dredged Material Management Plan.** Prior to construction of the VMT project component, the applicant shall develop a dredged material management plan to outline procedures necessary to evaluate the suitability of dredged materials for either on-site beneficial reuse or in-bay disposal at the Carquinez disposal or other approved site. The purpose of the plan shall be to ensure that dredged materials are handled in a manner that is consistent with the San Francisco Bay Long-Term Management Strategy for Dredging developed cooperatively by the U.S. Environmental Protection Agency (EPA), U.S. Army Corps of Engineers (USACE), the San Francisco Regional Water Quality Control Board (RWQCB), and the Bay Conservation and Development Commission (BCDC). The plan shall include screening and testing guidelines necessary to ensure dredged materials may be reused on-site without resulting in potentially adverse impacts on water quality and aquatic biota.

The dredged material management plan shall be prepared and implemented by a qualified professional geochemist or water quality expert with relevant Bay-Delta project experience. In consultation with San Francisco Bay RWQCB and BCDC staff, and in consideration of the applicable water quality objectives and known water quality impairments within receiving waters, the plan shall outline the type and frequency of testing that would be required as materials are dredged out of the Bay. The plan shall develop site-specific thresholds that would indicate the material is suitable for on-site reuse using input from the San Francisco Bay RWQCB and the following document: *Beneficial Reuse of Dredged Materials: Sediment Screening and Testing Guidelines*. Testing protocols from *Evaluation of Dredged Material Proposed for Discharge in Waters of the U.S. – Testing Manual (Inland Testing Manual)* shall also be incorporated into the plan where applicable.

The USACE, the San Francisco Bay RWQCB, and the BCDC shall have review and approval authority over the plan. During dredging operations, the applicant shall submit monthly reports to each agency describing the volume and destination (i.e., on-site, in-bay, or ocean) of dredged materials, with testing results justifying the decision.

MM-3.8-2 **Riprap and Aggregate Sourcing.** Prior to construction of the wharf, the applicant shall disclose to the U.S. Army Corps of Engineers (USACE), the San Francisco Bay Regional Water Quality Control Board (RWQCB), and the Bay Conservation and Development Commission (BCDC) the source and volume of the Class II aggregate and riprap to be used in construction and backfill materials. For materials proposed to be reused from on-site demolition activities, the applicant shall demonstrate to the satisfaction of the agencies that such reuse would not result in release or leaching of contaminants into the water column. The applicant shall describe screening and testing procedures to be used to ensure that rock and aggregate materials do not contain legacy contaminants that could violate water quality objectives or result in substantial adverse impacts on aquatic biota when placed along the shoreline. All materials to be used in the construction of the wharf and shoreline backfill shall be subject to approval by the San Francisco Bay RWQCB, and the BCDC.

Refer to **MM-3.3-3** and **MM-3.3-4** in Section 3.3, Biological Resources.

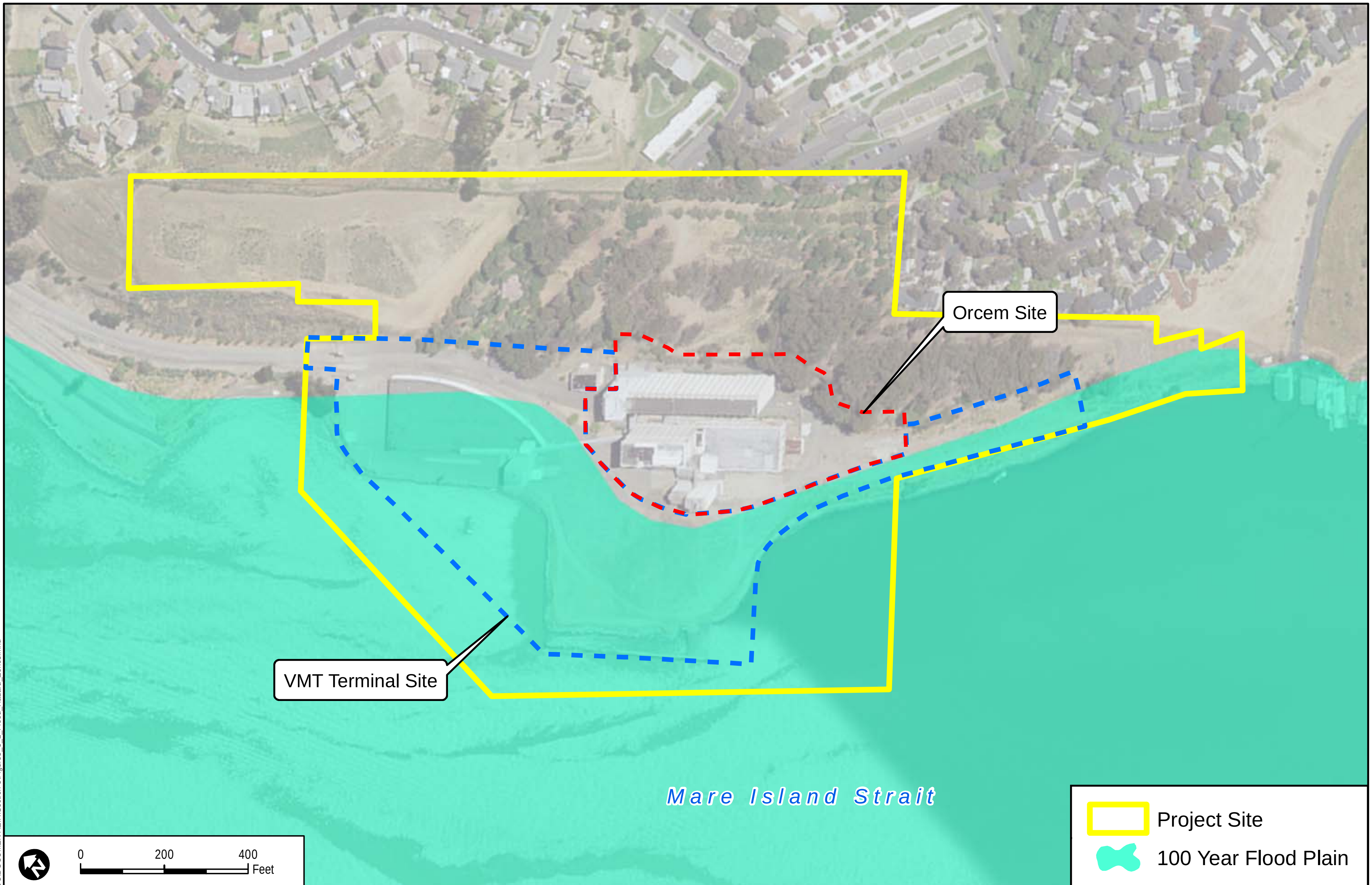
~~**Mitigation for Impact 3.8-2:** The removal of the deteriorated docks located at the northern end of the City of Vallejo Municipal Marina could result in significant impacts to water quality related to removal of creosote pilings.~~

Refer to **MM-3.3-3** in Section 3.3, Biological Resources.

3.8.6 Level of Significance After Mitigation

Impact 3.8-1: With implementation of mitigation measures MM-3.8-1, MM-3.8-2, MM-3.3-3, and MM-3.3-4, Impact 3.8-1 would be reduced to a **less-than-significant** level. Implementation of MM-3.8-1 and MM-3.8-2 would ensure that dredged materials as well as on-site concrete (associated with existing buildings) would be tested prior to on-site reuse as engineered fill, and would minimize the potential for mobilization of impurities and/or organic or inorganic contaminants in stormwater runoff or leaching into marine waters. Furthermore, measures to minimize impacts to aquatic life in the intertidal zone would include a creosote piling removal plan (MM-3.3-3), and an in-water construction/deconstruction pollution prevention plan (MM-3.3-4). MM-3.3-3 and MM-3.3-4 together would minimize the potential for in-water construction activities to adversely affect water quality by training workers, recovering debris, and ensuring the proper placement and use of containment booms.

~~**Impact 3.8-2:** Implementation of MM-3.3-3 (Section 3.3, Biological Resources) would require a creosote piling removal plan, which would ensure that impacts related to removal of the creosote piles at the City's Municipal Marina would be reduced to a **less-than-significant** level.~~



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SOURCE: Bing 2014, FEMA 2014

FIGURE 3.8-1

Flood Hazard Zones

VALLEJO MARINE TERMINAL AND ORCEM PROJECT

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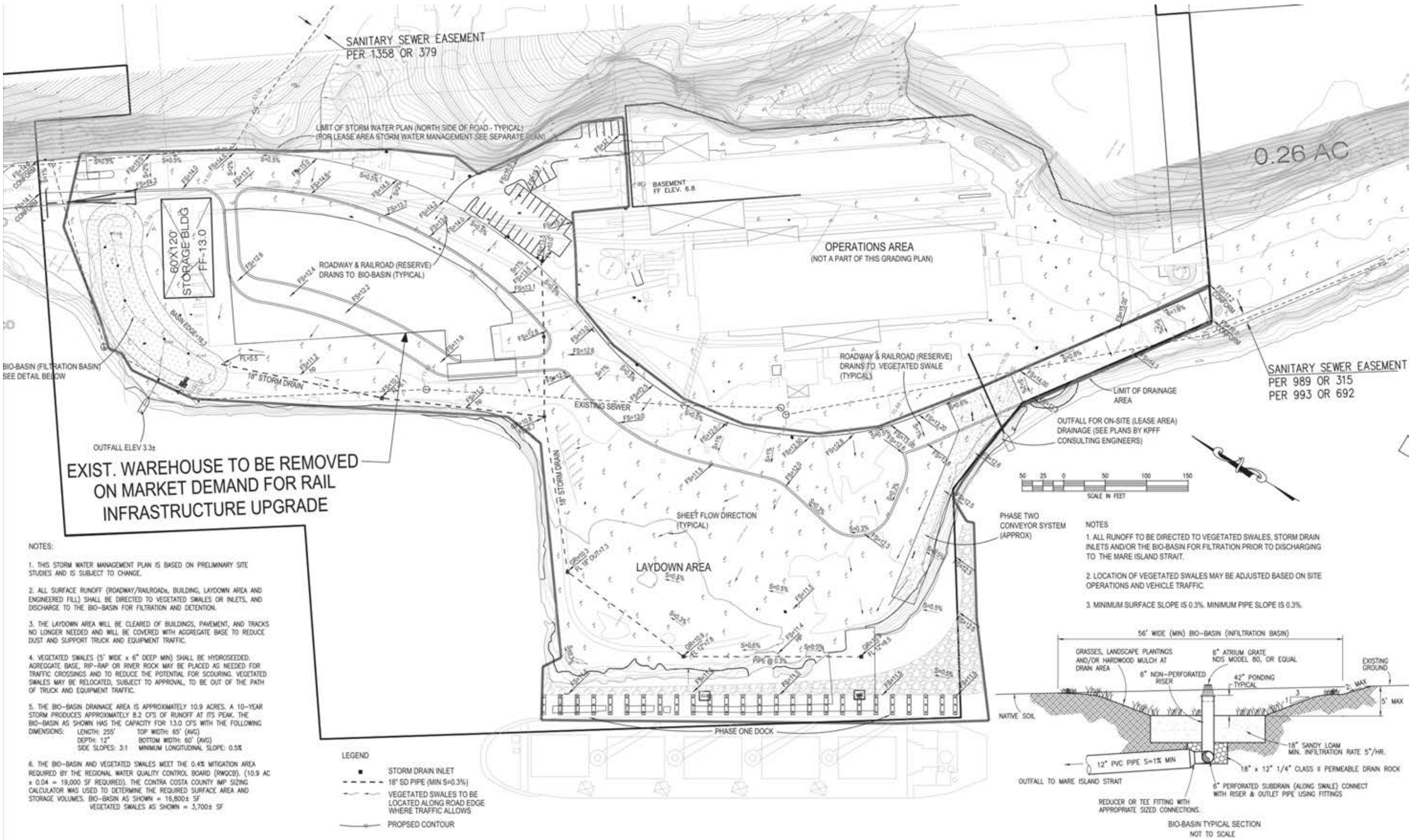

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SOURCE: Meridian Associates, Inc. 2016

FIGURE 3.8-2
VMT Preliminary Stormwater Management Plan

VALLEJO MARINE TERMINAL AND ORCEM PROJECT

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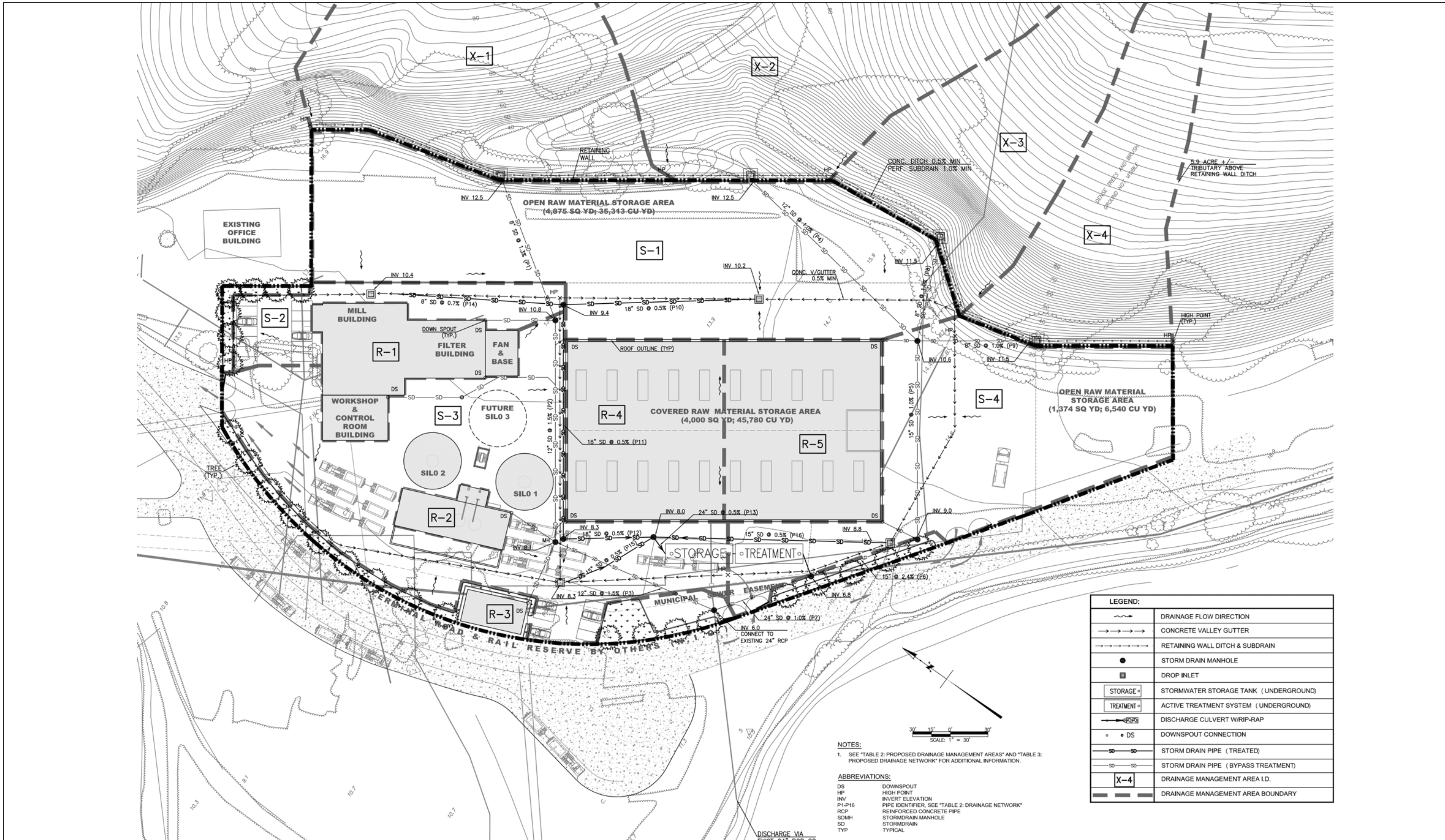

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SOURCE: KPFF CONSULTING ENGINEERS 2016

FIGURE 3.8-3
Orcem Drainage Plan

VALLEJO MARINE TERMINAL AND ORCEM PROJECT

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3.9 LAND USE AND PLANNING

This section analyzes the potential impacts of the Vallejo Marine Terminal (VMT) and Orcem project (proposed project) with respect to land and water uses and recommends mitigation measures where necessary to reduce or avoid significant impacts.

3.9.1 Regulatory Setting

Federal

There are no federal land use and planning regulations applicable to the proposed project.

State

San Francisco Bay Conservation and Development Commission

The San Francisco Bay Conservation and Development Commission (BCDC) is a state agency that was created as a temporary agency by the McAteer-Petris Act in 1965. In 1969, the McAteer-Petris Act was amended to make BCDC a permanent agency. BCDC regulates filling, dredging, and changes in use in San Francisco Bay. In addition, BCDC regulates new development within 100 feet of the shoreline to ensure the provision of public access to and along the Bay. BCDC is also responsible for ensuring that shoreline property suitable for regional high-priority water-oriented uses, such as ports, water-related industry, water-oriented recreation, airports, and wildlife areas, is reserved for these purposes (BCDC 2014). BCDC planning documents applicable to the project site are described below.

San Francisco Bay Plan

The San Francisco Bay Plan (Bay Plan), which was prepared by BCDC between 1965 and 1969 and most recently amended in 2012, guides the protection and use of the Bay and its shoreline. BCDC has permit jurisdiction over shoreline areas subject to tidal action up to the mean high tide line and including all sloughs, tidelands, submerged lands, and marshlands lying between the mean high tide and 5 feet above mean sea level for the nine Bay Area counties with Bay frontage, and the land lying between the Bay shoreline and a line drawn parallel to, and 100 feet from, the Bay shoreline, known as the 100-foot shoreline band. The Bay Plan provides policy direction for BCDC's permit authority regarding the placement of fill; extraction of materials; determining substantial changes in use of land, water, or structures within its jurisdiction; protection of the Bay habitat and shoreline; and maximizing public access to the Bay (BCDC 2012).

Part II of the Bay Plan includes the following overarching objectives (BCDC 2012):

- Objective 1: Protect the Bay as a great natural resource for the benefit of present and future generations.

- Objective 2: Develop the Bay and its shoreline to their highest potential with a minimum of Bay filling.

Parts III and IV of the Bay Plan contain findings and policies pertaining to the natural resources of the Bay and development of the Bay and shoreline, respectively. The specific policies applicable to the proposed project are discussed in detail in Section 3.9.4, Impact Discussion.

The project site is included on Bay Plan Map 2: Carquinez Strait, within the Vallejo Water-Related Industrial Area (6), which is designated "Water-Related Industry" (BCDC 2012). Bay Plan Policies for Area 6 indicate that "some fill may be needed" within this area in order to fully accommodate the planned and desired land uses, and to create commercially viable use of the shoreline. Mare Island Strait is identified as a "Certain Waterway" on the Bay Plan, which provides navigable water access to the designated "Vallejo Water-Related Industrial Area" including the project site.

<u>Shoreline Spaces: Public Access Design Guidelines for the San Francisco Bay</u>

The BCDC Public Access Design Guidelines provide guidance for site planning and design of public access areas associated with development projects along the shoreline of the San Francisco Bay. The Public Access Design Guidelines is an advisory document based on the Bay Plan policies and is intended to facilitate the design of projects that are consistent with BCDC's policies regarding public access. The following seven public access objectives are provided to help achieve the goal of providing "maximum feasible public access, consistent with the project" (BCDC 2005):

1. Make public access PUBLIC.
2. Make public access USABLE.
3. Provide, maintain and enhance VISUAL ACCESS to the Bay and shoreline.
4. Maintain and enhance the VISUAL QUALITY of the Bay, shoreline and adjacent developments.
5. Provide CONNECTIONS to and CONTINUITY along the shoreline.
6. Take advantage of the BAY SETTING.
7. Ensure that public access is COMPATIBLE WITH WILDLIFE through siting, design and management strategies.

<u>Bay Area Seaport Plan</u>

The San Francisco Bay Area Seaport Plan is a joint regional policy document of BCDC and the Metropolitan Transportation Commission (MTC) that was adopted in 1996 and last amended in 2012. It is the maritime element of MTC's Regional Transportation Plan and provides more detailed policy direction that extends from the Bay Plan's Port policies. The Seaport Plan contains policies for existing and future waterfront areas reserved for cargo terminals and port-priority uses, based on economic forecasts and projected future needs of Bay Area ports (BCDC and MTC 2012).

California Local Agency Formation Commission

The legislature has charged the Local Agency Formation Commission (LAFCO) with carrying out changes in governmental organization to promote specified legislative policies codified in the Cortese-Knox-Hertzberg Local Government Reorganization Act of 2000. The Cortese-Knox-Hertzberg Act commences with Section 56000 of the Government Code, specifically sections 56001, 56300, 56301, 56375, 56377, and 56668. These sections contain the following major policy elements:

1. Orderly Growth. LAFCO is charged with encouraging orderly growth and development. Providing housing for persons and families of all incomes is an important factor in promoting orderly development.
2. Logical Boundaries. LAFCO is responsible for encouraging the logical formation and determination of boundaries.
3. Efficient Services. LAFCO must exercise its authority to ensure that affected populations receive adequate, efficient, and effective governmental services.
4. Preserve Agricultural and Open Spaces. LAFCO is required to exercise its authority to guide development away from open space and prime agricultural land uses unless such actions would not promote planned, orderly, and efficient development.

Local

Plan Bay Area

Plan Bay Area, a long-range land use and transportation strategy for the San Francisco Bay Area, was approved by the Association of Bay Area Governments (ABAG) and MTC on July 18, 2013. ABAG is the regional planning agency for the 9 counties and 101 cities and towns within the San Francisco Bay region. The plan includes the region's first Sustainable Communities Strategy and the 2040 Regional Transportation Plan. The plan provides a strategy for meeting 80% of the region's future housing needs in Priority Development Areas (PDAs), which are defined as neighborhoods that offer a wide variety of housing options within walking distance of transit and amenities such as grocery stores, community centers, and restaurants. Identified by cities and towns across the region, the PDAs range from regional centers such as downtown San Jose to suburban centers such as Walnut Creek's west downtown area, and smaller town centers such as the Suisun City Waterfront. The plan funds mixed-income housing production and locally-led planning in PDAs.

~~City of Vallejo General Plan~~

~~The Vallejo General Plan, adopted in July 1999, establishes the goals and policies guiding land use and development within the City's Planning Area, which includes lands within the City limits and lands outside the City limits but within the City's Sphere of Influence (SOI). The entire project site is located within the City's Planning Area. The portion of the project site within the City limits is designated "Employment" (City of Vallejo 1999).~~

~~The following goals and policies are applicable to the proposed project.~~

~~**Waterfront Development Goal:** To have a waterfront devoted exclusively to water oriented uses, including industrial, residential, commercial and open space uses, which permit public access.~~

- ~~***Policy 1:*** BCDC's Public Access Design Guidelines should be used in reviewing all development proposals. In areas hazardous to public safety or incompatible with public use, in-lieu access at another nearby location may be provided.~~
- ~~***Policy 3:*** The following public access to and along public waterways, streams and rivers is required where feasible:~~

  ~~a. Access to the water every 1,500 feet;~~

  ~~b. Accessway to be a minimum of 50 feet wide;~~

  ~~c. Access along the: water to be a minimum of 200 feet in width;~~

  ~~d. Planned Developments and commercial and industrial areas may vary provided they are within the intent and purpose of this provision.~~

~~**Industrial Development Goal 2:** To have a higher percentage of residents working in the Vallejo area.~~

- ~~***Policy 1:*** Review large vacant acreages for potential development; existing industrially zoned areas should not be rezoned unless the zoning is inappropriate.~~

~~**Industrial Development Goal 3:** To insure compatibility between industrial land uses and uses of a lesser intensity.~~

- ~~***Policy 1:*** Where possible, natural buffers, e.g., railroad tracks, major street, or abrupt topographic changes should be used to delineate industrial areas.~~

~~**Industrial Development Goal 4:** To maximize the potential of industrially zoned lands for the fostering of new and innovative industrial development.~~

- ~~***Policy 1:*** Use the Planned Development approach in those areas where industrial uses will be compatible with accessory residential and/or commercial uses.~~

~~**Circulation and Transportation, Compatibility with Adjoining Land Uses Goal:** To have a street and highway system that services all land uses with a minimum adverse impact.~~

- ~~***Policy 3:*** All truck traffic and regional bus service should be restricted to peripheral major streets and north-south, east-west arterial and collector streets having the least number of residences and schools. Only small trucks servicing the neighborhood centers should be allowed on other streets. Where possible, unloading facilities should be provided off alleys rather than streets.~~

~~**Public Facilities and Other Services, Other Services Goal:** To provide an efficient and financially sound system of urban services to protect the health, safety and general welfare of Vallejo area residents.~~

- ~~***Policy 5:*** Prior to annexation to the City, a Specific Area Plan and Environmental Impact Report should be conducted. A cost/revenue impact study should be undertaken to determine the cost of providing public services.~~

~~**Air Quality Goal 1:**~~

- ~~***Policy 2:*** Balance jobs and housing in future development to provide Vallejo residents the opportunity to work within Vallejo, and reduce long distance commuting both to and from Vallejo. Jobs and housing should be balanced both in numbers and in salary range/housing cost.~~

~~**Air Quality Goal 2:** To reduce the air quality impact associated with future development in Vallejo.~~

- ~~***Policy 3:*** Require air quality mitigation for new development not amenable to TSM [Transportation Systems Management] methods. Retail commercial and residential development, in particular, do not lend themselves to trip reduction through TSM. As part of the environmental review process these types of uses should be required to provide air quality mitigation by providing funding for off-site improvements to improve air quality. Examples of such improvements are pedestrian/bicycle amenities, transit support, transit amenities such as bus shelters, or additional park-and-ride lots.~~
- ~~***Policy 4:*** Use project siting to reduce air pollution exposure of sensitive receptors. Locate air pollution sources away from residential areas and other sensitive receptors. Include buffer zones within residential and sensitive receptor site plans to separate these uses from freeways, arterials, point sources and potential sources of odors.~~

~~**Fish and Wildlife Resources Goal:** To protect valuable fish and wildlife habitats.~~

- ~~***Policy 5:*** Recognize areas valuable for marine life productions, particularly the Napa Marshes and Carquinez Strait, and work with the California Department of Fish and Game~~

~~and Bay Conservation and Development Commission in insuring the protection of these areas from incompatible uses.~~

~~**Noise Goal:** To provide for a more pleasing acoustic environment for the city by controlling noise levels in a manner that is acceptable to the residents, reasonable for commercial and industrial land uses, and practical to enforce.~~

- ~~***Policy 2:*** Roadways should be kept in good repair and new surface material should be evaluated in terms of noise generation.~~

~~**Floodplain Hazards Goal:** To protect life, property, and public well-being from seismic, floodplain, and other environmental hazards and to reduce or avoid adverse economic, social, and physical impacts caused by existing environmental conditions.~~

- ~~***Policy 3:*** Evaluate all new developments to determine how peak runoff can be delayed using such measures as detention or retention basins, permanent greenbelt areas, temporary underground storage, permeable paving and roof top ponding.~~

City of Vallejo General Plan

The Vallejo General Plan 2040, was adopted in August 2017 (City of Vallejo 2017a). The General Plan 2040 Land Use Map was adopted in November 2017 (City of Vallejo 2017b). The previous draft of this EIR was based on the General Plan adopted in July 1999. This document, where necessary and appropriate, updates any policies pertaining to land use that may have changed in the recently updated General Plan. This discussion is shown in underline and/or strikeout in this document for ease of review. The General Plan establishes the goals and policies guiding land use and development within the City's Planning Area, which includes lands within the City limits and lands outside the City limits but within the City's Sphere of Influence. The entire project site is located within the City's Planning Area and within the City limits. The project site is defined as an "Employment Center" in the City's General Plan and carries a land use designation of Industrial/Light Industrial.

The following goals and policies are applicable to the potential changes in land use of the proposed project.

POLICY NBE-1.1 Natural Resources. Protect and enhance hillsides, waterways, wetlands, and aquatic wildlife habitat through land use decisions that avoid and mitigate potential environmental impacts on these resources to the extent feasible.

- *Action NBE-1.1A Cooperate with federal, State, and local regulatory and stewardship agencies to promote the restoration and long-term sustainability of local natural resources.*

POLICY NBE-1.9 Cultural Resources. Protect and preserve archaeological, historic, and other cultural resources.

POLICY NBE-1.12 Historic Preservation**.** Promote community awareness of the benefits of historic preservation.

POLICY NBE-2.8 Infill Development. Promote infill development targets such as vacant and underutilized sites for community-desired and enhancing uses compatible with surrounding uses.

- *Action NBE-2.8A Identify sites suitable for redevelopment; work with property owners to promote economically feasible and community desired uses that enhance and are compatible with the existing urban fabric.*

POLICY NBE-4-1 Waterfront Focus. Prioritize public access and recreational and water-dependent uses along the waterfront while minimizing adverse effects on the natural environment.

POLICY NBE-4.4 Visual Continuity. Foster a cohesive and distinctive visual experience along the waterfront.

- *Action NBE-4.4A Continue to use the Waterfront Design Guidelines to guide public and private investments along the waterfront between Solano Avenue and the Mare Island Causeway.*
- *Action NBE-4.4B Continue to use BCDC Public Access Design Guidelines in reviewing waterfront development proposals.*

POLICY NBE-5.1 Noise Control. Ensure that noise does not affect quality of life in the community.

- *Action NBE-5.1A Continue to require that new noise-producing uses are located sufficiently far away from noise-sensitive receptors and/or include adequate noise mitigation, such as screening, barriers, sound enclosures, noise insulation, and/or restrictions on hours of operation.*

POLICY NBE-5.6 Flood Control Planning. Protect the community from potential flood events.

- *Action NBE-5.6E Continue to require that new or modified structures within the 100-year floodplain comply with the City's Flood Management Regulations, including elevation of building pads above the floodplain and flood-proofing of buildings, and continue to prohibit permanent structures in designated floodways*

POLICY NBE-5.10 Site Safety. Ensure that affected soil, groundwater, or buildings will not have the potential to adversely affect the environment or the health and safety of site occupants.

POLICY CP-1.12 Clean Air. Protect the community from harmful levels of air pollution.

- *Action CP-1.12B Update City regulations to set BAAQMD-recommended limits for particulate emissions from construction, demolition, debris hauling, and utility maintenance.*

POLICY CP-1.4 Active Recreation Facilities. Ensure all Vallejo residents are served by convenient and safe active recreation facilities that meet the needs of all ages, abilities, and interest groups.

POLICY MTC-1.6 Public Access. Promote public access to open space and trails.

POLICY MTC-2.1 Safety First. Prioritize pedestrian, bicycle, and automobile safety over traffic flow.

- *Action MTC-3.4C Regularly maintain key neighborhood connection routes to facilitate bicycle access, including through debris removal and street repair*

POLICY EET-2.2 Good Jobs. Retain and attract new businesses offering high quality jobs.

- *Action EET-2.2B Seek out businesses that build on Vallejo's competitive advantages and offer high and living wage jobs in a range of industries such as advanced manufacturing, maritime industrial, biosciences/life sciences, and tourism/hospitality.*

POLICY MTC-1-4 Regional Transportation Planning. Ensure that Vallejo is well connected to road, rail, air, and maritime systems in support of both mobility and local economic development.

City of Vallejo Zoning Code

The project site is within the City limits and zoned “Intensive Use.” The Intensive Use zoning district is Vallejo’s heaviest industrial district and currently applies to the balance of the project site. As detailed in Chapter 16.34 of the City’s Zoning Code, “General Industrial Uses” are “Permitted Uses” (Section 16.34.020.C.2), whereas “Heavy Industrial Uses” are permitted upon the issuance of a major use permit (Section 16.34.040.B.1). Code Section 16.06.530 (Article V) classifies “General Industrial Uses” as consisting of “industrial plants engaged in manufacturing, compounding, processing, assembling, packaging, treatment or fabrication of materials and products.” It classifies “Heavy Industrial Uses” as “all other plants” or any such plant which “involves the compounding of radioactive materials, petroleum refining or manufacturing of explosives.” It should be noted that pursuant to Section 16.80.060, the applicant is requesting an exception to allow the project to exceed the City’s 75-foot height limit.

3.9.2 Existing Conditions

The project site contains the former General Mills deep-water terminal and buildings associated with the former General Mills plant. The General Mills plant closed in 2004, and the project site has since remained vacant. Table 3.9-1 below identifies the former General Mills buildings and equipment located on the project site, together with their approximate sizes and year of construction. The existing structures listed in Table 3.9-1 vary in height from one to eight stories, and in footprint size up to approximately 42,500 square feet, comprising a total of approximately 211,460 square feet of floor area. The location of these structures is shown on Figure 2-1 of this EIR.

Table 3.9-1
Existing General Mills Structures

Figure 2-1 Reference	Structure	Type	Footprint (square feet)	Floor Area (square feet)	Year Built
1	Grain Silos & Elevator	Equipment	17,700	17,700	1917
2	Flour Mill	Building	35,000	134,000	1917
3	Old Bulkhouse	Building	1,200	1,200	1957
4	New Bulkhouse	Building	1,100	1,100	1985
5	Welding Shop	Building	400	400	1985
6	Pipe Storage	Building	600	600	1985
7	Forklift Repair	Building	300	300	1985
8	Mill Run Canopy (structure removed in 2012)	Building	0	0	1986
9	Administrative Bldg.	Building	2,100	4,200	1917
10	Garage	Building	1,910	1,910	1918
11	Warehouse	Building	42,500	42,500	1947
12	Bakery Bulkhouse	Building	4,700	4,700	1992
13	Manager's House	Building	985	1,970	1901–1919
14	Manager's Garage	Building	380	380	1950s
15	Barn	Building	500	500	1901–1919
16	Dock (Wharf)	Structure	0	0	1901–1919

The project site is bounded by the Mare Island Strait to the west, a steep hillside to the east, rail lines and existing industrial uses to the north, and undeveloped areas to the south. Residential uses are located east and southeast from the site. The residential uses include the Bay Village Townhouses to the southeast, Harbor Park Apartments and single-family residences to the northeast, and single-family homes to the south along the water front (the Sandy Beach community), just outside the City boundary.

3.9.3 Thresholds of Significance

The following criteria, included in Appendix G of the California Environmental Quality Act (CEQA) Guidelines (14 CCR 15000 et seq.), will be used to determine the significance of potential land use and planning impacts. Impacts to land use and planning would be significant if the proposed project would:

a. Physically divide an established community;

b. Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect;

3.9.4 Impact Discussion

A) Would the project physically divide an established community?

VMT and Orcem Project Analysis

The proposed project would be developed on the site of the former General Mills deep-water terminal and processing plant. The site has been vacant since 2004 when General Mills closed the plant. As described in the Existing Conditions section, the project site is bounded by the Mare Island Strait to the west, a steep hillside to the east, rail lines and existing industrial uses to the north, undeveloped areas to the south, and residential uses to the east and southeast. Access to the project site is provided from Derr Street, which extends south from Lemon Street and dead-ends at the project site. The surrounding communities are separated from the project site by water, steep hillsides, and distance.

Construction of the proposed project would involve demolition of existing structures and construction of new structures, both in the water and on land. Construction of these facilities would not physically divide any established communities since it would occur within the 31.4-acre project site, which has been vacant since 2004. Similarly, operation of the proposed project would occur primarily on site. Operations would involve transport of materials by truck, train, and/or ocean-going vessels. The trucks and trains would travel through surrounding communities on existing routes and would not require new routes to be added that could potentially divide a community. For these reasons, construction and operations the proposed project would not physically divide an established community, and **no impact** would occur.

~~Off-Site Improvements~~

~~The proposed project includes two off-site improvements that would take place at the City of Vallejo Municipal Marina located approximately 2 miles north of the project site: public access improvements and removal of existing deteriorated docks. The public access improvements would involve installation of a new self-propelled personal watercraft launch ramp just north of the access ramp to K Dock at the south end of the marina. The proposed launch would consist of a pre-cast articulated concrete mat, approximately 10 feet wide by 60 feet long over a geotextile fabric. Installation of the launch ramp would occur within the existing marina. The project would also involve the removal of existing deteriorated dock improvements within the water area at the north end of the marina. Approximately eighty (80) 14-inch-diameter creosote timber piles and~~

~~deteriorated dock facilities would be removed from this portion of the marina. The personal watercraft launch ramp improvements would be located within the existing Municipal Marina and would be consistent with the Marina Master Plan. The removal of deteriorating docks would enhance the existing marina by ameliorating an existing issue. Neither action would divide an existing community. Impacts would be **less than significant**.~~

B) Would the project conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

VMT and Orcem Project Analysis

The proposed project is subject to several land use plans, policies, and regulations, including the Bay Plan, the Seaport Plan, the City of Vallejo General Plan, and the City of Vallejo Zoning Ordinance. Table 3.9-2 lists the individual policies of plans determined to be applicable to the various components of the proposed project. A consistency determination is also provided for each applicable policy and regulation. In several cases, final conditions and determinations of consistency will be dictated by other agencies as they issue project permits. In these cases, Table 3.9-2 uses the term "potentially consistent."

Table 3.9-2
Consistency of the Proposed Project with Relevant Goals, Objectives, and Policies

Goals, Objectives, and Policies	Analysis	Consistency
The Bay Plan		
Fish, Other Aquatic Organisms, and Wildlife		
Policy 1. To assure the benefits of fish, other aquatic organisms and wildlife for future generations, to the greatest extent feasible, the Bay's tidal marshes, tidal flats, and subtidal habitat should be conserved, restored and increased.	VMT: The VMT component of the project would involve the removal of a deteriorated timber wharf and construction of a modern deep-water terminal, including wharf improvements, which would impact subtidal habitat in the project area. As described in Section 3.3, Biological Resources, based on the small area affected, the loss of subtidal and intertidal habitat due to expansion of the wharf would not be significantly detrimental to the bay marine community. Following the deposition of fine sand-mud sediments due to dredging, recovery would begin almost immediately, and the benthic community inhabiting those sediments would be expected to recover to pre-dredging composition and abundances within a few months to less than 2 years. Orcem: The Orcem component of the project would not involve any changes to the Bay's tidal marshes, tidal flats, and subtidal habitat.	Potentially Consistent. The final consistency determination will be made by BCDC.
Policy 2. Specific habitats that are needed to conserve, increase or prevent the extinction of any native species, species threatened or endangered, species that the California Department of Fish and Game has determined are candidates for listing as endangered or threatened under the California Endangered Species Act, or any species that provides substantial public benefits, should be protected, whether in the Bay or behind dikes.	VMT: The VMT component of the project would involve the removal of a deteriorated timber wharf and construction of a modern deep-water terminal, including wharf improvements, which would impact subtidal habitat in the project area. As described in Section 3.3, Biological Resources, the proposed wharf-and public access improvements would result in the permanent loss of approximately 1.04 acres of potential foraging habitat for sensitive fish	Consistent.

Table 3.9-2
Consistency of the Proposed Project with Relevant Goals, Objectives, and Policies

Goals, Objectives, and Policies	Analysis	Consistency
	species due to in-bay fill and shoreline modification for wharf construction and the temporary degradation of an additional 9.5 acres due primarily to dredging; however, the substrate at the site is not considered to be of high quality as a foraging habitat and the incidence of sensitive fish species at the site is low. Orcem: The Orcem component of the project would not involve any changes to habitats within the Bay.	
Water Quality		
Policy 1. Bay water pollution should be prevented to the greatest extent feasible. The Bay's tidal marshes, tidal flats, and water surface area and volume should be conserved and, whenever possible, restored and increased to protect and improve water quality. Fresh water inflow into the Bay should be maintained at a level adequate to protect Bay resources and beneficial uses.	VMT: As described in Section 3.8, Hydrology and Water Quality, construction of the VMT facilities could result in significant impacts to water quality. However, these impacts would be subject to appropriate mitigation measures as described in Section 3.3 and Section 3.8, which would ensure impacts remain less than significant. Once operational, VMT would be subject to the Stormwater Control Plan, which has been designed to reduce stormwater runoff and minimize Bay water pollution; therefore, impacts would be less than significant. Orcem: As described in Section 3.8, Hydrology and Water Quality, the Orcem project component would not result in any significant impacts to water quality during construction with implementation of a construction SWPPP. Once operational, Orcem would be subject to the Stormwater Control Plan, which has been designed to reduce stormwater runoff and	Consistent.

Table 3.9-2
Consistency of the Proposed Project with Relevant Goals, Objectives, and Policies

Goals, Objectives, and Policies	Analysis	Consistency
	minimize Bay water pollution; therefore, impacts would be less than significant.	
Policy 3. New projects should be sited, designed, constructed and maintained to prevent or, if prevention is infeasible, to minimize the discharge of pollutants into the Bay by: (a) controlling pollutant sources at the project site; (b) using construction materials that contain non-polluting materials; and (c) applying appropriate, accepted and effective best management practices, especially where water dispersion is poor and near shellfish beds and other significant biotic resources.	VMT and Orcem: Refer to response to Water Quality Policy 1, above.	Consistent.
Policy 6. To protect the Bay and its tributaries from the water quality impacts of nonpoint source pollution, new development should be sited and designed consistent with standards in municipal stormwater permits and state and regional stormwater management guidelines, where applicable, and with the protection of Bay resources. To offset impacts from increased impervious areas and land disturbances, vegetated swales, permeable pavement materials, preservation of existing trees and vegetation, planting native vegetation and other appropriate measures should be evaluated and implemented where appropriate.	VMT and Orcem: Refer to response to Water Quality Policy 1, above.	Consistent.
Policy 7. Whenever practicable, native vegetation buffer areas should be provided as part of a project to control pollutants from entering the Bay, and vegetation should be substituted for rock riprap, concrete, or other hard surface shoreline and bank erosion control methods where appropriate and practicable.	VMT: As described in Section 3.8, Hydrology and Water Quality, the VMT project component provides for the construction of vegetated swales, a storm drain system, and bio-basin for detention and filtration (see Figure 3.8-2) with the capacity to handle up to 100-year storm volumes. Orcem: As described in Section 3.8, Hydrology and Water Quality, the Orcem project component would utilize a drainage system with stormwater catchment and treatment tanks in-lieu of vegetated swales within the limited available space on-site.	Consistent.

Table 3.9-2
Consistency of the Proposed Project with Relevant Goals, Objectives, and Policies

Goals, Objectives, and Policies	Analysis	Consistency
Water Surface Area and Volume		
Policy 1. The surface area of the Bay and the total volume of water should be kept as large as possible in order to maximize active oxygen interchange, vigorous circulation, and effective tidal action. Filling and diking that reduce surface area and water volume should therefore be allowed only for purposes providing substantial public benefits and only if there is no reasonable alternative.	VMT: A small area of fill would be required in order to achieve necessary design parameters for marine logistics on the VMT Site. The proposed solid fill areas, approximately 150,905 square feet in total for the wharf, would be used as back area for the loading and unloading of cargo and as a lay-down area for marine construction materials. The proposed fill would allow for the reuse of an existing wharf area for modern cargo loading and unloading, which would provide a substantial public benefit by increasing the capacity for cargo shipping in the City of Vallejo. Orcem: The Orcem project component would not involve any filling or diking of the Bay.	Potentially Consistent. The final consistency determination will be made by BCDC.
Policy 2. Water circulation in the Bay should be maintained, and improved as much as possible. Any proposed fills, dikes, or piers should be thoroughly evaluated to determine their effects upon water circulation and then modified as necessary to improve circulation or at least to minimize any harmful effects.	VMT: As described above, the VMT project component would require a small amount of fill and would involve the construction of a new wharf structure in the Bay. The proposed wharf structure would replace an existing deteriorated wharf that was previously used by General Mills. The impacts of the proposed fill and wharf structure are analyzed throughout this Environmental Impact Report (EIR), and mitigation is provided to reduce or avoid impacts to the extent practicable. Orcem: The Orcem project component would not involve any filling or diking of the Bay.	Consistent.

Table 3.9-2
Consistency of the Proposed Project with Relevant Goals, Objectives, and Policies

Goals, Objectives, and Policies	Analysis	Consistency
Tidal Marshes and Tidal Flats		
Policy 1. Tidal marshes and tidal flats should be conserved to the fullest possible extent. Filling, diking, and dredging projects that would substantially harm tidal marshes or tidal flats should be allowed only for purposes that provide substantial public benefits and only if there is no feasible alternative.	VMT: As described above, a small area of fill would be required in order to achieve necessary design parameters for marine logistics on the VMT Site. The proposed fill would allow for the reuse of an existing wharf area, which would provide a substantial public benefit by increasing the capacity for cargo shipping in the City of Vallejo. There is no feasible alternative site on the Bay that could accommodate the proposed VMT facilities. Orcem: The Orcem project component would not involve any filling or diking of tidal marshes or tidal flats.	Consistent.
Policy 2. Any proposed filling, diking, or dredging project should be thoroughly evaluated to determine the effect of the project on tidal marshes and tidal flats, and designed to minimize, and if feasible, avoid any harmful effects.	VMT: As described previously, the VMT project component would require a small amount filling, diking, and dredging. The impacts of the proposed fill, diking, and dredging are analyzed throughout this EIR, and mitigation is provided to reduce or avoid impacts to the extent practicable. Orcem: The Orcem project component would not involve any filling or diking of tidal marshes or tidal flats.	Consistent.

Table 3.9-2
Consistency of the Proposed Project with Relevant Goals, Objectives, and Policies

Goals, Objectives, and Policies	Analysis	Consistency
Policy 3. Projects should be sited and designed to avoid, or if avoidance is infeasible, minimize adverse impacts on any transition zone present between tidal and upland habitats. Where a transition zone does not exist and it is feasible and ecologically appropriate, shoreline projects should be designed to provide a transition zone between tidal and upland habitats.	VMT: The VMT project component would involve development within the transition zone between tidal and upland habitats; however, the VMT project component would minimize adverse impacts on the transition zone by redeveloping a site that has previously been disturbed and developed. In addition, impacts to the transition zone would be avoided and minimized to the maximum extent feasible. Orcem: The Orcem project component would not involve any impacts on a transition zone between tidal and upland habitats.	Consistent.
Subtidal Areas		
Policy 1. Any proposed filling or dredging project in a subtidal area should be thoroughly evaluated to determine the local and Bay-wide effects of the project on: (a) the possible introduction or spread of invasive species; (b) tidal hydrology and sediment movement; (c) fish, other aquatic organisms and wildlife; (d) aquatic plants; and (e) the Bay's bathymetry. Projects in subtidal areas should be designed to minimize and, if feasible, avoid any harmful effects.	VMT: The VMT project component would involve the removal of a deteriorated timber wharf and construction of a modern deep-water terminal, which would require filling and dredging. As described in Section 3.3, Biological Resources, sediment deposition from dredging for the VMT project would result in the temporary degradation of approximately 9.5 acres of benthic habitat and the permanent loss of approximately 1.07 acres of subtidal soft substrate. However, impacts would remain less than significant. Ongoing dredging activities for maintenance would be required on a periodic basis an estimated average for 5 days every 4 years, and would be subject to a U.S. Army Corps of Engineers (USACE) permit. Orcem: The Orcem project component would not involve any filling or dredging.	Potentially Consistent. The final consistency determination will be made by BCDC.

Table 3.9-2
Consistency of the Proposed Project with Relevant Goals, Objectives, and Policies

Goals, Objectives, and Policies	Analysis	Consistency
Policy 2. Subtidal areas that are scarce in the Bay or have an abundance and diversity of fish, other aquatic organisms and wildlife (e.g., eelgrass beds, sandy deep water or underwater pinnacles) should be conserved. Filling, changes in use, and dredging projects in these areas should therefore be allowed only if: (a) there is no feasible alternative; and (b) the project provides substantial public benefits.	VMT: The VMT project component would involve the removal of a deteriorated timber wharf and construction of a modern deep-water terminal, which would require filling and dredging. As described in Section 3.3, Biological Resources, the low intertidal and subtidal area of the Napa River identified to be affected by the wharf, consists predominantly of a tidal mudflat that does not support any eelgrass, widgeon grass, or other submerged aquatic vegetation and provides only low quality foraging habitat for fish species. Orcem: The Orcem project component would not involve any filling or dredging.	Potentially Consistent. The final consistency determination will be made by BCDC.
Climate Change		
Policy 2. When planning shoreline areas or designing larger shoreline projects, a risk assessment should be prepared by a qualified engineer and should be based on the estimated 100-year flood elevation that takes into account the best estimates of future sea level rise and current flood protection and planned flood protection that will be funded and constructed when needed to provide protection for the proposed project or shoreline area. A range of sea level rise projections for mid-century and end of century based on the best scientific data available should be used in the risk assessment. Inundation maps used for the risk assessment should be prepared under the direction of a qualified engineer. The risk assessment should identify all types of potential flooding, degrees of uncertainty, consequences of defense failure, and risks to existing habitat from proposed flood protection devices.	VMT and Orcem: As described in Section 3.6, Greenhouse Gas Emissions, of this EIR, a sea level rise (SLR) assessment was prepared for the proposed project by Moffatt & Nichol. The proposed project would be designed to be resilient to SLR as projected up to 2088 in the California Climate Action Team's State of California SLR Guidance Document.	Consistent.
Policy 3. To protect public safety and ecosystem services, within areas that a risk assessment determines are vulnerable to future shoreline flooding that threatens public safety, all projects—other than repairs of existing facilities, small projects that do not increase risks to public	VMT and Orcem: The potential for sea level rise and associated risks has been evaluated in Section 3.6, Greenhouse Gas Emissions, of this EIR. Based on the SLR predictions in the	Consistent.

Table 3.9-2
Consistency of the Proposed Project with Relevant Goals, Objectives, and Policies

Goals, Objectives, and Policies	Analysis	Consistency
safety, interim projects and infill projects within existing urbanized areas––should be designed to be resilient to a mid-century sea level rise projection. If it is likely the project will remain in place longer than mid-century, an adaptive management plan should be developed to address the long-term impacts that will arise based on a risk assessment using the best available science-based projection for sea level rise at the end of the century.	California Climate Action Team's State of California SLR Guidance Document, the proposed project would be resilient to sea level rise as projected up to 2088.	
Safety of Fills		
Policy 2. Even if the Bay Plan indicates that a fill may be permissible, no fill or building should be constructed if hazards cannot be overcome adequately for the intended use in accordance with the criteria prescribed by the Engineering Criteria Review Board.	VMT: As described in Section 3.5, Geology and Soils, the VMT project component would involve fill; however, a design-level geotechnical study would be prepared and compliance with all recommendations contained in the study would ensure that hazards related to use of fill would be minimized. Orcem: The Orcem project component would not involve any fill of the Bay.	Potentially Consistent. The final consistency determination will be made by BCDC.
Policy 3. To provide vitally needed information on the effects of earthquakes on all kinds of soils, installation of strong-motion seismographs should be required on all future major landfills. In addition, the Commission encourages installation of strong-motion seismographs in other developments on problem soils, and in other areas recommended by the U.S. Geological Survey, for purposes of data comparison and evaluation.	VMT: The VMT project component would involve approximately 150,905 square feet in total of Bay–Delta waters surface area fill, involving a total volume of 21,200 cubic yards of engineered fill; however, this is not considered a major fill. Orcem: The Orcem project component would not include any major fills.	Potentially Consistent. The final consistency determination will be made by BCDC.
Policy 4. Adequate measures should be provided to prevent damage from sea level rise and storm activity that may occur on fill or near the shoreline over the expected life of a project. The Commission may approve fill that is needed to provide flood protection for existing projects and uses. New projects on fill or near the shoreline should either be set back from the edge of the shore so that the project will not be subject to	VMT and Orcem: The potential for sea level rise and associated risks has been evaluated in Section 3.6, Greenhouse Gas Emissions, of this EIR. The structures associated with the proposed project most vulnerable to storm activity and SLR would be the proposed wharf. The wharf would	Potentially Consistent. The final consistency determination will be made by BCDC.

Table 3.9-2
Consistency of the Proposed Project with Relevant Goals, Objectives, and Policies

Goals, Objectives, and Policies	Analysis	Consistency
dynamic wave energy, be built so the bottom floor level of structures will be above a 100-year flood elevation that takes future sea level rise into account for the expected life of the project, be specifically designed to tolerate periodic flooding, or employ other effective means of addressing the impacts of future sea level rise and storm activity. Rights-of-way for levees or other structures protecting inland areas from tidal flooding should be sufficiently wide on the upland side to allow for future levee widening to support additional levee height so that no fill for levee widening is placed in the Bay.	be constructed to accommodate a 100-year event based on SLR predictions in the California Climate Action Team's State of California SLR Guidance Document.	
Dredging		
Policy 1. Dredging and dredged material disposal should be conducted in an environmentally and economically sound manner. Dredgers should reduce disposal in the Bay and certain waterways over time to achieve the LTMS [Long-Term Management Strategy] goal of limiting in-Bay disposal volumes to a maximum of one million cubic yards per year. The LTMS agencies should implement a system of disposal allotments to individual dredgers to achieve this goal only if voluntary efforts are not effective in reaching the LTMS goal. In making its decision regarding disposal allocations, the Commission should confer with the LTMS agencies and consider the need for the dredging and the dredging projects, environmental impacts, regional economic impacts, efforts by the dredging community to implement and fund alternatives to in-Bay disposal, and other relevant factors. Small dredgers should be exempted from allotments, but all dredgers should comply with policies 2 through 12.	VMT: On the water side of the proposed VMT wharf, the channel would be dredged to a depth of -38.0 feet mean lower low water (MLLW) (approximately 89,800 cubic yards for Phase 1, and subject to a permit from the USACE. This depth would subsequently be maintained through a USACE Section 10 Maintenance Permit. Beneficial use of dredge material would be sought on site, and any material unfit for reuse would be deposited at the Carquinez disposal site. Orcem: The Orcem project component would not involve any dredging.	Potentially Consistent. The final consistency determination will be made by BCDC.
Policy 3. Dredged materials should, if feasible, be reused or disposed outside the Bay and certain waterways. Except when reused in an approved fill project, dredged material should not be disposed in the Bay and certain waterways unless disposal outside these areas is infeasible and the Commission finds: (a) the volume to be disposed is consistent with applicable dredger disposal allocations and disposal site limits adopted by the Commission by regulation; (b) disposal would be at a site designated by the Commission; (c) the quality of the material disposed of	VMT: As described above, the VMT project component would require dredging subject to a permit from USACE. This depth would subsequently be maintained through a USACE Section 10 Maintenance Permit. Beneficial use of dredge material would be sought on-site, and any material unfit for reuse would be deposited at the Carquinez disposal site.	Potentially Consistent. The final consistency determination will be made by BCDC.

Table 3.9-2
Consistency of the Proposed Project with Relevant Goals, Objectives, and Policies

Goals, Objectives, and Policies	Analysis	Consistency
is consistent with the advice of the San Francisco Bay Regional Water Quality Control Board and the inter-agency Dredged Material Management Office (DMMO); and (d) the period of disposal is consistent with the advice of the California Department of Fish and Game, the U.S. Fish and Wildlife Service and the National Marine Fisheries Service.	Orcem: The Orcem project component would not involve any dredging.	
Policy 4. If an applicant proposes to dispose dredged material in tidal areas of the Bay and certain waterways that exceeds either disposal site limits or any disposal allocation that the Commission has adopted by regulation, the applicant must demonstrate that the potential for adverse environmental impact is insignificant and that non-tidal and ocean disposal is infeasible because there are no alternative sites available or likely to be available in a reasonable period, or because the cost of disposal at alternate sites is prohibitive. In making its decision whether to authorize such in-Bay disposal, the Commission should confer with the LTMS agencies and consider the factors listed in Policy 1.	VMT: As described above, the VMT project component would require dredging subject to a permit from USACE. Beneficial use of dredge material would be sought on site, and any material unfit for reuse would be deposited at the Carquinez disposal site. Orcem: The Orcem project component would not involve any dredging.	Potentially Consistent. The final consistency determination will be made by BCDC.
Policy 6. Dredged materials disposed in the Bay and certain waterways should be carefully managed to ensure that the specific location, volumes, physical nature of the material, and timing of disposal do not create navigational hazards, adversely affect Bay sedimentation, currents or natural resources, or foreclose the use of the site for projects critical to the economy of the Bay Area.	VMT: As described above, the VMT project component would require dredging subject to a permit from USACE. Beneficial use of dredge material would be sought on site, and any material unfit for reuse would be deposited at the Carquinez disposal site. Orcem: The Orcem project component would not involve any dredging.	Potentially Consistent. The final consistency determination will be made by BCDC.
Policy 7. All proposed channels, berths, turning basins, and other dredging projects should be carefully designed so as not to undermine the stability of any adjacent dikes, fills or fish and wildlife habitats.	VMT: As described above, the VMT project component would require dredging subject to a permit from USACE. As described in Section 3.8 of this EIR, Hydrology and Water Quality, the wharf and the new area of engineered fill would not substantially change the course of the Mare Island Strait. As described in Section 3.3, Biological Resources, with adherence to established BMPs, work windows, and mitigation	Potentially Consistent. The final consistency determination will be made by BCDC.

Table 3.9-2
Consistency of the Proposed Project with Relevant Goals, Objectives, and Policies

Goals, Objectives, and Policies	Analysis	Consistency
	measures, the proposed dredging activities would not result in a significant detrimental effect on fish or marine wildlife habitat. Orcem: The Orcem project component would not involve any dredging.	
Policy 9. To protect underground fresh water reservoirs (aquifers): (a) all proposals for dredging or construction work that could penetrate the mud "cover" should be reviewed by the San Francisco Bay Regional Water Quality Control Board and the State Department of Water Resources; and (b) dredging or construction work should not be permitted that might reasonably be expected to damage an underground water reservoir. Applicants for permission to dredge should provide additional data on groundwater conditions in the area of construction to the extent necessary and reasonable in relation to the proposed project.	VMT: As described above, the VMT project component would require dredging subject to a permit from USACE. Approval would also be sought from the San Francisco Bay Regional Water Quality Control Board and the State Department of Water Resources. As described in Section 3.8 of this EIR, Hydrology and Water Quality dewatering during the construction period for both projects could be required. However, the dewatering would only result in a temporary and highly localized effect on the uppermost water-bearing zones related to near-surface excavations which are not accessed by adjacent property owners as a source of water supply. Orcem: The Orcem project component would not involve any dredging.	Potentially Consistent. The final consistency determination will be made by BCDC.
Water-Related Industry		
Policy 1. Sites designated for both water-related industry and port uses in the Bay Plan should be reserved for those industries and port uses that require navigable, deep water for receiving materials or shipping products by water in order to gain a significant transportation cost advantage.	VMT and Orcem: The VMT project site is not designated as a Port priority use area in the San Francisco Bay Plan and is not discussed in the Seaport Plan. However, the proposed project consists of marine terminal uses that require navigable, deep water for shipping and receiving materials and cargo. The project would ensure the continuation of such uses in a location	Potentially Consistent. The final consistency determination will be made by BCDC.

Table 3.9-2
Consistency of the Proposed Project with Relevant Goals, Objectives, and Policies

Goals, Objectives, and Policies	Analysis	Consistency
	historically used for water-related industry. It may be deemed a temporary use by BCDC.	
Policy 2. Linked industries, water-using industries, and industries which gain only limited economic benefits by fronting on navigable water, should be located in adjacent upland areas. However, pipeline corridors serving such facilities may be permitted within water-related industrial priority use areas, provided pipeline construction and use does not conflict with present or future water-transportation use of the site.	VMT: The VMT project component consists of marine terminal uses that require navigable, deep water for shipping and receiving materials and cargo. These uses require access to navigable waters and the shipping aspects of the project may not be port specific and trucking and rail would be feasible in upland areas. Orcem: The proposed Orcem facilities would be developed in the upland area adjacent to the proposed marine terminal. The Orcem component is dependent on proximity to the water and use of the VMT Terminal for import of its primary raw material, granulated blast furnace slag (GBFS).	Potentially Consistent. The final consistency determination will be made by BCDC.
Policy 4. Water-related industry and port sites should be planned and managed so as to avoid wasteful use of the limited supply of waterfront land. The following principles should be followed to the maximum extent feasible in planning for water-related industry and port use: a. Extensive use of the shoreline for storage of raw materials, fuel, products, or waste should not be permitted on a long-term basis. If required, such storage areas should generally either be at right angles to the main direction of the shoreline or be as far inland as feasible, so other use of the shoreline may be made possible. b. Where large acreages are available, site planning should strive to provide access to the shoreline for all future plants and port facilities that might locate in the same area. (As a general rule, therefore, the longest dimension of plant sites should be at right angles to the shoreline.) Marine terminals should also be shared as much as possible among industries and port uses.	VMT and Orcem: The VMT project site is not designated as a Port priority use area in the San Francisco Bay Plan and is not discussed in the Seaport Plan. However, the proposed project has been planned to take advantage of an existing industrial site and marine facilities that were historically used by General Mills. BCDC has determined that the use of the site for cargo would be consistent with the Bay Plan, provided that the use is interim in nature and does not preclude future use of the site for water-related industry. Interim uses are allowed for a limited period typically ranging from 5 years to 10 years, depending on the proposed use and conditions of	Potentially Consistent. The final consistency determination will be made by BCDC.

Table 3.9-2
Consistency of the Proposed Project with Relevant Goals, Objectives, and Policies

Goals, Objectives, and Policies	Analysis	Consistency
c. Waste treatment ponds for water-related industry and port uses should occupy as little land as possible, be above the highest recorded level of tidal action, and be as far removed from the shoreline as possible. d. Any new highways, railroads, or rapid transit lines in existing or future water-related industrial and port areas should be located sufficiently far away from the waterfront so as not to interfere with industrial use of the waterfront. New access roads to waterfront industrial and port areas should be approximately at right angles to the shoreline, topography permitting.	the site. In some cases, the interim use is renewable by permit amendment.1 a. The shoreline areas of the project site would be used for a modern deep-water terminal, including a wharf-and laydown area. Storage areas and other structures would be located in the upland areas, in the general location of the existing structures on the site. b. The VMT project component has been designed to maximize the ability of the marine terminal to expand in the future, while also minimizing environmental impacts. c. The project does not involve any waste treatment ponds. d. The project does not propose any new highways, railroads, or rapid transit lines; however, it would upgrade the existing roads and railroads within and adjacent to the site to enable the use of these existing facilities.	
Policy 5. Water-related industry and port uses should be planned so as to make the sites attractive (as well as economically important) uses of the shoreline. The following criteria should be employed to the maximum extent possible: a. Air and water pollution should be minimized through strict compliance with all relevant laws, policies and standards. Mitigation, consistent with the Commission's policy concerning mitigation, should be provided for all unavoidable adverse environmental impacts. b. When bayfront hills are used for water-related industries, terracing should generally be required and leveling of the hills should not be permitted.	VMT and Orcem: The proposed project has been planned to take advantage of an existing industrial site and marine facilities that were historically used by General Mills. a. Air and water pollution associated with the proposed project are discussed in Sections 3.2 and 3.7 of this EIR, respectively. As described in these sections, the proposed project has been designed to minimize air	Potentially Consistent. The final consistency determination will be made by BCDC.

Table 3.9-2
Consistency of the Proposed Project with Relevant Goals, Objectives, and Policies

Goals, Objectives, and Policies	Analysis	Consistency
c. Important Bay overlook points, and historic areas and structures that may be located in water-related industrial and port areas, should be preserved and incorporated into the site design, if at all feasible. In addition, shoreline not actually used for shipping facilities should be used for some type of public access or recreation, to the maximum extent feasible. Public areas need not be directly accessible by private automobiles with attendant parking lots and driveways; access may be provided by hiking paths or by forms of public transit such as elephant trains or aerial tramways. d. d. Regulations, tax arrangements, or other devices should be drawn in a manner that encourages industries and port uses to meet the foregoing objectives.	and water pollution in compliance with applicable laws and regulations. b. The site does not include any bayfront hills that would be impacted by the project. c. As described in Section 3.4, Cultural Resources, the project site does include historic buildings and structures, some of which would be demolished, and others which would be reused as feasible. In addition, public access to the site would be restricted due to Department of Homeland Security regulations for the security of active marine terminals. Public access to the shoreline would continue to be provided to the north and south of the project site. In addition, VMT would provide monetary assistance to close the funding gap for the design phase of the Bay/Vine Trail project. ~~install a new self-propelled personal watercraft launch just north of the access ramp to K Dock at the south end of the City of Vallejo Municipal Marina.~~ This public access improvement would be completed by VMT in lieu of providing direct public access to the waterfront within the project site. d. Not applicable.	
Ports		
Policy 1. Port planning and development should be governed by the policies of the Seaport Plan and other applicable policies of the Bay Plan. The Seaport Plan provides for:	VMT: The VMT project component would redevelop the existing marine terminal facilities on the former General Mills site in order to	Potentially Consistent. The final consistency determination will be made by BCDC.

Table 3.9-2
Consistency of the Proposed Project with Relevant Goals, Objectives, and Policies

Goals, Objectives, and Policies	Analysis	Consistency
a. Expansion and/or redevelopment of port facilities at Benicia, Oakland, Redwood City, Richmond, and San Francisco, and development of new port facilities at Selby; b. Further deepening of ship channels needed to accommodate expected growth in ship size and improved terminal productivity; c. The maintenance of up-to-date cargo forecasts and existing cargo handling capability estimates to guide the permitting of port terminals; and d. Development of port facilities with the least potential adverse environmental impacts while still providing for reasonable terminal development.	provide additional capacity for importing and exporting cargo and other materials. The VMT project component would minimize adverse environmental impacts by reusing an existing site and performing minimal dredging and filling needed to achieve necessary design parameters for marine logistics. BCDC has determined that the use of the site for cargo would be consistent with the Bay Plan, provided that the use is interim in nature and does not preclude future use of the site for water-related industry. Interim uses are allowed for a limited period typically ranging from 5 years to 10 years, depending on the proposed use and conditions of the site. In some cases, the interim use is renewable by permit amendment. Orcem: The Orcem project component does not propose to expand or redevelop port facilities; it would utilize the VMT Terminal by providing an enclosed conveyor to transport imported raw materials from the terminal to the Orcem Site.	
Policy 2. Some filling and dredging will be required to provide for necessary port expansion, but any permitted fill or dredging should be in accord with the Seaport Plan.	VMT: As described above, the VMT project component would require some filling and dredging in order to achieve necessary design parameters for marine logistics. The proposed filling and dredging would be in accordance with the Seaport Plan. Orcem: The Orcem project component would not involve any filling or dredging of Bay-Delta waters.	Potentially Consistent. The final consistency determination will be made by BCDC.
Policy 3. Port priority use areas should be protected for marine terminals and directly-related ancillary activities such as container freight stations, transit sheds and other temporary storage, ship repairing, support transportation uses including trucking and railroad yards, freight	VMT and Orcem: The proposed project is not located in a Port priority use area; however, it would re-establish marine-related industrial uses on the former General Mills site. Due to the nature of the	Potentially Consistent. The final consistency determination will be made by BCDC.

Table 3.9-2
Consistency of the Proposed Project with Relevant Goals, Objectives, and Policies

Goals, Objectives, and Policies	Analysis	Consistency
forwarders, government offices related to the port activity, chandlers, and marine services. Other uses, especially public access and public and commercial recreational development, should also be permissible uses provided they do not significantly impair the efficient utilization of the port area.	planned operations on the site, including shipping, the site would be a Department of Homeland Security-controlled site, and no public access would be permitted. In addition, VMT would provide monetary assistance to close the funding gap for the design phase of the Bay/Vine Trail project. ~~install a new self-propelled personal watercraft launch just north of the access ramp to K Dock at the south end of the City of Vallejo Municipal Marina.~~ This public access improvement would be completed by VMT in lieu of providing direct public access to the waterfront within the project site.	
Public Access		
Policy 1. A proposed fill project should increase public access to the Bay to the maximum extent feasible, in accordance with the policies for Public Access to the Bay.	VMT: As described above, a small area of fill would be required for the VMT project component in order to achieve necessary design parameters for marine logistics. Due to the nature of the planned operations on the site, including shipping, the site would be a Department of Homeland Security-controlled site, and no public access would be permitted. The project site has been historically used for similar industrial uses and has been closed to the public. Implementation of the proposed project would therefore not change existing public access to the site. Public access to the waterfront in this area would continue to be provided adjacent to the project site along Derr Street to the north and Sandy Beach Road to the south. In addition, VMT would provide monetary assistance to close the funding gap for the design phase of the Bay/Vine Trail project. ~~would install a new self-propelled~~	Potentially Consistent. The final consistency determination will be made by BCDC.

Table 3.9-2
Consistency of the Proposed Project with Relevant Goals, Objectives, and Policies

Goals, Objectives, and Policies	Analysis	Consistency
	~~personal watercraft launch just north of the access ramp to K Dock at the south end of the City of Vallejo Municipal Marina~~. This public access improvement would be completed by VMT in lieu of providing direct public access to the waterfront within the project site. BCDC will determine if the proposed public access improvements are sufficient. Orcem: The Orcem project component would not involve any Bay–Delta waters fill.	
Policy 2. In addition to the public access to the Bay provided by waterfront parks, beaches, marinas, and fishing piers, maximum feasible access to and along the waterfront and on any permitted fills should be provided in and through every new development in the Bay or on the shoreline, whether it be for housing, industry, port, airport, public facility, wildlife area, or other use, except in cases where public access would be clearly inconsistent with the project because of public safety considerations or significant use conflicts, including unavoidable, significant adverse effects on Bay natural resources. In these cases, in lieu access at another location preferably near the project should be provided.	VMT and Orcem: As described above, the project site would be a Department of Homeland Security-controlled site, and no public access would be permitted. Public access to the waterfront in this area would continue to be provided adjacent to the project site along Derr Street to the north and Sandy Beach Road to the south. In addition, in-lieu access would be provided as described in response to Public Access Goal 1 above. BCDC will determine if the proposed public access improvements are sufficient.	Potentially Consistent. The final consistency determination will be made by BCDC.
Policy 9. Access to and along the waterfront should be provided by walkways, trails, or other appropriate means and connect to the nearest public thoroughfare where convenient parking or public transportation may be available. Diverse and interesting public access experiences should be provided which would encourage users to remain in the designated access areas to avoid or minimize potential adverse effects on wildlife and their habitat.	VMT and Orcem: As described above, the project site would be a Department of Homeland Security-controlled site, and no public access would be permitted. Public access to the waterfront in this area would continue to be provided adjacent to the project site along Derr Street to the north and Sandy Beach Road to the south. In addition, in-lieu access would be provided, as described in response to Public Access Goal 1 above. BCDC will determine if the	Potentially Consistent. The final consistency determination will be made by BCDC.

Table 3.9-2
Consistency of the Proposed Project with Relevant Goals, Objectives, and Policies

Goals, Objectives, and Policies	Analysis	Consistency
	proposed public access improvements are sufficient.	
	Appearance, Design and Scenic Views	
Policy 1. To enhance the visual quality of development around the Bay and to take maximum advantage of the attractive setting it provides, the shores of the Bay should be developed in accordance with the Public Access Design Guidelines.	VMT and Orcem: The Public Access Design Guidelines have been considered in the design of the proposed project; however, as described previously, the project site would be a Department of Homeland Security-controlled site, and no public access would be permitted. Public access to the waterfront in this area would continue to be provided adjacent to the project site along Derr Street to the north and Sandy Beach Road to the south.	Consistent.
Policy 2. All bayfront development should be designed to enhance the pleasure of the user or viewer of the Bay. Maximum efforts should be made to provide, enhance, or preserve views of the Bay and shoreline, especially from public areas, from the Bay itself, and from the opposite shore. To this end, planning of waterfront development should include participation by professionals who are knowledgeable of the Commission's concerns, such as landscape architects, urban designers, or architects, working in conjunction with engineers and professionals in other fields.	VMT and Orcem: The proposed organization of land uses and grouping of structures would result in a well-composed urban design. The project designs take into consideration the existing characteristics of the site and surrounding area, as well as the functional requirements of the project components.	Potentially Consistent. The final consistency determination will be made by BCDC.
Policy 3. In some areas, a small amount of fill may be allowed if the fill is necessary—and is the minimum absolutely required—to develop the project in accordance with the Commission's design recommendations.	VMT: As described above, a small area of fill would be required for the VMT project component in order to achieve necessary design parameters for marine logistics. Orcem: The Orcem project component would not involve any Bay-Delta waters fill.	Potentially Consistent. The final consistency determination will be made by BCDC.
Policy 4. Structures and facilities that do not take advantage of or visually complement the Bay should be located and designed so as not to impact visually on the Bay and shoreline. In particular, parking areas	VMT and Orcem: The proposed project would reuse existing buildings on the site to the maximum extent practicable and would maintain the site as an	Consistent.

Table 3.9-2
Consistency of the Proposed Project with Relevant Goals, Objectives, and Policies

Goals, Objectives, and Policies	Analysis	Consistency
should be located away from the shoreline. However, some small parking areas for fishing access and Bay viewing may be allowed in exposed locations.	industrial facility as it has been used historically. As described in Section 3.1, Aesthetics, the proposed structures and facilities would replace existing buildings of similar scale and style and replace some badly deteriorating structures with modern facilities. The proposed structures and facilities would be located generally in the same location as the existing buildings on the site and would not substantially alter the views of the Bay. Proposed parking would be located along the eastern hillside, away from the shoreline.	
Policy 5. To enhance the maritime atmosphere of the Bay Area, ports should be designed, whenever feasible, to permit public access and viewing of port activities by means of (a)-view points (e.g., piers, platforms, or towers), restaurants, etc., that would not interfere with port operations, and (b)-openings between buildings and other site designs that permit views from nearby roads.	VMT and Orcem: As described above, the project site would be a Department of Homeland Security-controlled site, and no public access would be permitted. Public access to the waterfront in this area would continue to be provided adjacent to the project site along Derr Street to the north and Sandy Beach Road to the south. In addition, in-lieu access would be provided, as described in response to Public Access Goal 1 above.	Potentially Consistent. The final consistency determination will be made by BCDC.
Policy 14. Views of the Bay from vista points and from roads should be maintained by appropriate arrangements and heights of all developments and landscaping between the view areas and the water. In this regard, particular attention should be given to all waterfront locations, areas below vista points, and areas along roads that provide good views of the Bay for travelers, particularly areas below roads coming over ridges and providing a "first view" of the Bay (shown in Bay Plan Map No. 8, Natural Resources of the Bay).	VMT and Orcem: As described in Section 3.1, Aesthetics, the proposed project would result in minor changes to views from public viewpoints surrounding the site. The proposed construction would primarily replace existing buildings of similar scale and style and would include landscaping to help screen the facilities from surrounding areas. The proposed development would not significantly detract from any scenic vistas.	Consistent.

Table 3.9-2
Consistency of the Proposed Project with Relevant Goals, Objectives, and Policies

Goals, Objectives, and Policies	Analysis	Consistency
Fills in Accord with the Bay Plan		
Policy 1. Fills in accord with the Bay Plan. A proposed project should be approved if the filling is the minimum necessary to achieve its purpose, and if it meets one of the following three conditions: a. The filling is in accord with the Bay Plan policies as to the Bay-related purposes for which filling may be needed (i.e., ports, water-related industry, and water-related recreation) and is shown on the Bay Plan maps as likely to be needed; or b. The filling is in accord with Bay Plan policies as to purposes for which some fill may be needed if there is no other alternative (i.e., airports, roads, and utility routes); or c. The filling is in accord with the Bay Plan policies as to minor fills for improving shoreline appearance or public access.	VMT: As described above, a small area of fill would be required in order to achieve necessary design parameters for marine logistics. The proposed fill would allow for the reuse of an existing wharf area for modern cargo loading and unloading, which would provide a substantial public benefit by increasing the capacity for cargo shipping in the City of Vallejo. BCDC has determined that the use of the site for cargo would be consistent with the Bay Plan, provided that the use is interim in nature and does not preclude future use of the site for water-related industry. Interim uses are allowed for a limited period typically ranging from 5 years to 10 years, depending on the proposed use and conditions of the site. In some cases, the interim use is renewable by permit amendment.[1] Orcem: The Orcem project component would not involve any Bay-Delta waters fill.	Potentially Consistent. The final consistency determination will be made with BCDC permit application.
Vallejo General Plan		
POLICY NBE-1.1 Natural Resources. Protect and enhance hillsides, waterways, wetlands, and aquatic wildlife habitat through land use decisions that avoid and mitigate potential environmental impacts on these resources to the extent feasible. Action NBE-1.1A Cooperate with federal, State, and local regulatory and stewardship agencies to promote the restoration and long-term sustainability of local natural resources. ~~Waterfront Development Goal: To have a waterfront devoted exclusively to water oriented uses, including industrial, residential, commercial and open space uses, which permit public access.~~	VMT: As described above, a small area of fill would be required in order to achieve necessary design parameters for marine logistics. Orcem: An active osprey nest has been observed on top of the flour mill building. It is unlikely that the Townsend's big-eared bat or roost sites would be found on the project site;	Potentially Consistent. For wetlands the final consistency determination will be made with BCDC permit application. Compliance with mitigation brings consistency for other biological issues.

Table 3.9-2
Consistency of the Proposed Project with Relevant Goals, Objectives, and Policies

Goals, Objectives, and Policies	Analysis	Consistency
	disturbance of roost sites would be a significant impact without provided mitigation. ~~VMT and Orcem: The proposed project includes water-oriented industrial uses that are reliant on water for transportation of materials. Due to the nature of the planned operations on the site, including shipping, the site would be a Department of Homeland Security-controlled site, and no public access would be permitted. The project site has been historically used for similar industrial uses and has been closed to the public. Implementation of the proposed project would therefore not change existing public access to the site. Public access to the waterfront in this area would continue to be provided adjacent to the project site along Derr Street to the north and Sandy Beach Road to the south. In addition, VMT would install a new self-propelled personal watercraft launch just north of the access ramp to K Dock at the south end of the City of Vallejo Municipal Marina. This public access improvement would be completed by VMT in lieu of providing direct public access to the waterfront within the project site.~~	
POLICY NBE-1.9 Cultural Resources. Protect and preserve archaeological, historic, and other cultural resources. *Action NBE-1.9A Continue to require that land use activities comply with State requirements and follow best practices to ensure that cultural resources are not impacted and that appropriate agencies and technical experts are involved in the evaluation and protection of resources and sites.*	VMT and Orcem: Implementation of the proposed project would result in a significant impact on historic architectural resources due to the loss of integrity of the Sperry Flour Mill Historic District associated with demolition of the flour mill, grain silos, and dock. Mitigation would reduce this Impact, but not to a less-than-significant level. Thus, the impacts would remain significant and unavoidable. While this policy	Consistent

Table 3.9-2
Consistency of the Proposed Project with Relevant Goals, Objectives, and Policies

Goals, Objectives, and Policies	Analysis	Consistency
	calls for the protection of historic resources, it should be reviewed in conjunction with the City's existing Municipal Code, which allows for the removal of a historic resource (Section 16.38.270) provided that a certificate of appropriateness is approved by the Architectural Heritage Landmarks Commission. Therefore, if the applicants can obtain a certificate of appropriateness to remove the existing structures that have been identified as a historic resource, the project would be considered consistent with this policy.	
POLICY NBE-1.10 Historic Resources. Encourage the protection, rehabilitation, and reuse of historic buildings and structures. *Action NBE-1.10B Require the identification and protection (emphasis added) of all on-site historic resources in conjunction with any proposed development, in compliance with all applicable City provisions (including the Downtown Specific Plan Historical Resource Assessment) and State and federal guidelines for the treatment of historic properties.*	While the existing administrative building and garage would be reused, the project would result in the demolition of three key buildings that contribute to the integrity of the Sperry Flour Mill Historic District. The demolition of these buildings would result in a significant impact on historic architectural resources due to the loss of integrity of the Sperry Flour Mill Historic District. Mitigation would reduce this impact, but not to a less-than-significant level. Thus, the impacts would remain significant and unavoidable. While this policy calls for the protection of historic resources, it should be reviewed in conjunction with the City's existing Municipal Code, which allows for the removal of a historic resource (Section 16.38.270) provided that a certificate of appropriateness is approved by the Architectural Heritage Landmarks Commission. Therefore, if the applicants can obtain a certificate of appropriateness to remove the existing structures that have been identified as a historic resource, the project would be considered consistent with this policy.	Consistent

Table 3.9-2
Consistency of the Proposed Project with Relevant Goals, Objectives, and Policies

Goals, Objectives, and Policies	Analysis	Consistency
POLICY NBE-1.12 Historic Preservation. Promote community awareness of the benefits of historic preservation.	See above	Consistent
POLICY NBE-2.8 Infill Development. Promote infill development targets such as vacant and underutilized sites for community-desired and enhancing uses compatible with surrounding uses. • *Action NBE-2.8A Identify sites suitable for redevelopment; work with property owners to promote economically feasible and community desired uses that enhance and are compatible with the existing urban fabric.*	*The project site contains the former General Mills deep-water terminal and buildings associated with the former General Mills plant. The General Mills plant closed in 2004, and the project site has since remained vacant. Thus, the site has historically been used for industrial uses and, although underutilized for 15 years, has been planned and zoned to allow for heavy industrial uses, with rail and ship access. Therefore, the use is consistent with the existing urban fabric. The proposed on-site activities are generally compatible with the adjacent industrial uses within the City boundaries. The adjacent residential uses within the City's boundaries are adequately separated from the project site because they are elevated above the site and set back from the top of the slope. The nearest home in the Sandy Beach residential area is approximately 1,100 feet to the south of the site. Sandy Beach development was developed long after the industrial uses on this site existed. The applicants propose to operate on a 7-days-per-week, 24-hour basis which could be considered incompatible with residential uses, but as demonstrated in the impact analysis section of the EIR, the project would not result in any significant or unavoidable impacts to the Sandy Beach community.*	Consistent

Table 3.9-2
Consistency of the Proposed Project with Relevant Goals, Objectives, and Policies

Goals, Objectives, and Policies	Analysis	Consistency
Policy NBE-4-1 Waterfront Focus. Prioritize public access and recreational and water-dependent uses along the waterfront while minimizing adverse effects on the natural environment.	VMT and Orcem: The proposed project is located on Mare Island Strait, which is a public waterway; however, as described above, no public access would be permitted. Public access to Mare Island Strait would continue to be provided adjacent to the project site along Derr Street to the north and Sandy Beach Road to the south. The project site has been historically used for similar industrial uses and has been closed to the public. Implementation of the proposed project would therefore not change existing public access to the site. In addition in-lieu access would be provided via the provision of monetary assistance to close the funding gap for the design phase of the Bay/Vine Trail project.	Consistent

Table 3.9-2
Consistency of the Proposed Project with Relevant Goals, Objectives, and Policies

Goals, Objectives, and Policies	Analysis	Consistency
~~Policy 1: BCDC's Public Access Design Guidelines should be used in reviewing all development proposals. In areas hazardous to public safety or incompatible with public use, in-lieu access at another nearby location may be provided.~~ POLICY NBE-4.4 Visual Continuity. Foster a cohesive and distinctive visual experience along the waterfront. • Action NBE-4.4A Continue to use the Waterfront Design Guidelines to guide public and private investments along the waterfront between Solano Avenue and the Mare Island Causeway. • Action NBE-4.4B Continue to use BCDC Public Access Design Guidelines in reviewing waterfront development proposals.	VMT and Orcem: The BCDC Public Access Design Guidelines have been considered in the design of the proposed project. However, as described previously, due to the nature of the planned operations on the site, no public access would be permitted. Public access to Mare Island Strait would continue to be provided adjacent to the project site along Derr Street to the north and Sandy Beach Road to the south. In-lieu access would be provided via the provision of monetary assistance to close the funding gap for the design phase of the Bay/Vine Trail project. ~~the installation of a new self-propelled personal watercraft launch, as described above. However, based on review of the proposed access and coordination with BCDC staff that this proposal does not meet the intent of the policy because the scope of the access is so limited and will only serve a very limited population within the City jurisdiction~~.	Consistent

Table 3.9-2
Consistency of the Proposed Project with Relevant Goals, Objectives, and Policies

Goals, Objectives, and Policies	Analysis	Consistency
POLICY NBE-5.1 Noise Control. Ensure that noise does not affect quality of life in the community. • *Action NBE-5.1A Continue to require that new noise-producing uses are located sufficiently far away from noise-sensitive receptors and/or include adequate noise mitigation, such as screening, barriers, sound enclosures, noise insulation, and/or restrictions on hours of operation.* ~~Policy 3: The following public access to and along public waterways, streams and rivers is required where feasible:~~ ~~a. Access to the water every 1,500 feet;~~ ~~b. Accessway to be a minimum of 50 feet wide;~~ ~~c. Access along the: water to be a minimum of-200 feet in width;~~ ~~Planned Developments and commercial and industrial areas may vary provided they are within the intent and purpose of this provision.~~	VMT and Orcem: As described in the Noise section, proposed mitigation would bring noise from materials handling, loading and unloading, and plant production to levels that would not exceed established standards.~~VMT and Orcem: The proposed project is located on Mare Island Strait, which is a public waterway; however, as described above, no public access would be permitted. Public access to Mare Island Strait would continue to be provided adjacent to the project site along Derr Street to the north and Sandy Beach Road to the south. The project site has been historically used for similar industrial uses and has been closed to the public. Implementation of the proposed project would therefore not change existing public access to the site. In addition, in-lieu access would be provided via the installation of a new self-propelled personal watercraft launch, as described above.~~	Consistent.

Table 3.9-2
Consistency of the Proposed Project with Relevant Goals, Objectives, and Policies

Goals, Objectives, and Policies	Analysis	Consistency
POLICY NBE-5.6 Flood Control Planning. Protect the community from potential flood events. *NBE-5.6E Continue to require that new or modified structures within the 100-year floodplain comply with the City's Flood Management Regulations, including elevation of building pads above the floodplain and flood-proofing of buildings, and continue to prohibit permanent structures in designated floodways.* ~~Industrial Development Goal 3: To insure compatibility between industrial land uses and uses of a lesser intensity.~~	VMT and Orcem: As described in the Hydrology and Water Quality Section, the 100-year floodplain is limited to areas of the VMT Site where no permanent habitable structures are proposed. Although the project would place fill within the Mare Island Strait, it would not place people or the public at risk. Furthermore, the fill would be placed in the shallow tidal area and would not encroach upon the strait's deep-water channel. Impacts would therefore be less than significant. ~~VMT and Orcem: The proposed project is located in an area that has been historically used for industrial uses and is assigned an industrial land use designation. The project site is bound by steep hillsides, Mare Island Straits, and railroad tracks, which all serve as natural buffers from the surrounding uses of lesser intensity.~~	Consistent
POLICY NBE-5.10 Site Safety. Ensure that affected soil, groundwater, or buildings will not have the potential to adversely affect the environment or the health and safety of site occupants. ~~Policy 1: Where possible, natural buffers, e.g., railroad tracks, major street, or abrupt topographic changes should be used to delineate industrial areas.~~	The project includes erosion control methods and would not use the groundwater for construction or water supply. ~~VMT and Orcem: The proposed project is located in an area that has been historically used for industrial uses and is assigned an industrial land use designation. The project site is bound by steep hillsides, Mare Island Straits, and railroad tracks, which all serve as natural buffers from the surrounding areas.~~Buildings would be built to standards to protect the health and safety of site occupants.	Consistent
~~Industrial Development Goal 4: To maximize the potential of industrially zoned lands for the fostering of new and innovative industrial development.~~	~~VMT and Orcem: The proposed project would redevelop the industrially zoned project site with a viable marine terminal and manufacturing facility for ground granulated blast furnace slag~~	~~Consistent.~~

Table 3.9-2
Consistency of the Proposed Project with Relevant Goals, Objectives, and Policies

Goals, Objectives, and Policies	Analysis	Consistency
	~~(GGBFS) and other cement products. Use of the project site would be maximized by locating both the VMT and Orcem components of the project on one site.~~	
~~Policy 1: Use the Planned Development approach in those areas where industrial uses will be compatible with accessory residential and/or commercial uses.~~	~~VMT and Orcem: The proposed project would involve shipping and industrial operations that would not be compatible with accessory residential uses; however, VMT proposes to allow for future commercial office use of remaining existing buildings on the site, including the Administration Building. Any future uses on the site would be required to be compatible with the VMT and Orcem uses.~~	~~Consistent.~~
~~Circulation and Transportation, Compatibility with Adjoining Land Uses Goal: To have a street and highway system that services all land uses with a minimum adverse impact.~~ POLICY MTC-1-4 Regional Transportation Planning. Ensure that Vallejo is well connected to road, rail, air, and maritime systems in support of both mobility and local economic development. *Action MTC-1-4d Periodically review designated truck routes and enforce compliance to optimize goods movement and minimize impacts on neighborhoods and sensitive land uses.*	VMT and Orcem: As described in Section 3.12, Transportation and Traffic, the project site is currently accessible via the existing street and highway network surrounding the site. The proposed project would utilize this system and would implement mitigation measures, specified in Section 4.12, to minimize adverse impacts to the street and highway system.	Consistent.
~~Policy 3: All truck traffic and regional bus service should be restricted to peripheral major streets and north-south, east-west arterial and collector streets having the least number of residences and schools. Only small trucks servicing the neighborhood centers should be allowed on other streets. Where possible, unloading facilities should be provided off alleys rather than streets.~~	~~VMT and Orcem: As described in Section 3.12, Transportation and Traffic, it is expected that trucks accessing the site would use primarily the Curtola Parkway–Lemon Street route for trips to/from I-780 and I-80 East, and the Sonoma Boulevard route for trips to/from I-80 West. Loading and unloading of the trucks would occur on the project site.~~	~~Consistent.~~

Table 3.9-2
Consistency of the Proposed Project with Relevant Goals, Objectives, and Policies

Goals, Objectives, and Policies	Analysis	Consistency
POLICY CP-1.4 Active Recreation Facilities. Ensure all Vallejo residents are served by convenient and safe active recreation facilities that meet the needs of all ages, abilities, and interest groups. ~~Public Facilities and Other Services, Other Services Goal: To provide an efficient and financially sound system of urban services to protect the health, safety and general welfare of Vallejo area residents.~~	VMT and Orcem: The project site has been historically used for similar industrial uses and has been closed to the public. Implementation of the proposed project would therefore not change existing public access to the site. In addition, in-lieu access would be provided via the provision of monetary assistance to close the funding gap for the design phase of the Bay/Vine Trail project. ~~VMT and Orcem: As described in Section 3.11, Public Services and Recreation, the proposed project would be served by the existing urban services provided by the City of Vallejo.~~	Consistent
~~*Air Quality Goal 1: To improve Vallejo's air quality.*~~ POLICY CP-1.12 Clean Air. *Protect the community from harmful* levels of air pollution. *Action CP-1.12B Update City regulations to set BAAQMD-recommended limits for particulate emissions from construction, demolition, debris hauling, and utility maintenance.*	VMT and Orcem: As described in Section 3.2, Air Quality, the proposed project would result in significant air quality impacts, some of which would remain significant and unavoidable after mitigation. However, feasible mitigation measures would be implemented to reduce air quality impacts to the maximum extent practicable.	Consistent.
POLICY EET-2.2 Good Jobs. Retain and attract new businesses offering high quality jobs. *Action EET-2.2B Seek out businesses that build on Vallejo's competitive advantages and offer high and living wage jobs in a range of industries such as advanced manufacturing, maritime industrial, biosciences/life sciences, and tourism/hospitality.* ~~Policy 2: Balance jobs and housing in future development to provide Vallejo residents the opportunity to work within Vallejo, and reduce long distance commuting both to and from Vallejo. Jobs and housing should be balanced both in numbers and in salary range/housing cost.~~	VMT and Orcem: As described in Section 5.4, Growth Inducement, the proposed project is expected to generate temporary construction job, as well as full time jobs during operation. These jobs could potentially be filled by local Vallejo residents who currently commute to manufacturing and transportation and warehousing jobs outside of Vallejo. Although the project does not propose any new housing, the increase in local jobs would help reduce the number of residents commuting outside the City for similar jobs.	Consistent.

Table 3.9-2
Consistency of the Proposed Project with Relevant Goals, Objectives, and Policies

Goals, Objectives, and Policies	Analysis	Consistency
POLICY MTC-1.6 Public Access. Promote public access to open space and trails. ~~Air Quality Goal 2: To reduce the air quality impact associated with future development in Vallejo.~~	VMT and Orcem: The project site has been historically used for similar industrial uses and has been closed to the public. Implementation of the proposed project would therefore not change existing public access to the site. In addition, in-lieu access would be provided via the provision of monetary assistance to close the funding gap for the design phase of the Bay/Vine Trail project. ~~As described in Section 3.2, Air Quality, the proposed project would result in significant air quality impacts, some of which would remain significant and unavoidable after mitigation. However, feasible mitigation measures would be implemented to reduce air quality impacts to the maximum extent practicable.~~	Consistent
POLICY MTC-2.1 Safety First. Prioritize pedestrian, bicycle, and automobile safety over traffic flow. *Action MTC-3.4C Regularly maintain key neighborhood connection routes to facilitate bicycle access, including through debris removal and street repair* ~~Policy 3: Require air quality mitigation for new development not amenable to TSM methods. Retail commercial and residential development, in particular, do not lend themselves to trip reduction through TSM. As part of the environmental review process these types of uses should be required to provide air quality mitigation by providing funding for off-site improvements to improve air quality. Examples of such improvements are pedestrian/bicycle amenities, transit support, transit amenities such as bus shelters, or additional park-and-ride lots.~~	VMT and Orcem: As described in the Transportation and Traffic section, the project applicants shall work with the City of Vallejo to identify, design, and construct improvements to sidewalks on Lemon Street and Sonoma Boulevard. In addition, the applicants will to contribute their fair share to the maintenance of impacted roads, as determined by Public Works. ~~VMT and Orcem: Once operational, the VMT component of the project would employee up to 40 individuals, and the Orcem component of the project would employ up to 40 individuals. The City's Transportation Systems Management (TSM) Ordinance (Municipal Code Chapter 8.70) requires TSM measures to be implemented for "Major Employers" (employers who employ 100 or more employees). Since VMT and Orcem would not employ 100 or more employees, they~~	Consistent

Table 3.9-2
Consistency of the Proposed Project with Relevant Goals, Objectives, and Policies

Goals, Objectives, and Policies	Analysis	Consistency
	~~would be considered "Minor Employers." The VMT and Orcem project components would be required to comply with the requirements for minor employers as specified in Section 8.70.050 of the City's Municipal Code.~~	
~~Policy 4: Use project siting to reduce air pollution exposure of sensitive receptors. Locate air pollution sources away from residential areas and other sensitive receptors. Include buffer zones within residential and sensitive receptor site plans to separate these uses from freeways, arterials, point sources and potential sources of odors.~~	~~VMT and Orcem: The proposed project is a site dependent use and is located on the site of a previous marine terminal. Siting for the proposed project is constrained by physical site suitability characteristics and access to transportation. Site layout would be planned to minimize air pollution exposure to the maximum extent feasible.~~	~~Consistent .~~
~~Fish and Wildlife Resources Goal: To protect valuable fish and wildlife habitats.~~	~~VMT: As described in Section 3.3, Biological Resources, the proposed wharf would affect marine benthic and intertidal hard-substrate habitat, however all impacts would be either less than significant or would be mitigated to a less-than-significant level.~~ ~~Orcem: The Orcem Plant would redevelop an existing industrial facility and would comply with all mitigation measures identified in Section 3.3, Biological resources to reduce impacts to wildlife habitat to below a level of significance.~~	~~Consistent.~~

Table 3.9-2
Consistency of the Proposed Project with Relevant Goals, Objectives, and Policies

Goals, Objectives, and Policies	Analysis	Consistency
~~Policy 5: Recognize areas valuable for marine life productions, particularly the Napa Marshes and Carquinez Strait, and work with the California Department of Fish and Game and Bay Conservation and Development Commission in insuring the protection of these areas from incompatible uses.~~	~~VMT: The VMT project component would permanently impact approximately 1.04 acres of subtidal soft substrate habitat considered to be of low quality for fish foraging, and create approximately 600 linear feet of new intertidal hard substrate supportive of sessile marine fauna. Impacts would be less than significant.~~ ~~Orcem: The Orcem project component would not result in development in or use of marine or estuarine habitat.~~	~~Consistent.~~
~~Noise Goal: To provide for a more pleasing acoustic environment for the city by controlling noise levels in a manner that is acceptable to the residents, reasonable for commercial and industrial land uses, and practical to enforce.~~	~~VMT and Orcem: As described in Section 3.10, Noise, the proposed project would result in significant noise impacts after mitigation since the City cannot guarantee that the California Northern Railroad will implement the measures needed to reduce noise associated with the proposed rail operations. The noise levels generated by proposed rail operations would be reasonable for industrial land uses and be reduced to the maximum extent practicable by the applicants and the applicants would be committed to working with the railroad to reduce noise levels as feasible.~~	~~Consistent.~~
~~Policy 2: Roadways should be kept in good repair and new surface material should be evaluated in terms of noise generation.~~	~~VMT and Orcem: As described in Section 3.12, Transportation and Traffic, implementation of MM-3.12-1 would ensure that any damage to streets caused by construction equipment would be repaired by the project applicant. In addition, MM-3.12-4a and MM-3.12-5 would require improvements to Lemon Street to ensure the roadway is maintained during project operations. As described in Section 3.10, Noise, implementation of MM-3.10-3a would ensure that~~	~~Consistent~~

Table 3.9-2
Consistency of the Proposed Project with Relevant Goals, Objectives, and Policies

Goals, Objectives, and Policies	Analysis	Consistency
	~~roadway noise from construction vehicles would remain less than significant.~~	
~~Floodplain Hazards Goal: To protect life, property, and public well-being from seismic, floodplain, and other environmental hazards and to reduce or avoid adverse economic, social, and physical impacts caused by existing environmental conditions.~~	~~VMT and Orcem: As described in Section 3.5, Geology and Soils, and Section 3.8, Hydrology and Water Quality, implementation of required mitigation measures would ensure that the proposed project would not result in any significant impacts related to seismic, floodplain, or other environmental hazards.~~	~~Consistent~~
~~Policy 3: Evaluate all new developments to determine how peak runoff can be delayed using such measures as detention or retention basins, permanent greenbelt areas, temporary underground storage, permeable paving and roof top ponding.~~	~~VMT and Orcem: As described in Section 3.8, Hydrology and Water Quality, both VMT and Orcem would be subject to their respective Stormwater Control Plans, which have been designed to reduce stormwater runoff and minimize Bay water pollution.~~	~~Consistent~~

Note:
1 See San Francisco BCDC letter dated April 29, 2016 (associated with this document in the Response to Comments section).

General Plan and Zoning Designations

The entire project site within the City limits is designated "Employment" and is zoned "Intensive Use." The proposed use of the site by VMT and Orcem is consistent with the City's existing General Plan and zoning designations for the majority of the site. Both the VMT and Orcem project components are classified as "General Industrial Uses," which are permitted in the "Intensive Use" zoning district.

The proposed Orcem Plant would adjoin residential land uses to the east and southeast. However, all equipment and operational areas on the Orcem Site would be located more than 300 feet from the nearest residential zoning district boundary. Therefore, the Orcem component of the project would be allowed to operate on a 24-hour basis without application of the provisions of Chapter 16.57 – Limitations of Permitted Uses of the Zoning Code. Section 16.57.030(A)(1) states that all late night business operations (considered as businesses that operate between the hours of 12:00 midnight and 6:00 a.m.) that are within 300 feet of a residential use or zoning district shall require a Major Use Permit. The provisions of Section 16.57.030(A)(1) would be applicable to small portions of the VMT Site located south of the Orcem Plant where a maintenance shed is proposed, and east of the entry road where the Manager's House is located.

For the reasons described above, the proposed project is consistent with most applicable land use plans, policies, and regulations of an agency with jurisdiction over the project. However there are several policies (those of the City's and BCDC) described above that rely on compliance with BCDC policies and plans and the project has been found to be potentially inconsistent with these policies. Therefore, impacts would be **potentially significant awaiting final permit conditions**.

~~Off-Site Improvements~~

~~The proposed project includes two off-site improvements that would take place at the City of Vallejo Municipal Marina located approximately 2 miles north of the project site: public access improvements and removal of existing deteriorated docks. The public access improvements would involve installation of a new self-propelled personal watercraft launch ramp just north of the access ramp to K Dock at the south end of the marina. The proposed launch would consist of a pre-cast articulated concrete mat, approximately 10 feet wide by 60 feet long over a geotextile fabric. Installation of the launch ramp would occur within the existing marina. The project would also involve the removal of existing deteriorated dock improvements within the water area at the north end of the marina. Approximately eighty (80) 14-inch-diameter creosote timber piles and deteriorated dock facilities would be removed from this portion of the Marina.~~

~~The proposed personal watercraft launch ramp would be consistent with the Vallejo General Plan's Waterfront Development Goal: "To have a waterfront devoted exclusively to water oriented uses, including industrial, residential, commercial and open space uses that permit public access." However, it may not be consistent with Waterfront Development Policy 1: "BCDC's Public Access~~

~~Design Guidelines should be used in reviewing all development proposals. In areas hazardous to public safety or incompatible with public use, in-lieu access at another nearby location may be provided." The proposed improvement would also be consistent with existing plans outlined in the Marina Master Plan and designed and constructed according to the Vallejo Public Works design and engineering standards. The piling removal and public access ramp installation would not conflict with any land use plans, policies, or regulations intended to avoid or mitigate an environmental effect. Impacts would therefore be~~ ~~**potentially significant.**~~

3.9.5 Mitigation Measures

There are several policies ~~(those of the City's and BCDC)~~ described in Section 3.9.4 that rely on compliance with BCDC policies and plans, and this project has been found to be potentially ~~in~~consistent with these policies pending BCDC permit issuance. Therefore, impacts would be potentially ~~significant~~ consistent awaiting final permit conditions. No mitigations measures are applicable at this time.

3.9.6 Level of Significance After Mitigation

Mitigation is not available at this time for potentially ~~in~~consistent project elements, thus mitigation is not provided.

3.10 NOISE

This section analyzes the potential impacts of the Vallejo Marine Terminal (VMT) and Orcem project (proposed project) with respect to noise and recommends mitigation measures where necessary to reduce or avoid significant impacts. The primary information sources used to support this analysis include technical noise impact assessment reports conducted for the proposed project by an independent acoustic consultant. These include:

- **Appendix K-1**: AWN Consulting. 2014. *Environmental Noise Impact Assessment of the Proposed VMT Development, Vallejo, California*. March 2014.
- **Appendix K-2**: AWN Consulting. 2014. *Environmental Noise Impact Assessment of the Proposed Orcem Development, Vallejo, California*. March 2014.
- **Appendix K-3**: AWN Consulting. 2014. *Cumulative Environmental Noise Impact Assessment of the Proposed Orcem and VMT Developments, Vallejo, California*. March 2014.

AWN Consulting evaluated construction-related noise emissions, both from on-site construction equipment and activities and off-site transportation of materials and construction personnel, for VMT and Orcem, separately and combined. AWN Consulting also assessed long-term operational noise from each facility and from both combined operations. Additional information sources used in this section include the City of Vallejo General Plan – Noise Element (City of Vallejo 2012) and the Vallejo Noise Ordinance (Vallejo Code of Ordinances, Sections 7.84 and 16.72; City of Vallejo 2014). All figures referenced in this section are provided at the end of the section.

Noise Background and Terminology

Fundamentals of Environmental Noise

Vibrations, traveling as waves through air from a source, exert a force perceived by the human ear as sound. Sound pressure level (referred to as sound level) is measured on a logarithmic scale in decibels (dB) that represent the fluctuation of air pressure above and below atmospheric pressure. Frequency, or pitch, is a physical characteristic of sound and is expressed in units of cycles per second or hertz (Hz). The normal frequency range of hearing for most people extends from about 20 to 20,000 Hz. The human ear is more sensitive to middle and high frequencies, especially when the noise levels are quieter. As noise levels get louder, the human ear starts to hear the frequency spectrum more evenly. To accommodate for this phenomenon, a weighting system to evaluate how loud a noise level is to a human was developed. The frequency weighting called "A" weighting is typically used for quieter noise levels which de-emphasizes the low frequency components of the sound in a manner similar to the response of a human ear. This A-weighted sound level is called the "noise level" and is referenced in units of dBA.

Since sound is measured on a logarithmic scale, a doubling of sound energy results in a 3 dBA increase in the noise level. Changes in a community noise level of less than 3 dBA are not typically noticed by the human ear (DOT 1980). Changes from 3 to 5 dBA may be noticed by some individuals who are extremely sensitive to changes in noise. A 5 dBA increase is readily noticeable (EPA 1971). The human ear perceives a 10 dBA increase in sound level as a doubling of the sound level (i.e., 65 dBA sounds twice as loud as 55 dBA to a human ear).

An individual's noise exposure occurs over a period of time; however, noise level is a measure of noise at a given instant in time. Community noise sources vary continuously, being the product of many noise sources at various distances, all of which constitute a relatively stable background or ambient noise environment. The background, or ambient, noise level gradually changes throughout a typical day, corresponding to distant noise sources, such as traffic volume, as well as changes in atmospheric conditions.

Noise levels are generally higher during the daytime and early evening when traffic (including airplanes), commercial, and industrial activity is the greatest. However, noise sources experienced during nighttime hours when background levels are generally lower can be potentially more conspicuous and irritating to the receiver. In order to evaluate noise in a way that considers periodic fluctuations experienced throughout the day and night, a concept termed "community noise equivalent level" (CNEL) was developed, wherein noise measurements are weighted, added, and averaged over a 24-hour period to reflect magnitude, duration, frequency, and time of occurrence. A complete definition of CNEL is provided below.

Different types of measurements are used to characterize the time-varying nature of sound. These measurements include the equivalent sound level (L_{eq}), the minimum and maximum sound levels (L_{min} and L_{max}), percentile-exceeded sound levels (Lxx), the day–night sound level (L_{dn}), and the CNEL. Below are brief definitions of these measurements and other terminology used in this section.

- *Decibel* (dB) is a unitless measure of sound on a logarithmic scale which indicates the squared ratio of sound pressure amplitude to a reference sound pressure amplitude. The reference pressure is 20 micropascals.
- *A-weighted decibel* (dBA) is an overall frequency-weighted sound level in decibels that approximates the frequency response of the human ear.
- *Equivalent sound level* (L_{eq}) is the constant level that, over a given time period, transmits the same amount of acoustic energy as the actual time-varying sound. Equivalent sound levels are the basis for both the day–night average sound levels (L_{dn}) and community noise equivalent level (CNEL) scales.

- *Maximum sound level* (L_{max}) is the maximum sound level measured during the measurement period.
- *Minimum sound level* (L_{min}) is the minimum sound level measured during the measurement period.
- *Percentile-exceeded sound level* (Lxx) is the sound level exceeded x percent of a specific time period. L10 is the sound level exceeded 10% of the time.
- *Day–night average sound level* (L_{dn}) is a 24-hour average A-weighted sound level with a 10 dB penalty added to the nighttime hours from 10:00 p.m. to 7:00 a.m. The 10 dB penalty is applied to account for increased noise sensitivity during the nighttime hours.
- *Community noise equivalent level* (CNEL) is the average equivalent A-weighted sound level during a 24-hour day. CNEL accounts for the increased noise sensitivity during the evening hours (7 p.m. to 10 p.m.) and nighttime hours (10 p.m. to 7 a.m.) by adding 5 dB to the sound levels in the evening and 10 dB to the sound levels at night. CNEL and L_{dn} are often considered equivalent descriptors.

Exterior Noise Distance Attenuation

Noise sources are classified in two forms: (1) point sources, such as stationary equipment or a group of construction vehicles and equipment working within a spatially limited area at a given time, and (2) line sources, such as a roadway with a large number of pass-by sources (motor vehicles). Sound generated by a point source typically diminishes (attenuates) at a rate of 6.0 dBA for each doubling of distance from the source to the receptor at acoustically “hard” sites and at a rate of 7.5 dBA for each doubling of distance from source to receptor at acoustically “soft” sites. Sound generated by a line source (i.e., a roadway) typically attenuates at a rate of 3 dBA and 4.5 dBA per doubling distance, for hard and soft sites, respectively. Sound levels can also be attenuated by man-made or natural barriers. For the purpose of sound attenuation discussion, a “hard” or reflective site does not provide any excess ground-effect attenuation and is characteristic of asphalt or concrete ground surfaces, as well as very hard-packed soils. An acoustically “soft” or absorptive site is characteristic of unpaved loose soil or vegetated ground.

Fundamentals of Vibration

Vibration is an oscillatory motion that can be described in terms of displacement, velocity, or acceleration. The response of humans to vibration is very complex. However, it is generally accepted that human response to vibration is best characterized using the velocity parameter.

Heavy equipment operation, including stationary equipment that produces substantial oscillation or construction equipment that causes percussive action against the ground surface, may be perceived by building occupants as perceptible vibration. It is also common for ground-borne vibration to cause windows, pictures on walls, or items on shelves to rattle. Although the perceived vibration from such equipment operation can be intrusive to building occupants, the vibration is seldom of sufficient magnitude to cause even minor cosmetic damage to buildings.

To avoid confusion with sound decibels, the abbreviation VdB is used for vibration decibels. The vibration threshold of perception for most people is around 65 VdB. Vibration levels in the 70 to 75 VdB range are often noticeable but generally deemed acceptable, and levels in excess of 80 VdB are often considered unacceptable (FTA 2006).

3.10.1 Regulatory Setting

Federal

Noise Control Act of 1972

The U.S. Environmental Protection Agency (EPA) is authorized under the Noise Control Act of 1972 to publish guidelines on the effects of noise and establish levels of noise, which are "requisite to protect the public welfare with an adequate margin of safety." Table 3.10-1 presents the recommended maximum noise exposure levels published by the EPA, categorized by effects of concern and activity or land use type. The recommended maximum exposure levels are guidelines only and do not represent strict limits.

Table 3.10-1
EPA Noise Guidelines

Effect	Level	Area
Hearing Loss	$L_{eq(24)} \leq 70$ dB	All areas.
Outdoor activity interference and annoyance	$L_{dn)} \leq 55$ dB	Outdoors in residential areas and farms and other outdoor areas where people spend widely varying amounts of time and other places in which quiet is a basis for use.
	$L_{eq(24)} \leq 55$ dB	Outdoor areas where people spend limited amounts of time, such as school yards, playgrounds, etc.
Indoor activity interference and annoyance	$L_{dn} \leq 45$ dB	Indoor residential areas.
	$L_{eq(24)} \leq 45$ dB	Other indoor areas with human activities such as schools, etc.

Federal Transit Administration and Federal Railroad Administration Standards

Although the Federal Transit Administration (FTA) standards are intended for federally funded mass transit projects, the impact assessment procedures and criteria included in the FTA *Transit Noise and Vibration Impact Assessment Manual* (May 2006) are routinely used for projects proposed by local jurisdictions. The FTA and Federal Railroad Administration have published guidelines for assessing the impacts of ground-borne vibration associated with rail projects, which have been applied by other jurisdictions to other types of projects. The FTA measure of the threshold of architectural damage for conventional sensitive structures is 0.2 inch/second perturbation projection vector (PPV).

State

California Noise Control Act of 1973

Sections 46000 through 46080 of the California Health and Safety Code, known as the California Noise Control Act of 1973, declares that excessive noise is a serious hazard to the public health and welfare and that exposure to certain levels of noise can result in physiological, psychological, and economic damage. It also identifies a continuous and increasing bombardment of noise in the urban, suburban, and rural areas. The California Noise Control Act declares that the State of California has a responsibility to protect the health and welfare of its citizens by the control, prevention, and abatement of noise. It is the policy of the state to provide an environment for all Californians free from noise that jeopardizes their health or welfare.

California Noise Insulation Standards

In 1974, the California Commission on Housing and Community Development adopted noise insulation standards for hotels, motels, dormitories, and multi-family residential buildings (24 CCR, Part 2). Title 24 established standards for interior room noise as attributable to outside noise sources. As of January 1, 2014, the State of California has adopted the 2013 California Building Code. Chapter 12 of this document provides guidance on the interior environment of buildings. The current iteration of this document no longer regulates sound transmission from exterior sources to the interior of buildings. Revisions to CCR Title 24, Part 2 are anticipated which will remove performance standards for a building façade to achieve an interior noise standard of 45dB CNEL.

Governor's Office of Planning and Research Guidelines

The Governor's Office of Planning and Research has published land use compatibility guidelines which specify acceptable noise levels for a variety of land uses. These guidelines have been adopted by the City of Vallejo (City) and are graphically illustrated in Figure 3.10-1. Further discussion is provided under the heading Land Use Compatibility Guidelines.

City of Vallejo

Land Use Compatibility Guidelines

As discussed previously, the City has adopted the land use compatibility guidelines published by the Governor's Office of Planning and Research, reproduced as Figure 3.10-1. As illustrated in Figure 3.10-1, the normally acceptable noise level in low, medium, and high density residential areas is 60 dB L_{dn}. In areas zoned for business or commercial use the normally acceptable noise level is 70 dB L_{dn}. For industrial or manufacturing uses, the normally acceptable noise level is 70 dB L_{dn}.

City of Vallejo General Plan

The City of Vallejo adopted the General Plan 2040 in August 2017 (City of Vallejo 2017). The General Plan 2040 replaced the previous General Plan, most recently amended in 1999. The General Plan 1999 was the basis of earlier drafts of this EIR. This document, where necessary and appropriate, updates any policies pertaining to noise that may have changed in the General Plan 2040. This discussion is shown in redline and/or strikeout in this document for ease of review.

The following policies in the General Plan 2040 are applicable to noise control within the City of Vallejo:

POLICY NBE-5.13 Noise Control. Ensure that noise does not affect quality of life in the community.

- *Action NBE-5.1A Continue to require that new noise-producing uses are located sufficiently far away from noise-sensitive receptors and/or include adequate noise mitigation, such as screening, barriers, sound enclosures, noise insulation, and/or restrictions on hours of operation.*
- *Action NBE-5.1B Update City regulations to require that parking, loading, and shipping facilities and all associated mechanical equipment be located and designed to minimize potential noise and vibration impacts on residential neighborhoods.*
- *Action NBE-5.1C Update City regulations to restrict the allowable hours to between 7 AM and 7 PM on weekdays for construction, demolition, maintenance, and loading/unloading activities that may impact noise-sensitive land uses.*

POLICY NBE-5.14 Vibration Control. Ensure that vibration does not affect quality of life in the community.

- *Action NBE-5.2A Update City regulations to establish quantified vibration level limits similar to commonly used guidelines found in the Federal Transit Administration document "Transit Noise and Vibration Impact Assessment" (2006).*

POLICY NBE-5.15 Noise Compatibility Standards. Apply the General Plan noise and land use compatibility standards to all new residential, commercial, and mixed-use development and redevelopment.

- *Action NBE-5.3E When approving new development, limit project-related noise increases to the following for permanent stationary and transportation-related noise sources:*
    - *no more than 10 dB in non-residential areas;*

- o *no more than 5 dB in residential areas where the with-project noise level is less than the maximum "normally acceptable" level in the Noise and Land Use Compatibility figure; and*
- o *no more than 3 dB where the with-project noise level exceeds the "normally acceptable" level in Noise and Land Use Compatibility figure.*

- *Action NBE-5.15F Require acoustical studies with appropriate mitigation measures for projects that are likely to be exposed to noise levels that exceed the 'normally acceptable' standard and for any other projects that are likely to generate noise in excess of these standards*

Vallejo Municipal Code

Noise control is provided in the Vallejo Municipal Code primarily in two sections—one dealing with prohibitions and the other establishing performance standards.

7.84.010 General prohibition – Loud unnecessary and unusual noise.

Notwithstanding any other provisions of the Vallejo Municipal Code and in addition thereto, it shall be unlawful for any person to willfully make or continue, or cause to be made or continued, any loud, unnecessary, and unusual noise which disturbs the peace or quiet of any neighborhood or which causes discomfort or annoyance to any reasonable person of normal sensitiveness residing in the area. The standard which may be considered in determining whether a violation of the provisions of this chapter exist may include, but not be limited to, the following:

A. The level of noise;
B. Whether the nature of the noise is usual or unusual;
C. Whether the origin of the noise is natural or unnatural;
D. The level and intensity of the background noise, if any;
E. The proximity of the noise to residential sleeping facilities;
F. The nature and zoning of the area within which the noise emanates;
G. The density of the inhabitation of the area within which the noise emanates;
H. The time of the day and night the noise occurs;
I. The duration of the noise;
J. Whether the noise is recurrent, intermittent, or constant; and
K. Whether the noise is produced by a commercial or noncommercial activity.

(Ord. 1377 N.C.(2d) Section 1 (part), 1997.)

7.84.020 Specific prohibitions.

In addition to and separate from the prohibition set forth in Section 7.84.010 above, the following acts, and the causing or permitting thereof, are hereby declared to be in violation of this ordinance. As used in this section, the term "noise disturbance" means any sound which: (1) endangers or injures the safety or health of humans or animals; (2) annoys or disturbs a reasonable person of normal sensitiveness; or (3) endangers or injures personal or real property. The listing of specific prohibited activities in this section is not intended to limit the city's authority to regulate any and all loud, unnecessary and unusual noise pursuant to Section 7.84.010. Any noise not falling within the specific prohibitions set forth in this section is subject to regulation under the provisions of Section 7.84.010 above.

F. Loading and Unloading. It shall be unlawful to load, unload, open, close, or to do other handling of boxes, crates, containers, building materials, garbage cans, or similar objects between the hours of 9 p.m. and 7 a.m. in such a manner as to cause a noise disturbance across a residential real property boundary. This subsection shall not apply to the collection and disposal of garbage and recyclable materials by the city's franchises.

16.72.030 Noise performance standards.

No land use shall generate sound exceeding the maximum levels permitted in the following table when such sounds are measured in any of the zoning districts listed in this table:

Zoning District	Maximum Sound Pressure Level in Decibels
Resource Conservation, Rural Residential, and Medical Districts	55
Low, Medium, and High Density Residential Districts	60
Professional Offices, Neighborhood, Pedestrian, and Waterfront Shopping and Services Districts	70
Freeway Shopping and Service, Linear Commercial and Intensive Use Districts	75

16.72.040 Noise performance standards – Correction factors.

The following correction factors, when applicable, shall be applied to the maximum sound pressure levels given in Section 16.72.030:

Time and Operation of Type of Noise	Correction in Maximum Permitted Decibels
Emission only between 7 a.m. and 10 p.m.	Plus 5
Noise of unusual impulsive character such as hammering or drill pressing	Minus 5
Noise of unusual periodic character such as hammering or screeching	Minus 5

16.72.050 Noise performance standards – Exceptions.

The following sounds, upon compliance with state conditions, may exceed the maximum sound pressure levels given in Section 16.72.030:

C. Sounds from transportation equipment used exclusively in the movement of goods and people to and from a given premises, temporary construction or demolition work[.]

3.10.2 Existing Conditions

Noise Survey

An environmental noise survey was conducted in order to quantify the existing noise environment. The survey included both long-term and short-term sound level measurements at representative locations, and was conducted by Illingworth & Rodkin Inc. Full details of the baseline noise survey are included in Appendices K-1 and K-2 of this document. The following sections summarize the findings.

Measurement Locations

A series of both unattended long-term and attended short-term surveys were conducted in order to determine the existing baseline noise environment. A total of five unattended long-term monitoring positions were selected; each is described below and illustrated on Figure 3.10-2.

- **LT1** was selected to represent the noise environment of Sandy Beach Road residential land uses located along the waterfront.
- **LT2** was on a bluff overlooking the project site and adjacent to condominium units located at the northwest terminus of Seawitch Lane.
- **LT3** was selected to represent the noise environment of residential land uses within the Harbor Park Apartments and along Winchester Street.
- **LT4** was selected to represent the noise environment of noise-sensitive land uses along Lemon Street, west of Sonoma Boulevard.
- **LT5** quantified ambient noise levels from vehicular traffic along Sonoma Boulevard.

In addition, a total of four attended short-term monitoring positions were selected; each is described below and illustrated on Figure 3.10-2.

- **ST1** Lake Dalwigk Park, 70 feet from the center of Lemon Street at Sheridan Street. The measurement site represented the park and nearby residential land uses.
- **ST2** 75 feet from the center of Sonoma Boulevard south of Solano Avenue. This location was selected to quantify ambient traffic noise levels along Sonoma Boulevard.

- **ST3** Center of Alden Park, Mare Island and was selected to represent the noise environment at noise-sensitive receptors on Mare Island.
- **ST4** Easternmost terminus of York Street and was selected to represent the noise environment at noise-sensitive receptors along the railroad corridor that leads to and from the project site.

Noise Survey Results

As described above, sound level measurement or monitoring locations were selected in order to characterize existing ambient noise levels in key areas surrounding the project site. The recorded sound levels during the survey are considered representative of average noise conditions in the immediate vicinity of the measurement location, and are used as the ambient or baseline noise condition. Results of the noise survey are presented below.

Unattended Measurement Locations

The results for locations LT1 to LT5 are summarized in Table 3.10-2 below.

Table 3.10-2
Summary of Results for Unattended (Long-Term) Measurement Locations

Location	Measured Noise Levels (dBA)		
	L_{day}	L_{night}	L_{dn}
LT1	54	48	55
LT2	52	45	53
LT3	49	45	52
LT4	57	48	57
LT5	60	56	63

Attended Locations

The results for locations ST1 to ST4 are summarized in Table 3.10-3 below.

Table 3.10-3
Summary of Results for Attended (Short-Term) Measurement Locations

Location	Start Time	Measured Noise Levels (dBA)					
		L_{eq}	L_1	L_{10}	L_{50}	L_{90}	L_{max}
ST1	1450	59	71	62	52	47	73
	1500	57	66	61	53	46	69
ST2	1520	62	72	66	59	53	74
	1530	63	70	67	61	53	72

Table 3.10-3
Summary of Results for Attended (Short-Term) Measurement Locations

Location	Start Time	Measured Noise Levels (dBA)					
		L_{eq}	L_{1}	L_{10}	L_{50}	L_{90}	L_{max}
ST3	1100	53	65	56	44	41	71
	1110	48	60	50	43	39	63
ST4	1140	51	61	55	48	46	61
	1150	49	54	51	49	47	57

At monitoring location ST1, the primary source of noise was road traffic movement along Lemon Street. Ambient noise levels measured were in the range of 57 to 59 dBA $L_{eq\ (10\ minutes)}$.

At monitoring location ST2, the primary source of noise was road traffic along Sonoma Boulevard. Ambient noise levels measured were in the range of 62 to 63 dBA $L_{eq\ (10\ minutes)}$.

At monitoring location ST3, the primary source of noise was local road traffic. Ambient noise levels measured were in the range of 48 to 53 dBA $L_{eq\ (10\ minutes)}$.

At monitoring location ST4, the primary source of noise was local and distant road traffic. Ambient noise levels measured were in the range of 49 to 51 dBA $L_{eq\ (10\ minutes)}$.

3.10.3 Thresholds of Significance

The following criteria, included in Appendix G of the California Environmental Quality Act (CEQA) Guidelines (14 CCR 15000 et seq.), will be used to determine the significance of potential noise impacts. Impacts to noise would be significant if the proposed project would:

A) Expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;

B) Expose persons to or generate excessive groundborne vibration or groundborne noise levels;

C) Create a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project; or

D) Create a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

CEQA does not define the noise level increase that is considered substantial. However, based on guidance contained within the Vallejo General Plan Noise Element, the following significance criteria have been defined for use in this Environmental Impact Report.

Residential Areas

An increase in the day-night average noise level greater than 3 dB L_{dn} at noise-sensitive receptors would be considered significant when projected noise levels would exceed those considered "normally acceptable" for the affected land use.

An increase greater than 5 dB L_{dn} would be considered significant when projected noise levels would continue to meet those considered "normally acceptable" for the affected land use.

Non-residential Areas

An increase in the day-night average noise level greater than 3 dB L_{dn} at noise-sensitive receptors would be considered significant when projected noise levels would exceed those considered "normally acceptable" for the affected land use.

An increase greater than 10 dB L_{dn} would be considered significant when projected noise levels would continue to meet those considered "normally acceptable" for the affected land use, i.e., 75 dB L_{dn}.

Significance Criteria – Survey Result Conclusions

Based on a review of the ambient long-term and short-term noise data and the relevant noise criteria discussed in Section 3.10.1, project-generated noise increasing the existing ambient by more than 5 dBA L_{dn} would be considered significant at residential receptors represented by LT1, LT2, LT3, ST3, or ST4. These receptors include:

1. Sandy Beach Road single-family residential land uses
2. Multifamily residential units located along Seawitch Lane
3. Within the Harbor Park Apartments
4. At single-family residences along Winchester Street, on Mare Island
5. Housing along the railroad corridor

Project-generated noise increasing the existing ambient by more than 3 dBA L_{dn} above the "normally acceptable" level would be considered significant at noise-sensitive receptors represented by sites LT5, ST1, or ST2. These receptors include:

1. Lemon Street East of Sonoma Boulevard (up to 6th Street, east of which the zoning is Intensive Use)
2. Sonoma Boulevard South of Lemon Street

Project-generated noise increasing the existing ambient by more than 10 dB L_{dn} (but remaining within the "normally acceptable" level) would be considered significant at receptors represented by site LT4. This receptor includes Lemon Street West of Sonoma Boulevard, which is located within lands zoned for intensive use.

3.10.4 Impact Discussion

Noise-Sensitive Locations

For the purposes of the noise impact assessment, the closest residential properties have been included in the noise-modeling procedure in order to present the worst-case receptors in the analysis. Figure 3.10-3 indicates the location of the nearest noise-sensitive locations. Table 3.10-4 provides a brief description for each noise-sensitive location (NSL).

Table 3.10-4
Noise-Sensitive Locations

Location	Description
NSL1	Sandy Beach Road Residences
NSL2	Bay Village Apartments
NSL3	Harbor Park Apartments
NSL4	Browning Way Residences
NSL5	Colt Ct Residences
NSL6	Lemon Street Residences West of Sonoma Blvd
NSL7	Sonoma Boulevard Residences
NSL8	Mare Island Residences
NSL9	Lemon Street Residences East of Sonoma Blvd
NSL10	Residential Property near Rail Tracks on 3rd Street

A) Would the project expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

VMT Analysis

Construction Impacts

Demolition of structures, earth-moving, and construction of new construction and site improvements involves heavy construction equipment with the potential for substantial noise generation. To assess the VMT construction noise levels, the Roadway Construction Noise Model (RCNM) developed by the Federal Highway Administration (FHWA) was used. RCNM includes noise generation values for the most common heavy construction equipment, and an average usage factor for each type of equipment (% of each hour). The model also contains algorithms to combine the noise from multiple pieces of equipment as specified, and to calculate the attenuated noise level at designated receptor locations (defined by distance from the construction activity). Each phase of the construction activity has been assessed for the three closest noise sensitive locations to the development site, i.e., NSL1, NSL2, and NSL3.

Analysis (quantification) of construction noise emissions is provided in this sub-section, below. However, it should be noted the Vallejo Noise Ordinance does not specify limit values (i.e., dBA levels) for construction noise. Instead the City designates allowable hours for construction activity within the Noise Element in Policy 2b; the allowable hours are 7:00 a.m. to 9:00 p.m. (City of Vallejo 2012). Furthermore, VMC Section 16.72.050 states that in relation to the maximum permissible sound levels within the Performance Standard Regulations, sounds from temporary construction or demolition work may exceed these maximum sound pressure levels upon compliance with state conditions (i.e., equipment meeting maximum allowable sound generation levels, properly fitted with factory-installed mufflers)(City of Vallejo 2014).

The following two types of short-term noise impacts would occur during VMT Site preparation and construction:

- An increase in traffic volumes on local streets associated with the transport of workers, equipment and materials to and from the project site, and
- Heavy construction equipment operating on the project site.

The transport of workers and construction equipment and materials to the project site would incrementally increase noise levels on access roads leading to the site. Because workers and construction equipment would use existing routes, noise from slow-moving passing trucks (75 dBA L_{max} at 50 feet) would be similar to existing vehicle-generated noise. For this reason, short-term intermittent noise from trucks would be minor when averaged over a longer time period (i.e., an hour, or more). In addition, according to the City's noise ordinance, noise from temporary transportation of goods or people to and from a given premises is exempt from the City's noise standards. Therefore, short-term construction-related noise associated with worker and equipment transport to the proposed project site would not result in a significant impact on receptors along the access routes leading to the VMT Site.

Noise generated during demolition, excavation, grading, site preparation, and building erection on the VMT Site would result in potential noise impacts on off-site uses. Existing receptors in the vicinity, as discussed in Section 3.10.4, would be subject to short-term noise generated by construction equipment and activities on the VMT Site.

Construction would be performed in phases, each of which has its own fleet of equipment and, consequently, its own noise generation. These phases could change the intensity of the noise generated on the VMT Site and, therefore, the noise levels surrounding the site as construction progresses. However, similarities in the dominant noise sources and patterns of operation allow construction-related noise ranges to be categorized by work phase. Table 3.10-5 lists construction equipment noise levels for the types of equipment likely to be used on this project. The noise levels are based on a distance of 50 feet between the equipment and a noise receptor (actual distances between on-site construction noise sources and residential receptors would be greater, as discussed below and reflected in Table 3.10-6), and are derived directly from RCNM. Appendix K-1 presents the calculation sheets for each activity and location.

According to the FHWA (RCNM), typical noise levels would range up to 95 dBA L_{max} at 50 feet during the noisiest construction phases. The site-preparation phase, which includes pile driving for the installation of piles to support pier and berth improvements, and the demolition phase, which includes impact hammers to break concrete, would generate the highest noise levels; noise emissions levels for these two pieces of equipment are identified in Table 3.10-5. Earth-moving equipment includes excavating machinery such as backhoes, bulldozers and front loaders. Compacting equipment includes compactors, scrapers, and graders. Typical operating cycles for these types of construction equipment may involve 1 or 2 minutes of full-power operation followed by 3 or 4 minutes at lower power settings. RCNM accounts for these cycles with a usage factor for each type of equipment, which are all well below 100%. The usage factor is applied to arrive at average noise levels which would be experienced during each phase of the VMT construction process.

Table 3.10-5
Typical Construction Noise Levels

Type of Equipment	Acoustical Usage Factor (%)	L_{max} at 50 feet (dBA)
All Other Equipment > 5 HP	50	85
Backhoe	40	80
Clam Shovel (dropping)	20	93
Compactor (ground)	20	80
Compressor (air)	40	80
Concrete Mixer Truck	40	85
Concrete Pump Truck	20	82
Concrete Saw	20	90
Crane	16	85
Dozer	40	85
Drum Mixer	50	80
Dump Truck	40	84
Excavator	40	85
Flat Bed Truck	40	84
Front End Loader	40	80
Generator	50	82
Grapple (on backhoe)	40	85

Table 3.10-5
Typical Construction Noise Levels

Type of Equipment	Acoustical Usage Factor (%)	L_{max} at 50 feet (dBA)
Impact Pile Driver	20	95
Jackhammer	20	85
Man Lift	20	85
Mounted Impact Hammer (hoe ram)	20	90
Pickup Truck	40	55
Pneumatic Tools	50	85
Pumps	50	77
Roller	20	85
Tractor	40	84
Vacuum Street Sweeper	10	80
Welder/Torch	40	73

Source: FHWA 2008.

Table 3.10-6 presents the predicted maximum noise levels at the nearest noise-sensitive locations (i.e., NSL1, NSL2, and NSL3) for a range of expected construction activities. Appendix K-1 presents the calculation sheets for each VMT construction phase activity at each sensitive receptor location.

Table 3.10-6
Predicted Maximum VMT Construction Noise Levels at Closest Sensitive Receptors

Construction Activity	Type of Equipment	Predicted dBA L_{max} Levels		
		NSL1	*NSL2*	*NSL3*
Demolition	Front End Loader	47	52	56
	Excavator (x2)	52	57	61
	Crane	49	54	57
	Mounted Impact Hammer (hoe ram)	58	64	67
	Grapple (on backhoe)	55	60	64
	Dump Truck	45	50	53
Earthwork and Excavation	Backhoe	56	60	55
	Excavator (x2)	62	67	61
	Front End Loader	57	62	56
	Roller	57	63	57
	Tractor	62	67	61
	Vacuum Street Sweeper	60	64	59
Piling	Impact Pile Driver	72	75	74
Concrete and Steel Works	Concrete Mixer Truck	57	61	56
	Concrete Pump Truck	60	64	59
	Concrete Saw	68	72	67
	Crane	59	63	58

Table 3.10-6
Predicted Maximum VMT Construction Noise Levels at Closest Sensitive Receptors

Construction Activity	Type of Equipment	Predicted dBA L_{max} Levels		
		NSL1	*NSL2*	*NSL3*
	Drum Mixer	59	62	57
	Flat Bed Truck	53	56	51
	Pneumatic Tools	64	67	62
	Welder/Torch	53	56	51

The closest noise-sensitive land uses to the VMT construction areas are NSL1, NSL2, and NSL3 which adjoin the project site. The closest residences on these properties are located between 360 and 1,427 feet from the VMT construction activity locations where the activities listed in Table 3.10-6 would occur. At these distances, maximum noise levels from construction activities at the building site could range from 47 dBA up to 75 dBA L_{max} at the property line of the nearest sensitive locations.

Since the City has not established a numeric limit for construction noise exposure, VMT construction would not exceed established standards, and impacts would be **less than significant**.

Operational Impacts

Operation of the VMT project component would be divided into the following three distinct activities or functional areas:

- Bulk terminal operations,
- Rail activity, and
- Additional vehicular traffic on the public road network.

Each of the above functions is evaluated independently for noise generation, followed by an assessment of all the functions combined.

VMT would construct a bulk aggregate import and distribution facility on the existing terminal footprint. The general transportation method would be to unload dry bulk cargo from vessels, temporarily store the cargo, and reclaim it from storage to cargo trucks and railcars for local and regional distribution. The proposed project would also allow for reloading cargo to barges to enable VMT to engage in short sea shipping initiatives using inland and intercoastal waterways.

During initial project stages, trucks would be loaded using front-end loaders to load cargo directly in the truck trailers. Transport of materials using rail is also planned to take place from the VMT facility based upon commercial demands of potential clients. Railcars would be loaded via a surge bin to improve operational efficiency and reduce the use of wheel loaders. Wheel loaders would then be used only in the stockyard to reclaim the cargo to receiving hoppers that feed conveyors leading to the rail loading stations and to maintain the stockpiles. Truck load-out is assumed to remain mobile during all operations.

Bulk Terminal Operations

The VMT project component would primarily be expected to receive and discharge self-unloading vessels in loads of up to approximately 40,000 metric tons at the terminal. It is assumed that there would be a 5–6 day loading/unloading time per vessel. Unloading from smaller deep water draft vessels to other forms of transportation would occur, on average, in one day or less. During the time that vessels are moored at the facility, 24-hour operations would be conducted for offloading or loading of cargo. Refer to Figure 3.10-4 for an illustration of the proposed VMT mobile equipment (plant) operations.

AWN Consulting used a proprietary noise prediction model by Brüel & Kjær to assess the noise generation associated with each major piece of equipment and activity including wheeled loaders, loading hoppers and trucks, vessel engines, and transloading activity. See Appendix K-1 for a detailed description of equipment, mobile plant operating assumptions (i.e., operating pattern for the wheeled loaders and moveable hoppers), and noise emissions levels for each piece of equipment. Based on the assumptions of equipment, operating patterns, and facility capacity, noise model results for VMT operations are presented below in Table 3.10-7.

Table 3.10-7
Noise Levels due to VMT Operations

Location	VMT Operation					
	Truck Only			*Truck and Rail*		
	L_{day}	L_{night}	L_{dn}	L_{day}	L_{night}	L_{dn}
NSL1	38	38	45	39	39	46
NSL2	43	43	49	48	48	54
NSL3	35	35	41	41	41	47
NSL4	38	38	45	44	44	50
NSL5	33	33	39	36	36	43
NSL6	25	25	31	28	28	35
NSL7	21	21	27	25	25	32
NSL8	41	41	48	44	44	51
NSL9	15	15	21	20	20	27
NSL10	29	29	35	32	32	39

Note that in Table 3.10-7, operations were modeled with the following scenarios:

- Truck only – i.e., all material leaves site by truck.
- Truck and Rail – a mixed mode operation where material leaves site by truck and rail.

As described in Chapter 2, Project Description, the maximum train size would be 77 cars; however, this analysis evaluates the impacts of 100 car trains, which is a conservative estimate. The assessment also assumes that all transportation options would be used in a single 24-hour period to present the worst case. As more transportation modes are brought on line, the volume handled by each (and therefore noise generated by the number of transloading trips for each mode) would decrease. For instance, when trucks alone are used, a maximum of 2,000 truckloads per month would leave the site; however, with the anticipated full utilization of both truck and rail, truck trips would be reduced by approximately 50% and would be further reduced with the introduction of barge operations. This figure for theoretical maximum VMT-only truck movements would again be further reduced with operation of the Orcem plant as noted in Chapter 2, Project Description, as the total maximum throughput volume for the VMT Terminal would remain limited to 160,000 metric tons per month.

<u>Truck Trips on Roadway Network (Off-Site)</u>

The operational phase of the VMT project component would generate additional heavy truck trips on the local road network. The actual maximum monthly VMT truck volume would be limited to 2,000 truck trips, and this figure has been used for modeling the noise impact of truck activities. Completion of the rail improvements and operation of the truck and rail mode may reduce this monthly maximum by up to 50%, or 1,000 truck trips. Again, further reductions in truck movements may result from introduction of barge movements. However, for the purposes of this assessment, it is conservatively assumed that the maximum daily number of VMT truck load trips to and from the site would be 87 for all modes and phases of operation (83 outbound loads, plus 4 inbound loads). This equates to approximately four truckloads per hour from the site, or eight trips (i.e., four trucks in/four trucks out) during each hour of a 24-hour day.

All trucks would access the site from Derr Avenue coming from Lemon Street. Southbound trucks would travel along State Route 29 (SR-29) to Interstate 80 (I-80), while northbound and eastbound trucks would travel along Lemon Street west of SR-29 before proceeding to either northbound I-80 or eastbound I-780; the split in traffic between northbound and southbound traffic is assumed to be 50/50.

Based on the conservative assumption that the maximum allowable 2,000 trucks per month would enter or leave the site and assuming an average truck speed of 20 miles per hour (mph) on all local routes, the predicted noise levels from truck trips serving the VMT Site are presented in Table

3.10-8. Please note that some receivers would not be influenced by truck trips on the local road network as they are located some distance from the road network.

Table 3.10-8
Noise Levels Due to Off-Site Truck Trips Associated with VMT Operations

Location	VMT Operations		
	L_{day}	L_{night}	L_{dn}
NSL1	—	—	—
NSL2	—	—	—
NSL3	31	31	37
NSL4	32	32	38
NSL5	43	43	49
NSL6	55	55	61
NSL7	54	54	61
NSL8	—	—	—
NSL9	55	55	61
NSL10	—	—	—

Rail Activity

The existing railway serving the VMT Site would be used by VMT to transport materials. The volume of material to be transported by train per month would depend on the phase of operation; however, regardless of the monthly volume throughput, a maximum equivalent of three 100-car trains could access the site per week. Please note that this assessment is based on this worst-case scenario. It is assumed that a single 100-car train movement to and from the site during any single 24-hour period is representative of the worst-case scenario for all phases and modes. It should be noted that the actual train movement frequency is anticipated to be three times per week, but in order to model the noise from the train movement, we include it in the same 24-hour period as other noise that would be occurring. In addition, as described previously, the project would utilize up to 77-car trains; therefore, the analysis of 100-car trains provides a conservative estimate.

Export of materials by rail from the VMT Site would involve the following factors:

- Arriving trains, either laden or unladen, would be parked in the proposed rail yard area to be located on the existing tracks outside the site boundary. It is expected that trains would arrive with 100 railcars.
- The railcars would then be shunted from this yard area to the rail transloading area on the VMT Site where there is capacity for 16 railcars; two train movements (or switches) per

hour between the rail transloading area and the yard area are assumed (i.e., one movement in and one movement out).

- Locomotives would not idle within the yard while waiting to shunt railcars.
- A low noise emission genset switcher is proposed which has a noise emission level 10 dB below a standard freight locomotive.
- Product export would be transloaded to or from the railcars using a surge bin system that has been included in the assessment of bulk terminal operations.
- Loaded or unloaded railcars would be shunted back to the rail yard area outside the site boundary to await collection by the locomotive.

Figure 3.10-5 illustrates the locations for components or activities described above.

Rail activity noise generation was assessed using the Chicago Rail Efficiency and Transportation Efficiency (CREATE) railroad noise modeling spreadsheet which is based on the FTA procedures for the assessment of transit noise and vibration. Please refer to Appendix K-1 for the complete assumptions and inputs to the CREATE spreadsheet. Table 3.10-9 provides the results of the modeling, presented as noise levels for each component rail activity, at each of the vicinity sensitive receptors.

Table 3.10-9
Individual Component Noise Levels Due to VMT Rail Activity

	Rail Yard Activity (including layover)		Shunting Between Yard and Site		Trains Arriving/Leaving	
	Distance to Activity (feet)	*L_{eq}*	*Distance to Activity (feet)*	*L_{eq}*	*Distance to Activity (feet)*	*L_{eq}*
NSL1	2,920	28	2,015	36	3,100	44
NSL2	2,000	28	1,080	35	2,660	40
NSL3	1,455	36	690	43	2,065	47
NSL4	1,280	37	655	43	1,935	47
NSL5	460	48	460	45	790	53
NSL6	575	46	575	44	575	55
NSL7	1,600	35	1,600	37	1,600	48
NSL8	2,100	32	2,100	35	2,100	46
NSL9	1,600	35	1,600	37	1,600	48
NSL10	1,080	39	790	42	240	61

The noise levels presented in Table 3.10-9 are representative of the worst-case noise level that may occur over an hour-long period. In order to present the results in terms of L_{day}, L_{night}, and L_{dn} per the other impact assessments, noise levels have been calculated based on the following assumptions:

- A 77-car train is loaded over the course of one 15-hour shift.
- Two switches (i.e., a small grouping of rail cars moved by a switch engine) per hour are required between the rail yard outside the site boundary and the rail transloading area which has been modeled assuming that railcar loading occurs over the course of 15 hours.
- When switches are not occurring there would be no idling locomotive permitted in the rail yard area.
- A worst-case of one train movement during the daytime (i.e., 07:00 a.m. to 6:00 p.m.) (hours that the California Northern Railroad operates).

Table 3.10-10 presents the calculated noise levels at each vicinity noise-sensitive location based on the above assumptions. Rail movement would be limited during the hours of 9:00 a.m. and 4:00 p.m., as specified in MM-3.12-2 in Section 3.12, Transportation and Traffic. Although this mitigation is not required to reduce a significant noise impact due to rail activity, it would help to reduce annoyance from rail noise during evening hours.

Table 3.10-10
Total Noise Levels due to VMT Rail Activity

Location	VMT Operations		
	L_{day}	L_{night}	L_{dn}
NSL1	38	38	43
NSL2	36	36	41
NSL3	44	43	49
NSL4	44	43	49
NSL5	50	49	55
NSL6	49	49	54
NSL7	40	41	46
NSL8	38	39	44
NSL9	40	41	46
NSL10	50	52	57

Note that the noise from locomotive warning horns was not included in this assessment as it is considered to be a sound made in the interest of public safety. Such sounds are considered to be exempt from noise impact assessments per the guidance contained within Chapter 16 of the City's Municipal Code regarding exceptions to the City's noise performance standards (City of Vallejo 2014).

Operations Equipment Staging Area

A small metal-framed equipment storage and maintenance building of approximately 6,000 square feet is proposed to be located on the western side of the VMT Site (refer to Appendix K-1 for illustration of location). The internal port access road would be extended south to allow access to this building by equipment used at the wharf. The area between the maintenance building and the southern Orcem Site boundary would be used to park equipment when not in use at the wharf. The equipment storage area and maintenance building would be located approximately 200 feet west of the nearest residential land use boundary. These facilities would not be operated between the hours of 12:00 a.m. and 6:00 a.m.

The noise impact of this equipment staging area would be limited to the noise generated by site equipment starting and warming up for 5 minutes in the morning and then returning to park in the evening. This activity is likely to result in noise levels at the nearest noise sensitive locations of NSL1 and NSL2, of 33 dB L_{eq},1-hour and 38 dB L_{eq},1-hour respectively. These noise levels are well below the existing ambient noise levels measured in this area.

Noise from Combined Operations

To assess the overall noise impact of the VMT operations, each noise source discussed in the previous sections must be added logarithmically to determine the combined noise impact. The following factors were considered in calculating the combined noise effects of all VMT operations:

- Vessel loading/unloading activity would occur continuously, i.e., 24 hours a day/7 days a week, when a vessel is moored.
- Truck movements on the local road network would increase gradually as the facilities' production increases. The results presented here are representative of the worst-case scenarios at peak production.
- VMT activity includes truck and train activity during operations.

This represents the worst-case scenario for production. Table 3.10-11 presents the calculated results for total operations for the VMT project component, based on the assumptions described above.

Table 3.10-11
Noise Levels from All VMT Operations Activity (Combined)

NSL	Phase	VMT Bulk Terminal dB L_{dn}	VMT Rail dB L_{dn}	VMT Trucks dB L_{dn}	VMT Total Noise dB L_{dn}	Existing Baseline Level dB L_{dn}	Total Noise Level dB L_{dn}	Increase in Noise Level, dB L_{dn}
1	1	46	43	n/a	48	55	56	1
	2	47	43	n/a	49		56	1
2	1	54	41	n/a	54	53	57	4

Table 3.10-11
Noise Levels from All VMT Operations Activity (Combined)

NSL	Phase	VMT Bulk Terminal dB L_{dn}	VMT Rail dB L_{dn}	VMT Trucks dB L_{dn}	VMT Total Noise dB L_{dn}	Existing Baseline Level dB L_{dn}	Total Noise Level dB L_{dn}	Increase in Noise Level, dB L_{dn}
	2	54	41	n/a	54		57	4
3	1	47	49	37	51	52	55	3
	2	50	49	37	53		55	3
4	1	50	49	38	53	52	55	3
	2	52	49	38	54		56	4
5	1	43	55	49	56	52	58	6
	2	47	55	49	57		58	6
6	1	35	54	61	62	57	63	6
	2	39	54	61	62		63	6
7	1	32	46	61	61	63	65	2
	2	35	46	61	61		65	2
8	1	51	44	n/a	52	54	56	2
	2	54	44	n/a	54		57	3
9	1	27	46	61	61	63	65	2
	2	31	46	61	61		65	2
10	1	39	57	n/a	57	52	58	6
	2	42	57	n/a	57		58	6

Using the significance criteria discussed in Section 3.10.3 (A and C), Table 3.10-12 summarizes the significance determinations for the total VMT operational project-related noise level increases.

Table 3.10-12
Significance Determination for Noise Levels from All VMT Operations Activity (Combined)

NSL	Predicted Increase in Noise	Comment	Mitigation Required
1	1 dB	This is a less-than-significant permanent increase in the noise level.	No
2	4 dB	This is a less-than-significant permanent increase in the noise level.	No
3	3 dB	This is a less-than-significant permanent increase in the noise level.	No
4	3 – 4 dB	This is a less-than-significant permanent increase in the noise level.	No
5	6 dB	This is a significant permanent increase in the noise level.	Yes
6	6 dB	This is a less-than-significant permanent increase in the noise level.	No
7	2 dB	This is a less-than-significant permanent increase in the noise level.	No
8	2 – 3 dB	This is a less-than-significant permanent increase in the noise level.	No
9	2 dB	This is a less-than-significant permanent increase in the noise level.	No
10	6 dB	This is a significant permanent increase in the noise level.	Yes

Based on the information in Table 3.10-12, the increase in noise levels would exceed established polices and standards and therefore the impacts would be **significant** at the following two locations (**Impact 3.10-1**):

- NSL5 (Colt Court Residences)
- NSL10 (3rd Street Residence)

Mitigation measures to reduce this impact are provided in Section 3.10.5.

Orcem Analysis

Construction Impacts

Construction of the Orcem Plant would involve both indirect off-site noise impacts (increased traffic on local streets associated with the transport of workers, equipment, and materials to and from the project site), and noise from on-site equipment and activity. Refer to Table 3.10-5 for the noise level produced from typical construction activities.

The transport of workers and construction equipment and materials to the project site would incrementally increase noise levels on access roads leading to the Orcem Site. During the worst-case periods of construction, it is estimated that there would be up to five deliveries per day to the site using heavy trucks. Since workers and construction equipment would use existing routes, noise from slow-moving passing trucks (75 dBA L_{max} at 50 feet) would be similar to existing vehicle generated noise in the project area. For this reason, short-term intermittent noise from trucks would be minor when averaged over a longer time period. In addition, according to the City's noise ordinance, noise from temporary transportation of goods or people to and from a given premises is exempt from the City's noise standards. Therefore, short-term construction-related noise associated with worker and equipment transport to the proposed project site would not result in a significant impact on receptors along the access routes leading to the Orcem Site.

Noise generated during demolition of the site improvements and the structures, excavation, grading, site preparation, and building erection on the Orcem Site would result in potential noise impacts on off-site uses. Existing receptors in the vicinity, as discussed in Section 3.10.4, would be subject to short-term noise generated by construction equipment and activities on the project site when construction occurs.

According to the FHWA (RCNM), typical noise levels range up to 95 dBA L_{max} at 50 feet during the noisiest construction phases. The demolition phase, which includes impact hammers to break concrete, would generate the highest noise levels. Earth-moving equipment includes excavating machinery such as backhoes, bulldozers, front loaders, compactors, scrapers, and graders. Typical operating cycles for these types of construction equipment may involve 1 or 2 minutes of full-power operation, followed by 3 or 4 minutes at lower power settings. RCNM accounts for these cycles with a usage factor for each type of equipment, which are all well below 100%. The usage factor is applied to arrive at average noise levels which would be experienced during each phase of the Orcem construction process.

Table 3.10-13 presents the predicted maximum noise levels at the nearest noise-sensitive locations (i.e., NSL1, NSL2, and NSL3) for a range of expected construction activities. Appendix K-2 presents the calculation sheets for each Orcem construction phase activity at each sensitive receptor location.

Table 3.10-13
Predicted Maximum Orcem Construction Noise Levels at Closest Sensitive Receptors

Construction Activity	Type of Equipment	Predicted dBA L_{max} Levels		
		NSL1	*NSL2*	*NSL3*
Demolition	Front End Loader	52	61	57
	Excavator (x2)	57	66	62
	Crane	53	63	59
	Mounted Impact Hammer (hoe ram)	63	72	69
	Grapple (on backhoe)	60	69	65
	Dump Truck	49	58	55
Earthwork and Excavation	Backhoe	50	60	56
	Excavator (x2)	57	66	62
	Front End Loader	52	61	57
	Roller	53	63	59
	Tractor	57	66	62
	Vacuum Street Sweeper	54	64	60
Concrete and Steel Works	Concrete Mixer Truck	52	61	52
	Concrete Pump Truck	55	64	54
	Concrete Saw	63	72	62
	Crane	54	63	53
	Drum Mixer	53	63	53
	Flat Bed Truck	48	57	47
	Pneumatic Tools	59	68	58
	Welder/Torch	47	57	47

The closest noise sensitive land uses to the project construction areas are NSL1, NSL2, and NSL3 which adjoin the project site. The closest sensitive receptors within these properties are located between 400 and 1,475 feet from the Orcem construction activity listed in Table 3.10-13. At these distances, maximum noise levels from construction activities at the building site could range from 45 dBA up to 75dBA L_{max} at the property line of the nearest sensitive locations.

Since the City has not established a numeric limit for construction noise exposure, Orcem project construction would not exceed established standards, and impacts would be **less than significant**. Note that potential impacts associated with construction activities are addressed under 3.10.4.D.

Operational Impacts

The Orcem operations would include four distinct types of activities with the potential for generation of noise and/or vibration. The four types of activities include:

- Fixed and mobile plant noise emissions,
- Vessel unloading activity,
- Rail activity, and
- Additional vehicular traffic on the public road network.

Each of these activities is assessed individually, and then the combined effects of all activities occurring simultaneously are evaluated.

Orcem Fixed and Mobile Plant Noise Emissions

The Orcem production process would involve four key elements with regard to noise generation as follows:

1. Transport to and storage of raw materials on the Orcem Site, including granulated blast furnace slag (GBFS), cement, and other additives.
2. Transport of raw material from storage to the process plant.
3. Drying, grinding, and blending GBFS granulate and other raw materials and additives.
4. Transport of finished ground granulated blast furnace slag (GGBFS) and cements to markets.

The Orcem project component is proposed to be implemented in the following two phases:

- Phase 1:-up to a production rate of 500,000 metric tons per year.
- Phase 2: Above 500,000 metric tons and up to a maximum production rate of 900,000 metric tons per year.

In addition, the facility would be capable of operating in several modes as follows:

- Mode 1: GBFS production only.
- Mode 2: Portland cement production only.
- Mode 3: Both GBFS and portland cement production in independent production runs.

The mode of operation would have an impact on the volume of vehicular movements on the local road network as certain modes require the importation of raw material via the road network in addition to the importation of material by vessel. In addition, Modes 2 and 3 would require a clinker storage building and associated mechanical plant to be constructed. This building is not required for Mode 1 operation.

The drying, grinding, and blending of processed raw materials to form the finished product would involve the use of a variety of components within the fixed plant on the Orcem Site. In addition to the fixed plant noise sources there would also be mobile equipment on the Orcem Site. The mobile equipment would be a single diesel-powered wheeled loader with a bucket capacity of approximately 7 tons. The loader would transfer raw material to the mill feed hopper. Figure 3.10-6 illustrates where the loader would operate. See Appendix K-2 for a detailed description of equipment, fixed and mobile plant operating assumptions, and noise emissions levels for each piece of equipment.

AWN Consulting used a proprietary noise prediction model by Brüel & Kjær to assess the noise generation associated with each major piece of equipment and activity. Based on the assumptions of equipment, operating patterns, and facility capacity, noise model results for the Orcem fixed and mobile operations are presented below in Table 3.10-14 (Phase 1) and Table 3.10-15 (Phase 2).

Table 3.10-14
Noise Levels due to Orcem Fixed and Mobile Plant Operations – Phase 1

Location	Phase 1								
	Mode 1			*Mode 2*			*Mode 3*		
	L_{day}	L_{night}	L_{dn}	L_{day}	L_{night}	L_{dn}	L_{day}	L_{night}	L_{dn}
NSL1	39	47	53	43	47	53	43	47	53
NSL2	48	57	62	54	57	62	54	57	62
NSL3	46	55	60	48	54	60	48	54	60
NSL4	45	54	59	49	54	59	49	54	59
NSL5	32	41	46	37	41	47	37	41	47
NSL6	28	37	42	34	37	43	34	37	43
NSL7	28	37	42	34	37	43	34	37	43
NSL8	38	47	53	44	47	53	44	47	53
NSL9	24	33	38	30	33	39	30	33	39
NSL10	33	41	47	36	42	47	36	42	47

Table 3.10-15
Noise Levels due to Orcem Fixed and Mobile Plant Operations – Phase 2

Location	Phase 2								
	Mode 1			*Mode 2*			*Mode 3*		
	L_{day}	L_{night}	L_{dn}	L_{day}	L_{night}	L_{dn}	L_{day}	L_{night}	L_{dn}
NSL1	44	48	54	45	48	54	45	48	54
NSL2	56	60	66	59	60	66	59	60	66
NSL3	47	55	60	50	55	60	50	55	60
NSL4	48	54	60	51	54	60	51	54	60
NSL5	35	42	47	39	42	47	39	42	47
NSL6	32	38	43	35	38	44	35	38	44
NSL7	34	39	44	37	39	45	37	39	45
NSL8	40	47	53	44	47	53	44	47	53
NSL9	32	35	41	34	36	41	34	36	41
NSL10	35	42	41	38	42	48	38	42	48

Orcem Vessel Unloading

The principal raw materials to be processed by the Orcem Plant would be GBFS and clinker, which would arrive at the proposed VMT wharf via either geared vessels or self-discharged vessels. The raw materials would be transported from the VMT wharf to the Orcem Site via a closed conveyor system to be developed as part of the Orcem Phase 1 improvements. The noise impact on the nearest sensitive locations has been evaluated using a proprietary noise prediction model by Brüel & Kjær, based on the assumption that the unloading activity would occur continuously (i.e., 24 hours per day) while a vessel is at dock. The detailed assumptions and inputs to the model for assessment of the vessel unloading activity may be found in Appendix K-2. Results of the noise model evaluation are presented in Table 3.10-16.

Table 3.10-16
Noise Levels due to Orcem Vessel Unloading Activity

Location	Phases 1 and 2 All Modes		
	L_{day}	L_{night}	L_{dn}
NSL1	39	40	46
NSL2	43	44	50
NSL3	33	34	40
NSL4	37	38	44
NSL5	32	32	39
NSL6	25	26	32
NSL7	22	22	28
NSL8	42	42	49
NSL9	22	23	29

Table 3.10-16
Noise Levels due to Orcem Vessel Unloading Activity

Location	Phases 1 and 2 All Modes		
	L_{day}	L_{night}	L_{dn}
NSL10	32	33	39

Orcem Truck Trips on Roadway Network (Off-Site)

The operational phase of the Orcem project component would generate additional heavy truck trips on the local road network. The number of truck trips serving the site therefore depends on the mode and phase of operation. Average hourly truck round-trips (i.e., trucks in and trucks out) would range from 6 to 16 during the day (7:00 a.m. to 10:00 p.m.) and from 10 to 22 overnight (10:00 p.m. to 7:00 a.m.) for three different modes in Phase 1 and Phase 2. These traffic volumes are considered worst-case as they assume that bulk deliveries by road would occur simultaneously to the export of finished product. However, it is probable that the bulk deliveries to the site would be much less frequent over the course of a full year's production. The haul route to and from the site would be via Lemon Street to the junction with Sonoma Boulevard, at which point the traffic would divert to either:

- Route 1 – Lemon Street, turning right onto I-780 and then north on I-80;
- Route 2 – Lemon Street, turning right onto I-780;
- Route 3 – Lemon Street, turning right onto Sonoma Boulevard; or
- Route 4 – Lemon Street, turning left onto Sonoma Boulevard.

Based on these assumptions, and also assuming an average truck speed of 20 mph on all local routes, the predicted worst-case noise levels from truck movements serving the Orcem Site are presented in Tables 3.10-17 and 3.10-18. Note that some receivers would not be influenced by truck trips on the local road network as they are located some distance from the road network.

Table 3.10-17
Noise Levels due to Truck Movements Associated with Orcem Operations – Phase 1

Location	Phase 1								
	Mode 1			*Mode 2*			*Mode 3*		
	L_{day}	L_{night}	L_{dn}	L_{day}	L_{night}	L_{dn}	L_{day}	L_{night}	L_{dn}
NSL1	—	—	—	—	—	—	—	—	—
NSL2	32	34	40	34	36	42	33	34	41
NSL3	29	32	38	32	33	39	31	32	38
NSL4	31	33	39	33	35	41	32	33	40
NSL5	42	44	50	44	45	51	43	44	50

Table 3.10-17
Noise Levels due to Truck Movements Associated with Orcem Operations – Phase 1

Location	Phase 1								
	Mode 1			*Mode 2*			*Mode 3*		
	L_{day}	L_{night}	L_{dn}	L_{day}	L_{night}	L_{dn}	L_{day}	L_{night}	L_{dn}
NSL6	54	56	62	56	57	64	55	56	62
NSL7	48	51	57	51	53	59	51	51	58
NSL8	—	—	—	—	—	—	—	—	—
NSL9	52	54	60	54	55	61	52	54	60
NSL10	—	—	—	—	—	—	—	—	—

Table 3.10-18
Noise Levels due to Truck Movements Associated with Orcem Operations – Phase 2

Location	Phase 2								
	Mode 1			*Mode 2*			*Mode 3*		
	L_{day}	L_{night}	L_{dn}	L_{day}	L_{night}	L_{dn}	L_{day}	L_{night}	L_{dn}
NSL1	—	—	—	—	—	—	—	—	—
NSL2	34	36	42	36	38	44	35	36	43
NSL3	32	33	39	34	35	41	32	34	40
NSL4	33	35	41	35	37	43	34	35	42
NSL5	44	45	51	46	47	53	45	46	52
NSL6	56	57	64	58	59	66	57	58	64
NSL7	51	53	59	54	55	61	53	54	60
NSL8	—	—	—	—	—	—	—	—	—
NSL9	54	55	61	55	57	63	54	55	61
NSL10	—	—	—	—	—	—	—	—	—

Orcem Rail Activity

The existing railway serving the site would be used by Orcem to import raw materials and export finished product. The volume of material to be transported by train per month would depend on the phase of operation; however, regardless of the monthly volume throughput a maximum of one train movement to and from the site during any single 24-hour period (combined for Orcem and VMT) is representative of the worst-case for all phases and modes.

Train transport of materials by rail to/from the Orcem facility would involve the following factors:

- Arriving trains, either laden or unladen, would be parked in the proposed rail yard area to be located on the existing tracks outside the site boundary. It is expected that trains would arrive with 77 railcars.

- The railcars would then be shunted from this yard area to the rail transloading area on the VMT Site where there is capacity for 16 railcars; up to two train movements per hour between the rail transloading area and the yard area are assumed (i.e., one movement in and one movement out).
- Locomotive would not idle within the yard while waiting to shunt railcars.
- A low noise emission genset switcher is proposed which has a noise emission level 10 dB below a standard freight locomotive.
- Product import/export would be transloaded to or from the railcars using sealed trucks which pump the product to or from the railcar.
- Loaded or unloaded railcars would be shunted back to the rail yard area outside the site boundary to await collection by the locomotive.
- It is expected to require 15 hours to load or unload a train.

Figure 3.10-7 illustrates the locations for components or activities described above.

Rail activity noise generation was assessed using the CREATE railroad noise modeling spreadsheet which is based on the FTA procedures for the assessment of transit noise and vibration. Please refer to Appendix K-2 for the complete assumptions and inputs to the CREATE spreadsheet.

Table 3.10-19 provides the results of the modeling, presented as noise levels for each component rail activity, at each of the vicinity sensitive receptors.

Table 3.10-19
Individual Component Noise Levels due to Orcem Rail Activity

Location	Rail Yard Activity (including layover)		Shunting Between Yard and Site		Trains Arriving/Leaving	
	Distance to Activity (feet)	*L_{eq}*	*Distance to Activity (feet)*	*L_{eq}*	*Distance to Activity (feet)*	*L_{eq}*
NSL1	2,920	28	2,015	43	3,100	38
NSL2	2,000	32	1,080	47	2,660	39
NSL3	1,455	36	690	50	2,065	41
NSL4	1,280	37	655	50	1,935	41
NSL5	460	48	460	52	790	47
NSL6	575	46	575	51	575	49
NSL7	1,600	35	1,600	44	1,600	42
NSL8	2,100	32	2,100	43	2,100	41
NSL9	1,600	35	1,600	44	1,600	42
NSL10	1,080	39	790	49	240	55

The noise levels presented in Table 3.10-19 are representative of the worst-case noise level that may occur over an hour-long period for the average exposure within the NSL sites listed. In addition to the rail activity noise, it is also necessary to consider the noise from truck movements to and from the rail transloading area that would occur when loading or unloading a train. Based on the volume of material to be transported by rail and the 15-hour loading period, a total of 66 truckloads would be required between the Orcem facility and the train loading area.

In order to present the results in terms of L_{day}, L_{night} and L_{dn} per the other impact assessments, noise levels have been calculated based on the following assumptions:

- A 77-car train is loaded over the course of 15 hours during the day.
- Two switches per hour are required between the rail yard outside the site boundary and the rail transloading area.
- When switches are not occurring, there would be no idling locomotive permitted in the rail yard area.
- A worst-case of two train movements during the daytime (i.e., 07:00 hours to 22:00 hours), representing an arrival and departure, with each 77-car train is assumed to have 1 locomotive. Following the preparation of the Draft EIR, the California Northern Railroad confirmed the proposed project will only be served by the normal operating hours of the railroad from 7:00 a.m. to 6:00 p.m. Monday to Friday. Thus only one train movement per day would be possible. However, this assumption was not changed as removal of a single overnight train event would not appreciably alter noise levels as rail-related noise is dominated by switching operations in the loading and unloading process.

Table 3.10-20 presents the calculated noise levels at each vicinity noise-sensitive location based on the above assumptions. Rail arrivals and departures would be limited to the hours of 9:00 a.m. and 4:00 p.m., as specified in MM-3.12-2 in Section 3.12, Transportation and Traffic. Although this mitigation is not required to reduce a significant noise impact due to rail activity, it would help to reduce annoyance from rail noise during evening hours.

Table 3.10-20
Total Noise Levels Due to Orcem Rail Activity

Location	Calculated Noise Level, dB		
	L_{day}	L_{night}	L_{dn}
NSL1	41	0	39
NSL2	46	0	44
NSL3	48	0	46
NSL4	48	0	46
NSL5	51	0	49

Table 3.10-20
Total Noise Levels Due to Orcem Rail Activity

Location	Calculated Noise Level, dB		
	L_{day}	L_{night}	L_{dn}
NSL6	50	0	48
NSL7	43	0	41
NSL8	41	0	39
NSL9	43	0	41
NSL10	50	0	47

Note that the noise from locomotive warning horns has not been included in this assessment as it is considered to be a sound made in the interest of public safety. Such sounds are exempt from noise impact assessments as per the guidance contained within Chapter 16 of the City of Vallejo's Municipal Code regarding exceptions to the City's noise performance standards.

Noise from Combined Orcem Operations

To assess the overall noise impact of the Orcem operations, each noise source discussed in the previous sections must be added logarithmically to determine the combined noise impact. The following factors were considered in calculating the combined noise effects of all Orcem operations:

- The Orcem production facility would operate continuously for 24 hours a day in accordance with the hours of operation discussed in Chapter 2.0, Project Description.
- Truck movements on the local road network would increase gradually as the facility's production increases. The results presented here represent the worst-case scenarios at peak production for Phases 1 and 2 respectively.
- During Phase 1, up to 13 vessels per year are expected to serve the Orcem Site, increasing to 19 at peak production in Phase 2. When docked, it is expected to take approximately 3 days to unload using a conveyor system.
- The number of trains per year serving the Orcem facility would range from up to 36 trains in Phase 1 to a maximum of 100 trains per annum in Phase 2; however, in any given 24-hour period, a single train would be able to arrive, be loaded or unloaded, and depart. Please note that there would be no rail activity if the site operates under Mode 2.

In order to present as realistic an assessment as possible the following three modeling scenarios have been assessed for both phases of the Orcem project component:

A. Scenario A – noise impact of Orcem production and truck movements on the local road network. This represents the proposed normal operation of the Orcem Plant when there would be no vessel unloading or rail activity.

B. Scenario B (including mitigation) – noise impact of Orcem production and truck movements, plus the temporary noise impact of vessel unloading to the Orcem Site.

C. Scenario C (including mitigation) – noise impact of Orcem production and truck movements, plus the temporary noise impact of vessel unloading and rail activity to the Orcem Site.

Of the three modeling scenarios, Scenario A represents the proposed normal day-to-day operation of the Orcem facility covering production and product transport off site using truck movements on the local road network. Scenarios B and C consider the addition of vessel unloading activity and rail loading activity respectively. Scenario C is the worst-case in which the facility would be in full production, a vessel would be unloaded and product would be exported off site by both truck and rail.

Orcem Combined Noise – Scenario A (Orcem Plant Operation Plus Truck Noise Only)

Scenario A represents normal daily operation of the Orcem Plant, when neither vessel nor rail loading activities would occur. Table 3.10-21 presents the results of the combined Orcem noise generation levels at vicinity noise-sensitive receptors for Scenario A.

Table 3.10-21
Noise Levels from All Orcem Operations Activity
Plus Truck Movements (Combined) – Scenario A

Location	Phase	Mode	Orcem Plant dB L_{dn}	Orcem Trucks dB L_{dn}	Orcem Total Noise dB L_{dn}	Existing Baseline dB L_{dn}	Total Noise Level dB L_{dn}	Increase in Noise dB L_{dn}
NSL1	1	1	52	n/a	52	55	57	2
		2	54	n/a	54		58	3
		3	54	n/a	54		58	3
	2	1	54	n/a	54		58	3
		2	54	n/a	54		58	3
		3	54	n/a	54		58	3
NSL2	1	1	60	40	60	53	61	8
		2	63	42	63		63	10
		3	63	41	63		63	10
	2	1	66	42	66		66	13
		2	66	44	66		66	13
		3	66	43	66		66	13
NSL3	1	1	60	38	60	52	61	9
		2	61	39	61		62	10
		3	61	38	61		62	10
	2	1	60	39	60		61	9
		2	60	41	60		61	9
		3	60	40	60		61	9
NSL4	1	1	60	39	60	52	61	9

Table 3.10-21
Noise Levels from All Orcem Operations Activity
Plus Truck Movements (Combined) – Scenario A

Location	Phase	Mode	Orcem Plant dB L_{dn}	Orcem Trucks dB L_{dn}	Orcem Total Noise dB L_{dn}	Existing Baseline dB L_{dn}	Total Noise Level dB L_{dn}	Increase in Noise dB L_{dn}
		2	61	41	61		62	10
		3	61	40	61		62	10
	2	1	60	41	60		61	9
		2	60	43	60		61	9
		3	60	42	60		61	9
NSL5	1	1	47	50	52	52	55	3
		2	48	51	53		55	3
		3	48	50	52		55	3
	2	1	47	51	52		55	3
		2	47	53	54		56	4
		3	47	52	53		56	4
NSL6	1	1	43	62	62	57	63	6
		2	44	64	64		65	8
		3	44	62	62		63	6
	2	1	34	64	64		65	8
		2	44	66	66		67	10
		3	44	64	64		65	8
NSL7	1	1	42	57	57	63	64	1
		2	44	59	59		64	1
		3	44	58	58		64	1
	2	1	44	59	59		64	1
		2	45	61	61		65	2
		3	45	60	60		65	2
NSL8	1	1	53	n/a	53	54	57	3
		2	54	n/a	54		57	3
		3	54	n/a	54		57	3
	2	1	53	n/a	53		57	3
		2	53	n/a	53		57	3
		3	53	n/a	53		57	3
NSL9	1	1	39	60	60	63	65	2
		2	40	61	61		65	2
		3	40	60	60		65	2
	2	1	41	61	61		65	2
		2	41	63	63		66	3
		3	41	61	61		65	2
NSL10	1	1	48	n/a	48	52	53	1
		2	49	n/a	49		54	2

Table 3.10-21
Noise Levels from All Orcem Operations Activity
Plus Truck Movements (Combined) – Scenario A

Location	Phase	Mode	Orcem Plant dB L_{dn}	Orcem Trucks dB L_{dn}	Orcem Total Noise dB L_{dn}	Existing Baseline dB L_{dn}	Total Noise Level dB L_{dn}	Increase in Noise dB L_{dn}
		3	49	n/a	49		54	2
	2	1	47	n/a	47		53	1
		2	48	n/a	48		53	1
		3	48	n/a	48		53	1

Table 3.10-22 summarizes the noise impacts and identifies those locations where a significant increase in the existing ambient noise level may occur.

Table 3.10-22
Significance Determination for Noise Levels from All Orcem Operations Activity
Plus Truck Movements (Combined) – Scenario A

Location	Predicted Increase in Noise	Comment	Mitigation Required
NSL1	2 – 3 dB	This is a less-than-significant permanent increase in the noise level.	No
NSL2	8 – 13 dB	This is a significant permanent increase in the noise level according to the CEQA checklist.	Yes
NSL3	9 – 10 dB	This is a significant permanent increase in the noise level according to the CEQA checklist.	Yes
NSL4	9 – 10 dB	This is a significant permanent increase in the noise level according to the CEQA checklist.	Yes
NSL5	3 – 4 dB	This is a less-than-significant permanent increase in the noise level.	No
NSL6	6 – 10 dB	This is a less-than-significant permanent increase in the noise level.	No
NSL7	1 – 2 dB	This is a less-than-significant permanent increase in the noise level.	No
NSL8	3 dB	This is a less-than-significant permanent increase in the noise level.	No
NSL9	2 – 3 dB	This is a less-than-significant permanent increase in the noise level.	No
NSL10	1 – 2 dB	This is a less-than-significant permanent increase in the noise level.	No

As shown in Table 3.10-22, three locations in Scenario A would be exposed to an increase in noise levels that exceed the applicable policies and standards:

- NSL2 (Seawitch Lane Residences)
- NSL3 (Harbor Park Apartments)
- NSL4 (Browning Way Residences)

Therefore, noise impacts under Scenario A of the Orcem project component would be **significant** (**Impact 3.10-2**), and mitigation is provided in Section 3.10.5. Scenario A is considered the most basic operating mode for Orcem, where transportation would be achieved with trucks alone. This mode would occur approximately 75% of the time, in the periods between the arrival of either a vessel or a train to the facility.

Orcem Combined Noise – Scenario B (Orcem Plant Operation Plus Truck Noise Plus Vessels)

Scenario B represents the situation in which the Scenario A operation would be supplemented by vessel unloading activity. Because Scenario A alone was found to have significant noise impacts, mitigation measures are required to address normal Orcem operations (Section 3.10.5); the analysis of Scenario B assumes the required mitigation measures for normal Orcem operations have been implemented. While the frequency of vessel unloading activity would increase as the output of the Orcem manufacturing facility increases, the intensity of the activity would be similar for all phases. Once a vessel is at dock, the material would be unloaded by conveyor operating continuously for 2 – 3 days. Therefore, the noise level due to vessel unloading at a noise-sensitive location would be the same for each mode and phase.

Table 3.10-23 presents the noise modeling results for Scenario B. To reiterate, the reduction in Orcem Plant operations noise from incorporation of the identified required mitigations in Scenario A is assumed in the following results.

Table 3.10-23
Noise Levels from All Orcem Operations Activity
Plus Truck Movements Plus Vessel Unloading (Combined) – Scenario B

Location	Phase	Mode	Orcem Plant dB L_{dn}	Orcem Trucks dB L_{dn}	Orcem Total Noise dB L_{dn}	Existing Baseline dB L_{dn}	Total Noise Level dB L_{dn}	Increase in Noise dB L_{dn}
NSL1	1	1	45	46	49	55	56	1
		2	46	46	49		56	1
		3	46	46	49		56	1
	2	1	46	46	49		56	1
		2	45	46	49		56	1
		3	45	46	49		56	1
NSL2	1	1	55	50	56	53	58	5
		2	55	50	56		58	5
		3	55	50	56		58	5
	2	1	55	50	56		58	5
		2	56	50	57		59	6
		3	51	50	57		59	6
NSL3	1	1	52	40	51	52	55	3
		2	52	40	52		55	3

Table 3.10-23
Noise Levels from All Orcem Operations Activity
Plus Truck Movements Plus Vessel Unloading (Combined) – Scenario B

Location	Phase	Mode	Orcem Plant dB Ldn	Orcem Trucks dB Ldn	Orcem Total Noise dB Ldn	Existing Baseline dB Ldn	Total Noise Level dB Ldn	Increase in Noise dB Ldn
		3	52	40	52		55	3
	2	1	52	40	52		55	3
		2	52	40	53		55	3
		3	52	40	53		55	3
NSL4	1	1	52	44	52	52	55	3
		2	53	44	53		56	4
		3	53	44	53		56	4
	2	1	53	44	53		56	4
		2	53	44	54		56	4
		3	53	44	54		56	4
NSL5	1	1	50	39	51	52	54	2
		2	52	39	52		55	3
		3	51	39	51		55	3
	2	1	52	39	52		55	3
		2	53	39	54		56	4
		3	52	39	53		55	3
NSL6	1	1	62	32	62	57	63	6
		2	64	32	64		65	8
		3	62	32	62		63	6
	2	1	64	32	64		65	8
		2	66	32	66		67	10
		3	64	32	64		65	8
NSL7	1	1	57	28	57	63	64	1
		2	59	28	59		64	1
		3	58	28	58		64	1
	2	1	59	28	59		64	1
		2	61	28	61		65	2
		3	60	28	60		65	2
NSL8	1	1	48	49	51	54	56	2
		2	48	49	52		56	2
		3	48	49	52		56	2
	2	1	48	49	52		56	2
		2	49	49	52		56	2
		3	49	49	52		56	2
NSL9	1	1	60	29	60	63	65	2
		2	61	29	61		65	2
		3	60	29	60		65	2
	2	1	61	29	61		65	2

Table 3.10-23
Noise Levels from All Orcem Operations Activity
Plus Truck Movements Plus Vessel Unloading (Combined) – Scenario B

Location	Phase	Mode	Orcem Plant dB L_{dn}	Orcem Trucks dB L_{dn}	Orcem Total Noise dB L_{dn}	Existing Baseline dB L_{dn}	Total Noise Level dB L_{dn}	Increase in Noise dB L_{dn}
		2	63	29	63		66	3
		3	61	29	61		65	2
NSL10	1	1	38	39	42	52	52	0
		2	40	39	42		52	0
		3	40	39	42		52	0
	2	1	40	39	42		52	0
		2	40	39	43		52	0
		3	40	39	43		52	0

Table 3-10.24 summarizes the noise impacts and identifies those locations where a significant increase in the existing ambient noise level may occur for Scenario B.

Table 3.10-24
Significance Determination for Noise Levels from All Orcem Operations Activity
Plus Truck Movements Plus Vessel Unloading (Combined) –Scenario B

Location	Predicted Increase in Noise	Comment	Mitigation Required
NSL1	1 dB	This is a less-than-significant permanent increase in the noise level.	No
NSL2	5 – 6 dB	This is a significant temporary increase in the noise level according to the CEQA checklist.	See Discussion
NSL3	3 dB	This is a less-than-significant permanent increase in the noise level.	No
NSL4	3 – 4 dB	This is a less-than-significant permanent increase in the noise level.	No
NSL5	2 – 4 dB	This is a less-than-significant permanent increase in the noise level.	No
NSL6	6 – 10 dB	This is a less-than-significant permanent increase in the noise level.	No
NSL7	1 – 2 dB	This is a less-than-significant permanent increase in the noise level.	No
NSL8	3 dB	This is a less-than-significant permanent increase in the noise level.	No
NSL9	2 – 3 dB	This is a less-than-significant permanent increase in the noise level.	No
NSL10	0 dB	This is a less-than-significant permanent increase in the noise level.	No

The majority of locations show no change in the noise level for Scenario B when compared to Scenario A with mitigation. However, during Phase 2 of the Orcem project component, there would be a slight exceedance of 1dB above the allowed increase of 5 dB over ambient. It should be noted, however, that the threshold for project-generated noise increases is intended to address the prevalent noise generation from routine operations, and not necessarily noise levels from lower frequency events associated with a facility. Also, a 1 dBA difference in environmental noise levels is not detectable by the human ear, and therefore the difference between a 5 dBA and a 6 dBA L_{dn} increase would not be deemed noticeable. Consequently, considering the temporary nature of the activity, once a month in Phase 1 and up to once every 3 weeks in Phase 2, the impact would not be felt on a continuous basis by proximate residential properties. As such, the less than 1 dBA exceedance of the noise criterion on a periodic, rather than continuous basis is deemed to be a **less-than-significant** noise impact.

Orcem Combined Noise – Scenario C (Orcem Plant Operation Plus Truck, Train, and Vessel Unloading Noise)

Scenario C represents the situation in which the Scenario A and B operations would be supplemented by train loading/unloading activity. Because Scenario A alone was found to have significant noise impacts, mitigation measures are required to address normal Orcem operations (Section 3.10.5); the analysis of Scenario C assumes the required mitigation measures for normal Orcem operations have been implemented. While the frequency of train activity would increase as the output of the Orcem manufacturing facility increases, the intensity of the activity would be similar for all phases. A maximum of one train movement to and from the site during any single 24-hour period is representative of the worst-case for all phases and modes. Table 3.10-25 presents the noise modeling results for Scenario C. To reiterate, the reduction in Orcem Plant operations noise from incorporation of the identified required mitigations in Scenario A is assumed in the following results.

Table 3.10-25
Noise Levels from All Orcem Operations Activity Plus Truck Movements Plus Vessel Unloading, Plus Rail (Combined) – Scenario C

Location	Phase	Mode	Orcem Plant dB L_{dn}	Orcem Trucks dB L_{dn}	Orcem Total Noise dB L_{dn}	Existing Baseline dB L_{dn}	Total Noise Level dB L_{dn}	Increase in Noise dB L_{dn}
NSL1	1	1	45	39	46	55	56	1
		2	46	0	46		56	1
		3	46	39	47		56	1
	2	1	46	39	47		56	1
		2	45	0	45		55	0
		3	45	39	46		56	1
NSL2	1	1	55	44	55	53	57	4
		2	55	0	55		57	4
		3	55	44	55		57	4
	2	1	55	44	55		57	4
		2	56	0	56		58	5

Table 3.10-25
Noise Levels from All Orcem Operations Activity Plus Truck Movements Plus Vessel Unloading, Plus Rail (Combined) – Scenario C

Location	Phase	Mode	Orcem Plant dB L_{dn}	Orcem Trucks dB L_{dn}	Orcem Total Noise dB L_{dn}	Existing Baseline dB L_{dn}	Total Noise Level dB L_{dn}	Increase in Noise dB L_{dn}
		3	56	44	56		58	5
NSL3	1	1	51	46	52	52	55	3
		2	52	0	52		55	3
		3	52	46	53		55	3
	2	1	52	46	53		55	3
		2	52	0	53		55	3
		3	52	46	53		56	4
NSL4	1	1	52	46	53	52	55	3
		2	53	0	53		55	3
		3	53	46	54		56	4
	2	1	53	46	54		56	4
		2	53	0	53		56	4
		3	53	46	54		56	4
NSL5	1	1	50	49	53	52	55	3
		2	52	0	52		55	3
		3	51	49	53		55	3
	2	1	52	49	53		56	4
		2	53	0	53		56	4
		3	52	49	54		56	4
NSL6	1	1	62	48	62	57	63	6
		2	64	0	64		65	8
		3	62	48	62		63	6
	2	1	64	48	64		65	8
		2	66	0	66		57	10
		3	64	48	64		65	8
NSL7	1	1	57	41	57	63	64	1
		2	59	0	59		64	1
		3	58	41	58		64	1
	2	1	59	41	59		64	1
		2	61	0	61		65	2
		3	60	41	60		65	2
NSL8	1	1	48	39	48	54	55	1
		2	48	0	48		55	1
		3	48	39	49		55	1
	2	1	48	39	49		55	1
		2	49	0	49		55	1
		3	49	39	49		55	1

Table 3.10-25
Noise Levels from All Orcem Operations Activity Plus Truck Movements Plus Vessel Unloading, Plus Rail (Combined) – Scenario C

Location	Phase	Mode	Orcem Plant dB L_{dn}	Orcem Trucks dB L_{dn}	Orcem Total Noise dB L_{dn}	Existing Baseline dB L_{dn}	Total Noise Level dB L_{dn}	Increase in Noise dB L_{dn}
NSL9	1	1	60	41	60	63	65	2
		2	61	0	61		65	2
		3	60	41	60		65	2
	2	1	61	41	61		65	2
		2	63	0	63		66	3
		3	61	41	61		65	2
NSL10	1	1	38	47	48	52	53	1
		2	40	0	40		52	0
		3	40	47	48		54	2
	2	1	40	47	48		54	2
		2	40	0	40		52	0
		3	40	47	48		54	2

Table 3.10-26 summarizes the noise impacts and identifies those locations where a significant increase in the existing ambient noise level may occur for Scenario C.

Table 3.10-26
Significance Determination for Noise Levels from All Orcem Operations Activity Plus Truck Movements Plus Vessel Unloading, Plus Rail (Combined) –Scenario C

Location	Predicted Increase in Noise	Comment	Mitigation Required
NSL1	0 – 1 dB	This is a less-than-significant permanent increase in the noise level.	No
NSL2	4 – 5 dB	This is a less-than-significant permanent increase in the noise level.	No
NSL3	3 – 4 dB	This is a less-than-significant permanent increase in the noise level.	No
NSL4	3 – 4 dB	This is a less-than-significant permanent increase in the noise level.	No
NSL5	3 – 4 dB	This is a less-than-significant permanent increase in the noise level.	No
NSL6	6 – 10 dB	This is a less-than-significant permanent increase in the noise level.	No
NSL7	1 – 2 dB	This is a less-than-significant permanent increase in the noise level.	No
NSL8	1 dB	This is a less-than-significant permanent increase in the noise level.	No
NSL9	2 – 3 dB	This is a less-than-significant permanent increase in the noise level.	No
NSL10	0 – 2 dB	This is a less-than-significant permanent increase in the noise level.	No

None of the assessed locations show a change in the noise level for Scenario C when compared to normal operations of the Orcem facility (Scenario A) with the required mitigations implemented (Section 3.10.5). Therefore, rail activity associated with the Orcem Site would not result in any additional significant impacts requiring mitigation. Impacts would therefore be **less than significant**.

Combined VMT and Orcem Analysis

Construction Impacts

As described under both the VMT and Orcem analyses, construction noise impacts would include indirect off-site noise associated with traffic trips for workers and materials and on-site noise from equipment and construction activities. The transport of workers and construction equipment and materials to the project site would incrementally increase noise levels on access roads leading to the site. Because workers and construction equipment would use existing routes, noise from slow-moving passing trucks (75 dBA L_{max} at 50 feet) would be similar to existing vehicle-generated noise. For this reason, short-term intermittent noise from trucks would be minor when averaged over a longer time period. In addition, according to the City's noise ordinance, noise from temporary transportation of goods or people to and from a given premise is exempt from the City's noise standards.

Noise generated during demolition, excavation, grading, site preparation, and building construction on the project site would result in potential noise impacts on off-site uses. Existing receptors in the vicinity, as discussed in Section 3.10.3, would be subject to short-term noise generated by construction equipment and activities on the project site when construction occurs. Noise from on-site construction, including heavy construction equipment operation and activities, was assessed for each project using the FHWA RCNM. Refer to the construction noise discussion of VMT and Orcem for a detailed description of the methodology. While it is envisioned that both developments would be constructed simultaneously, it is difficult to know in advance exactly how each phase of construction would overlap on both sites. Therefore, Table 3.10-27 presents the predicted maximum noise levels at these nearest noise-sensitive locations for a range of expected construction activities for both developments. The major difference in construction between the two project components would be the installation of pilings as part of the VMT project component.

Table 3.10-27
Predicted Maximum VMT and Orcem Construction Noise Levels at Closest Sensitive Receptors

Construction Activity	Type of Equipment	Predicted dBA L_{max} Levels					
		VMT Construction			*Orcem Construction*		
		NSL1	*NSL2*	*NSL3*	*NSL1*	*NSL2*	*NSL3*
Demolition	Front End Loader	47	52	56	52	61	57
	Excavator (x2)	52	57	61	57	66	62

Table 3.10-27
Predicted Maximum VMT and Orcem Construction Noise Levels at Closest Sensitive Receptors

Construction Activity	Type of Equipment	Predicted dBA L_{max} Levels					
		VMT Construction			*Orcem Construction*		
		NSL1	*NSL2*	*NSL3*	*NSL1*	*NSL2*	*NSL3*
	Crane	49	54	57	53	63	59
	Mounted Impact Hammer (hoe ram)	58	64	67	63	72	69
	Grapple (on backhoe)	55	60	64	60	69	65
	Dump Truck	45	50	53	49	58	55
Earthwork and Excavation	Backhoe	56	60	55	50	60	56
	Excavator (x2)	62	67	61	57	66	62
	Front End Loader	57	62	56	52	61	57
	Roller	57	63	57	53	63	59
	Tractor	62	67	61	57	66	62
	Vacuum Street Sweeper	60	64	59	54	64	60
Piling	Impact Pile Driver	72	75	74	No piling required		
Concrete and Steel Works	Concrete Mixer Truck	57	61	56	52	61	52
	Concrete Pump Truck	60	64	59	55	64	54
	Concrete Saw	68	72	67	63	72	62
	Crane	59	63	58	54	63	53
	Drum Mixer	59	62	57	53	63	53
	Flat Bed Truck	53	56	51	48	57	47
	Pneumatic Tools	64	67	62	59	68	58
	Welder/Torch	53	56	51	47	57	47

The closest noise-sensitive land uses to the project construction areas are NSL1, NSL2, and NSL3 which adjoin the project site. These properties are located between 360 and 1,427 feet from the construction activity modeled in Table 3.10-27. At these distances, maximum noise levels from construction activities at either building site could range from 45 dBA up to 75 dBA L_{max} at the property line of the nearest sensitive locations. In a worst-case scenario, if the most noise-intensive construction activity were to occur simultaneously on both the VMT and Orcem Sites, maximum construction noise could range up to 78 dBA L_{max} at the property line of the nearest sensitive locations (the sum of 75 dBA plus 75 dBA). This noise level would be just noticeable to an average resident, compared to the 75 dBA maximum noise level from either of the two project components alone.

Since the City has not established a numeric limit for construction noise exposure, impacts would be **less than significant**. For a detailed discussion of the assessment methodology and potential impacts associated with short-term construction please refer to the construction noise discussion of VMT and Orcem in Section 3.10.4.

Operational Noise

The operational phases of both the VMT and Orcem project components have been assessed separately earlier in this section. In both instances, a series of mitigation measures (see Section 3.10.5) have been developed to control the individual noise impact of each development. This section examines the noise impact of both project components operating together, and assumes the separately required mitigation measures for each project component are implemented.

In order to assess the worst-case scenario for operational noise from the combined project components, the following analysis includes noise generated by Orcem production, rail and truck movements on the local road network, plus noise generated by VMT unloading a vessel and transporting material by truck, rail, and barge. Note that a lower noise impact would occur during actual operations due to the low probability of all noise sources operating simultaneously. Notwithstanding this, the worst-case scenario has been presented.

Table 3.10-28 presents the results of the combined VMT and Orcem noise generation levels at vicinity noise-sensitive receptors. The identified noise levels account for the mitigation measures already developed separately for VMT and Orcem, as identified in Section 3.10.5.

Table 3.10-28
Combined Noise Levels from All VMT and Orcem Operations Activity

Location	Phase	Mode	Orcem dB L_{dn}	VMT dB L_{dn}	Project Total Noise dB L_{dn}	Existing Baseline dB L_{dn}	Total Noise Level dB L_{dn}	Increase in Noise dB L_{dn}
NSL1	1	1	45	47		55	56	1
		2	46	47			56	1
		3	46	47			56	1
	2	1	46	47			56	1
		2	45	47			56	1
		3	45	47			56	1
NSL2	1	1	55	51		53	58	5
		2	55	51			58	5
		3	55	51			58	5
	2	1	55	51			58	5
		2	56	51			59	6
		3	56	51			59	6
NSL3	1	1	51	49		52	56	4
		2	52	49			56	4

Table 3.10-28
Combined Noise Levels from All VMT and Orcem Operations Activity

Location	Phase	Mode	Orcem dB L_{dn}	VMT dB L_{dn}	Project Total Noise dB L_{dn}	Existing Baseline dB L_{dn}	Total Noise Level dB L_{dn}	Increase in Noise dB L_{dn}
		3	52	49			56	4
	2	1	52	49			56	4
		2	52	49			56	4
		3	52	49			56	4
NSL4	1	1	52	51		52	56	4
		2	53	51			57	5
		3	53	51			57	5
	2	1	53	51			57	5
		2	53	51			57	5
		3	53	51			57	5
NSL5	1	1	50	55		52	58	6
		2	52	55			58	6
		3	51	55			58	6
	2	1	52	55			58	6
		2	53	55			58	6
		3	52	55			58	6
NSL6	1	1	62	62		57	65	8
		2	64	62			66	9
		3	62	62			67	10
	2	1	64	62			66	9
		2	66	62			67	10
		3	64	62			66	9
NSL7	1	1	57	61	63	63	66	3
		2	59	61	63		66	3
		3	58	61	63		66	3
	2	1	59	61	63		66	3
		2	61	61	64		67	4
		3	60	61	64		66	3
NSL8	1	1	48	51	53	54	57	3
		2	48	51	53		57	3
		3	48	51	53		57	3
	2	1	48	51	53		57	3
		2	49	51	53		57	3
		3	49	51	53		57	3
NSL9	1	1	60	61	64	63	66	3
		2	61	61	64		67	4
		3	60	61	64		66	3
	2	1	61	61	64		67	4

Table 3.10-28
Combined Noise Levels from All VMT and Orcem Operations Activity

Location	Phase	Mode	Orcem dB L_{dn}	VMT dB L_{dn}	Project Total Noise dB L_{dn}	Existing Baseline dB L_{dn}	Total Noise Level dB L_{dn}	Increase in Noise dB L_{dn}
		2	63	61	65		67	4
		3	61	61	64		67	4
NSL10	1	1	38	38	53	52	55	3
		2	40	40	53		55	3
		3	40	40	53		55	3
	2	1	40	40	53		55	3
		2	40	40	53		55	4
		3	40	40	53		55	4

Table 3.10-29 summarizes the noise impacts of the combined project components, and identifies those locations where a significant increase in the existing ambient noise level may occur.

Table 3.10-29
Significance Determination for Combined Noise Levels from All VMT and Orcem Operations

Location	Predicted Increase in Noise	Comment	Mitigation Required
NSL1	1 dB	This is a less-than-significant permanent increase in the noise level.	No
NSL2	5 – 6 dB	This is a less-than-significant permanent increase in the noise level.	See Discussion
NSL3	4 dB	This is a less-than-significant permanent increase in the noise level.	No
NSL4	4 – 5 dB	This is a less-than-significant permanent increase in the noise level.	No
NSL5	6 dB	This is a less-than-significant permanent increase in the noise level.	See Discussion
NSL6	8 – 10 dB	This is a less-than-significant permanent increase in the noise level.	No
NSL7	3 – 4 dB	This is a less-than-significant permanent increase in the noise level.	See Discussion
NSL8	3 dB	This is a less-than-significant permanent increase in the noise level.	No
NSL9	3 – 4 dB	This is a less-than-significant permanent increase in the noise level.	See Discussion
NSL10	3 – 4 dB	This is a less-than-significant permanent increase in the noise level.	No

At NSL2, NSL5, NSL7, and NSL9, there would be a very slight increase of less than 1 dBA above the allowable increase of 3 or 5 dBA; the actual exceedance is of the order of 0.5 dBA and due to rounding, a slight exceedance is identified. An exceedance of this magnitude is imperceptible, and it is considered impractical to provide mitigation for such a small amount.

Increases in ambient noise levels from combined noise emissions from VMT and Orcem at all other locations assessed would be below the threshold of significance for a permanent and significant noise impact to occur.

Therefore, combined VMT and Orcem project noise increases at all locations assessed are considered to below the threshold of significance set forth in the City of Vallejo's applicable policies and standards, resulting in a **less-than-significant** noise impact.

B) Would the project expose persons to or generate excessive groundborne vibration or groundborne noise levels?

VMT Analysis

Construction Impacts

Construction activities associated with implementation of the VMT project component could temporarily expose persons in the vicinity of the project site to excessive groundborne vibration or groundborne noise levels. Typical vibration source levels for construction equipment are shown in Table 3.10-30.

Table 3.10-30
Typical Construction Ground Vibration Levels

Type of Equipment		VdB @ 25 feet
Pile Driver (impact)	Upper Range	112
	Typical	104
Pile Driver (sonic)	Upper Range	105
	Typical	93
Clam shovel drop (slurry wall)		94
Hydromill (slurry wall)	In Soil	66
	In Rock	75
Vibratory roller		94
Hoe ram		87
Large bulldozer		87
Caisson drilling		87
Loaded trucks		86
Jackhammer		79
Small bulldozer		58

Source: FTA 2006.

The main concern associated with ground-borne vibration is annoyance; however, in extreme cases, vibration can cause damage to buildings, particularly those that are old or otherwise fragile. Some common sources of ground-borne vibration are trains, and construction activities such as blasting, pile-driving, and heavy earth-moving equipment. The primary source of ground-borne vibration occurring as part of the project is construction activity.

The City Performance Standards (Chapter 16.72 of the Code of Ordinances) restrict any land use from producing vibration levels that are discernible without instruments at any point on the property line on which the use is located. According to the California Department of Transportation (Caltrans), the highest measured vibration level during highway construction was 2.88 inches/second PPV at 10 feet from a pavement breaker. Other typical construction activities and equipment, such as D-8 and D-9 Caterpillars, earthmovers, and trucks have not exceeded 0.10 inch/second PPV at 10 feet. Vibration-sensitive instruments and operations may require special consideration during construction. Vibration criteria for sensitive equipment and operations are not defined and are often case-specific. As a guide, major construction activity within 200 feet and pile driving within 600 feet may be potentially disruptive to sensitive operations (Caltrans 2002).

The proposed pile-driving activity required during the construction of the VMT project component would be located at the water's edge at the position of the new concrete pile supported wharf, which would be over 900 feet from the nearest noise-sensitive residence. Groundborne vibration levels from the operation of heavy construction equipment that would be used in demolition or construction of the VMT project component would therefore not be expected to cause damage to residential buildings of normal California construction.

Given the location of the nearest sensitive receptors to the VMT Site, and the distance between them and the construction activity, in particular pile driving for the dock at a distance of 900 feet or greater, it is unlikely that there would be any perceptible vibration off site during construction activity. Therefore, vibration impacts during construction of the VMT project component are considered **less than significant.**

Operational Impacts

The VMT project component would not generate any significant groundborne vibrations as a result of its operations aside from vibration caused by rail operations as described previously under Threshold A. For rail operations, one of the major sources of noise and vibration would be rolling stock on the existing jointed track; this is considered a **significant** vibration impact **(Impact 3.10-3)**. Refer to required mitigation measure MM-3.10-1a in Section 3.10.5.

In relation to truck trips on the local road network, there is potential for some groundborne vibrations to be generated by discontinuities in the road surface. However, since the road surface within the VMT Site would be smooth and well-maintained, the potential for these vibrations would be substantially reduced. Therefore, significant groundborne vibration is not anticipated as a result of VMT operation, and impacts would be **less than significant**.

Orcem Analysis

Construction Impacts

The City's Performance Standards (Chapter 16.72 of the Code of Ordinances) restrict any land use from producing vibration levels that are discernible without instruments at any point on the property line on which the use is located.

According to Caltrans, the highest measured vibration level during highway construction was 2.88 inches/second PPV at 10 feet from a pavement breaker. Other typical construction activities and equipment, such as D-8 and D-9 Caterpillars, earthmovers, and trucks, have not exceeded 0.10 inch/second PPV at 10 feet. As a guide, major construction activity within 200 feet may be potentially disruptive to sensitive operations (Caltrans 2002).

No demolition or construction activity for Orcem would occur within 200 feet of an existing residential property line. Refer to Table 3.10-30 for vibration levels associated with typical construction equipment and activities. Groundborne vibration levels from the operation of heavy construction equipment that would be used in demolition or construction of the proposed project would therefore not be expected to cause damage to residential buildings of normal northern California construction.

Given the location of the nearest sensitive receptors to the site, and the distance between them and the construction activity, it is unlikely that there would be any perceptible vibration off-site during construction activity. Therefore, vibration impacts during construction are considered **less than significant.**

Operational Impacts

During the operational phase of the Orcem project component, the Orcem facility would not be expected to generate any significant groundborne vibrations as a result of its operation. All mechanical equipment within the plant would be designed and mounted so as to reduce vibrations. This would be included in the Orcem Site's general maintenance program as excessive vibrations typically increase the likelihood of mechanical failure.

In relation to truck trips on the local road network, there is potential for some groundborne vibrations to be generated by discontinuities in the road surface. However, since the road surface within the Orcem Site would be smooth and well-maintained, the potential for these vibrations would be substantially reduced.

In summary, no significant groundborne vibration would be generated as a result of Orcem operation. Therefore, impacts would be **less than significant**.

Combined VMT and Orcem Analysis

Construction Impacts

Refer to Table 3.10-30 for vibration levels associated with typical construction equipment and activities. The Vallejo City Performance Standards (Chapter 16.72 of the Code of Ordinances) restrict any land use from producing vibration levels that are discernible without instruments at any point on the property line on which the use is located.

According to Caltrans, the highest measured vibration level during highway construction was 2.88 inches/second PPV at 10 feet from a pavement breaker. Other typical construction activities and equipment, such as D-8 and D-9 Caterpillars, earthmovers, and trucks, have not exceeded 0.10 inch/second PPV at 10 feet. As a guide, major construction activity within 200 feet and pile driving within 600 feet may be potentially disruptive to sensitive operations (Caltrans 2002).

Pile driving for the VMT dock construction would not be located closer than 900 feet from the closest residential property line; no demolition or construction activity for VMT or Orcem would occur within 200 feet of an existing residential property line. Groundborne vibration levels from the operation of heavy construction equipment that would be used in demolition or construction of the proposed project would therefore not be expected to cause damage to residential buildings of normal northern California construction.

Given the location of the nearest sensitive receptors to the site, and the distance between them and the construction activity, it is unlikely that there would be any perceptible vibration off-site during construction activity. Therefore, vibration impacts during construction of the combined project components are considered **less than significant.**

Operational Impacts

As described above, during the operational phase of the combined VMT and Orcem project components, significant groundborne vibrations are not anticipated. In relation to truck trips on the local road network, there is potential for some groundborne vibrations to be generated by discontinuities in the road surface. However, since the road surface within the VMT Site and Orcem Site would be smooth and well-maintained, the potential for these vibrations would be substantially reduced. Since no significant groundborne vibration would be generated as a result of the combined VMT and Orcem operations, impacts would be **less than significant**.

C) Would the project create a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

VMT Analysis

As described under threshold A, Table 3.10-12 summarizes the significance determinations for the total VMT operational project-related noise level increases. Based on the information in Table 3.10-11, the following two locations would experience a significant permanent increase in the noise level as a result of VMT operations:

- NSL5 (Colt Court Residences)
- NSL10 (3rd Street Residence)

Therefore, the VMT project component would result in a **significant** impact (**Impact 3.10-4**) at these two locations, and mitigation is provided in Section 3.10.5.

Orcem Analysis

As described under threshold A, to assess the overall noise impact of the Orcem project component, the following three scenarios were assessed for both phases of operation:

A. Scenario A – noise impact of Orcem production and truck movements on the local road network. This represents the proposed normal operation of the Orcem facility when there is no vessel unloading or rail activity.
B. Scenario B – noise impact of Orcem production plus truck movements (including mitigation) plus the temporary noise impact of vessel unloading on the Orcem Site.
C. Scenario C – noise impact of Orcem production plus truck movements (including mitigation) plus the temporary noise impact of vessel unloading, plus the temporary noise impact of rail activity to the Orcem Site.

Table 3.10-22 summarizes the noise impacts under Scenario A and identifies those locations where a significant increase in the existing ambient noise level may occur. As shown in Table 3.10-22, the following locations would be exposed to a significant permanent increase in ambient noise levels under Scenario A:

- NSL2 (Seawitch Lane Residences)
- NSL3 (Harbor Park Apartments)
- NSL4 (Browning Way Residences)

Impacts at these locations would therefore be **significant** (**Impact 3.10-5**), and mitigation is provided in Section 3.10.5.

As described in greater detail under threshold A, no additional significant impacts would occur under Scenarios B and C.

Combined VMT and Orcem Analysis

The operational phases of both the VMT and Orcem project components have been assessed separately earlier in this section. In both instances, a series of mitigation measures (see Section 3.10.5) have been required to control the individual noise impact of each development. In order to assess the worst-case scenario for operational noise from the combined project components, the combined analysis includes noise generated by Orcem production and truck movements on the local road network, plus noise generated by VMT unloading a vessel and transporting material by truck, rail, and barge.

Table 3.10-28 presents the results of the combined VMT and Orcem noise generation levels at vicinity noise-sensitive receptors. The identified noise levels account for the mitigation measures already required separately for VMT and Orcem, as identified in Section 3.10.5. Table 3.10-29 summarizes the noise impacts of the combined project components and identifies those locations where a significant increase in the existing ambient noise level may occur.

At NSL2, NSL5, NSL7, and NSL9, there would be a very slight increase of less than 1 dBA above the allowable increase of 3 or 5 dBA; the actual exceedance is of the order of 0.5 dBA and due to rounding, a slight exceedance is identified. An exceedance of this magnitude is imperceptible, and it is considered impractical to provide mitigation for such a small amount. Increases in ambient noise levels from combined noise emissions from VMT and Orcem at all other locations assessed would be below the threshold of significance for a permanent and significant noise impact to occur. Therefore, combined VMT and Orcem noise increases at all locations assessed would be below the threshold of significance for a permanent and significant noise impact, resulting in a **less-than-significant** noise impact.

D) Would the project create a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

VMT Analysis

As described under threshold A, the following two types of short-term noise impacts would occur during VMT site preparation and construction:

- An increase in traffic volumes on local streets associated with the transport of workers, equipment, and materials to and from the project site.
- Heavy construction equipment operating on the project site.

The transport of workers and construction equipment and materials to the project site would incrementally increase noise levels on access roads leading to the site. Because workers and construction equipment would use existing routes, noise from slow-moving passing trucks (75 dBA L_{max} at 50 feet) would be similar to existing vehicle-generated noise. For this reason, short-term intermittent noise from trucks would be minor when averaged over a longer time period (i.e., an hour or more).

Table 3.10-6 (provided earlier) presents the predicted maximum noise levels at the nearest noise sensitive locations (i.e., NSL1, NSL2, and NSL3) for a range of expected construction activities. The closest noise-sensitive land uses to the VMT construction areas are NSL1, NSL2, and NSL3, which adjoin the project site. These properties are located between 360 and 1,427 feet from the construction activity reflected in Table 3.10-6. At these distances, maximum noise levels from construction activities at the building site could range from 47 dBA up to 75 dBA L_{max} at the property line of the nearest sensitive locations.

These levels represent a substantial temporary increase in ambient noise levels in the vicinity of the VMT construction areas. This is considered a **significant** short-term, temporary, noise impact (**Impact 3.10-6**). Please refer to Section 3.10.5 for mitigation to address this impact.

Orcem Analysis

As described under threshold A, above, construction of the Orcem project component would involve both indirect off-site noise impacts (increased traffic on local streets associated with the transport of workers, equipment, and materials to and from the project site) and noise from on-site equipment and activity.

The transport of workers and construction equipment and materials to the project site would incrementally increase noise levels on access roads leading to the Orcem Site. During the worst-case periods of construction, it is estimated that there would be up to five deliveries per day to the site using heavy trucks. Since workers and construction equipment would use existing routes, noise from slow-moving passing trucks (75 dBA L_{max} at 50 feet) would be similar to existing vehicle-generated noise in the project area. For this reason, short-term intermittent noise from trucks would be minor when averaged over a longer time period.

Existing receptors in the vicinity of the Orcem Site would be subject to short-term noise generated by construction equipment and activities on the project site when construction occurs. Table 3.10-13, above, presents the predicted maximum noise levels at the nearest noise sensitive locations (i.e., NSL1, NSL2, and NSL3) for a range of expected construction activities. The closest noise-sensitive land uses to the project construction areas are NSL1, NSL2, and NSL3, which adjoin the project site. These properties are located between 400 and 1,475 feet from the Orcem construction activity listed in Table 3.10-13. At these distances, maximum noise levels from construction activities at the building site could range from 45 dBA up to 75dBA L_{max} at the property line of the nearest sensitive locations.

These levels represent a substantial temporary increase in ambient noise levels in the vicinity of the project. This is considered a **significant** short-term, temporary, noise impact (**Impact 3.10-7**). Please refer to Section 3.10.5 for mitigation to address this impact.

Combined VMT and Orcem Analysis

As described under both the VMT and Orcem analyses, construction noise impacts would include indirect off-site noise associated with traffic trips for workers and materials, and on-site noise from equipment and construction activities. The transport of workers and construction equipment and materials to the project site would incrementally increase noise levels on access roads leading to the site. Because workers and construction equipment would use existing routes, noise from slow-moving passing trucks (75 dBA L_{max} at 50 feet) would be similar to existing vehicle-generated noise. For this reason, short-term intermittent noise from trucks would be minor when averaged over a longer time period.

Table 3.10-27 presents the predicted maximum noise levels at these nearest noise sensitive locations for a range of expected construction activities for both the VMT and Orcem project components. The major difference in construction between the two project components is the installation of pilings as part of the VMT component.

The closest noise-sensitive land uses to the project construction areas are NSL1, NSL2, and NSL3, which adjoin the project site. These properties are located between 360 and 1,427 feet from the construction activity reflected in Table 3.10-27. At these distances, maximum noise levels from construction activities at either building site could range from 45 dBA up to 75 dBA L_{max} at the property line of the nearest noise-sensitive locations. In a worst-case scenario, if the most noise-intensive construction activity were to occur simultaneously on both the VMT and Orcem Sites, maximum construction noise could range up to 78 dBA L_{max} at the property line of the nearest noise-sensitive locations (the sum of 75 dBA plus 75 dBA). This noise level would be just noticeable to an average resident, compared to the 75 dBA maximum noise level from either of the two project components alone. However, these levels would represent a substantial temporary increase in ambient noise levels in the vicinity of the project. This is considered a **significant** short-term, temporary, noise impact (**Impact 3.10-8**). Please refer to Section 3.10.5 for mitigation to address this impact.

3.10.5 Mitigation Measures

Mitigation for Impacts 3.10-1 and 3.10-4: VMT Rail transportation activity, including the movement of rail cars along facility and adjoining track and the loading of materials into rail cars, would generate a significant permanent increase in noise levels at two noise-sensitive receptor locations that would exceed established standards.

MM-3.10-1a ~~VMT shall work with the California Northern Railroad to upgrade the existing track and any new track to a Continuous Welded Rail (CWR) which will remove the joints and provide a smooth continuous surface for rolling stock. Successful application of this measure would reduce the noise levels generated by rolling stock movements by 5 decibels (dB). The goal of this mitigation is to upgrade to CWR for all tracks as far as the junction with Chestnut Street to the north of the site. Figure 3.10-8 illustrates the extent of the CWR that is the goal under this mitigation~~California Northern Railroad shall not allow the use of rail cars with worn wheels to serve the project, which the railroad has confirmed is consistent with their operating policies. These measures would reduce rail-related noise and vibration levels to less than significant levels, even with the continued presence of jointed rail tracks.

MM-3.10-1b In order to mitigate excess noise generated by loading material into the rail and barge hoppers due to the impact of stone/gravel on the metal walls of the hopper, hoppers shall be lined with a rubber wearing sheet. Application of this measure would reduce hopper noise by 10 decibels (dB).

MM-3.10-1c On the basis of the review of the Draft EIR, mitigation has been incorporated to account for a shift in train arrivals and departures time. Following the preparation of the Draft EIR, the California Northern Railroad has confirmed the proposed project will be served by the normal operating hours of the railroad from 7:00 a.m. to 6:00 p.m. Monday to Friday. When railroad arrivals or departures are limited to daytime hours only, the L_{night} and L_{dn} levels would be only slightly reduced. In addition, all on-site rail loading and unloading activity shall be limited to the hours between 7:00 a.m. and 7~~10~~:00 p.m. to bring the project in compliance with General Plan Policy Action NBE-5.1C.

Mitigation for Impacts 3.10-2 and 3.10-5: The operation of the Orcem Plant, including all phases of materials handling and plant production, would generate a significant permanent increase in noise levels at three noise-sensitive receptor locations adjacent to the Orcem Site that would exceed established standards.

MM-3.10-2 In order to reduce the noise impact of the plant operation, a series of improvements are required for specific items in the plant as follows.

- An in-line attenuator shall be incorporated between the main fan (561-FN1) and the stack exhaust, offering minimum insertion losses as per Table 3.10-31.

- Local screening shall be provided adjacent to the clinker store bag filter fan (513-FN1) to reduce the noise level by 19 decibels (dB).
- Local screening shall be provided adjacent to the bag filter fan (521-FN1) to reduce the noise level by 18 dB.
- Local screening shall be provided adjacent to the air shock (531-AB1) to reduce the noise level by 9 dB.
- Local screening shall be provided adjacent to the main fan (561-FN1) to reduce the noise level by 9 dB.
- Local screening shall be provided adjacent to the bag filter fan on the intake Silo (521-FN2) to reduce the noise level by 8 dB.
- Local screening shall be provided adjacent to the air slide fans within the filter building (591-FA1, 591-FA2, 591-FA3) to reduce the noise level by 7 dB.
- Local screening shall be provided adjacent to the filter building bag filter fan (591-FN1) and the silo fan (591-FN3) to reduce the noise emission of each source by 3 dB.

Table 3.10-31
Orcem Plant Exhaust Stack Mitigation Requirements

	Measured Static Insertion Loss Octave Band Center Frequency (Hz) dB							
Ref	*63*	*125*	*250*	*500*	*1k*	*2k*	*4k*	*8k*
Stack Attenuator	11	13	15	17	19	20	20	20

Mitigation for Impact 3.10-3: The VMT project component would generate significant groundborne vibrations because of rail operations due to rolling stock on the existing jointed track.

Refer to mitigation measure **MM-3.10-1a**.

Mitigation for Impacts 3.10-6: The construction of the VMT facility would generate temporary noise levels up to 75 dBA L_{eq} at the closest residential receptor locations, resulting in potentially significant construction noise nuisance impacts.

MM-3.10-3a The following measures shall be adhered to during construction of the VMT facility.

- All construction equipment must have appropriate sound-muffling devices, which shall be properly maintained and used at all times such equipment is in operation.

- Where feasible, the project contractor shall place all stationary construction equipment so that emitted noise is directed away from sensitive receptors nearest the project site.
- The construction contractor shall locate on-site equipment staging areas so as to maximize the distance between construction-related noise sources and noise-sensitive receptors nearest the project site.
- Except as otherwise permitted, construction activities shall be restricted to the hours of 7:00 a.m. to 7:00 p.m. Monday to Saturday. Construction shall be prohibited on Sundays.
- Large potholes or rough pavement along Derr Avenue and Lemon Street within 0.50 mile of the plant shall be repaired in accordance with standards as determined necessary and feasible by the Vallejo Public Works Director to reduce roadway noise from construction vehicle and equipment transport.

MM-3.10-3b The following measures shall be implemented during construction of the VMT project component in order to lessen pile-driving noise impacts.

- Use a timber cushion block between the pile and hammer head to reduce impact noise.
- Correct alignment of pile and rig to reduce noise from pile guides and attachments.
- Use acoustic screens or efficient sound reducing exhausts to power units.

Mitigation for Impact 3.10-7: The construction of the Orcem Plant would generate temporary noise levels up to 75 dBA L_{eq} at the closest residential receptor locations, resulting in potentially significant construction noise nuisance impacts.

MM-3.10-4 The following measures shall be adhered to during construction of the Orcem facility.

- All construction equipment must have appropriate sound-muffling devices, which shall be properly maintained and used at all times such equipment is in operation.
- Where feasible, the project contractor shall place all stationary construction equipment so that emitted noise is directed away from sensitive receptors nearest the project site.
- The construction contractor shall locate on-site equipment staging areas so as to maximize the distance between construction-related noise sources and noise-sensitive receptors nearest the project site.

- Except as otherwise permitted, construction activities shall be restricted to the hours of 7:00 a.m. to 7:00 p.m. Monday to Saturday. Construction shall be prohibited on Sundays.
- The project applicant shall establish and maintain a hot-line for the duration of the construction period to receive and respond to noise complaints.

Mitigation for Impact 3.10-8: The combined effects of construction of the VMT and Orcem project components would result in a substantial temporary increase in ambient noise levels in the vicinity of the project site.

Refer to mitigation measures **MM 3.10-3a, MM-3.10-3b**, and **MM 3.10-4**.

3.10.6 Level of Significance After Mitigation

Impacts 3.10-1, 3.10-3, and 3.10-4: Implementation of mitigation measures MM-3.10-1a, MM-3.10-1b, and MM-3.10-1c would reduce VMT's operational noise levels, as illustrated in Table 3.10-32. to **less-than-significant** levels.

~~However, implementation of mitigation measure MM-3.10-1a would be dependent on the California Northern Railroad since the City does not have jurisdiction over the railroad. While the City can require the applicants to work with the California Northern Railroad to make these improvements, the City cannot ensure that the California Northern Railroad will agree to make the improvements. Therefore, Impact 3.10-3 would remain significant and unavoidable with mitigation.~~

Table 3.10-32
Mitigated Noise Levels from All VMT Operations Activity (Combined)

Location	Phase	VMT Bulk Terminal dB L_{dn}	VMT Rail dB L_{dn}	VMT Trucks dB L_{dn}	VMT Total Noise dB L_{dn}	Existing Baseline Level dB L_{dn}	Total Noise Level dB L_{dn}	Increase in Noise Level, dB L_{dn}
NSL1	1	46	39	n/a	46	55	56	1
	2	46	39	n/a	47		56	1
NSL2	1	51	37	n/a	51	53	55	2
	2	51	37	n/a	51		55	2
NSL3	1	44	45	37	48	52	53	1
	2	46	45	37	49		54	2
NSL4	1	47	46	38	50	52	54	2
	2	49	46	38	51		55	3
NSL5	1	41	50	49	55	52	57	5
	2	44	50	49	55		57	5
NSL6	1	32	52	61	62	57	63	6
	2	36	52	61	62		63	6
NSL7	1	29	43	61	61	63	65	2
	2	31	43	61	61		65	2

Table 3.10-32
Mitigated Noise Levels from All VMT Operations Activity (Combined)

Location	Phase	VMT Bulk Terminal dB L_{dn}	VMT Rail dB L_{dn}	VMT Trucks dB L_{dn}	VMT Total Noise dB L_{dn}	Existing Baseline Level dB L_{dn}	Total Noise Level dB L_{dn}	Increase in Noise Level, dB L_{dn}
NSL8	1	49	40	n/a	50	54	55	1
	2	51	40	n/a	51		56	2
NSL9	1	23	43	61	61	63	65	2
	2	26	43	61	61		65	2
NSL10	1	37	43	n/a	53	52	55	3
	2	40	43	n/a	53		55	3

Impacts 3.10-2 and 3.10-5: Implementation of mitigation measure MM-3.10-2 would reduce Orcem's operational noise impacts to a **less-than-significant** level.

Impact 3.10-6: Implementation of mitigation measures MM-3.10-3a and MM-3.10-3b would reduce VMT's construction noise impacts to a **less-than-significant** level.

Impact 3.10-7: Implementation of mitigation measure MM-3.10-4 would reduce Orcem's construction noise impacts to a **less-than-significant** level.

Impact 3.10-8: Implementation of mitigation measures MM-3.10-3a, MM-3.10.3b, and MM-3.10-4 would reduce the combined construction noise impacts to a **less-than-significant** level.

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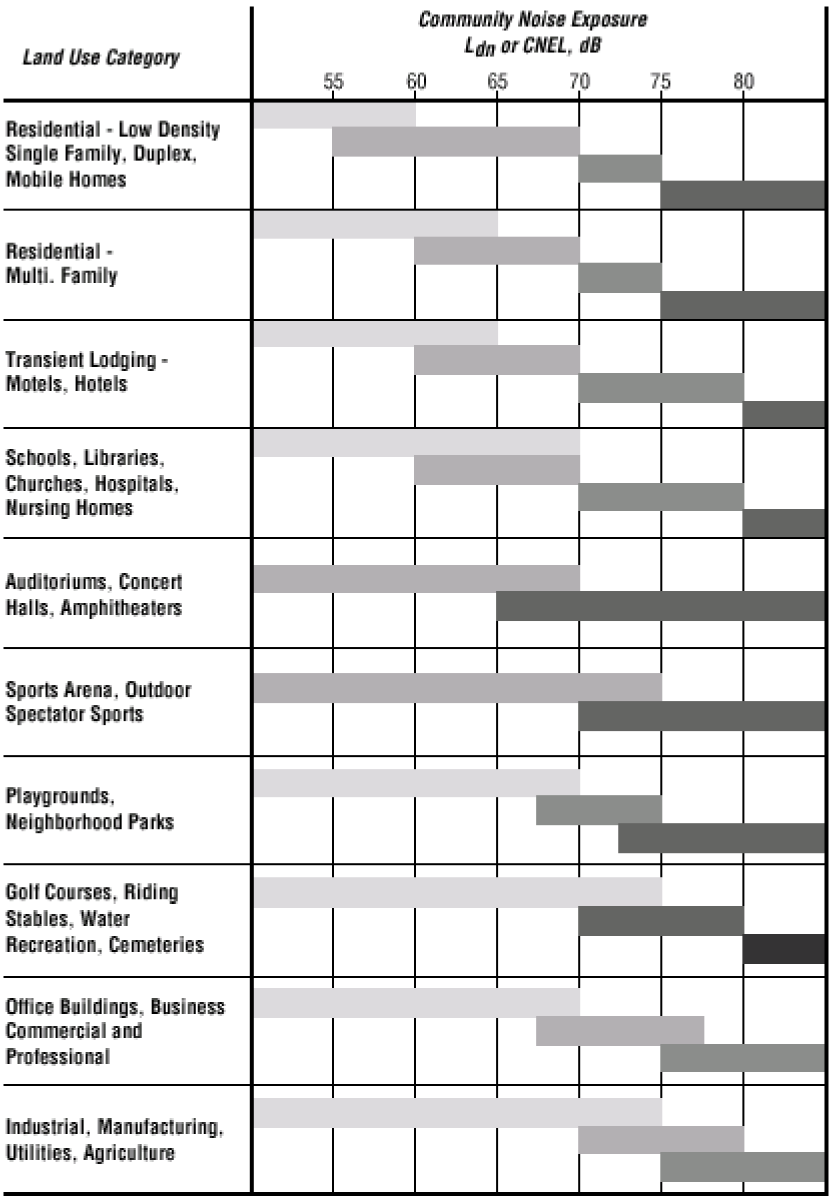

INTERPRETATION:

Normally Acceptable
Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

Conditionally Acceptable
New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.

Normally Unacceptable
New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

Clearly Unacceptable
New construction or development should generally not be undertaken.

FIGURE 3.10-1
Land Use Compatibility Guidelines (Community Noise)

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Project Site

FIGURE 3.10-2
Noise Monitor Locations

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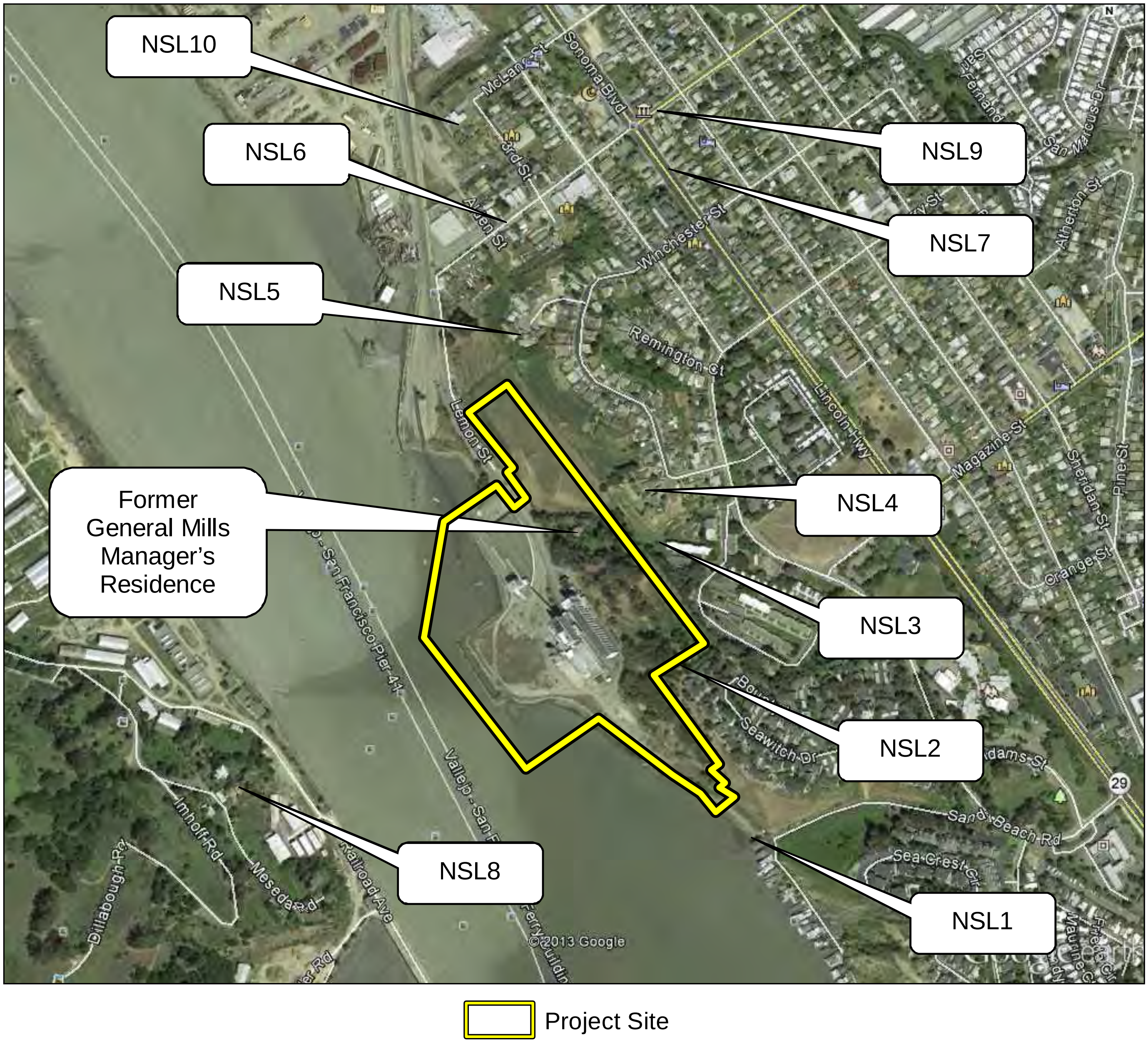

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SOURCE: AWN Consulting 2014

FIGURE 3.10-3

Noise Sensitive Land Use Locations in the Project Vicinity

VALLEJO MARINE TERMINAL AND ORCEM PROJECT

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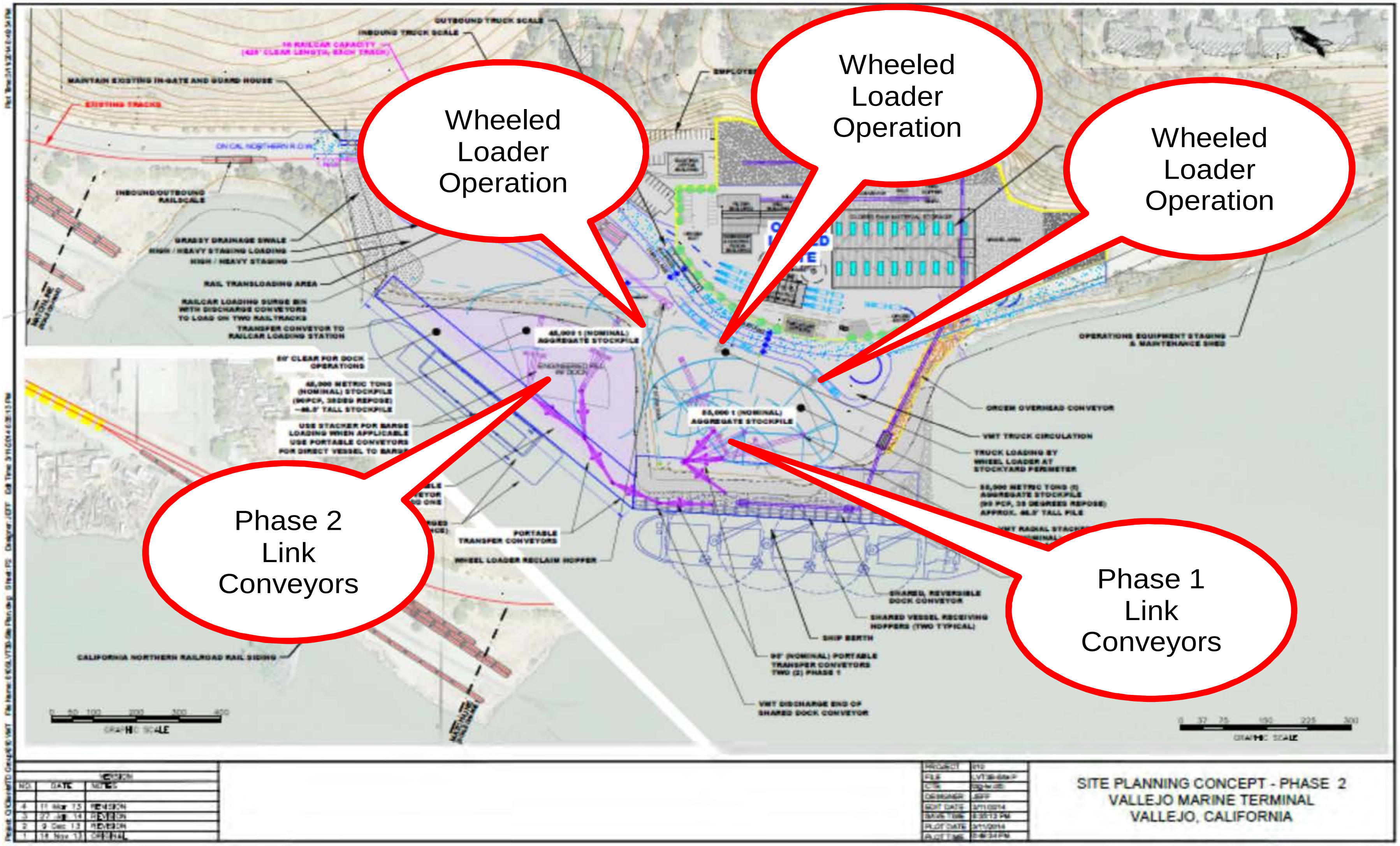

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SOURCE: AWN Consulting 2014

FIGURE 3.10-4

VMT Mobile Plant Operations Layout

VALLEJO MARINE TERMINAL AND ORCEM PROJECT

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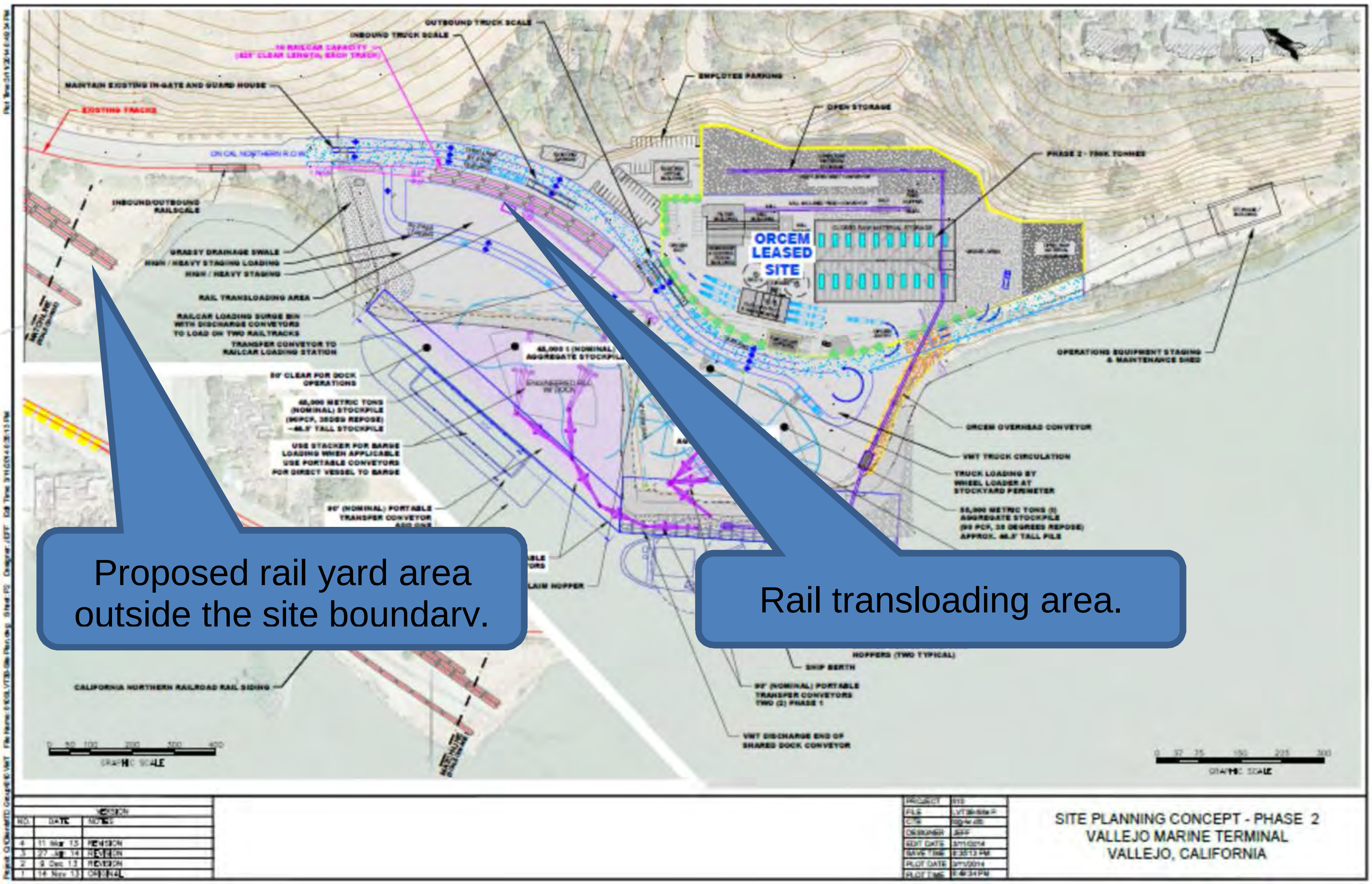

SOURCE: AWN Consulting 2014

FIGURE 3.10-5

VMT On-Site Rail Activity Areas

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VALLEJO MARINE TERMINAL AND ORCEM PROJECT

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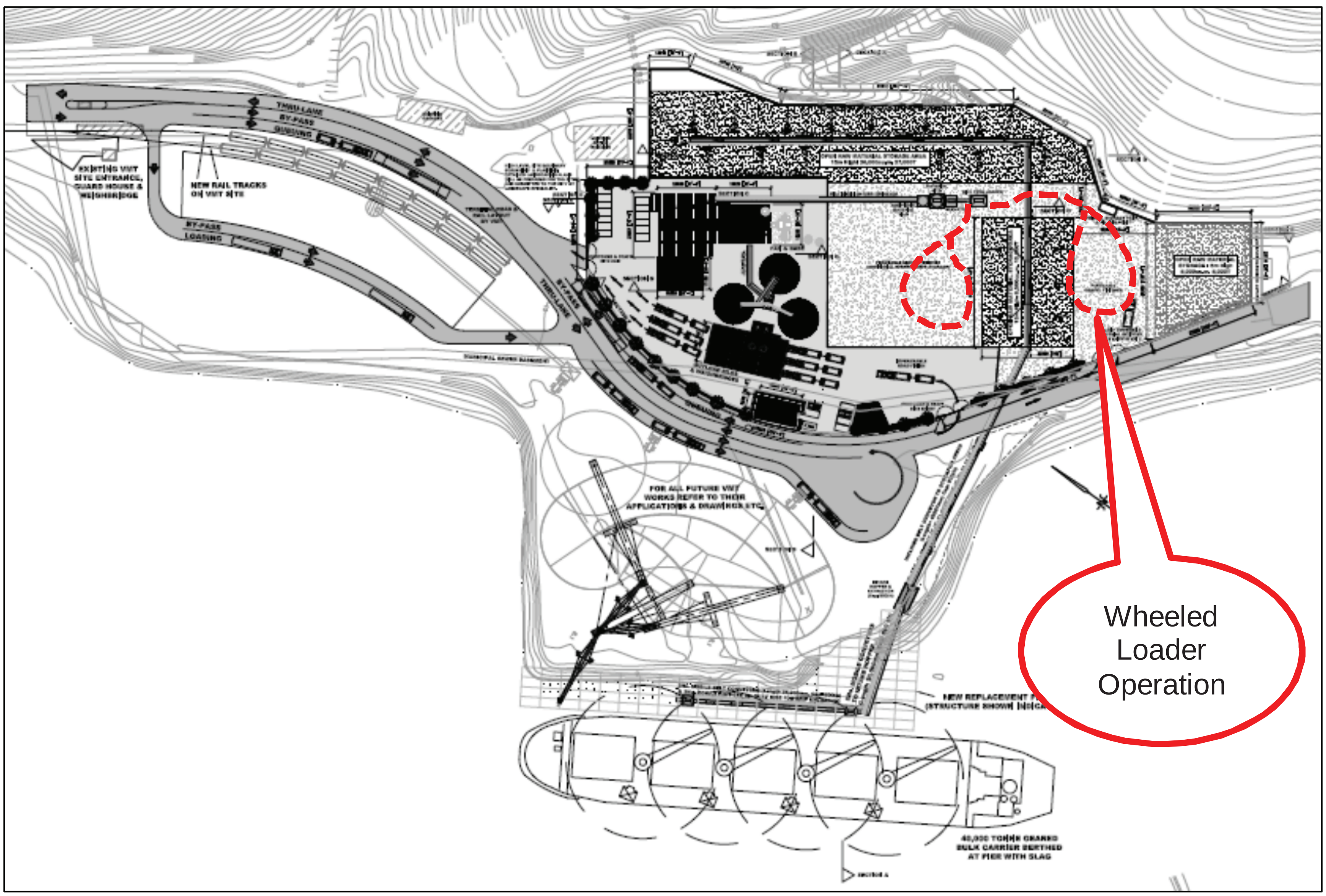

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SOURCE: AWN Consulting 2014

FIGURE 3.10-6
Orcem Plant Wheeled Loader Operations Area

VALLEJO MARINE TERMINAL AND ORCEM PROJECT

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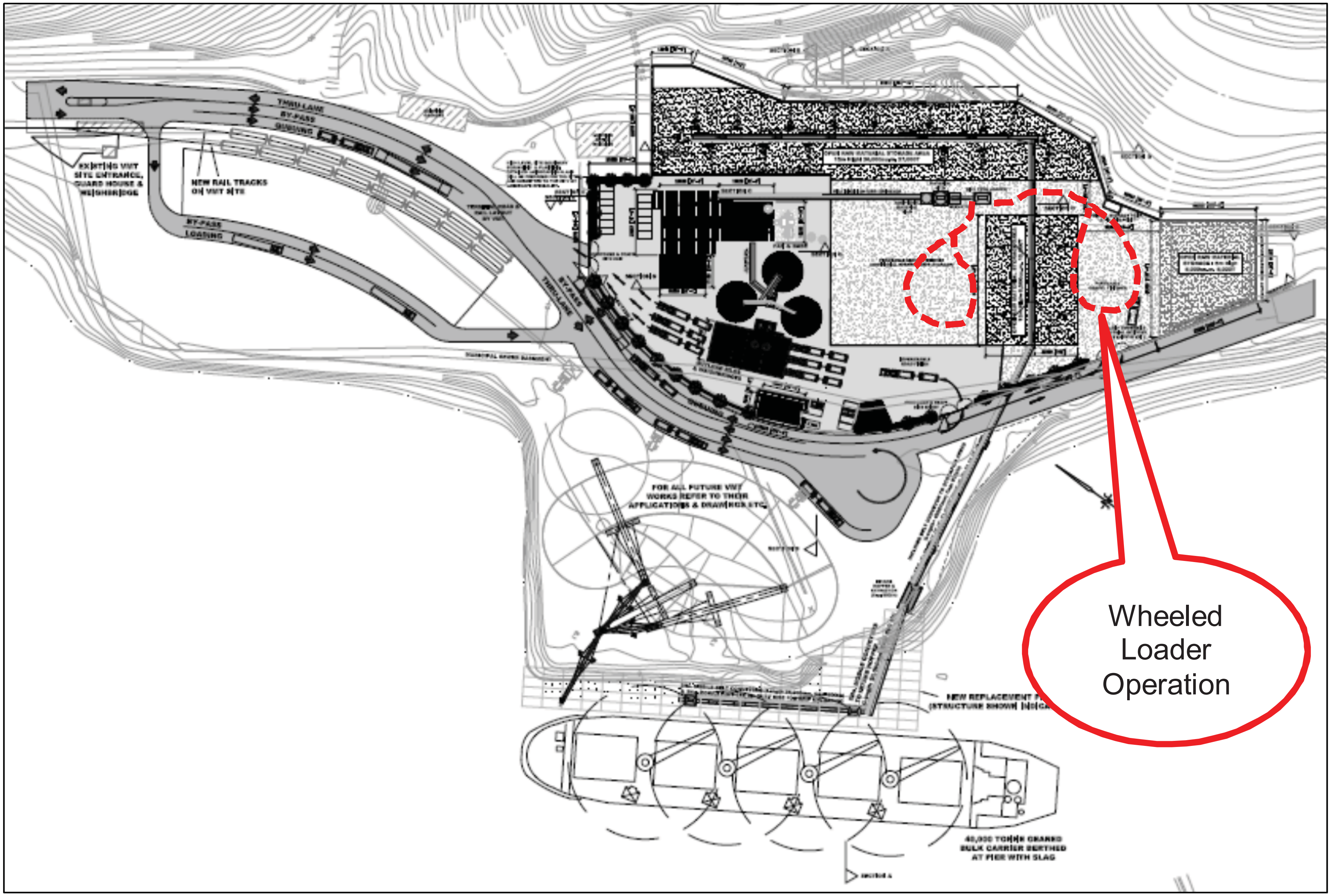

SOURCE: AWN Consulting 2014

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FIGURE 3.10-6

Orcem Plant Wheeled Loader Operations Area

VALLEJO MARINE TERMINAL AND ORCEM PROJECT

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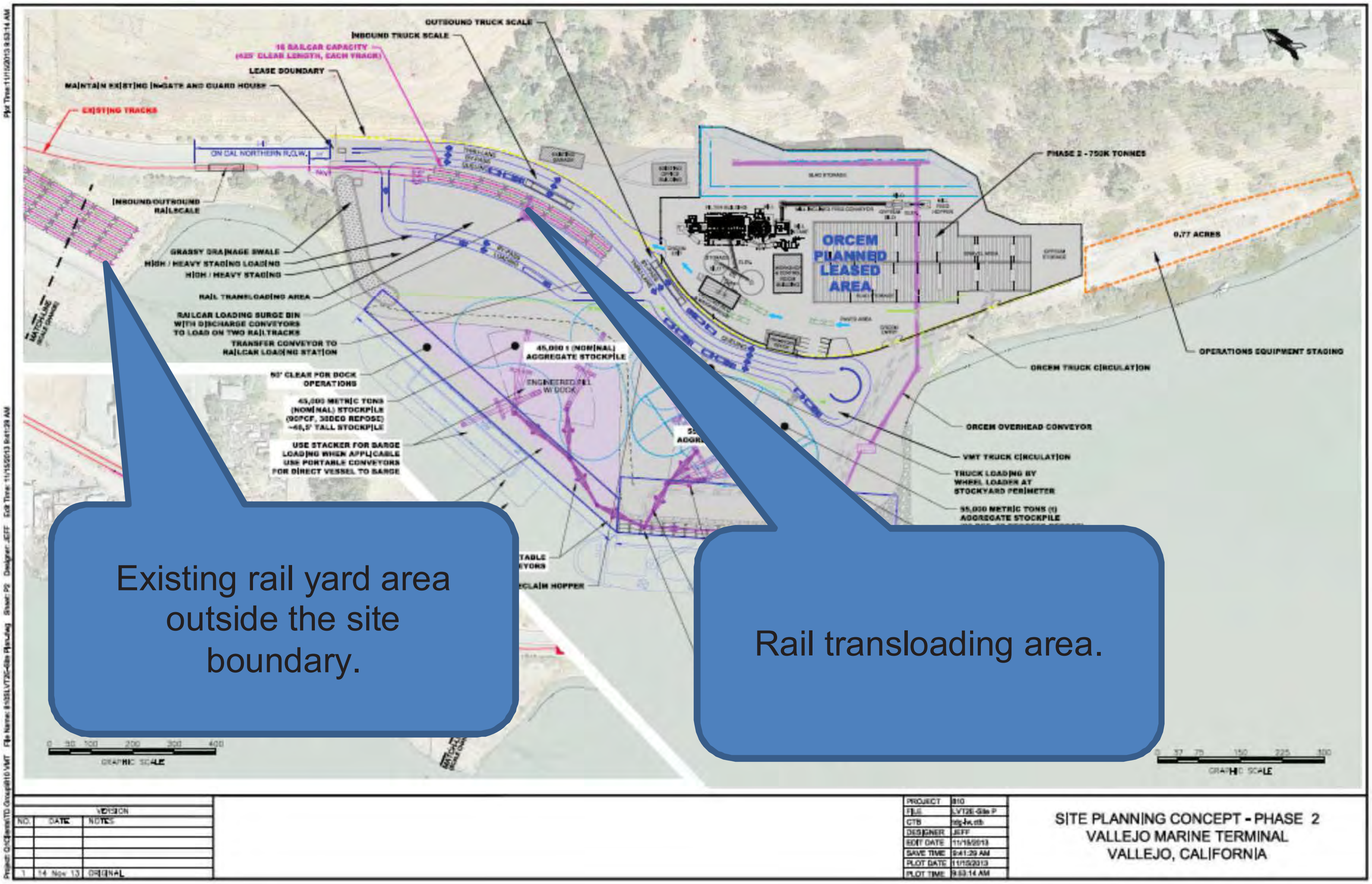

SOURCE: AWN Consulting 2014

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FIGURE 3.10-7

Orcem On-Site Rail Activity Areas

VALLEJO MARINE TERMINAL AND ORCEM PROJECT

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3.11 PUBLIC SERVICES AND RECREATION

This section analyzes the potential impacts of the Vallejo Marine Terminal (VMT) and Orcem project (proposed project) with respect to public services and recreation and recommends mitigation measures where necessary to reduce or avoid significant impacts.

3.11.1 Regulatory Setting

Federal

Maritime Transportation Security Act of 2002

The Maritime Transportation Security Act of 2002 (MTSA) amends the Merchant Marine Act of 1936 to establish a program to ensure greater security for U.S. ports and waterways. The MTSA, which implements the International Ship and Port Facility Security Code, creates a consistent security program for all U.S. ports. The MTSA requires vessels and port facilities to conduct vulnerability assessments and develop security plans that address security patrols, restricted areas, personnel identification procedures, access control measures, and surveillance equipment.

Security and Accountability for Every Port Act of 2006

The Security and Accountability for Every (SAFE) Port Act of 2006 modified existing legislation and created and codified new programs related to maritime security. These programs to improve security of U.S. ports include creation of the Transportation Worker Identification Credential, interagency operational centers for port security, the Port Security Grant Program, the Container Security Initiative, foreign port assessments, and the Customs Trade Partnership Against Terrorism. The Department of Homeland Security and its U.S. Coast Guard, Transportation Security Agency, and U.S. Customs and Border Protection have key maritime security responsibilities.

State

California Code of Regulations Title 24, Part 2 and Part 9

Part 2 of Title 24 of the California Code of Regulations (CCR) refers to the California Building Code, which contains regulations and general construction building standards of state adopting agencies, including administrative, fire, and life safety and field inspection provisions. Part 2 was updated in 2008 to reflect changes in the base document from the Uniform Building Code to the International Building Code. Part 9 refers to the California Fire Code, which contains fire safety-related building standards referenced in other parts of Title 24. This code is preassembled with the 2000 Uniform Fire Code of the Western Fire Chiefs Association. This code was revised in January 2008 with a change in the base model/consensus code from the Uniform Fire Code series to the International Fire Code.

California Fire Code

The California Fire Code and Office of the State Fire Marshall provides regulations and guidance for local agencies in the development and enforcement of fire safety standards. The California Fire Code also establishes minimum requirements that would provide a reasonable degree of safety from fire, panic, and explosion.

Local

City of Vallejo General Plan

The City of Vallejo adopted the General Plan 2040 in August 2017 (City of Vallejo 2017). The General Plan 2040 replaced the previous General Plan, most recently amended in 1999. The General Plan 1999 was the basis of earlier drafts of this EIR. This document, where necessary and appropriate, updates any policies pertaining to public services and recreation that may have changed in the General Plan 2040. This discussion is shown in redline and/or strikeout in this document for ease of review.

The following goals and policies in the General Plan 2040 are applicable to public services and recreation.

POLICY CP-1.4 Active Recreation Facilities. Ensure all Vallejo residents are served by convenient and safe active recreation facilities that meet the needs of all ages, abilities, and interest groups.

- *Action CP-1.4A Include active recreation opportunities for a range of ages and interests as considerations in planning and projects for the central waterfront and shoreline areas.*
- *Action CP-1.4C Explore opportunities for providing access to safe places for recreational in-water activities, such as boating, kayaking, paddle boarding, and swimming.*

POLICY CP-1.5 Active Recreation Programming. Support and expand active recreation programs in Vallejo.

- *Action CP-1.5A Support the [Greater Vallejo Recreation District] GVRD, residents, and community partners to assess the need for recreation facilities, programs, and services and develop a strategy for addressing those needs.*

POLICY CP-1.6 Active Transportation Network. Promote the health benefits of walking and bicycling by providing a convenient and safe network of bicycle paths and routes, sidewalks, pedestrian paths, and trails, including connections with major destinations such as civic facilities, educational institutions, employment centers, shopping, and recreation areas.

- *Action CP-1.6E Seek resources to increase police presence in and around bike and walking paths and pedestrian areas, through means such as reintroducing bike patrols by the Vallejo Police Department and re-establishing police substations in key areas.*

POLICY CP-1.13 Clean Water. Provide a safe, adequate water supply citywide.

- *Action CP-1.13E Support the efforts of federal, State, regional, and local agencies to clean up impaired water bodies in Vallejo.*

POLICY CP-2.1 Police Services. Provide responsive, efficient, and effective police services that promote a high level of public safety.

- *Action CP-2.1A Maintain community engagement initiatives and strengthen partnerships with community members and neighborhood groups to combat crime, improve public safety, and facilitate communication regarding law enforcement needs.*

POLICY CP-2.2 Safer Urban Design. Improve public safety and reduce demand for police service through project design enhancements in new development and public spaces.

- *Action CP-2.2A Continue to include the Police Department in the review of major new development plans and projects, particularly those related tobacco and alcohol establishments, to ensure that projects are designed and operated in a manner that minimizes the potential for criminal activity and maximizes the potential for responsive police services.*
- *Action CP-2.2C Work with the GVRD to improve and maintain park facilities as safe places for community gathering.*

POLICY CP-2.3 Fire Prevention and Response Services. Ensure the provision of fire prevention and emergency response services that minimize fire risks and protect life and property.

- *Action CP-2.3A Periodically review response times to gauge the need for additional VFD facilities, equipment, and personnel, and identify specific geographic areas of the city that may not be adequately served.*
- *Action CP-2.3E Work with property owners and public agencies to ensure that plant growth is managed to minimize fire danger.*

POLICY CP-3.4 Parks. Plan for and provide parkland and facilities to support Vallejo's recreational needs.

POLICY CP-3.5 Parks Maintenance. Maintain and improve parks and facilities in Vallejo.

- *Action NBE-1.3C Provide or encourage public access to natural resource areas where appropriate, to enhance environmental awareness as well as passive recreational opportunities.*

- ~~*Action NBE-1.3C Provide or encourage public access to natural resource areas where appropriate, to enhance environmental awareness as well as passive recreational opportunities.*~~

POLICY NBE-1.6 Open Space. Conserve and enhance natural open space areas in and adjacent to Vallejo and its waterfront.

- *Action NBE-1.6B Identify lands in Vallejo that provide connections for animals between open spaces and/or important habitat, and assist conservation agency efforts to acquire land and/or establish easements that facilitate wildlife movement.*
- *Action NBE-1.6C In coastal wetland and marsh areas and along creeks, allow and provide amenities to support public recreational activities compatible with conservation of the natural environment, such as picnicking, hiking, and nature and wildlife educational opportunities.*

POLICY NBE-2.9 Public Service Provision. Ensure that private development provides sufficient funding for infrastructure and public services to support the development.

- *Action NBE-2.9A Require fiscal impact analyses, as appropriate, for development proposals in order to evaluate public facility needs and costs, and the revenue likely to be generated by that development.*

POLICY NBE-4.1 Waterfront Focus. Prioritize public access and recreational and water-dependent uses along the waterfront while minimizing adverse effects on the natural environment.

POLICY MTC-2.3 Emergency Response Routes. Ensure adequate emergency vehicle access in all areas of Vallejo.

- *Action MTC-2.3B Continue to involve the Police and Fire Departments in the development review process to ensure that applicable requirements for emergency access are met.*

~~The Vallejo General Plan identifies the following goals and policies related to public services and recreation (City of Vallejo 1999).~~

~~*Fire Hazards Goal:* To protect life, property, and public well-being from seismic, floodplain, and other environmental hazards and to reduce or avoid adverse economic, social, and physical impacts caused by existing environmental conditions.~~

- ~~*Policy 1:* Use the Vallejo Fire Department Master Plan in evaluating all planning proposals.~~

- ~~*Policy 3:* Continue irrigated, fire resistant landscape policy in new development.~~

~~*Parks and Open Space Goal*: To have a park and open space system that is convenient and properly designed to serve the needs of all residents of the community.~~

- ~~*Policy 1:* Park design should be compatible with the surrounding land uses, and should reflect the natural environment. All proposed parks and recreational open space should be evaluated by the appropriate agencies and groups (including Planning, Public Works, Police, Fire, GVRD [Greater Vallejo Recreation District], VSFCD [Vallejo Sanitation and Flood Control District], VCUSD [Vallejo City Unified School District], Environmental Health and affected neighborhood organizations) in terms of community need, proper location and orientation, and accessibility.~~
- ~~*Policy 2:* Parks and recreational open space that will be dedicated should be consistent with the Master Plan adopted by GVRD.~~
- ~~*Policy 3:* The design of parks should take into consideration the concept of defensible open space to protect the safety of park users and the surrounding land uses.~~

Greater Vallejo Recreation District Park and Recreation Master Plan

The Greater Vallejo Recreation District (GVRD) is an independent special service district that has been providing recreational and leisure services to the citizens of Vallejo since 1944. GVRD is independent and separate from the City of Vallejo; however, GVRD manages most City-owned recreational properties (GVRD 2014).

The GVRD Park and Recreation Master Plan evaluates existing park and recreation areas and provides recommendations for meeting existing and future park and recreation needs within GVRD. The master plan also establishes criteria and standards for park and recreation areas and recommends funding mechanisms for implementation of the plan (GVRD 2006).

San Francisco Bay Trail Plan

The San Francisco Bay Trail Plan (Bay Trail Plan) is administered by the Association of Bay Area Governments. The Bay Trail is a multi-purpose recreational trail that, when complete, would encircle San Francisco Bay and San Pablo Bay with a continuous 400-mile network of bicycling and hiking trails. The trail would connect the shoreline of all nine Bay Area counties, link 47 cities, and cross the major bridges in the region.

3.11.2 Existing Conditions

Fire and Emergency Services

The project site is served by the Vallejo Fire Department (VFD). The VFD service area includes 53.58 square miles of incorporated City Limits, and the East Vallejo Fire District. VFD also provides fire and medical service for the unincorporated areas in the City's sphere of influence. The VFD consists of four divisions: the Emergency Medical Services Division, Fire Prevention Division, Fire Suppression Division, and Fire Training Division (City of Vallejo 2013a). There are six fire stations located throughout the City of Vallejo (City of Vallejo 2013b). Station 22, located at 700 Fifth Street, approximately 0.5 mile from the project site, is the station nearest the project site.

Police Services

The project site is served by the Vallejo Police Department (VPD). The site is also secured and patrolled by a private security company. The strategic goals of the VPD include the following (City of Vallejo 2013c):

- Deliver police services that satisfy customer needs.
- Develop, empower, and sustain a highly professional workforce.
- Employ management systems that improve organizational effectiveness.
- Promote awareness and understanding between the Police Department and the people it serves.
- Foster a quality culture throughout the organization.

The VPD is located approximately 1.5 miles from the project site at 111 Amador Street.

Recreation Facilities

GVRD currently operates: 20 neighborhood parks, 4 community parks, and 4 special purpose parks; an Olympic-size swimming pool; and 4 community centers. It also manages over 1,000 acres of public land within the City and some surrounding areas (GVRD 2014). The closest park to the project site is the 5-acre Carquinez Park, which is located approximately 0.5 mile southeast of the site, adjacent to Grace Patterson Elementary School. This park does not have a playground, lighting, or pathways, and is not heavily used except for dog walking (GVRD 2006).

3.11.3 Thresholds of Significance

The following criteria, included in Appendix G of the California Environmental Quality Act (CEQA) Guidelines (14 CCR 15000 et seq.), will be used to determine the significance of potential public services and recreation impacts. Impacts to public services and recreation would be significant if the proposed project would:

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

B) Include recreational facilities or require the construction or expansion of recreational facilities which might, have an adverse physical effect on the environment.

3.11.4 Impact Discussion

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

Fire protection

VMT and Orcem Project Analysis

The proposed project could increase the demand for fire protection due to the nature of the proposed uses on the site, which include heavy manufacturing and industrial uses. However, the project site is equipped with an existing 8-inch to 10-inch diameter looped water main that serves the overall site, delivering raw water for fire protection purposes. This fire protection system would be upgraded with placement of approved fire hydrants, and permanently maintained in accordance with the VFD standards to provide sustained water volumes for fire suppression purposes within the project site. In addition, VFD has confirmed that they have adequate equipment and personnel to serve the proposed project, and the project would not increase response times or otherwise impact performance of VFD (Sproete, pers. comm. 2014). Therefore, no new or physically altered fire protection facilities would be required as a result of the project, and impacts would be **less than significant**.

~~**Off-Site Improvements**~~

~~The proposed project includes two off-site improvements (public access improvements and removal of existing deteriorated docks) that would take place at the City of Vallejo Municipal Marina located approximately 2 miles north of the project site. These improvements would not increase the demand for fire protection services. Therefore,~~ ~~**no impact**~~ ~~would occur as a result of the off-site improvements.~~

Police protection

VMT and Orcem Project Analysis

The proposed project could increase the demand for police protection by increasing use of the site compared to existing conditions. The site is currently vacant and is secured by perimeter fencing to keep the public off the site. With implementation of the proposed project, the project site would continue to be secured, and there would be no public access permitted. Due to the nature of the planned operations on the site, including shipping, the site would be a Department of Homeland Security-controlled site. All workers, including rail engineers and truck drivers, would be required to have a Transportation Worker Identification Credential to access the site at all times. Perimeter site fencing would be repaired as necessary, as part of an overall effort to enhance site security consistent with Department of Homeland Security marine terminal security requirements. Given the high level of security required for the site and the restrictions on public access, a substantial increase in police service needs is not anticipated. However, the project could indirectly impact police response times should traffic be impeded by such operations. The potential traffic impacts resulting from the project are evaluated in Section 4.12 of this Environmental Impact Report (EIR). Despite the potential for a slight increase in response times as a result of the project, the VPD has confirmed that they have the personnel needed to adequately serve the project (O'Connell, pers. comm. 2014). Therefore, the project would not trigger the need for new or improved police facilities in order to serve the project, and impacts would be **less than significant**.

~~**Off-Site Improvements**~~

~~The proposed project includes two off-site improvements that would take place at the City of Vallejo Municipal Marina located approximately 2 miles north of the project site as described earlier. These improvements would not increase the demand for police protection services. Therefore,~~ ~~**no impact**~~ ~~would occur as a result of the off-site improvements.~~

B) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might, have an adverse physical effect on the environment?

VMT and Orcem Project Analysis

The Bay Conservation and Development Commission (BCDC) requires shoreline development projects, such as the proposed project, to provide public access to the bay. As described under Police Services above, the project site would not be open to public access due to Department of Homeland Security regulations pertaining to maritime facilities. BCDC allows projects that cannot permit public access for safety and security reasons to provide in-lieu public access in an off-site location. ~~In order to meet this requirement, the applicants would install a new self-propelled personal watercraft launch ramp just north of the access ramp to K Dock at the south end of the marina (see the following Off-Site Improvements discussion). The environmental effects of the proposed launch ramp have been analyzed as part of the project throughout this EIR.~~

The applicant team is proposing to contribute $381,500 to close the funding gap for the design phase of the Bay/Vine Trail project. The funds will be used to complete the trail alignment design through the City of Vallejo. The goal of the Bay Trail is to provide a multi-use path as close to the shoreline as possible allowing the residents to enjoy coastal resources. It should be noted that an Active Transportation Program grant has been awarded to the City of Vallejo for the construction of the trail. This grant covers 88% of the construction costs. It is anticipated that the design phase of the project will be completed by February 2020 and construction will begin in FY 2021-22. The Bay/Vine Trail public improvements are a high priority in the City of Vallejo's General Plan 2040. The proposed funding must be reviewed by BCDC at the time of the VMT project component's permitting. If additional mitigation is required by BCDC, additional environmental review may be necessary. Therefore, no additional adverse physical effects on the environment are anticipated, and impacts would be **less than significant**.

~~**Off-Site Improvements**~~

~~The proposed project includes two off-site improvements that would take place at the City of Vallejo Municipal Marina located approximately 2 miles north of the project site as described earlier. The off-site improvements have been analyzed as part of the project throughout this EIR, and no additional adverse physical effects would occur as a result of the improvement. Therefore, impacts would be **less than significant**.~~

3.11.5 Mitigation Measures

No mitigation is required.

3.11.6 Level of Significance After Mitigation

No mitigation measures are required; therefore, impacts would remain less than significant.

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3.12 TRANSPORTATION AND TRAFFIC

This section analyzes the potential impacts of the Vallejo Marine Terminal (VMT) project component and the Orcem project component (together the proposed project) with respect to transportation and traffic, and recommends mitigation measures where necessary to reduce or avoid significant impacts. The impacts of the two project components are identified separately, along with the combined impacts, for both Existing Plus Project and Cumulative (year 2040) conditions. All figures referenced in this section are provided at the end of the section. Supporting data and calculations, including the traffic counts, intersection level of service (LOS) calculations, and freeway LOS calculations, are provided in the following appendix:

Appendix L: Fehr and Peers. 2018~~6~~. *Transportation Technical Data.*

This chapter has been updated from the chapter presented in the February 2017 Draft Final EIR for the Vallejo Marine Terminal and Orcem Project to present a description of revised daily and peak hour truck traffic estimates, and an analysis of revised train lengths. The following changes were made:

- Vehicle trip generation estimates were modified to reflect the VMT and Orcem operations as described in the updated project description, and summarized in the Transportation Impact Analysis Data Sheet, March 29, 2018 (see Appendix L).
- Traffic volume graphics were modified to reflect the changes noted above.
- The rail crossing analysis was modified to reflect the updated maximum train lengths.

Note that the peak hour traffic operations analysis was not updated to reflect the changes in project-generated peak hour traffic because the results would not change the findings of no significant impact for peak hour traffic operations; the volume changes represent reductions of between 4 and 14 peak hour trips for the turning movements affected by project traffic at the study intersections.

In addition, the regulatory setting has been updated to remove reference to the 1999 General Plan, which has been replaced by the City of Vallejo General Plan 2040 since the Draft EIR for the Vallejo Marine Terminal and Orcem Project (September 2015) was prepared. The remainder of the Existing Conditions section has not been updated, and reflects the information available in 2014–2015 when the Draft EIR was prepared.

3.12.1 Regulatory Setting

State

Caltrans

The California Department of Transportation (Caltrans) owns and operates the state highway system, consisting of freeways and state routes within California. In the study area, Caltrans maintains control of Intestate 80 (I-80), Interstate 780 (I-780), and State Route 29 (SR-29), including the ramp terminal intersection at I-780/I-80/Curtola Parkway. Caltrans maintains Corridor System Management Plans that describe existing and projected future conditions on all state routes and freeways, and proposes performance strategies and improvements.

California Public Utilities Commission

The California Public Utilities Commission (CPUC) regulates privately owned transportation networks, including the railroad system. In the study area, CPUC regulates all rail crossings for safety, including the 16 at-grade crossings in the rail impact study area.

California Northern Railroad Company

The California Northern Railroad Company, a railroad company owned by Genessee & Wyoming, operates the railway connecting the project site to the larger railroad network.

Regional

San Francisco Bay Area Water Emergency Transportation Authority

The San Francisco Bay Area Water Emergency Transportation Authority owns and operates the San Francisco Bay Ferry service between the Vallejo Ferry Terminal and San Francisco.

Solano Transportation Authority

The Solano Transportation Authority (STA) was created in 1990 and has jurisdiction for Solano County to manage the county's federal, state, and regional transportation funds. In the role of Solano County's Congestion Management Agency, STA partners with the Metropolitan Transportation Commission and Caltrans District 4. STA provides countywide planning and program prioritization, funding, operating, and maintaining transportation programs and services.

STA maintains the County Congestion Management Program (CMP). The most recently published CMP update is the 2013 CMP. The CMP requires that the transportation system within the County be monitored biennially for compliance with LOS standards. Each jurisdiction is responsible for monitoring the LOS on segments or intersections within its jurisdiction. The LOS standard for the County CMP facilities has been set at LOS E for all roadways except for those already operating at LOS F when the first CMP was prepared (County of Solano 2013). The CMP transportation system includes all of the state routes in the County and other Routes of Regional Significance. A comprehensive list of these routes is available in the CMP. The CMP applies the LOS E threshold to roadway segments, not intersections. Therefore, for purposes of intersection analysis, the local jurisdiction's LOS threshold should be applied.

In addition to LOS, the CMP considers four other performance measures. These performance measures are travel times to and from work, ridership for intercity transit, bicycle and pedestrian movement, and multimodal split.

Local

City of Vallejo

General Plan 2040

The Vallejo General Plan 2040 was adopted in August 2017 (City of Vallejo 2017a). The General Plan 2040 Land Use Map was adopted in November 2017 (City of Vallejo 2017b). The previous draft of this EIR was based on the General Plan adopted in July 1999. This document, where necessary and appropriate, updates any policies pertaining to biological resources that may have changed in the recently updated General Plan. This discussion in shown in redline and/or strikeout in this document for ease of review.

The following General Plan 2040 goals and policies are applicable to transportation and traffic resources of the proposed project:

~~The 1999 Vallejo General Plan (City of Vallejo 1999) establishes the goals and policies guiding land use and development within the City's Planning Area. Land use, transportation systems, environmental concerns, and economic and equity goals are discussed with the General Plan. The General Plan also includes goals and policies for vehicles, pedestrian and bike systems, public transit, freight movement, and congestion management strategies. While the entire Circulation and Transportation Element of the General Plan is incorporated here by reference, the key policies related to the proposed project include the following:~~

~~**Mobility Goal – Policy 6:** Prior to approval of a particular land use, it should be analyzed to determine its impact on the existing circulation system~~

~~**Traffic Safety Goal – Policy 1:** Reduce excessive speeds and amount of traffic in residential neighborhoods through a variety of techniques, including narrowing of streets or intersections, landscaping, diversion of traffic, and closing of streets. Innovative approaches to street design shall be encouraged as an incentive for greater use of the Planned Development approach to land development and neighborhood design.~~

~~**Compatibility with Adjoining Land Uses Goal – Policy 3:** All truck traffic and regional bus service should be restricted to peripheral major streets and north-south, east-west arterial and collector streets having the least number of residences and schools. Only small trucks servicing~~

~~the neighborhood centers should be allowed on other streets. Where possible, unloading facilities should be provided off alleys rather than streets.~~

~~**Non-Motorized Transportation Goal 2 – Policy 2**: Provide safe pedestrian crossing, e.g., signalized crosswalks and pedestrian overpasses, on major streets where day-to-day activities warrant them. Pedestrian walkways should be provided between residential neighborhoods and high use areas such as schools, parks, and commercial centers. The walkways should be safe for adjoining property owners and users.~~

~~The City of Vallejo is in the process of updating its General Plan. However, for the purposes of this Environmental Impact Report (EIR), the current 1999 General Plan is referenced, since the update will not be complete until 2016.~~

~~General Plan Update~~

POLICY MTC-1.4 Regional Transportation Planning. Ensure that Vallejo is well connected to road, rail, air, and maritime systems in support of both mobility and local economic development.

- *Action MTC-1.4B Support improvements to regional goods movement facilities, such as truck scales, that facilitate local economic development.*
- *Action MTC-1.4D Periodically review designated truck routes and enforce compliance to optimize goods movement and minimize impacts on neighborhoods and sensitive land uses.*
- *Action MTC-1.4G Work with shoreline land owners to develop services to the maritime industry and water based transportation.*

Traffic Impact Analysis/Study Guidelines

The City of Vallejo has prepared guidelines for traffic impact analyses (City of Vallejo n.d.). The guidelines include topics such as defining the study area, obtaining traffic counts, identifying the peak periods for analysis, defining analysis scenarios, discussion of on-site access and circulation, the intersection analysis method, forecasting traffic, assessment of traffic impact significance, mitigation approach, sight distance assessments, assessment of impacts on non-auto modes of travel, and assessment of the need for roadway upgrades.

3.12.2 Existing Conditions

Study Area

The traffic analysis study area includes I-80 from north of I-780 to south of Sonoma Boulevard; I-780 from east of I-80 to its terminus at Curtola Parkway; and the City of Vallejo roadways along the primary access routes between the freeways and the project site, including Curtola Parkway, Sonoma Boulevard, and Lemon Street. The area includes segments of freeway mainline and ramps, roadways, and intersections under the jurisdictions of the City of Vallejo and Caltrans. The study area was defined in consultation with transportation planning staff in the City of Vallejo and based on an assessment of the peak hour project traffic volumes that would be added to the roadway network. The pedestrian, bicycle, and transit study area is the same as the traffic study area. The rail impact study area extends from the project site through Vallejo to the northern city limit, and includes 16 at-grade rail crossings.

Roadway Network

The following major roadways provide circulation within the study area (see Figure 3.12-1).

I-80 is an east–west freeway originating in the San Francisco Bay Area to the southwest, continuing east to Sacramento and points east. I-80 crosses Vallejo in a north–south orientation. In the project study area, I-80 provides three mixed-flow lanes in each direction and has a posted speed limit of 65 miles per hour (mph).

I-780 is an east–west freeway that connects I-680 just north of the Benicia-Martinez Bridge to the east to I-80 in Vallejo. The freeway terminates at I-80, connecting to Curtola Parkway at the Lemon Street intersection. I-780 passes through parts of unincorporated Solano County and heads southeast along the Benicia State Recreation Area. In Vallejo, I-780 consists of two mixed-flow lanes in each direction with posted speed limit of 65 mph.

Sonoma Boulevard (SR-29) is a major north–south corridor that runs through the western part of the City of Vallejo. In addition to serving as a primary commercial corridor for the City, Sonoma Boulevard provides access to I-80 to the south and SR-37 to the north. In the project vicinity, Sonoma Boulevard is a four-lane roadway with left-turn pockets at major intersections between I-80 and Curtola Parkway. The railroad tracks that serve the project site (currently not in use) cross Sonoma Boulevard between Curtola Parkway and I-80. Sonoma Boulevard is also a designated truck route, with trucks representing 3.75% of the total volume during the peak periods, based on the most recent traffic count data provided by the Caltrans District 4 Office of Highway Operations. Sonoma Boulevard has striped bicycle lanes from Maritime Academy Drive to about 650 feet west of Magazine Street.

Curtola Parkway is a four-lane arterial that extends west from the I-780 terminus just west of I-80, intersecting Lemon Street, Solano Way, and Sonoma Boulevard. At this point the roadway becomes Mare Island Way, continuing along the Mare Island Strait and connecting to SR-37.

Lemon Street is a minor arterial that connects Curtola Parkway and SR-29. It provides direct access to I-780 from the project site and other industrial properties along the City's waterfront with one lane in each direction and on-street parking. Lemon Street was designated as a truck route until December 2010. On December 14, 2010, the Vallejo City Council removed portions of Tennessee Street, Mare Island Way, Curtola Parkway, Lemon Street, Solano Avenue, Benicia Road, Sacramento Street, and Broadway as truck routes. This change was intended to limit the movement of large commercial trucks on Vallejo streets because limited funding was available to maintain the streets. However, trucks are allowed by City ordinance to use non-designated streets to access pick-up and delivery sites if the streets provide direct property access to the site in question or are on the most direct path to the site. Lemon Street is also designated as a signed bike route, although striped bike lanes are not provided.

Existing Intersection Operations

Study Intersections

Intersections usually form the critical components of the local roadway system capacity because of the delay introduced by traffic signals and stop signs. Therefore, the local roadway network traffic impact evaluation focuses on the operations of key intersections on the routes that would serve the proposed project traffic. The following 17 intersections were selected for study in this analysis, based on the estimated project trip generation, distribution, and assignment to the roadway network:

1. Sonoma Boulevard (SR-29)/Curtola Parkway
2. Sonoma Boulevard (SR-29)/Solano Avenue
3. Sonoma Boulevard (SR-29)/Lemon Street
4. Sonoma Boulevard (SR-29)/Winchester Street
5. Sonoma Boulevard (SR-29)/Cherry Street
6. Sonoma Boulevard (SR-29)/Magazine Street
7. Sonoma Boulevard (SR-29)/Sandy Beach Road
8. Sonoma Boulevard (SR-29)/Maritime Academy Drive
9. Lemon Street/Third Street
10. Lemon Street/Porter Street
11. Lemon Street/Grant Street
12. Lemon Street/5th Street
13. Lemon Street/Sheridan Street
14. Lemon Street/6th Street
15. Lemon Street/Union Street

16. Lemon Street/Carlson Street
17. Lemon Street/Curtola Parkway

The intersections are shown on Figure 3.12-1.

Intersection Peak Hour Traffic Volumes

Counts of peak period (7:00 a.m.–9:00 a.m. and 4:00 p.m.–6:00 p.m.) traffic, pedestrian, and bicycle volumes at the 17 study intersections were conducted in April 2014. The peak hour vehicle turning movement volumes, along with the intersection control type (signal or side-street stop-control) and lane configuration are presented in Figures 3.12-2A and 3.12-2B. The peak hours in the study area, based on the counts, are 8:00 to 9:00 a.m. and 4:30 to 5:30 p.m. Counts of pedestrian crossings and bicycle movements were also collected and are included in the count sheets in Appendix L. Pedestrian and bicycle activity is very low at most intersections, although moderate pedestrian activity was observed at Lemon Street/Carlson Street and Lemon Street/Curtola Parkway, related primarily to the Curtola Park and Ride facility.

Field observations were also conducted during the PM peak hour to validate the current congestion levels and the queuing conditions. Traffic signal timing and phasing information for signalized intersections were obtained from Caltrans and the City of Vallejo.

Intersection Levels of Service Methodology

The operational performance of a roadway network is commonly described with the term "level of service" (LOS). LOS is a qualitative description of operating conditions, ranging from LOS A (free-flow traffic conditions with little or no delay) to LOS F (oversaturated conditions where traffic flows exceed design capacity, resulting in long queues and delays). The LOS analysis methods outlined in the Highway Capacity Manual (HCM2010; Transportation Research Board 2010) were used in this study, consistent with the Vallejo Traffic Impact Analysis Guidelines. This methodology incorporates characteristics such as the signal timing plan, the effects of pedestrians on signal phase duration, traffic volume peaking characteristics, motorist behavioral characteristics, and others. The HCM2010 is considered the state-of-the-art methodology for assessing intersection operations and defining impacts, and allows for the accurate definition of mitigation measures, such as lengthening or adding turning lanes, modifying the signal phasing or timing, and other options. The Synchro Version 8 analysis program was used to perform the HCM analysis. The HCM analysis methods for signalized and unsignalized intersections are described below.

Signalized Intersection Methodology

Traffic operations at signalized intersections are evaluated using the LOS method described in Chapter 16 of the HCM2010. A signalized intersection's LOS is based on the weighted average control delay measured in seconds per vehicle. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration. Table 3.12-1 summarizes the relationship between the control delay and LOS for signalized intersections.

Table 3.12-1
Signalized Intersection LOS Criteria

Level of Service (LOS)	Description	Average Control Delay (seconds)
A	Operations with very low delay occurring with favorable traffic signal progression and/or short cycle lengths.	< 10
B	Operations with low delay occurring with good progression and/or short cycle lengths.	> 10 to 20
C	Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	> 20 to 35
D	Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop and individual cycle failures are noticeable.	> 35 to 55
E	Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences. This is considered to be the limit of acceptable delay.	> 55 to 80
F	Operations with delays unacceptable to most drivers occurring due to over-saturation, poor progression, or very long cycle lengths.	> 80

Source: Transportation Research Board 2010.
Note: V/C = volume to capacity

Unsignalized Intersection Methodology

In Chapter 17 of the HCM2010, the LOS for unsignalized intersections (side-street or all-way stop-controlled intersections) is defined by the average control delay per vehicle (measured in seconds). The control delay incorporates delay associated with deceleration, acceleration, stopping, and moving up in the queue. For side-street stop-controlled intersections, delay is calculated for each stop-controlled movement and for the uncontrolled left turns, if any, from the main street. The delay and LOS for the intersection as a whole and for the worst movement are reported for side-street stop intersections. The intersection average delay is reported for all-way stop intersections (Transportation Research Board 2010). Table 3.12-2 summarizes the relationship between delay and LOS for unsignalized intersections. The delay ranges for unsignalized intersections are lower than for signalized intersections as drivers expect less delay at unsignalized intersections.

Table 3.12-2
Unsignalized Intersection LOS Criteria

Level of Service (LOS)	Description	Average Control Delay per Vehicle (seconds)
A	Little or no delays	< 10
B	Short traffic delays	> 10 to 15
C	Average traffic delays	> 15 to 25
D	Long traffic delays	> 25 to 35
E	Very long traffic delays	> 35 to 50
F	Extreme traffic delays with intersection capacity exceeded	> 50

Source:Transportation Research Board 2010.

Intersection Level of Service Standards

City of Vallejo

As described in the City of Vallejo Traffic Impact Analysis Guidelines, Vallejo strives to maintain a LOS standard of D for intersections (City of Vallejo n.d.) For purposes of project impact assessment, Table 3.12-3 shows the maximum acceptable increase in volume-to-capacity (v/c) ratio that is acceptable for intersections operating at LOS C, D, and E/F. The v/c is calculated as part of the HCM methodology described above. Increases in v/c ratio above these thresholds would constitute a significant impact. These standards are applied to signalized and all-way stop-controlled intersections, but not to side-street stop-controlled intersections, where the overall operation of the intersection is often good even when the stop-controlled movement experiences longer delays.

At side-street stop-controlled intersections, poor LOS—e.g., LOS E or F—for the stop-controlled movement is an indication that a traffic signal may be warranted, subject to further evaluation, including a check of the peak hour volume signal warrant per the California Manual of Uniform Traffic Control Devices (CA-MUTCD). This warrant compares the higher side-street (stop-controlled) volume against the primary (uncontrolled) street two-way volume, and determines whether a signal is warranted based on the combination of the two volumes. Additional evaluation in the form of an engineering and traffic study that checks all the CA-MUTCD warrants and considers intersection-specific conditions is typically performed before deciding whether to install a signal.

Table 3.12-3
Volume-to-Capacity (V/C) Thresholds for Project Impacts (Signalized Intersections)

LOS Without Project	Increase in V/C With Project
C	>0.04
D	>0.02
E or F	>0.01

Source: City of Vallejo n.d.

Caltrans

For Caltrans-controlled intersections (i.e., the intersections on SR-29 and the I-780/Curtola Parkway/Lemon Street intersection) the LOS standard is the LOS C/D boundary. However, in practice, Caltrans has historically designated LOS D, or the current/baseline operating condition, whichever is worse, to be acceptable in urban, high-volume settings.

Existing Intersection Levels of Service

Table 3.12-4 shows the existing weekday AM and PM peak hour service levels, based on the counts conducted in April 2014. All signalized intersections operate at LOS C or better; one signalized intersection, Lemon Street/Curtola Parkway, operates at a good LOS D (38 seconds of delay) in the PM peak hour. Of the side-street stop-controlled intersections, all but one have side-street service levels of C or better; at the Lemon Street/Carlson Street intersection, which provides the entrance to the Curtola Park and Ride lot opposite Carlson Street, the park and ride lot driveway operates at LOS E in the PM peak hour. It is noted that a traffic signal is scheduled to be installed at this intersection in 2015, as part of the Curtola Park and Ride Hub improvement project that is currently under construction. With the signal installed, the side-street LOS E condition will be eliminated, and the intersection would operate at LOS A.

Table 3.12-4
Existing Peak Hour Intersection LOS

Intersection	Control[1]	Peak Hour	Existing Delay (LOS)[2]
1. Sonoma Boulevard/Curtola Parkway[3]	Signal	AM PM	19 (B) 23 (C)
2. Sonoma Boulevard/Solano Avenue	Signal	AM PM	8 (A) 10 (A)
3. Sonoma Boulevard/Lemon Street	Signal	AM PM	8 (A) 6 (A)
4. Sonoma Boulevard/Winchester Street	SSSC	AM PM	1 (A) [14 (B)] 1 (A) [15 (B)]
5. Sonoma Boulevard/Cherry Street	SSSC	AM PM	1 (A) [14 (B)] 1 (A) [15 (B)]
6. Sonoma Boulevard/Magazine Street	Signal	AM PM	16 (B) 11 (B)
7. Sonoma Boulevard/Sandy Beach Road	SSSC	AM PM	4 (A) [16 (C)] 2 (A) [14 (B)]
8. Sonoma Boulevard/Maritime Academy Drive	Signal	AM PM	8 (A) 8 (A)
9. Lemon Street/Third Street	SSSC	AM PM	2 (A) [9 (A)] 2 (A) [9 (A)]
10. Lemon Street/Porter Street	SSSC	AM PM	4 (A) [9 (A)] 3 (A) [9 (A)]

Table 3.12-4
Existing Peak Hour Intersection LOS

Intersection	Control[1]	Peak Hour	Existing Delay (LOS)[2]
11. Lemon Street/Grant Street	SSSC	AM PM	2 (A) [10 (A)] 1 (A) [10 (A)]
12. Lemon Street/Fifth Street (Lincoln Highway)	SSSC	AM PM	4 (A) [11 (B)] 5 (A) [13 (B)]
13. Lemon Street/Sheridan Street	SSSC	AM PM	2 (A) [10 (A)] 1 (A) [10 (A)]
14. Sixth Street/Lemon Street	SSSC	AM PM	1 (A) [11 (B)] 1 (A) [10 (A)]
15. Union Avenue/Lemon Street	SSSC	AM PM	1 (A) [10 (A)] 1 (A) [11 (B)]
16. Lemon Street/Carlson Street	SSSC	AM PM	4 (A) [16 (C)] 10 (A) [36 (E)]
17. Lemon Street/Curtola Parkway	Signal	AM PM	22 (C) 38 (D)

Source: See Appendix L.
Notes:
1 Signal = signalized intersection, SSSC = side-street stop-controlled intersection.
2 Traffic operations results include delay in seconds per vehicle and LOS grade A – F, based on delay thresholds published in the HCM (Transportation Research Board 2010). For side-street stop-controlled intersections, average delay is listed first followed by the delay for the worst approach in parentheses.
3 HCM 2000 methodology is used for this intersection, because the five-leg configuration is not handled well in the HCM 2010/Synchro 8 software.

Existing Local Roadway Daily Traffic Volumes on Lemon Street

Lemon Street connects with Derr Avenue, providing the only means of vehicular access to the project site. Lemon Street is designated as an arterial roadway in the City's General Plan roadway network. As discussed in Section 3.12.2, while not currently officially designated as a truck route, Lemon Street provides a direct east–west connection between the project site and I-780. Lemon Street crosses Sonoma Boulevard, a designated north–south arterial roadway, approximately 0.50 mile northeast of the project site. Because all of the project traffic would use Lemon Street between the project site and Sonoma Boulevard, and just over half of the project traffic is expected to use Lemon Street between Sonoma Boulevard and Curtola Parkway, 24-hour traffic counts were taken at two locations on Lemon Street in order to provide a basis for assessing the neighborhood traffic impact along this roadway. The counts, conducted in April 2014, indicate a volume of 856 daily vehicles on Lemon Street just west of Sonoma Boulevard, and a volume of 9,437 vehicles just west of Curtola Parkway. The volume on Lemon Street just east of Sonoma Boulevard was not included in the 24-hour count, but based on the peak hour volume at the intersection of Lemon Street/Sonoma Boulevard, the daily volume is estimated to be about 2,700 vehicles per day (see Appendix L). The volumes just west and east of Sonoma Boulevard are consistent with a local roadway or very-low-volume collector; the volume just west of Curtola Parkway is consistent with a two-lane collector operating at the LOS C/D threshold.

Existing Freeway Operations

Freeway Operations Analysis Methodology

Freeway operations were analyzed for the following freeway segments:

- I-80 south of Sonoma Boulevard, at the southbound on-ramp and northbound off-ramp
- I-80 north of I-780, at the northbound on-ramp and southbound off-ramp
- Interstate 780 at the I-80/Curtola Parkway interchange

The analysis is based on the merge, diverge, and basic segment analysis procedures described in the HCM2010 (Transportation Research Board 2010), where LOS is related to vehicle density, as shown in Table 3.12-5. The vehicle density reflects both the congestion and average travel speed experienced by motorists. The densities are calculated in passenger car equivalents (PCEs) per hour per lane; PCEs take into account the truck composition of the traffic flow.

Table 3.12-5
Freeway LOS Definitions

Level of Service (LOS)	Freeway Segment Density (cars per hour/per lane)	Ramp Merge-Diverge Density (cars per hour/per lane)
A	< 11	< 10
B	> 11 and < 18	> 10 and < 20
C	> 18 and < 26	> 20 and < 28
D	> 26 and < 35	> 28 and < 35
E	> 35 and < 45	> 35
F	< 45 (Demand exceeds capacity)	Demand exceeds capacity when queues begin to form.

Source: Caltrans 2002.

Per Caltrans' requirements, the LOS for freeway weaving sections was determined using the Leisch Method as outlined in Figure 504.7A of the *Highway Design Manual* (Caltrans 2012). The Leisch Method calculates the LOS based on the service flow (passenger cars/per hour/per lane) through the weaving section.

Existing Freeway Operations

Table 3.12-6 presents the current freeway operating conditions in the study area based on the latest available peak hour volumes obtained from the Caltrans Highway Operations department. All but one segment operates at LOS D or better; the I-780 westbound weave section at the I-780 loop ramps is operating at LOS F in the AM and PM peak hours.

Table 3.12-6
Existing Freeway Operations

Freeway Facility		Type	AM Peak Hour (LOS)	PM Peak Hour (LOS)
Interstate 780: Laurel St - Glen Cove Pkwy	EB	Basic	C/20.4	C/18.8
	WB	Basic	B/16.2	C/23.9
Interstate 780: I-80 Loop Ramps Weave	EB	Weave	A	A
	WB	Weave	F/In Queue	F/In Queue
Interstate 80: I-780 Connectors - Georgia St	EB	Basic	C/24.7	C/22.9
	WB	Basic	C/23.7	D/28.3
Interstate 80: I-780 Connector Ramps	EB	Merge	D/31.4	D/30.1
	WB	Diverge	D/32.4	D/36.9
Interstate 80: South of Sonoma Blvd	EB	Basic	A/10.0	C/18.2
	WB	Basic	C/21.6	B/12.1

Source: See Appendix L.
Notes: LOS = Level of service; WB = Westbound; EB = Eastbound.
Bold indicates segments operating below the Caltrans LOS standard of D.

Bicycle and Pedestrian Facilities

The study area roadway network includes the following facilities for pedestrian and bicycle circulation.

Bicycle Facilities

Bicycle lanes are provided on Sonoma Boulevard between Sequoia Avenue and just south of Cherry Street. No other bicycle lanes or signed bicycle routes exist on Sonoma Boulevard, Lemon Street or Curtola Parkway, within the study area. As noted above, bicycling activity is very light in the study area, based on the April 2014 counts.

Pedestrian Facilities

Sidewalks are generally provided along Sonoma Boulevard in the study area, although a sidewalk gap exists on the east side of the street from about 250 feet south of Cherry Street to the Magazine Street intersection, and south of Magazine Street, sidewalks are generally not present. On Lemon Street, sidewalks are also generally provided, although in several locations the sidewalk traverses large industrial driveways, and at one key location – the east side of the street just south of Curtola Parkway – there is no sidewalk.

Protected (signalized) crossings are provided at five intersections along Sonoma Boulevard within the study area, including at Sonoma Boulevard/Lemon Street, which would serve all project trips. The intersection of Lemon Street/Curtola Parkway also provides signal-controlled crossings. There are striped crosswalks at several other side-street stop-controlled intersections along Sonoma Boulevard and Lemon Street.

The railroad tracks cross Sonoma Boulevard between Solano Avenue and Chestnut Street. While the tracks are not currently in use, the tracks would present an obstacle to pedestrian mobility once in use.

Transit Service

Local bus service in the study area includes SolTrans Route 3, which runs clockwise connecting the Vallejo Transit Center with the Glen Cove/Beverly Hills area via Curtola Parkway, returning via Magazine Street to serve the California Maritime Academy and Sonoma Boulevard stops before returning to the Transit Center. The service runs from approximately 6:00 a.m. and 7:30 p.m.. Headways on Route 3 are generally 30 minutes during the commute peak hours and hourly during the mid-day. Via its connection to the Vallejo Transit Center and the Curtola Park and Ride Hub, this route connects to other local and regional bus routes, including Route 80, connecting to El Cerrito Del Norte BART station; Route 78, connecting to Walnut Creek BART; and Route 85, connecting to the Fairfield Transportation Center (SolTrans 2014).

Railroad Network and Operations

The railroad tracks serving Vallejo are designated on the City's General Plan as "Railroad" corridors, enter the city limits from the north, and are owned and operated by the California Northern Railroad. These tracks enter Vallejo at the Napa/Solano county line, just east of SR-29 and Broadway Street. The tracks run parallel to Broadway Street for 1.7 miles, cross under SR-37, and then split just before Sereno Drive. From this junction, one set of tracks runs west and crosses the Mare Island Strait on the Mare Island Causeway. This segment of railroad is owned by the City of Vallejo and is currently leased to San Francisco Bay Railroad. The remaining California Northern tracks continue south, slowly separating from Broadway Street to the waterfront area on the east side of the Mare Island Strait near the project site. The areas traversed by this track designated on the Vallejo General Plan as Residential, Commercial and Employment (industrial) north of Curtola Parkway, and Employment south of Curtola Parkway. The distance from the junction to the end of the line is 3.3 miles.

The tracks serving Mare Island serve limited train traffic. However, the tracks between the Sereno junction and the project site have been inactive for many years. According to California Northern Railroad staff, the signal system would need to be upgraded to allow these tracks to serve train traffic (CNRR, pers. comm. 2014). At several crossings, missing or damaged equipment would need to be replaced, and all of the crossings would need to be improved to be compliant with the CPUC standards of the California Public Utilities Code (General Order Number 75-D), and the at-grade rail crossing design requirements set forth in the California Manual on Uniform Traffic Control Devices, Chapter 8 (Traffic Control for Railroad and Light Rail Transit Grade Crossings).

Table 3.12-7 summarizes the roadways that have grade crossings by the tracks to be used by the project. The current PM peak hour volumes are listed, along with the estimated vehicle queue storage length that is available between the stop bar for the signal control gates and the nearest upstream intersection.

Table 3.12-7
Existing Grade Crossings

Crossing	Street Type	# Lanes	PM Peak Hour Roadway Volume[1]	Distance to Nearest Upstream Controlled Intersection		Vehicle Queue Storage	
				West	*East*	*West*	*East*
Sonoma Boulevard (SR-29)	Arterial	4	1,080	410	240	30	20
Fifth Street	Collector	2	212	300	610	10	20
Curtola Parkway	Arterial	4	1,730	160	3500	10	280
Solano Avenue	Collector	2	434	240	760	10	30
Maine Street	Local	4	308	300	500	20	40
Georgia Street	Collector	4	740	430	340	30	30
Florida Street	Collector	4	858	390	350	30	30
Louisiana Street	Local	2	76	190	210	10	10
Tennessee Street	Arterial	4	1,720	20	340	2	30
Nebraska Street	Arterial	2	590	360	1000	10	40
Valle Vista Avenue	Collector	2	260	20	160	1	10
Redwood Street	Arterial	4	1,971	0	150	0	10
Sereno Drive	Collector	4	1,110	390	120	30	10
Tuolumne Street*	Local*	4	705	350	0	30	0
Lewis Brown Drive*	Arterial	4	3,800	250	390	20	30
Mini Drive	Collector	4	417	20	80	2	10
American Canyon Road (City of American Canyon)*	Collector	4	2,000	60	520	5	40

Notes:
1 Volumes as counted in May 2014 (10% of daily volume), except where noted with asterisk.
Asterisk volumes:
Tuolumne Street taken from City of Vallejo 2008 count map.
Lewis Brown Drive estimated at similar to Sereno Drive.
American Canyon Road taken from *The Village at Vintage Ranch Traffic Impact Analysis*, December 15, 2013.

To the north of American Canyon Road in the City of American Canyon, the tracks cross Holcomb Lane, Donaldson Way East, and South Napa Junction Road in the City of American Canyon, and Watson Way in Napa County, before continuing northeast through Napa toward Fairfield.

Several of the crossings in Table 3.12-7 are of major roadways with intersections located very close to the tracks, including Tennessee Street, Valle Vista Avenue, Redwood Street, Mini Drive, and American Canyon Road in American Canyon. In addition, it is noted that the Nebraska Street grade crossing is located near the Vallejo High School and Vallejo Ninth Grade Academy, and thus may serve a substantial school-related pedestrian crossing volume, as well as school vehicle traffic around school bell times.

In addition to the roadway/rail grade crossings listed in Table 3.12-7, there are several other roadways that terminate near the tracks without complete barriers, such that pedestrians and potentially bicyclists may cross even if a designated crossing facility (sidewalk or bicycle route) is not provided. These locations include the following:

- Lemon Street
- Chestnut Street
- York Street
- Garford Alley
- Indian Alley
- Virginia Street
- Capitol Street
- Maxwell Alley
- Kentucky Street
- Springs Road
- Ohio Street
- Packard Alley
- Alabama Street
- Reo Alley
- Indiana Street
- Byron Street
- Illinois Street/Monterey Street
- Nevada Street/Alameda Street
- Hobbs Avenue/Almond Avenue
- Holly Street/Almond Avenue
- Willow Street/Almond Avenue

3.12.3 Thresholds of Significance

Appendix G of the CEQA Guidelines (14 CCR 15000 et seq.) provides the guidance for determining the significance of potential transportation and traffic impacts. These guidelines are presented below, along with the specific criteria used in this EIR based on the standards of the City of Vallejo, the Solano County Congestion Management Agency (for CMP facilities), and Caltrans (for Caltrans facilities).

Impacts to transportation and traffic would be significant if the proposed project would:

A) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit.

For the purposes of this impact evaluation, an impact would be significant if any of the following occur:

1. The project causes the v/c ratio, as calculated with the HCM methodology, to increase by 0.04 or more at a signalized intersection operating at LOS C without the project; by 0.02 or more at a signalized intersection operating at LOS D without the project; or by 0.01 or more at a signalized intersection operating at LOS E or F without the project.
2. The project causes a side-street stop-controlled intersection operating at LOS D or better (for the worst side street movement or approach) without the project to deteriorate to LOS E or F, and causes the California Manual on Uniform Traffic Control Devices peak hour signal warrant to be met for either peak hour.
3. The project causes a side-street stop-controlled intersection already operating at LOS E or F without the project to deteriorate further and causes the California Manual on Uniform Traffic Control Devices peak hour signal warrant to be met for either peak hour.
4. The project causes delays or queues at rail crossings that are substantial (delays of over 1 minute during peak hours, or queues that block upstream intersections during the day and early evening when traffic volumes are at or near their peak hour levels) relative to delays or queues without the project.
5. The project causes a freeway segment to deteriorate from LOS D or better to LOS E or F.
6. The project adds more than 50 peak hour vehicles to a freeway segment already operating at LOS E or F without the project.

B) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways.

For the purposes of this impact evaluation, an impact would be significant if either of the following occur:

1. The project causes a CMP-monitored intersection to fall below the CMP standard. This applies to the intersection of Sonoma Boulevard/Curtola Parkway, where the CMP LOS standard is E.
2. The project causes a CMP route segment to fall below the CMP standard. The CMP standard for I-80 in Vallejo is LOS F; the CMP standard for SR-29 and I-780 in Vallejo is LOS E.

C) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).

For the purposes of this impact evaluation, an impact would be significant if the project site access design does not provide adequate sight distance and does not conform to City street design standards; or if the added trucks or trains would result in unsafe vehicle, pedestrian, and bicycle movements without physical improvements to improve safety.

D) Result in inadequate emergency access.

For the purposes of this impact evaluation, an impact would be significant if a significant impact is identified based on Criteria A.4 listed above.

E) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

For the purposes of this impact evaluation, based on guidance provided in the Vallejo General Plan 2040~~(1999)~~, an impact would be significant if either of the following occur:

1. The project prevents planned transit, pedestrian, or bicycle improvements from being constructed.
2. The project's added auto and truck trips or train movements obstruct, or make unsafe or substantially less convenient, pedestrian or bicycle movements on the City's roadway network.

3.12.4 Impact Discussion

This section presents the impact evaluation under each of the criteria in section 3.12.3. For each impact topic area A through E, the discussion addresses the impacts of the VMT project component, the Orcem project component, and the combined project as a whole.

A) Would the project conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit.

VMT and Orcem Project Analysis

Construction Impacts

During the construction period for the VMT project component and construction of the Orcem project component, temporary and intermittent transportation impacts may result from truck movements as well as construction worker vehicles to and from the project site. The construction-related traffic may temporarily reduce capacities of roadways in the project vicinity because of the slower movements and larger turning radii of construction trucks compared to passenger vehicles. It is expected that trucks accessing the site would use primarily the Curtola Parkway–Lemon Street route for trips to/from I-780 and I-80 East, and the Sonoma Boulevard route for trips to/from I-80

West. Truck traffic that occurs during the peak commute hours (7:00 a.m.to 9:00 a.m. and 4:00 p.m. to 6:00 p.m.) may result in worse LOS and higher delays at study intersections during the construction period, relative to existing conditions. The added truck traffic could also result in temporary closure of sidewalks, prohibition of on-street parking, and/or impact the stop locations of SolTrans Route 3 bus along Sonoma Boulevard.

Construction of the proposed project would result in temporary impacts on traffic operations and non-vehicular mobility. While temporary, this impact would be **significant** (**Impact 3.12-1**), and mitigation is provided in Section 3.12.5.

Operational Impacts

Trip Generation and Distribution

VMT Truck and Auto Trip Generation

As described in more detail in Chapter 2, Project Description, the VMT project component would include a new wharf serving a projected four deep draft vessels a month, one at a time, and the associated truck and rail traffic that could be generated with that wharf. ~~The second phase consists of a second wharf that would accommodate additional barge and smaller vessel activity.~~ Based on data provided by the VMT applicant, the truck traffic that could be generated ~~by either phase~~ is limited by the findings of the air quality analysis. Thus, ~~in either Phase 1or Phase 2,~~ the maximum daily and peak hour truck trips generated by the VMT project component have been defined as shown in Table 3.12-8. ~~Note that a more detailed table showing estimated VMT truck traffic generation for all phases is included in Appendix L.~~ Employee trips are estimated for the commute hours based on the total VMT employment projection (40 employees) and the 24-hour shift schedule. All employees are assumed to drive in single-occupant vehicles, for conservatism. Any transit use, carpooling, bicycling, or walking would reduce the trips shown in Table 3.12-8.

Table 3.12-8
Vallejo Marine Terminal Trip Generation

Vehicle Type	Daily			AM Peak Hour			PM Peak Hour		
	In	*Out*	*Total*	*In*	*Out*	*Total*	*In*	*Out*	*Total*
Trucks	87	87	174	4~~6~~	4~~6~~	8~~12~~	4	4	8~~12~~
Employees	40	40	80	13	13	26	0	13	13
Total	127	127	254	19	19	38	4	17	25

Source: Project Description, March 2018. Peak hour truck volumes based on 24-hour operations. See also the Transportation Impact Analysis Data Sheet in Appendix L.~~See Appendix L for truck projections and project application materials for employment description.~~

Orcem Truck and Auto Trip Generation

As described in more detail in Chapter 2, Project Description, the Orcem facility would have the capability to operate in three different production modes, and has five different production milestone levels identified for each mode. ~~Appendix L contains a detailed table presenting the projected truck traffic for each mode and milestone, based on information provided by the Orcem applicant.~~ The maximum daily and peak hour truck trips generated by the Orcem project component would occur in Mode 2/Milestone 5, and these are shown in Table 3.12-9. ~~Note that a more detailed table showing estimated Orcem truck traffic generation for all modes, and milestones 4 (up to 500,000 metric tons per year of product) and 5 (up to 900,000 metric tons per year of product), is included in Appendix L.~~ Employee trips are estimated for the commute hours based on the total Orcem employment projection, and the combination of day shift and 24-hour shift schedules (20 employees working a standard day shift and 20 employees working on 24-hour shift schedule). All employees are assumed to drive in single-occupant vehicles, for conservatism. Any transit use, carpooling, bicycling or walking would reduce the trips shown in Table 3.12-9.

Table 3.12-9
Orcem Trip Generation

Vehicle Type	Daily			AM Peak Hour			PM Peak Hour		
	In	*Out*	*Total*	*In*	*Out*	*Total*	*In*	*Out*	*Total*
Trucks	189~~208~~	189~~208~~	378~~416~~	8~~19~~	8~~19~~	16~~38~~	8~~17~~	8~~17~~	16~~34~~
Employees	40~~4~~	40~~4~~	80~~8~~	27~~8~~	7~~8~~	34~~6~~	0	27~~8~~	27~~8~~
Total	229~~52~~	229~~52~~	458~~504~~	35~~47~~	15~~27~~	50~~74~~	8~~17~~	345	43~~62~~

Source: Project Description, March 2018 (Mode 2/Milestone 5). See also the Transportation Impact Analysis Data Sheet in Appendix L.~~ for truck projections and project application materials for employment description. 208 daily truck trips is slightly more than the 189 described in Section 2.4.2 of this EIR. 208 adds raw material and finished product trucks together resulting in a more conservative analysis.~~

Vehicle Trip Distribution

The trips shown above were distributed and assigned to the roadway network using the projected truck distribution provided by the project applicants (see Figure 3.12-3). The employee trips were assigned using the same trip distribution, as it is similar to the trip distribution for commercial uses in the area as projected in the Solano-Napa Travel Demand Model (Solano Transportation Authority 2014). The project trip assignments to the study intersections are shown in Figures 3.12-4A and 3.12-4B for the VMT project component, Figures 3.12-5A and 3.12-5B for the Orcem project component, and Figures 3.12-6A and 3.12-6B for the proposed project as a whole (with both project components). Figures 3.12-7A, 3.12-7B, 3.12-8A, 3.12-8B, 3.12-9A, and 3.12-9B show the Existing Plus Project volumes for the VMT project component, the Orcem project component, and the proposed project as a whole, respectively.

Existing Plus Project Intersection Operations (Criteria A.1 – A.3)

Intersection operations were assessed for the Existing Plus Project condition for the VMT project component, the Orcem project component, and the proposed project as a whole. The LOS analyses reflect the added trucks with an increased truck percentage consistent with the number of trucks added. The Existing Plus Project intersection analysis incorporates two ~~planned~~ improvements that were ~~would be~~ constructed in 2015 after the preparation of the Existing Conditions analysis. ~~prior to the completion of the projects.~~ The improvements are part of the Curtola Park and Ride Hub project, and include the installation of a signal at Lemon Street/Carlson Street, along with a new westbound left-turn pocket lane on Lemon Street and provision of separate left and right turn lanes at the park and ride lot driveway, and the provision of a separate eastbound right turn lane on Lemon Street at Curtola Parkway. Table 3.12-10 shows the LOS results.

Table 3.12-10
Existing Plus Project Peak Hour Intersection Service Levels

Intersection	Control[1]	Peak Hour	Existing Delay (LOS)[2]	Existing + VMT Delay (LOS)	Exisiting + Orcem Delay (LOS)	Existing + Combined Delay (LOS)
1. Sonoma Boulevard/ Curtola Parkway*	Signal	AM PM	19 (B) 23 (C)	20 (B) 23 (C)	20 (B) 23 (C)	20 (B) 23 (C)
2. Sonoma Boulevard/ Solano Avenue	Signal	AM PM	8 (A) 10 (A)	8 (A) 10 (A)	8 (A) 10 (A)	8 (A) 10 (A)
3. Sonoma Boulevard/ Lemon Street	Signal	AM PM	8 (A) 6 (A)	8 (A) 6 (A)	8 (A) 7 (A)	8 (A) 7 (A)
4. Sonoma Boulevard/ Winchester Street	SSSC	AM PM	1 (A) [14 (B)] 1 (A) [15 (B)]	1 (A) [15 (B)] 1 (A) [15 (B)]	1 (A) [15 (B)] 1 (A) [15 (B)]	1 (A) [15 (B)] 1 (A) [15 (B)]
5. Sonoma Boulevard/ Cherry Street	SSSC	AM PM	1 (A) [14 (B)] 1 (A) [15 (B)]	1 (A) [14 (B)] 1 (A) [15 (B)]	1 (A) [15 (B)] 1 (A) [16 (C)]	1 (A) [15 (B)] 1 (A) [16 (C)]
6. Sonoma Boulevard/ Magazine Street	Signal	AM PM	16 (B) 11 (B)	16 (B) 11 (B)	16 (B) 11 (B)	16 (B) 11 (B)
7. Sonoma Boulevard/ Sandy Beach Road	SSSC	AM PM	4 (A) [16 (C)] 2 (A) [14 (B)]	4 (A) [16 (C)] 2 (A) [14 (B)]	4 (A) [16 (C)] 2 (A) [15 (B)]	4 (A) [16 (C)] 2 (A) [15 (B)]
8. Sonoma Boulevard/ Maritime Academy Drive	Signal	AM PM	8 (A) 8 (A)	8 (A) 8 (A)	8 (A) 8 (A)	8 (A) 8 (A)
9. Lemon Street/ Third Street	SSSC	AM PM	2 (A) [9 (A)] 2 (A) [9 (A)]	2 (A) [9 (A)] 2 (A) [9 (A)]	2 (A) [9 (A)] 2 (A) [9 (A)]	2 (A) [9 (A)] 2 (A) [9 (A)]
10. Lemon Street/ Porter Street	SSSC	AM PM	4 (A) [9 (A)] 3 (A) [9 (A)]	4 (A) [10 (A)] 3 (A) [9 (A)]	4 (A) [10 (A)] 3 (A) [10 (A)]	4 (A) [10 (A)] 3 (A) [10 (A)]
11. Lemon Street/ Grant Street	SSSC	AM PM	2 (A) [10 (A)] 1 (A) [10 (A)]	2 (A) [10 (A)] 1 (A) [10 (A)]	2 (A) [10 (A)] 1 (A) [11 (B)]	2 (A) [10 (A)] 1 (A) [11 (B)]
12. Lemon Street/Fifth Street (Lincoln Highway)	SSSC	AM PM	4 (A) [11 (B)] 5 (A) [13 (B)]	4 (A) [11 (B)] 5 (A) [13 (B)]	4 (A) [11 (B)] 5 (A) [14 (B)]	4 (A) [11 (B)] 5 (A) [14 (B)]

Table 3.12-10
Existing Plus Project Peak Hour Intersection Service Levels

Intersection	Control[1]	Peak Hour	Existing Delay (LOS)[2]	Existing + VMT Delay (LOS)	Exisiting + Orcem Delay (LOS)	Existing + Combined Delay (LOS)
13. Lemon Street/ Sheridan Street	SSSC	AM PM	2 (A) [10 (A)] 1 (A) [10 (A)]	2 (A) [10 (A)] 1 (A) [11 (B)]	2 (A) [11 (B)] 1 (A) [11 (B)]	2 (A) [11 (B)] 1 (A) [11 (B)]
14. Sixth Street/ Lemon Street	SSSC	AM PM	1 (A) [11 (B)] 1 (A) [10 (A)]	1 (A) [11 (B)] 1 (A) [10 (A)]	1 (A) [11 (B)] 1 (A) [10 (A)]	1 (A) [11 (B)] 1 (A) [10 (A)]
15. Union Avenue/ Lemon Street	SSSC	AM PM	1 (A) [10 (A)] 1 (A) [11 (B)]	1 (A) [10 (A)] 1 (A) [11 (B)]	1 (A) [10 (A)] 1 (A) [11 (B)]	1 (A) [10 (A)] 1 (A) [11 (B)]
16. Lemon Street/ Carlson Street	SSSC/Signal[3]	AM PM	4 (A) [16 (C)] 10 (A) [36 (E)]	5 (A) 6 (A)	5 (A) 6 (A)	5 (A) 6 (A)
17. Lemon Street/ Curtola Parkway	Signal	AM PM	22 (C) 38 (D)	19 (B) 23 (C)	19 (B) 24 (C)	19 (B) 24 (C)

Source: See Appendix L.
Notes:
1 Signal = signalized intersection, SSSC = side-street stop-controlled intersection.
2 Traffic operations results include delay in seconds per vehicle and LOS grade A – F, based on delay thresholds published in the HCM (Transportation Research Board 2010). For side-street stop-controlled intersections, average delay is listed first followed by the delay for the worst approach in parentheses.
3 Lemon/Carlson ~~is currently a side-street stop-controlled intersection, but~~ was~~ill be~~ signalized in 2015 after preparation of the Existing Conditions analysis. ~~prior to the completion of the project.~~
* HCM2000 methodology is used for this intersection, because the five-leg configuration is not handled well in the HCM2010/Synchro 8 software.

The LOS analysis shows that there are no significant intersection impacts relative to significance Criteria A.1 – A.3 for either of the project components, nor for the project as a whole. The v/c ratio does not change by the increment set forth in Criteria A.1 (see Appendix L for the detailed LOS output including the v/c ratios); and the side-street stop-controlled LOS do not meet the criteria set forth in Criteria A.2 and A.3.

Based on the above analysis, project impacts under Criteria A.1 – A.3 would be **less than significant**.

Existing Plus Project Rail Crossing Impacts (Criteria A.4)

Rail Transport for VMT and Orcem Project

As described in the project description, t~~T~~he combined VMT and Orcem project is anticipated to generate rail traffic consisting of 77-car trains (the largest train that can be assembled west of the first grade crossing at Sonoma Boulevard) at a rate of an average of 2.6 trains (in and out) per week. The staging and assembly of the trains would occur on the project site and in the storage/spur tracks to the north of the site, such that this activity would not affect the Sonoma Boulevard grade crossing nor other crossings to the north. The Orcem project is projected to require 10 of the 77 cars in each train. Train movements through the City of Vallejo would occur between 7:00 a.m. and 6:00 p.m., which are the operating hours of California Northern Railroad. ~~It is noted that for the rail crossing impact analysis,~~

~~the train lengths are assumed to be 100 cars based on the original project information that was provided, and thus the analysis is conservative. However, the findings of the analysis below are not affected by the longer train length assumption, as discussed further below.~~

Based on a 60-foot rail wagon length (including coupling length), two 90-foot engines, and the track speed limit of 10 mph, the 77~~100~~-car trains would take approximately 6.4~~7.6~~ minutes to traverse each grade crossing as they move through Vallejo, American Canyon, and beyond. This estimate is based on "gate down" times provided by California Northern Railroad.[1] The crossing of Sonoma Boulevard would take an extra minute due to acceleration (for outbound trains) and deceleration (for inbound trains). As shown in Table 3.12-11, if these movements took place during the commute peak hours, this would result in the blockage of at least one upstream intersection at most of the crossings. It is reasonable to assume that similar blockages may occur, if to a somewhat lesser degree, if the crossings take place any time between 7~~6~~:00 a.m. and 6~~8~~:00 p.m., because traffic levels remain at or above 70% of peak hour traffic volumes during these periods, based on a review of 24-hour roadway traffic counts obtained for the Vallejo General Plan update. While traffic operations were not assessed at the adjacent intersections at each grade crossing, the projection of gate-down time (6.4~~7.6~~ minutes) and the blockage finding indicate that these movements would result in substantial delays.

[1] The gate-down time estimate was provided for 50-car trains and was factored up to represent the gate-down time for 77-car trains.

Table 3.12-11
Rail Crossing Evaluation

Crossing	Street Type	# Lanes	PM Peak Hour Roadway Volume[1]	Distance to Nearest Upstream Controlled Intersection		Vehicle Queue Storage		Queue Distance in Vehicles	Adjacent Intersection Blockages Expected?[3~~2~~] VMT/Orcem (77~~100~~-car trains)		Special Notes
				West	*East*	*West*	*East*	*VMT*	*West*	*East*	
Sonoma Boulevard (SR-29)	Arterial	4	1,080	410	240	30	20	86~~54~~	Block	Block	
Fifth Street	Collector	2	212	300	610	10	20	25~~16~~	Block	Block~~Clear~~	
Curtola Parkway	Arterial	4	1,730	160	3500	10	280	151~~97~~	Block	Clear	3~~4~~
Solano Avenue	Collector	2	434	240	760	10	30	76~~49~~	Block	Block	3~~4~~
Maine Street	Local	4	308	300	500	20	40	19~~2~~	Clear	Clear	
Georgia Street	Collector	4	740	430	340	30	30	58~~37~~	Block	Block	
Florida Street	Collector	4	858	390	350	30	30	73~~47~~	Block	Block	
Louisiana Street	Local	2	76	190	210	10	10	9~~6~~	Clear	Clear	
Tennessee Street	Arterial	4	1,720	20	340	2	30	150~~96~~	Block	Block	3~~4~~
Nebraska Street	Arterial	2	590	360	1000	10	40	87~~55~~	Block	Block	4~~5~~
Valle Vista Avenue	Collector	2	260	20	160	1	10	36~~23~~	Block	Block	3~~4~~
Redwood Street	Arterial	4	1,971	0	150	0	10	189~~21~~	Block	Block	3~~4~~
Sereno Drive	Collector	4	1,110	390	120	30	10	115~~74~~	Block	Block	
Tuolumne Street*	Local*	4	705	350	0	30	0	54~~35~~	Block	Block	
Lewis Brown Drive*	Arterial	4	3,800	250	390	20	30	990~~634~~	Block	Block	
Mini Drive	Collector	4	417	20	80	2	10	27~~17~~	Block	Block	3~~4~~
American Canyon Road (City of American Canyon)*	Collector	4	2,000	60	520	5	40	869~~557~~	Block	Block	3~~4~~

Notes:

1 Volumes as counted in May 2014 (10% of daily volume) except where noted with asterisk.

* Asterisk volumes:

Tuolumne Street taken from City of Vallejo 2008 count map.

Lewis Brown Drive estimated at similar to Sereno Drive.

American Canyon Road taken from *The Village at Vintage Ranch Traffic Impact Analysis*, December 15, 2013.

2~~3~~ Train crossing times:6.4~~7.6~~ minutes (plus 1 extra minute at Sonoma Boulevard due to acceleration/deceleration).

3~~4~~ Tracks adjacent to major intersection; special intersection design modifications may be needed.

4~~5~~ School located to east of crossing.

The proposed project would cause delays and queues at rail crossings that are substantial (delays of over 1 minute during peak hours, or queues that block upstream intersections during the day (7:00 a.m. to 6:00 p.m., the operating hours for California Northern Railroad),~~ and early evening~~ when traffic volumes are at or near their peak hour levels) relative to delays and queues without the project ~~component~~. Therefore, the impact of the project would be **significant** (**Impact 3.12-2**), and mitigation is provided in Section 3.12.5. ~~If maximum train lengths were reduced from 100 cars to 50 cars, this would have a substantial beneficial effect on traffic at the grade crossings, reducing driver delay and traffic queue interference with upstream intersections, relative to the 100-car maximum trains.~~ However, the impact would remain significant and unavoidable even with the implementation of mitigation discussed in Section 3.12.5.

Existing Plus Project Freeway Impacts (Criteria A.5 and A.6)

VMT Project Component

The VMT project component trips were added to the freeway segments to determine the Existing Plus Project change in vehicle density and LOS. For this analysis, consistent with the HCM methodology, the truck trips were converted to PCEs using a factor of two PCEs per truck, a conversion factor that is commonly used to represent the longer length of trucks relative to cars. Table 3.12-12 presents the results. The additional VMT truck and employee trips do not result in an impact based on significance Criteria A.5 and A.6. For the one freeway segment that already operates at LOS F, the westbound I-780 weave section at the I-80 loop ramps, the VMT project adds an estimated three AM peak hour trips and one PM peak hour trip, which are both below the significance threshold in Criteria A.6.

Table 3.12-12
Existing Plus Project Freeway Operations

Freeway Facility		Type	Existing							
			AM				*PM*			
			Existing	*+ VMT*	*+Orcem*	*+ Combined Project*	*Existing*	*+ VMT*	*+ Orcem*	*+ Combined Project*
Interstate 780: Laurel St - Glen Cove Pkwy	EB	Basic	C/20.4	C/20.4	C/20.4	C/20.4	C/18.8	C/18.9	C/18.9	C/18.9
	WB	Basic	B/16.2	B/16.2	B/16.3	B/16.3	C/23.9	C/23.9	C/23.9	C/23.9
Interstate 780: I-80 Loop Ramps Weave	EB	Weave	A	A	A	A	A	A	A	A
	WB	Weave	F/In Queue	F/In Queue	F/In Queue	F/In Queue	F/In Queue	F/In Queue	F/In Queue	F/In Queue

Table 3.12-12
Existing Plus Project Freeway Operations

Freeway Facility		Type	Existing							
			AM				*PM*			
			Existing	*+ VMT*	*+Orcem*	*+ Combined Project*	*Existing*	*+ VMT*	*+ Orcem*	*+ Combined Project*
Interstate 80: I-780 Connectors - Georgia St	EB	Basic	C/24.7	C/24.7	C/24.7	C/24.7	C/22.9	C/22.9	C/22.9	C/22.9
	WB	Basic	C/23.7	C/23.8	C/23.8	C/23.8	D/28.3	D/28.3	D/28.3	D/28.3
Interstate 80: I-780 Connector Ramps	EB	Merge	D/31.4	D/31.5	D/31.6	D/31.7	D/30.1	D/30.2	D/30.3	D/30.4
	WB	Diverge	D/32.4	D/32.5	D/32.5	D/32.6	D/36.9	D/36.9	D/36.9	D/36.9
Interstate 80: South of Sonoma Blvd	EB	Basic	A/10.0	A/10.0	A/10.0	A/10.1	C/18.2	C/18.2	C/18.3	C/18.4
	WB	Basic	C/21.6	C/21.6	C/21.7	C/21.7	B/12.1	B/12.1	B/12.2	B/12.2

Source: See Appendix L.
Notes: LOS = Level of service; WB = Westbound; EB = Eastbound.
Bold indicates segments operating below the Caltrans LOS standard of D.

Orcem Project Component

The Orcem project component trips were added to the freeway segments to determine the Existing Plus Project change in vehicle density and LOS. As with the VMT analysis, the truck trips were converted to PCEs using a factor of two PCE per truck. The results are shown in Table 3.12-12. The additional Orcem truck and employee trips do not result in an impact based on significance Criteria A.5 and A.6. For the one freeway segment that already operates at LOS F, the westbound I-780 weave section at the I-80 loop ramps, the Orcem project component adds an estimated seven~~nine~~ AM peak hour trips and one~~three~~ PM peak hour trips, which are both below the significance threshold in Criteria A.6.

It is noted that the combined impact of both project components also does not result in a significant impact under Criteria A.5 or A.6, as shown in Table 3.12-12. The project as a whole adds only 12 AM peak hour trips and 4 PM peak hour trips to the one LOS F segment.

Combined VMT and Orcem Project Components

Based on the above analysis, no impacts of the project as a whole are identified under Criteria A.5 and A.6. Impacts would therefore be **less than significant**.

Cumulative Impacts

The cumulative traffic impacts represent conditions at year 2040, with traffic growth at the intersections and freeway segments in the study area. Based on a review of projected growth in the Solano-Napa Travel Demand Model, the following yearly growth rates were applied to the existing traffic volumes to represent growth from all regional and local land use development between 2014 and 2040:

- Traffic volumes along Sonoma Boulevard and ~~,~~Curtola Parkway~~, and the freeways~~: 1% per year
- Traffic Volumes along Lemon Street: 0.25% per year
- Traffic volumes on I-80 and I-780: 1% per year

Figures 3.12-10A and 3.12-10B present the Cumulative (2040) Without Project intersection traffic volumes. Figures 3.12-11A, 3.12-11B, 3.12-12A, 3.12-12B, 3.12-13A, and 3.12-13B present the Cumulative Plus Project intersection traffic volumes for the VMT project component, the Orcem project component, and proposed project as a whole, respectively.

Cumulative Intersection Operations (Criteria A.1 – A.3)

Intersection operations were assessed for the Cumulative Plus Project condition for the VMT project component, the Orcem project component, and the project as a whole. The LOS analyses reflect the added trucks with an increased truck percentage consistent with the number of trucks added. The Cumulative Plus Project intersection analysis incorporates two improvements that were constructed after the Existing Conditions analysis was completed. ~~planned improvements that will be constructed in 2015 prior to the completion of the projects.~~ The improvements are part of the Curtola Park and Ride Hub project, and include the installation of a signal at Lemon Street/Carlson Street, along with a new westbound left-turn pocket lane on Lemon Street and provision of separate left and right turn lanes at the park and ride lot driveway, and the provision of a separate eastbound right turn lane on Lemon Street at Curtola Parkway. No other roadway or intersection improvements are assumed.

Table 3.12-13 shows the LOS results.

Table 3.12-13
Year 2040 Peak Hour Intersection LOS[1]

Intersection	Control[2]	Peak Hour	Cumulative Delay (LOS)	Cumulative + VMT Delay (LOS)	Cumulative + Orcem Delay (LOS)	Cumulative + Combined Project Delay (LOS)
1. Sonoma Boulevard/ Curtola Parkway*	Signal	AM PM	26 (C) 32 (C)	26 (C) 32 (C)	26 (C) 33 (C)	26 (C) 33 (C)

Table 3.12-13
Year 2040 Peak Hour Intersection LOS[1]

Intersection	Control[2]	Peak Hour	Cumulative Delay (LOS)	Cumulative + VMT Delay (LOS)	Cumulative + Orcem Delay (LOS)	Cumulative + Combined Project Delay (LOS)
2. Sonoma Boulevard/ Solano Boulevard	Signal	AM PM	9 (A) 11 (B)	9 (A) 11 (B)	9 (A) 11 (B)	9 (A) 11 (B)
3. Sonoma Boulevard/ Lemon Street	Signal	AM PM	6 (A) 7 (A)	7 (A) 7 (A)	7 (A) 8 (A)	8 (A) 8 (A)
4. Sonoma Boulevard/ Winchester Street	SSSC	AM PM	2 (A) [20 (C)] 2 (A) [21 (C)]	2 (A) [20 (C)] 2 (A) [21 (C)]	2 (A) [20 (C)] 2 (A) [21 (C)]	2 (A) [21 (C)] 2 (A) [22 (C)]
5. Sonoma Boulevard/ Cherry Street	SSSC	AM PM	2 (A) [19 (C)] 2 (A) [22 (C)]	2 (A) [20 (C)] 2 (A) [22 (C)]	2 (A) [20 (C)] 2 (A) [23 (C)]	2 (A) [20 (C)] 2 (A) [23 (C)]
6. Sonoma Boulevard/ Magazine Street	Signal	AM PM	12 (B) 11 (B)	12 (B) 11 (B)	12 (B) 11 (B)	12 (B) 11 (B)
7. Sonoma Boulevard/ Sandy Beach Road	SSSC	AM PM	5 (A) [19 (C)] 2 (A) [17 (C)]	5 (A) [20 (C)] 2 (A) [17 (C)]	5 (A) [20 (C)] 2 (A) [18 (C)]	5 (A) [21 (C)] 2 (A) [18 (C)]
8. Sonoma Boulevard/ Maritime Academy Drive	Signal	AM PM	8 (A) 9 (A)	8 (A) 9 (A)	8 (A) 9 (A)	8 (A) 9 (A)
9. Lemon Street/Third Street	SSSC	AM PM	3 (A) [9 (A)] 4 (A) [9 (A)]	3 (A) [9 (A)] 4 (A) [9 (A)]	3 (A) [9 (A)] 4 (A) [10 (A)]	3 (A) [9 (A)] 4 (A) [10 (A)]
10. Lemon Street/ Porter Street	SSSC	AM PM	5 (A) [9 (A)] 4 (A) [10 (A)]	5 (A) [10 (A)] 4 (A) [10 (A)]	5 (A) [10 (A)] 4 (A) [10 (A)]	5 (A) [10 (A)] 4 (A) [10 (A)]
11. Lemon Street/ Grant Street	SSSC	AM PM	3 (A) [11 (B)] 2 (A) [12 (B)]	3 (A) [11 (B)] 2 (A) [12 (B)]	3 (A) [11 (B)] 2 (A) [12 (B)]	3 (A) [11 (B)] 2 (A) [12 (B)]
12. Lemon Street/Fifth Street (Lincoln Highway)	SSSC	AM PM	5 (A) [12 (B)] 6 (A) [15 (B)]	5 (A) [12 (B)] 6 (A) [16 (C)]	5 (A) [12 (B)] 6 (A) [16 (C)]	5 (A) [13 (B)] 6 (A) [17 (C)]
13. Lemon Street/ Sheridan Street	SSSC	AM PM	3 (A) [12 (B)] 1 (A) [11 (B)]	3 (A) [12 (B)] 1 (A) [11 (B)]	3 (A) [12 (B)] 1 (A) [12 (B)]	3 (A) [12 (B)] 1 (A) [12 (B)]
14. Sixth Street/ Lemon Street	SSSC	AM PM	1 (A) [11 (B)] 1 (A) [11 (B)]	1 (A) [12 (B)] 1 (A) [11 (B)]	1 (A) [12 (B)] 1 (A) [12 (B)]	1 (A) [12 (B)] 1 (A) [12 (B)]
15. Union Avenue/ Lemon Street	SSSC	AM PM	1 (A) [10 (A)] 1 (A) [11 (B)]	1 (A) [11 (B)] 1 (A) [12 (B)]	1 (A) [11 (B)] 1 (A) [12 (B)]	1 (A) [11 (B)] 1 (A) [12 (B)]
16. Lemon Street/ Carlson Street[3]	SSSC	AM PM	6 (A) 7 (A)	6 (A) 7 (A)	6 (A) 7 (A)	6 (A) 7 (A)
17. Lemon Street/ Curtola Parkway	Signal	AM PM	20 (B) 26 (C)	21 (B) 26 (C)	21 (B) 27 (C)	21 (B) 27 (C)

Source: See Appendix L.
Notes:

1 Traffic operations results include delay in seconds per vehicle and LOS grade A – F, based on delay thresholds published in the HCM (Transportation Research Board 2010). For side-street stop-controlled intersections, average delay is listed first followed by the delay for the worst approach in parentheses.

2 Signal = signalized intersection, SSSC = side-street stop-controlled intersection.

3 Lemon/Carlson~~ is currently a side-street stop-controlled intersection, but~~ was~~ill be~~ signalized in 2015 after completion of the Existing Conditions analysis. ~~prior to the completion of the project.~~

* HCM2000 methodology is used for this intersection, because the five-leg configuration is not handled well in the HCM2010/Synchro 8 software.

The LOS analysis shows that there are no significant cumulative intersection impacts relative to significance Criteria A.1 – A.3 for either of the projects, nor for the combined projects. Relative to the Cumulative No Project condition, the v/c ratio does not change by the increment set forth in Criteria A.1 (see Appendix L for the detailed LOS output including the v/c ratios), and the side-street stop-controlled levels of service do not meet the criteria set forth in Criteria A.2 and A.3.

Based on the above analysis, cumulative impacts under Criteria A.1 – A.3 would be **less than significant**.

Cumulative Rail Crossing Impacts (Criteria A.4)

The rail crossing impacts discussed under the Existing Plus Project section above would worsen as traffic volumes grow on the various streets that have grade crossings with the railroad tracks. While a quantitative analysis for the cumulative (year 2040) condition was not performed, the intersection blockages and driver delays can reasonably be expected to worsen over time with the traffic volume growth.

Combined VMT and Orcem Project Components

As described previously, the proposed project would cause delays and queues at rail crossings that are substantial (delays of over 1 minute during peak hours, or queues that block upstream intersections during the day and early evening when traffic volumes are at or near their peak hour levels) relative to delays and queues in the Cumulative No Project condition. Therefore, the cumulative impact of the project would be **significant** (**Impact 3.12-3**), and mitigation is provided in Section 3.12.5.

Cumulative Freeway Impacts (Criteria A.5 and A.6)

VMT Project Component

The VMT trips were added to the Cumulative No Project freeway segment volumes to determine the Cumulative Plus Project change in vehicle density and LOS. For this analysis, consistent with the HCM methodology, the truck trips were converted to PCEs using a factor of two PCE per truck. Table 3.12-14 presents the results. The additional VMT truck and employee trips do not result in an impact based on significance Criteria A.5 and A.6. While several segments are projected to operate at LOS E or F in 2040, the project would add fewer than 10 trips to these segments, whereas the significance threshold as defined under A.5 is 50 peak hour trips. Two freeway segments are projected to operate at LOS F in the cumulative condition. At the westbound I-780 weave section at the I-80 loop ramps, the VMT project component would add an estimated three AM peak hour trips and one PM peak hour trip; and at the westbound I-80 off-ramp to I-780/Curtola Parkway westbound, the VMT project component would add one trip in the PM peak hour. These trips fall below the significance threshold in Criteria A.6.

Table 3.12-14
Cumulative (Year 2040) With Project Freeway Operations

Freeway Facility		Type	2040							
			AM				*PM*			
			2040 LOS	*+ VMT LOS*	*+ ORCEM LOS*	*+ Combined Project LOS*	*2040 LOS*	*+ VMT LOS*	*+ ORCEM LOS*	*+ Combined Project LOS*
Interstate 780: Laurel St - Glen Cove Pkwy	EB	Basic	D/26.1	D/26.1	D/26.1	D/26.1	C/23.9	C/23.9	C/23.9	C/23.9
	WB	Basic	C/20.4	C/20.5	C/20.5	C/20.5	D/32.1	D/32.1	D/32.1	D/32.1
Interstate 780: I-80 Loop Ramps Weave	EB	Weave	A	A	A	A	B	B	B	B
	WB	Weave	F/In Queue	F/In Queue	F/In Queue	F/In Queue	F/In Queue	F/In Queue	F/In Queue	F/In Queue
Interstate 80: I-780 Connectors - Georgia St	EB	Basic	D/33.5	D/33.5	D/33.5	D/33.6	D/30.2	D/30.2	D/30.2	D/30.3
	WB	Basic	D/31.8	D/31.8	D/31.8	D/31.9	E/40.8	E/40.8	E/40.9	E/40.9
Interstate 80: I-780 Connector Ramps	EB	Merge	E/38.4	E/38.5	E/38.6	E/38.7	E/36.7	E/36.8	E/36.9	E/37.0
	WB	Diverge	E/39.1	E/39.1	E/39.2	E/39.2	F/44.4	F/44.4	F/44.5	F/44.5
Interstate 80: South of Sonoma Blvd	EB	Basic	B/12.6	B/12.6	B/12.6	B/12.7	C/23.0	C/23.0	C/23.1	C/23.1
	WB	Basic	D/28.0	D/28.1	D/28.2	D/28.2	B/15.3	B/15.3	B/15.3	B/15.3

Source: See Appendix L.
Notes: LOS = Level of service; NB = Northbound; SB = Southbound; WB = Westbound; EB = Eastbound.
Bold indicates segments operating below the Caltrans LOS standard of D.

Orcem Project Component

The Orcem project component trips were added to the Cumulative No Project freeway segment volumes to determine the Cumulative Plus Project change in vehicle density and LOS. As with the VMT analysis, the truck trips were converted to PCEs using a factor of two PCEs per truck. The results are shown in Table 3.12-14. The additional Orcem truck and employee trips do not result in an impact based on significance Criteria A.5 and A.6. While several segments are projected to operate at LOS E or F in 2040, the project adds fewer than 20 trips to these segments, whereas the significance threshold as defined under A.5 is 50 peak hour trips. Two freeway segments are projected to operate at LOS F in the cumulative condition. At the westbound I-780 weave section at the I-80 loop ramps, the Orcem project component would add an estimated seven~~nine~~ AM peak hour trips and one~~three~~ PM peak hour trip~~s~~; and at the westbound I-80 off-ramp to I-780/Curtola

Parkway westbound, the VMT project component would add three~~seven~~ trips in the PM peak hour. These trips fall below the significance threshold in Criteria A.6.

Combined VMT and Orcem Project Components

It is noted that the combined project impact also would not result in a significant impact under Criteria A.5 or A.6, as shown in Table 3.12-14. The combined projects would add 10~~2~~ AM peak hour trips and 2~~4~~ PM peak hour trips to the westbound I-780 weave section at the I-80 loop ramps, and 3~~8~~ PM peak hour trips to the westbound I-80 off-ramp to I-780/Curtola Parkway westbound. Based on the above analysis, cumulative project impacts under Criteria A.5 and A.6 would be **less than significant**.

B) Would the project conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?

VMT and Orcem Project Analysis

As shown in Tables 3.12-10 and 3.12-12, neither the VMT project component nor the Orcem project component would result in a significant impact relative to Criteria B.1 and B.2 (refer to Thresholds of Significance, Section 3.12.3). Neither project would cause the intersection of Sonoma Boulevard/Curtola Parkway to fall below the CMP standard of LOS E (Criteria B.1) and neither project would cause a freeway segment to fall below the CMP standard for that segment (Criteria B.2). In addition, the combined projects would not result in significant impacts under these criteria. Based on the above analysis, impacts would be **less than significant**.

C) Would the project substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

VMT and Orcem Project Analysis

Both the VMT and Orcem project components would generate new truck trips that would travel on Lemon Street, Sonoma Boulevard, and Curtola Parkway to gain access to the freeway system. Sonoma Boulevard and Curtola Parkway are major four-lane arterial roadways designed to accommodate large trucks, and the impact of the additional trucks on safe roadway operation and safe pedestrian and bicycle movement is projected to be less than significant. Lemon Street east of Sonoma Boulevard is an arterial roadway with a 36-foot width, on-street parking, and center double yellow striping defining the two travel lanes (with additional width and turning capacity at Curtola Parkway); west of Sonoma Boulevard, Lemon Street has the same configuration, although there is no center double yellow striping to define the lanes. Since all truck trips generated by both projects would use this section of Lemon Street to access the rest of the roadway network, certain pavement and striping improvements are needed to allow safe movements for trucks, other vehicles, pedestrians, and bicyclists between Derr Avenue and Sonoma Boulevard. These needed safety improvements include pavement strengthening, centerline striping, potential on-street parking changes, and intersection improvements at Lemon Street/Sonoma Boulevard to provide adequate sight distance and maneuvering capacity for trucks.

The proposed project would require physical improvements to Lemon Street in order to provide safe and efficient vehicle movements. This impact would be **significant** (**Impact 3.12-4**), and mitigation is provided in Section 3.12.5.

D) Would the project result in inadequate emergency access?

VMT and Orcem Project Analysis

The proposed project is projected to potentially have a significant impact on emergency access, based on the findings under Criteria A.4 (rail crossings) above. The project is projected to have a significant impact on emergency access, based on the potential delays generated by train crossings at the grade crossings in Vallejo, American Canyon, and crossings further north, as identified relative to Criteria A.4. <u>In addition to the discussion under Criteria A.4, describing the delays incurred at the at-grade roadway crossings and the predicted blockages of upstream intersections, it is noted that the 77-car trains would be approximately 4,800 feet (0.90 mile) long, resulting in several at-grade roadway crossings being blocked at any given time as the trains traverse the City of Vallejo. This would require emergency vehicles to make long detours if they need to access an emergency on the other side of the tracks. The detour length would be exacerbated by queue formation on the approaches to each blocked at-grade crossing.</u> This impact would be **significant** (**Impact 3.12-5**), and mitigation is provided in Section 3.12.5.

E) Would the project conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?

VMT and Orcem Project Analysis

Both projects would add substantial truck traffic to Lemon Street between the project site and Sonoma Boulevard, and to a lesser extent between Sonoma Boulevard and Curtola Parkway, relative to the current daily traffic volume on this street. Lemon Street is a designated arterial roadway; east of Sonoma Boulevard it has a volume ranging from approximately 2,700 vehicles per day near Sonoma Boulevard and 9,440 vehicles per day near Curtola Parkway. West of Sonoma Boulevard, Curtola Parkway is a designated arterial roadway with a current daily traffic volume of 856 vehicles per day.

On the section of Lemon Street between Derr Avenue and Sonoma Boulevard, the VMT project component is projected to add 174 daily truck trips and 80 daily commute trips (a combined 30% increase), and the Orcem project component is projected to add 378~~416~~ daily truck trips and 80~~8~~ daily commute trips (a combined 54~~9~~% increase), for a combined project increase of 84~~9~~%. The increased traffic volume would substantially change the pedestrian and bicycling environment on this section of Lemon Street, increasing the volume from a level consistent with a local street to that of a lower-volume collector street.

On Lemon Street between Sonoma Boulevard and Curtola Parkway, the existing traffic volumes are higher, ranging from an estimated 2,700 vehicles per day just east of Sonoma Boulevard to 9,437 vehicles per day just west of Curtola Boulevard. An estimated ~~The daily combined project trips are estimated to represent~~ 56% of the total project trip generation is projected to use this ~~future trip generation along this~~ segment of roadway. For the VMT project component, this equates to 86 daily truck trips and 45 commute trips, which combined represent an increase of 5% relative to the lower-volume end of Lemon Street (just east of Sonoma Boulevard) and 1% relative to the higher-volume end of Lemon Street (just west of Curtola Boulevard). The Orcem project component adds 212~~233~~ daily truck trips and 45~~49~~ daily commute trips to this section of Lemon Street, which is an increase of 9~~10~~% relative to the lower-volume end of Lemon Street (just east of Sonoma Boulevard) and 3% relative to the higher-volume end of Lemon Street (just west of Curtola Boulevard). While these increases are within the normal traffic variation that most streets experience on a day-to-day basis, the fact that most of the trips would be heavy trucks means that residents with driveways along this section of Lemon Street, and local pedestrians and bicyclists, would find their mobility impacted in terms of driver convenience accessing individual driveways and in terms of the comfort and convenience for bicycling and walking trips along Lemon Street, particularly in the residential section just west and east of Sonoma Boulevard. In addition, this increased use impacts consistencty with General Plan policies that prioritise maintaince of key neighborhood connection routes to facilitate bicycle access.

In addition to the impacts of trucks on Lemon Street, the impact of the train movements at the grade crossings in the City, as well as near many of the non-grade crossing locations with proximate streets and intersections, would make pedestrian and bicycle movements near and across these locations less convenient, and even potentially unsafe without appropriate barriers in the case of the non-grade crossing locations. Given CPUC regulations governing safety standards for grade and non-crossings, improvements to reduce hazards to **less-than-significant** levels would be completed prior to the use of project rail service for those grade crossing locations with proximate streets and intersections, where pedestrian and bicycle movements across the tracks are currently physically possible. These intersections will be brought into compliance with code requirements for active tracks, including appropriate barriers and passive active warning signs and devices. The Public Works Department shall determine the project's fair-share costs allocation for the necessary improvements.

The project's added operational auto and truck trips on Lemon Street would make local vehicle, pedestrian, and bicycle movements less safe and convenient. Based on threshold of significance E.2, This impact would be **significant** (**Impact 3.12-6**), and mitigation is provided in Section 3.12.5.

3.12.5 Mitigation Measures

Mitigation for Impact 3.12-1: Construction of the proposed project would result in temporary impacts on traffic operations and non-vehicular mobility.

MM-3.12-1 The City of Vallejo shall require that a Construction Traffic Management Plan be developed as part of a larger Construction Management Plan to address potentially significant impacts during construction of the VMT and Orcem project components. As part of the plan development, the project applicants and their construction contractors shall meet with appropriate City of Vallejo departments to determine traffic management strategies to reduce, to the maximum extent feasible, traffic congestion and the effects of parking demand by construction workers during construction of the projects and other nearby projects that could be simultaneously under construction. The project applicants shall develop the plans for review and approval by the appropriate City departments. The plans shall include at least the following items and requirements:

A. A set of comprehensive traffic control measures, including scheduling of major truck trips and deliveries to avoid peak traffic hours, detour signs if required, lane closure procedures, signs, cones for drivers, and designated construction access routes.

B. Notification procedures for adjacent property owners and public safety personnel regarding when major deliveries, detours, and lane closures will occur.

C. Location of construction staging areas for materials, equipment, and vehicles at an approved location.

D. A process for responding to, and tracking, complaints pertaining to construction activity, including identification of an on-site complaint manager. The manager shall determine the cause of the complaints and shall take prompt action to correct the problem. A complaint manager shall be designated and their name and phone number shall be provided to Planning and Zoning prior to the issuance of the first permit issued by Building Services.

E. Provision for accommodation of pedestrian flow.

F. Provision for parking management and spaces on the project site for all construction workers to ensure that construction workers do not park in on-street spaces.

G. Any damage to the street caused by heavy equipment, or as a result of this construction, shall be repaired, at the project applicant's expense, within 1 week of the occurrence of the damage (or excessive wear), unless further damage/excessive wear may continue; in such case, repair shall occur prior to issuance of a final inspection of the building permit and in coordination with MM-3.12-4a. All damage that is a threat to public health or safety shall be repaired immediately. The street shall be restored to its condition prior to the new construction as established by the City Building Inspector and/or photo documentation, at the project sponsor's expense, before the issuance of a Certificate of Occupancy.

H. Any heavy equipment brought to the construction site shall be transported by truck, where feasible.

I. No materials or equipment shall be stored on the traveled roadway at any time.

J. Prior to construction, a portable toilet facility and a debris box shall be installed on the site, and properly maintained through project completion.

K. All equipment shall be equipped with mufflers.

L. Prior to the end of each work day during construction, the contractor or contractors shall pick up and properly dispose of all litter resulting from or related to the project, whether located on the property, within the public rights-of-way, or properties of adjacent or nearby neighbors.

Mitigation for the following impacts:

Impact 3.12-2: The proposed project would cause substantial delays and queues at rail crossings (delays of over 1 minute during peak hours, or queues that block upstream intersections during the day—7:00 a.m. to 6:00 p.m., the operating hours of California Northern Railroad—~~and early evening~~ when traffic volumes are at or near their peak hour levels) relative to delays and queues without the project.

Impact 3.12-3: The proposed project would cause substantial delays and queues at rail crossings (delays of over 1 minute during peak hours, or queues that block upstream intersections during the day—7:00 a.m. to 6:00 p.m., the operating hours of California Northern Railroad—~~and early evening~~ when traffic volumes are at or near their peak hour levels) relative to delays and queues in the Cumulative No Project condition.

Impact 3.12-5: The proposed project would have a significant impact on emergency access, based on the potential delays generated by train crossings at the grade crossings in Vallejo, American Canyon, and crossings further north.

MM-3.12-2a The applicants shall work with the California Northern Railroad to limit train movements through Vallejo to between 9:00 a.m. and 4:00 p.m., thus minimizing the traffic queueing associated with the train movements across the grade crossings throughout the city during peak commute hours.

MM-3.12-2b Prior to the issuance of permits for rail operations, the project applicants shall notify the police and fire departments of proposed rail operations and potential delays to facilitate alternative routing during emergencies.

Mitigation for Impact 3.12-4: The proposed project would require physical improvements to Lemon Street in order to provide safe and efficient vehicle movements.

MM-3.12-3 To provide for the safe movement of project trucks along with other existing pedestrian, bicycle, and vehicular traffic on Lemon Street between the project site and Sonoma Boulevard and through the intersection of Lemon Street/Sonoma Boulevard, the applicants shall retain the services of a qualified engineer to prepare a structural pavement assessment for this segment of roadway, which shall be submitted for review and approval by the City Public Works Department. The assessment shall evaluate the existing pavement condition/strength against the project's demands utilizing methodology acceptable to the City, and shall identify recommended improvements (for example, overlay, reconstruction, base repair, etc.) necessary to meet this demand, based on the schedule of combined VMT and Orcem truck traffic. The City shall determine the project's fair-share allocation of costs in relationship to overall improvement costs, and all necessary improvements shall be made prior to the issuance of a certificate of occupancy.

In addition, the applicants shall work with the City of Vallejo Public Works Department to identify, design, and prepare a cost estimate for those physical improvements necessary to provide adequate sight distance and maneuvering capacity for trucks along this segment of roadway, including the intersection at Lemon Street/Sonoma Boulevard. The needed improvements may include for example, centerline striping, potential on-street parking changes, sidewalk gap closures and widenings. The applicants shall provide an engineers cost esimtate for the improvements, to be approved by the Public Works Department. The Public Works Department shall determine the project's fair-share cost allocation for the necessary improvements. All necessary improvements shall be constructed prior to the issuance of a certificate of occupancy.

Mitigation for Impact 3.12-6: The proposed project's added operational auto and truck trips on Lemon Street would make local vehicle, pedestrian, and bicycle movements unsafe or less convenient.

MM-3.12-4 The project applicants shall work with the City of Vallejo to identify, design, and construct improvements on Lemon Street between the project site and Curtola Parkway, and on Sonoma Boulevard between Lemon Street and I-80 where not already funded or completed~~, based on the project truck traffic phasing,~~ to provide for safe movement of pedestrians and bicycles along and across this section of roadway, and to provide for the safe movement of project trucks through portions of this roadway where existing residential driveways take direct access, consistent with the applicable General Plan policies (see Final EIR Sections 3.9 and 3.12.1). Improvements may include, but are not limited to, the following:

- Provision of continuous 4-foot minimum-width sidewalks from Alden Street to Curtola Parkway, including closure of all gaps.
- Installation of high-visibility crosswalks (i.e., continental or zebra striping, and installation of pedestrian hybrid beacon or rectangular rapid flashing beacon devices if indicated by an engineering study), with curb extensions where feasible, at high-pedestrian use intersections as identified by the Public Works Department, including the intersections of Lemon Street with Sheridan Street, Lincoln Highway, Sonoma Boulevard, and Porter Street.
- Lowering of the speed limit to 25 miles per hour (mph), subject to an engineering and traffic survey supporting the speed zone. The project applicants shall be responsible for funding of the study and the actual costs of signage and street markings.

The project applicants shall provide an engineer's cost estimate for the necessary improvements, to be approved by the Public Works Department. The Public Works Department shall determine the project's fair-share costs allocation for the necessary improvements. The necessary improvements shall be constructed prior to the issuance of a certificate of occupancy.

MM-3.12-5 The project applicants shall work with the City of Vallejo to ensure maintainance of key neighborhood connection routes and to facilitate pedestrian and bicycle access on Lemon Street between the project site and Curtola Parkway, and on Sonoma Boulevard between Lemon Street and I-80. In addition, the applicant shall contribute their fair share to this maintenance of impacted roads, as determined by Public Works.

3.12.6 Level of Significance After Mitigation

Impact 3.12-1: With implementation of MM-3.12-1, which requires a Construction Traffic Management Plan to address impacts during construction of the proposed project, Impact 3.12-1 would be reduced to a **less-than-significant** level.

Impacts 3.12-2, 3.12-3, and 3.12-5: Implementation of MM-3.12-2a would be dependent on the California Northern Railroad, since the City does not have jurisdiction over the railroad. While the City can require the applicants to work with the California Northern Railroad to avoid peak commute hours, the City cannot ensure that the California Northern Railroad will agree to the desired hours of operation. In addition, similar blockages may occur, if to a somewhat lesser degree, if the crossings take place any time between 9~~6~~:00 a.m. and 4~~8~~:00 p.m., because traffic levels remain at or above 70% of peak-hour traffic volumes during th~~ese~~ period~~s~~. MM-3.12-2b would be implemented to provide emergency service providers with the opportunity to plan alternative routing during emergencies; however, delays due to rail operations could still impact emergency evacuation routes. For these reasons, Impacts 3.12-2, 3.12-3, and 3.12-5 would remain **significant and unavoidable** with mitigation.

Impact 3.12-4: With implementation of MM-3.12-3, improvements to Lemon Street from the project site through the intersection of Lemon Street/Sonoma Boulevard would be required to provide for safe vehicle movements. Impact 3.12-4 would be reduced to a **less-than-significant** level with this mitigation.

Impact 3.12-6: With implementation of MM-3.12-4, improvements to Lemon Street between the project site and Curtola Parkway would be required to provide for safe movement of pedestrians, bicycles, and trucks. Impact 3.12-6 would be reduced to a **less-than-significant** level with this mitigation.

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SOURCE: Fehr and Peers

FIGURE 3.12-1
Project Study Area

VALLEJO MARINE TERMINAL AND ORCEM PROJECT

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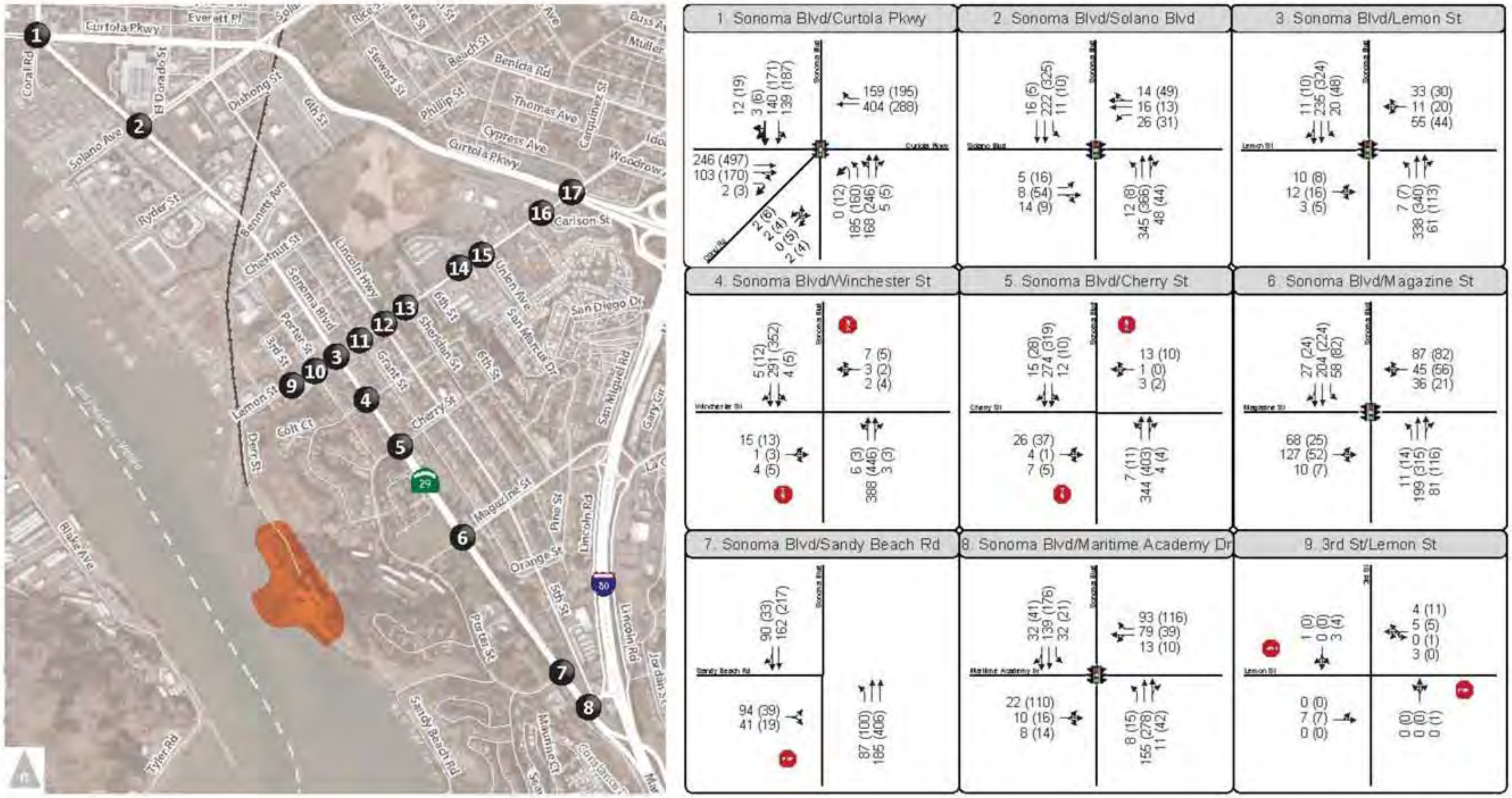

XX (YY) AM (PM) Peak Hour Traffic Volumes

Signalized Intersection

Stop Sign

Study Intersection

Project Site

Note: Counts conducted in April 2014.

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SOURCE: Fehr and Peers 2014

FIGURE 3.12-2A

Existing Peak Hour Intersection Traffic Volumes

VALLEJO MARINE TERMINAL AND ORCEM PROJECT

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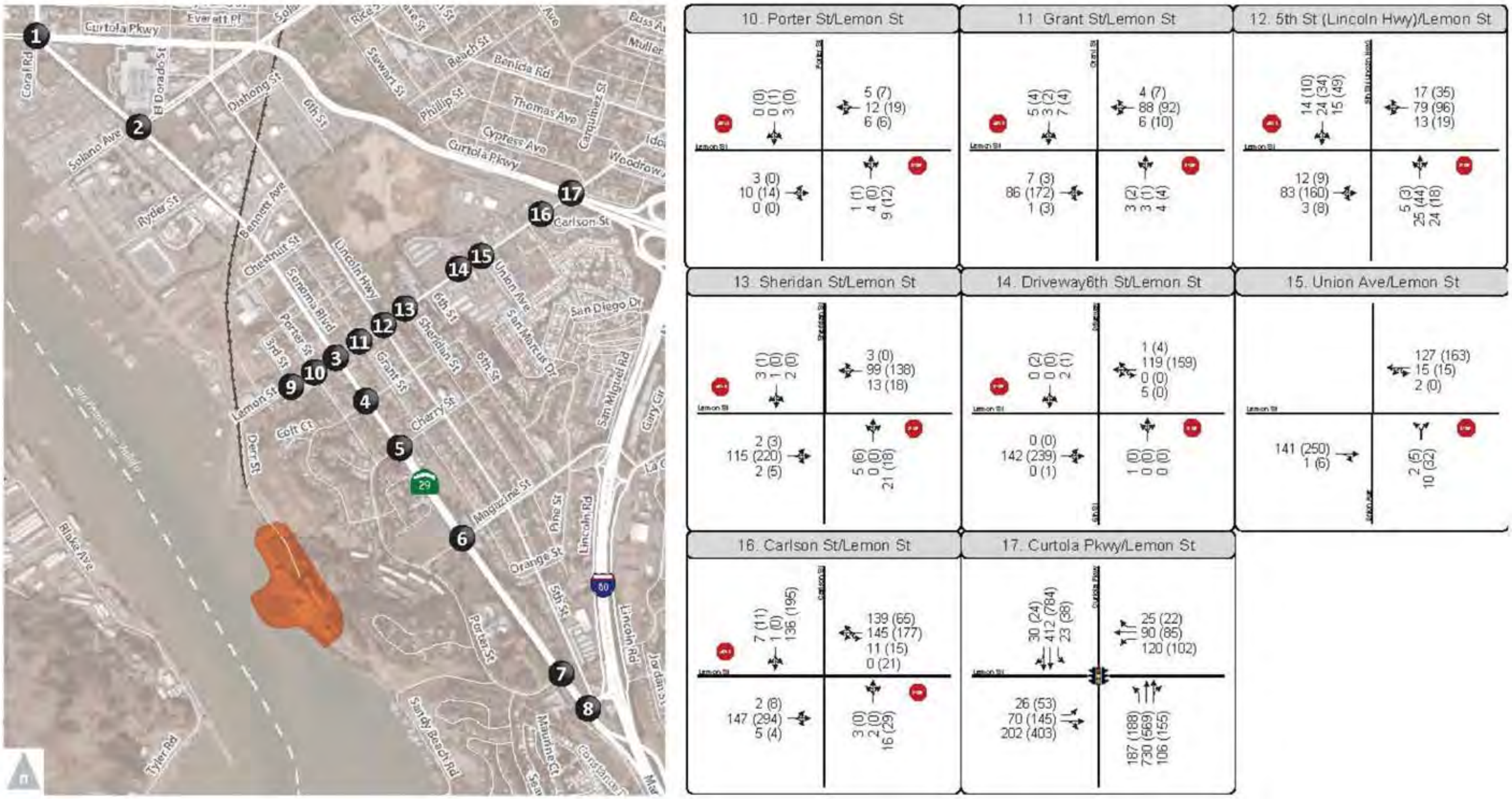

XX (YY) AM (PM) Peak Hour Traffic Volumes

Signalized Intersection

Stop Sign

Study Intersection

Project Site

Note: *Counts conducted in April 2014.*

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SOURCE: Fehr and Peers 2014

FIGURE 3.12-2B

Existing Peak Hour Intersection Traffic Volumes

VALLEJO MARINE TERMINAL AND ORCEM PROJECT

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Study Intersection

Project Site

Note: *This distribution was applied to truck trips and employee commute trips.*

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SOURCE: Fehr and Peers

FIGURE 3.12-3

Trip Distribution for ORCEM and VMT

VALLEJO MARINE TERMINAL AND ORCEM PROJECT

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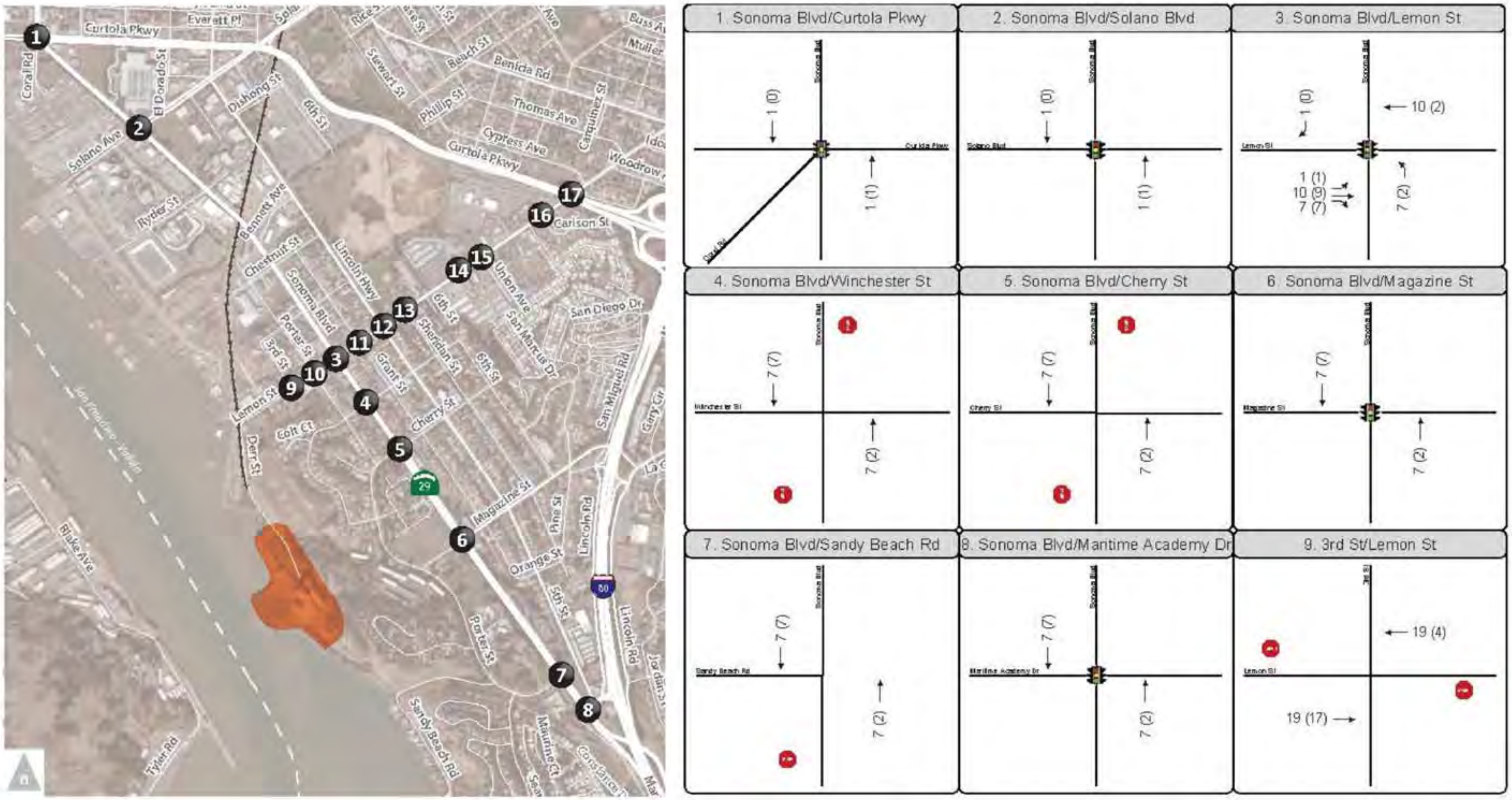

XX (YY) AM (PM) Peak Hour Traffic Volumes

Signalized Intersection

Stop Sign

Study Intersection

Project Site

Note: *Volumes include trucks and staff trips.*

Path: Z:\Projects\j830101\MAPDOC\DOCUMENT\EIR\Section 3\Figure3_12_4A_Vallejo_Marine_Terminal_Project_Trip_Assignment.mxd

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SOURCE: Fehr and Peers 2014

FIGURE 3.12-4A

Vallejo Marine Terminal Project Trip Assignment

VALLEJO MARINE TERMINAL AND ORCEM PROJECT

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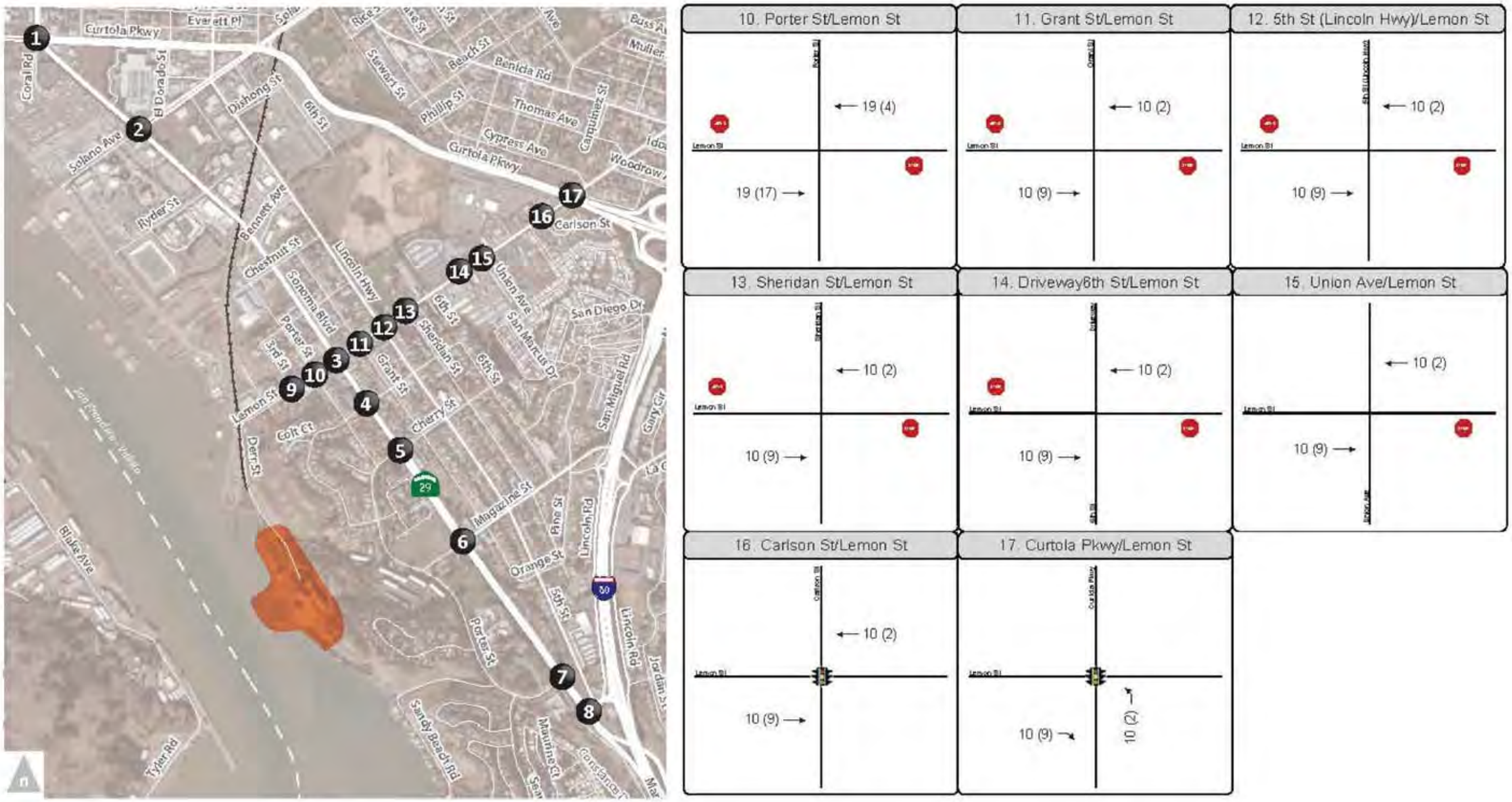

XX (YY) AM (PM) Peak Hour Traffic Volumes

Signalized Intersection

Stop Sign

Study Intersection

Project Site

Note: *Volumes include trucks and staff trips.*

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SOURCE: Fehr and Peers 2014

FIGURE 3.12-4B

Vallejo Marine Terminal Project Trip Assignment

VALLEJO MARINE TERMINAL AND ORCEM PROJECT

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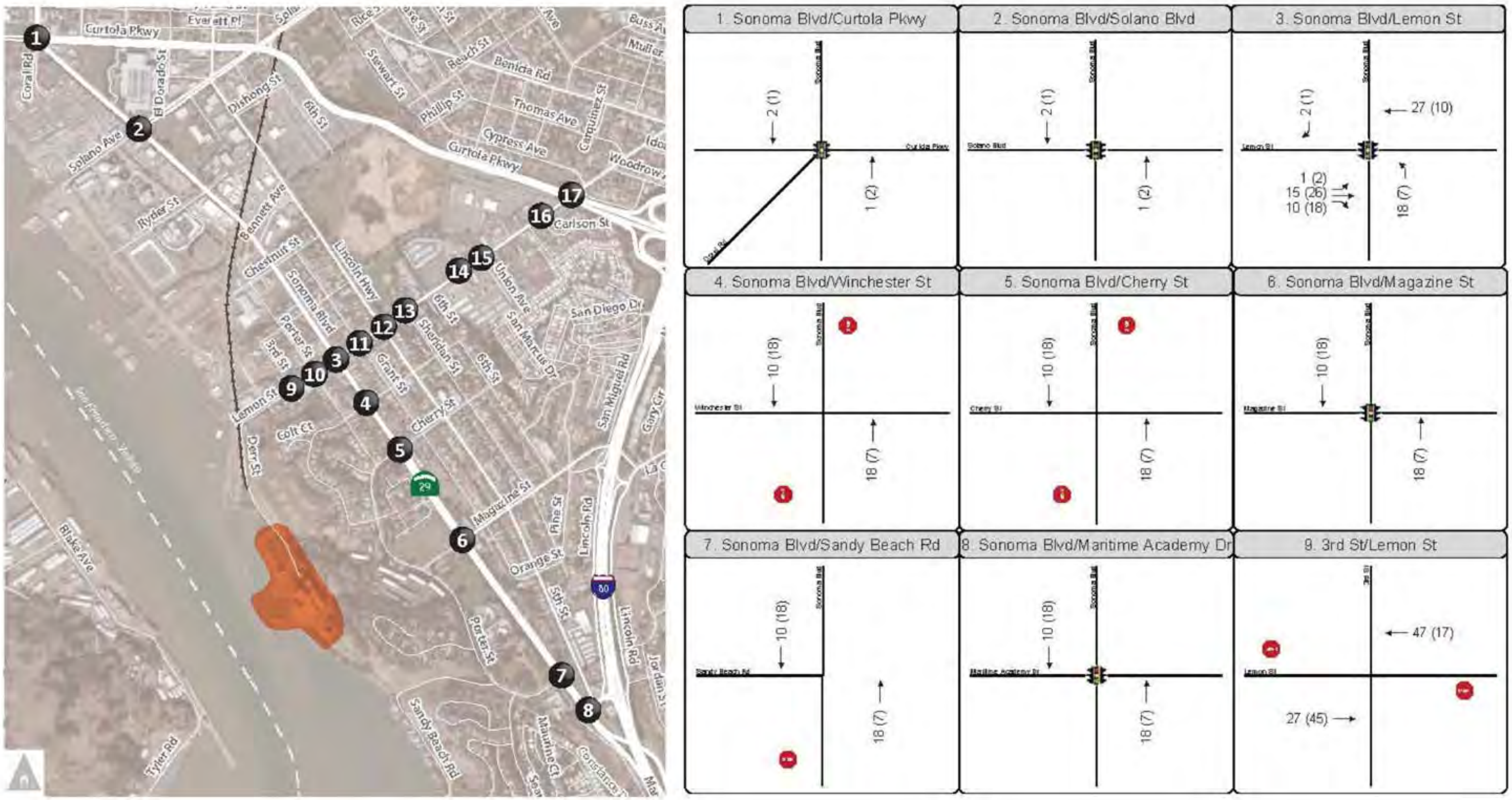

XX (YY) AM (PM) Peak Hour Traffic Volumes — Signalized Intersection — Stop Sign — # Study Intersection — Project Site

Note: *Volumes include trucks and staff trips.*

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SOURCE: Fehr and Peers 2014

FIGURE 3.12-5A

Orcem Project Trip Assignment

VALLEJO MARINE TERMINAL AND ORCEM PROJECT

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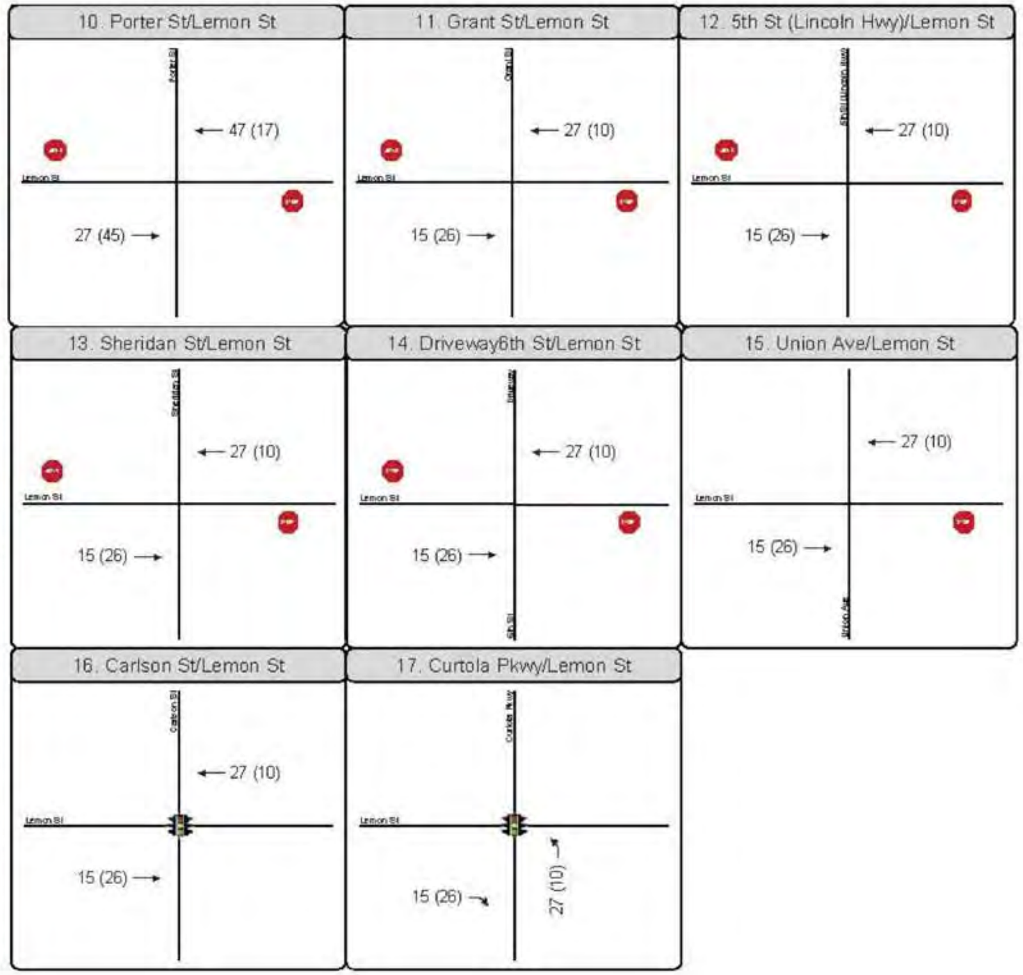

XX (YY) AM (PM) Peak Hour Traffic Volumes

Signalized Intersection

Stop Sign

Study Intersection

Project Site

Note: Volumes include trucks and staff trips.

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SOURCE: Fehr and Peers 2014

FIGURE 3.12-5B

Orcem Project Trip Assignment

VALLEJO MARINE TERMINAL AND ORCEM PROJECT

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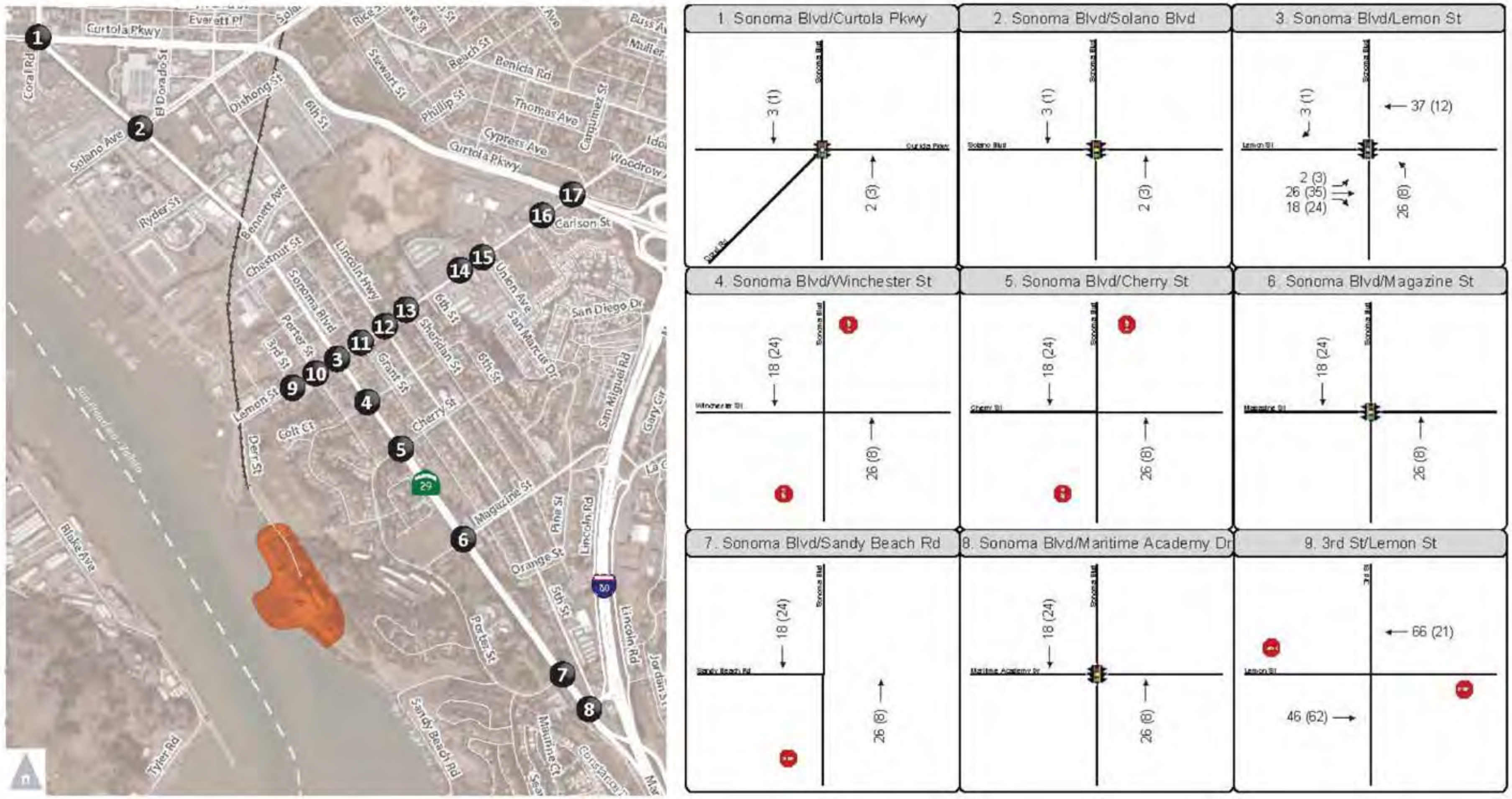

XX (YY) AM (PM) Peak Hour Traffic Volumes — Signalized Intersection — Stop Sign — # Study Intersection — Project Site

Note: *Volumes include trucks and staff trips.*

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SOURCE: Fehr and Peers 2014

FIGURE 3.12-6A

Combined Projects Project Trip Assignment

VALLEJO MARINE TERMINAL AND ORCEM PROJECT

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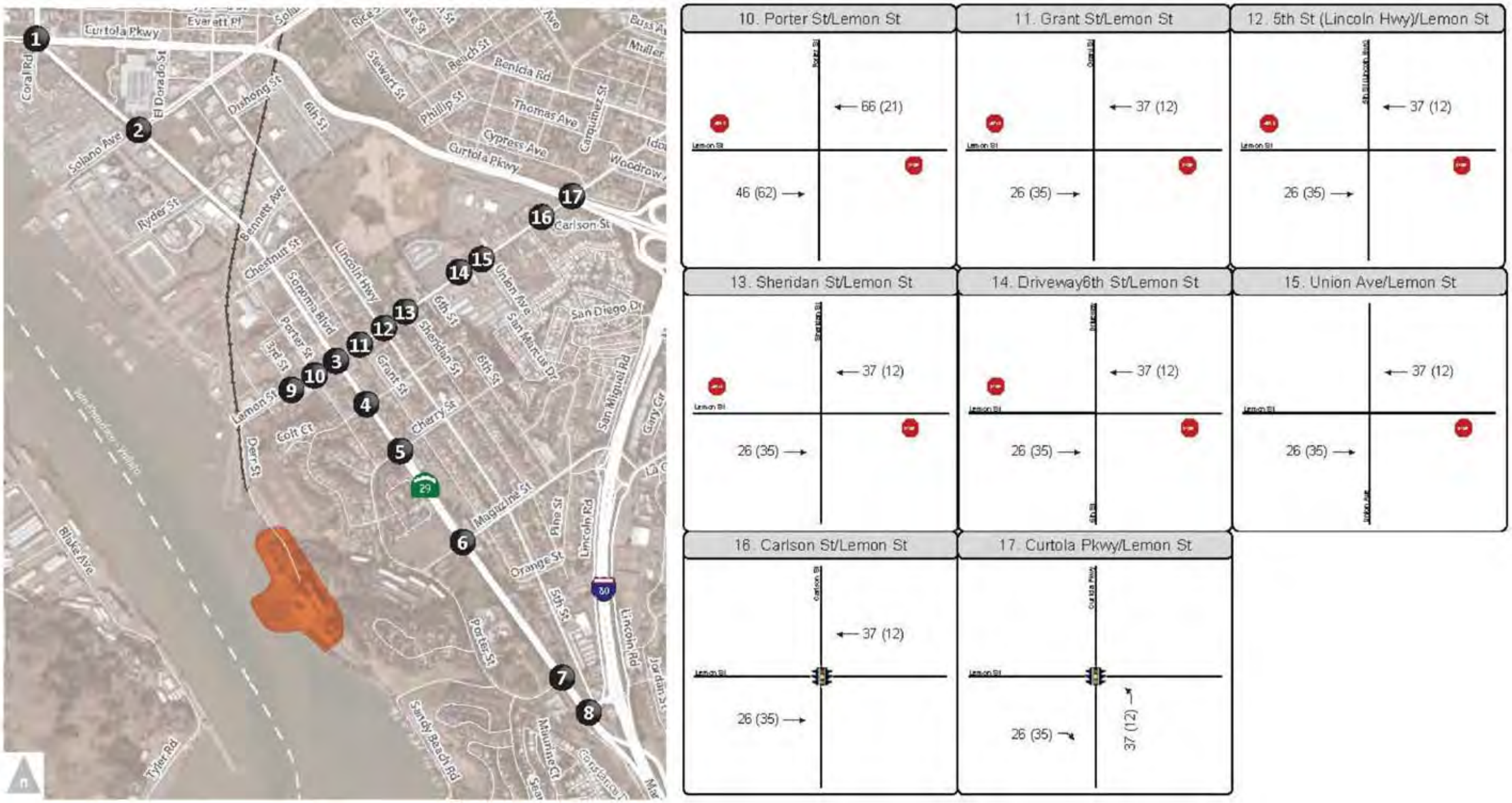

XX (YY) AM (PM) Peak Hour Traffic Volumes

Signalized Intersection

Stop Sign

Study Intersection

Project Site

Note: *Volumes include trucks and staff trips.*

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SOURCE: Fehr and Peers 2014

FIGURE 3.12-6B

Combined Projects Project Trip Assignment

VALLEJO MARINE TERMINAL AND ORCEM PROJECT

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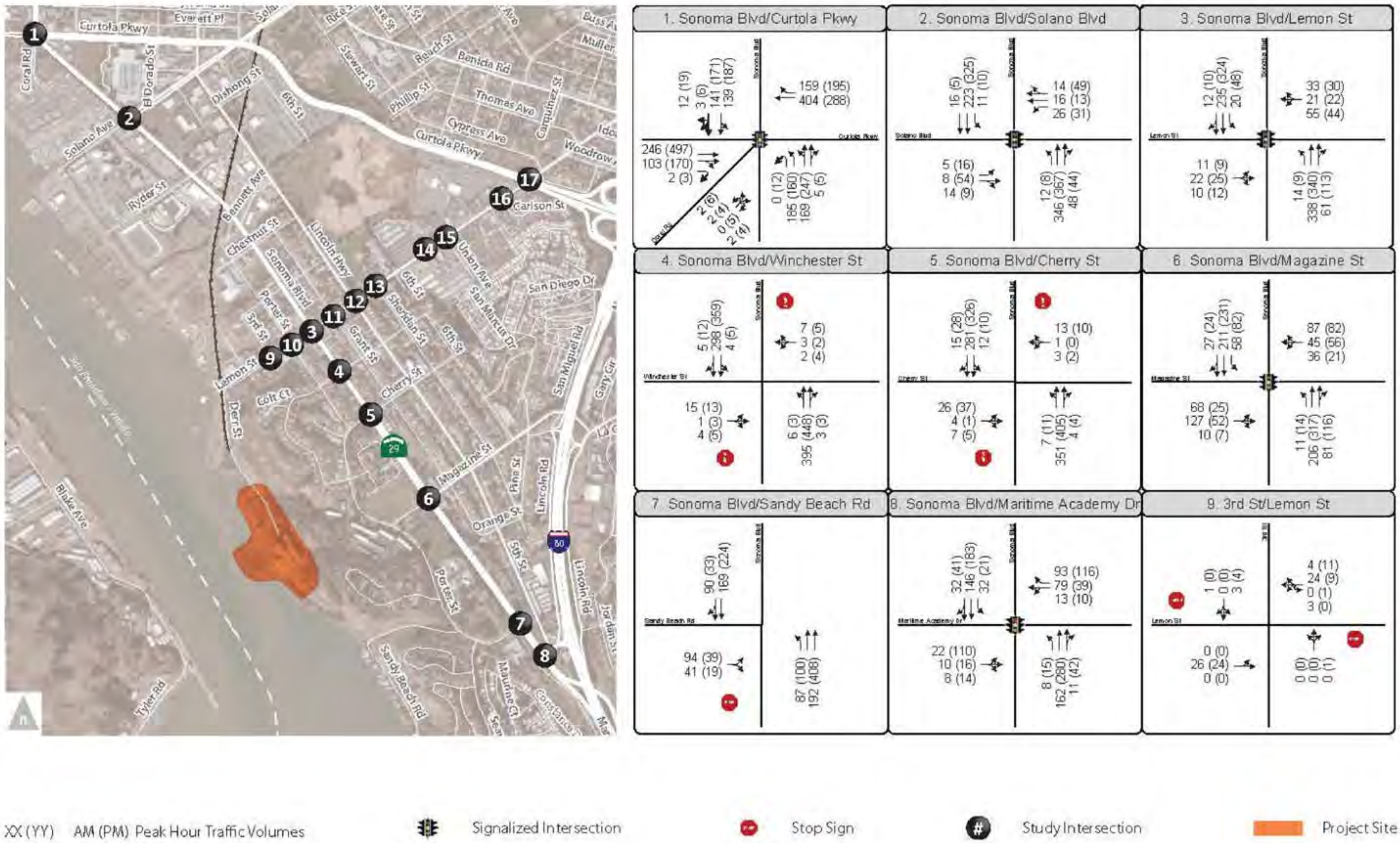

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SOURCE: Fehr and Peers 2014

FIGURE 3.12-7A

Existing + Vallejo Marine Terminal Peak Hour Intersection Traffic Volumes

VALLEJO MARINE TERMINAL AND ORCEM PROJECT

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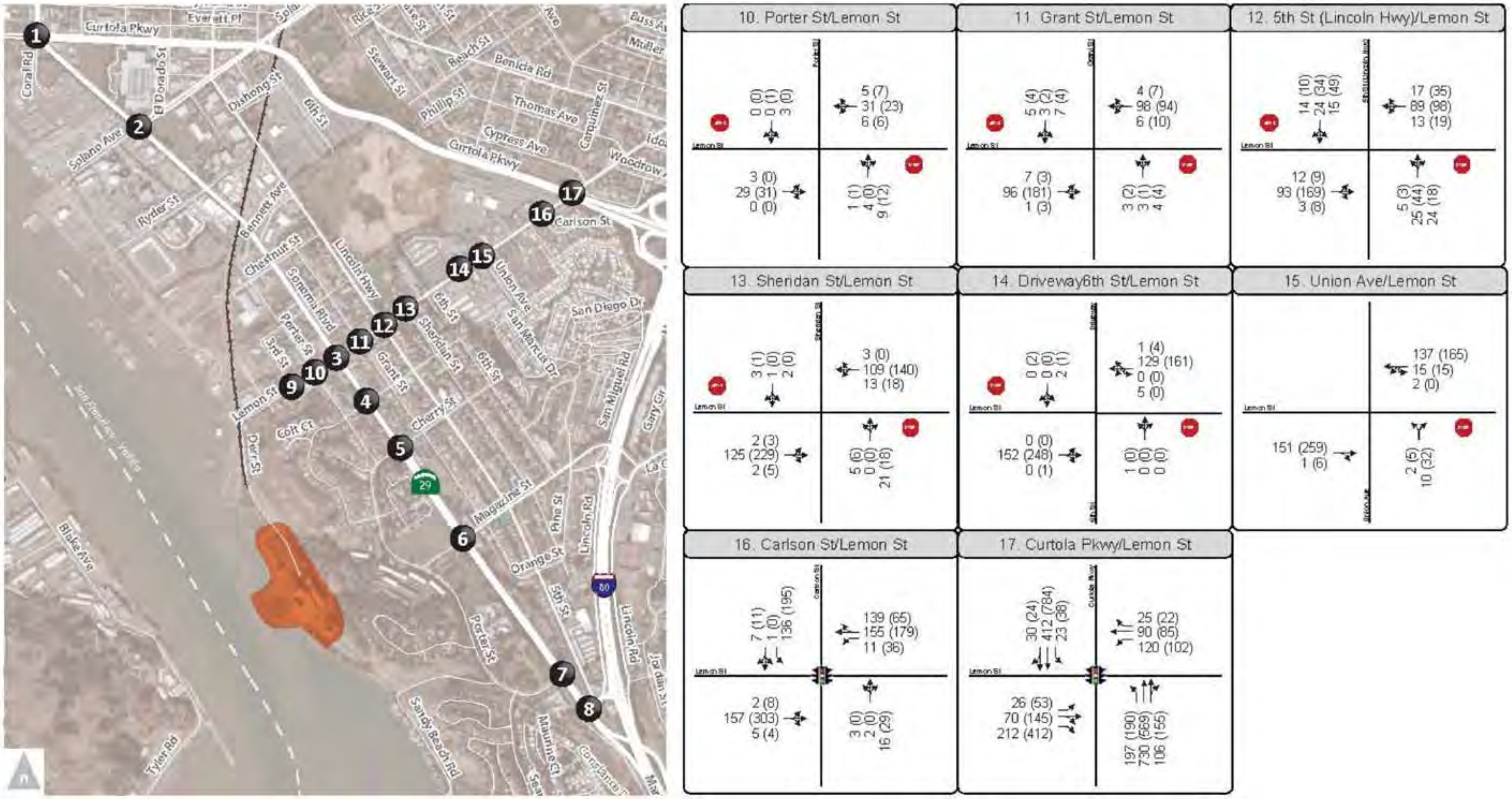

XX (YY) AM (PM) Peak Hour Traffic Volumes

Signalized Intersection

Stop Sign

Study Intersection

Project Site

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SOURCE: Fehr and Peers 2014

FIGURE 3.12-7B

Existing + Vallejo Marine Terminal Peak Hour Intersection Traffic Volumes

VALLEJO MARINE TERMINAL AND ORCEM PROJECT

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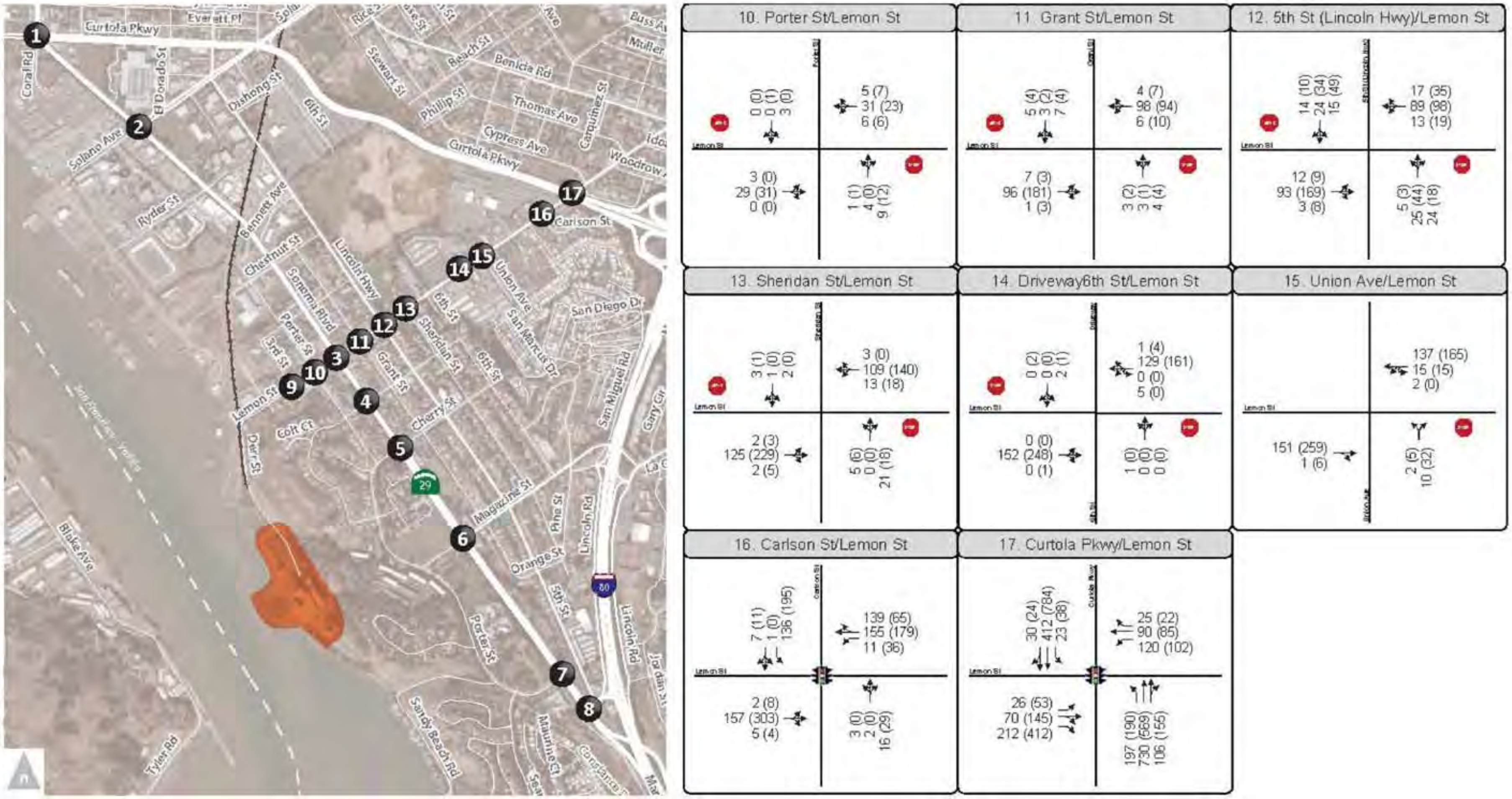

XX (YY) AM (PM) Peak Hour Traffic Volumes

Signalized Intersection

Stop Sign

Study Intersection

Project Site

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SOURCE: Fehr and Peers 2014

FIGURE 3.12-8A

Existing + Orceml Peak Hour Intersection Traffic Volumes

VALLEJO MARINE TERMINAL AND ORCEM PROJECT

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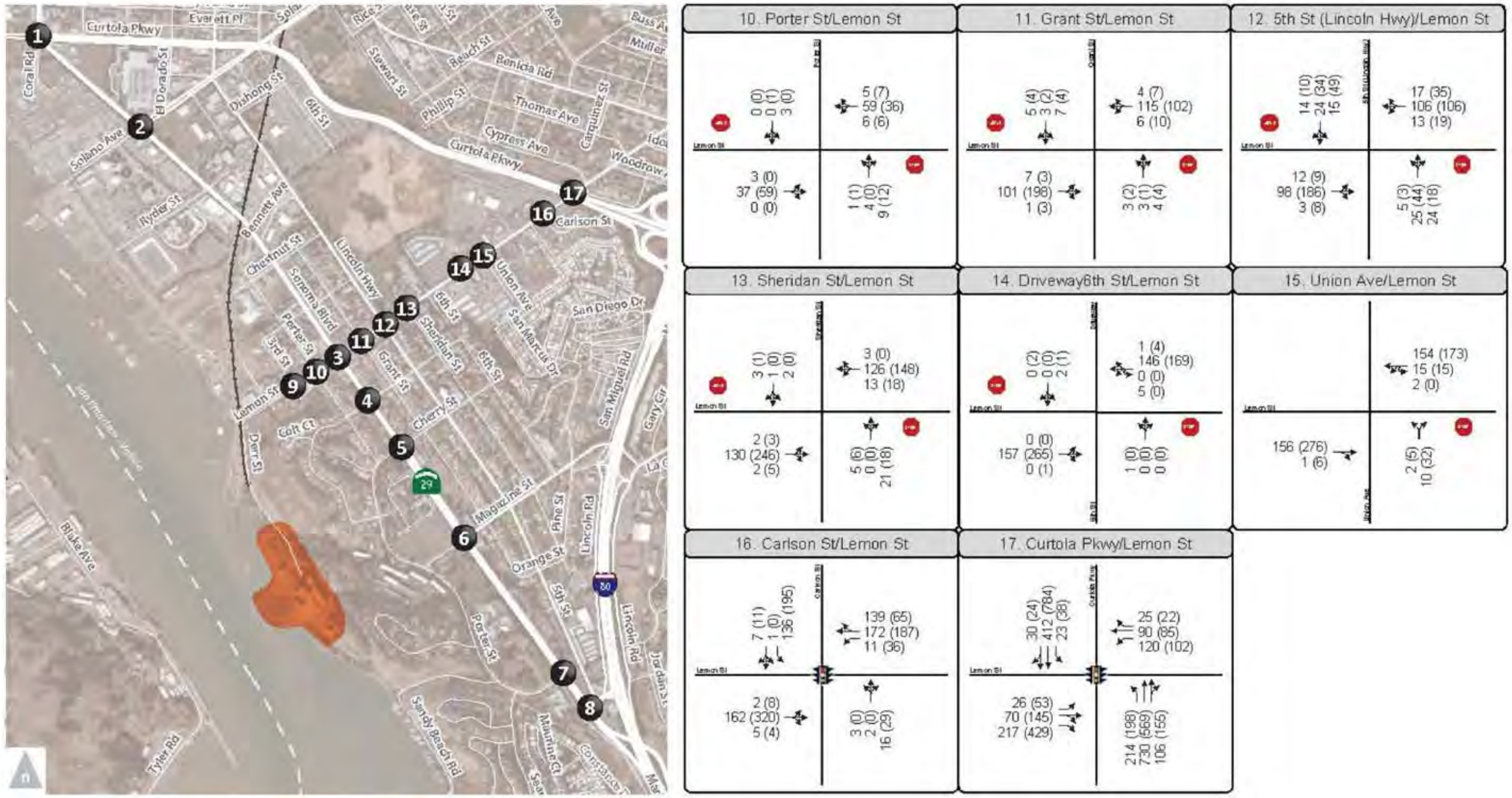

XX (YY) AM (PM) Peak Hour Traffic Volumes

Signalized Intersection

Stop Sign

Study Intersection

Project Site

DUDEK

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SOURCE: Fehr and Peers 2014

FIGURE 3.12-8B

Existing + Orcem Peak Hour Intersection Traffic Volumes

VALLEJO MARINE TERMINAL AND ORCEM PROJECT

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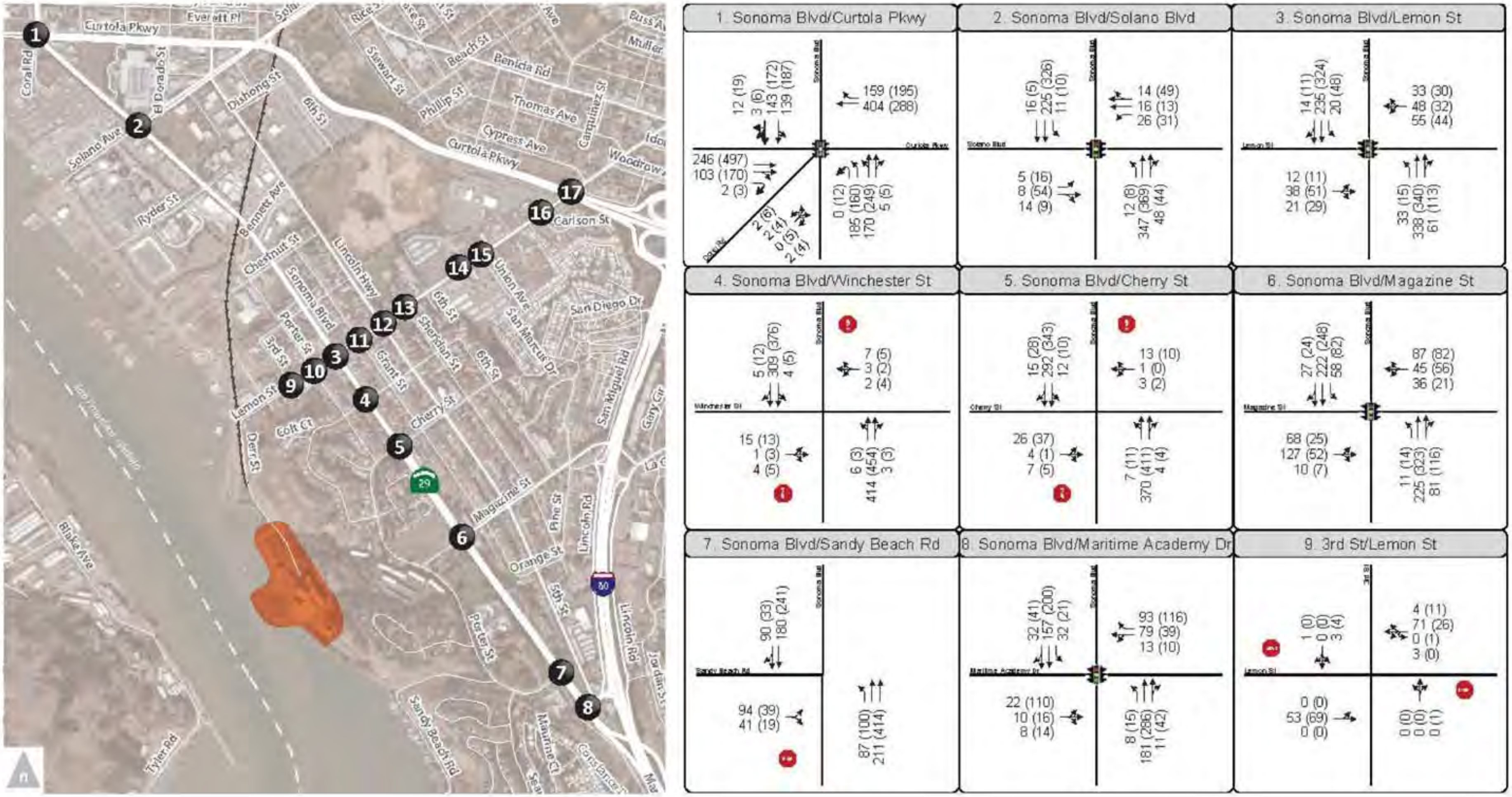

XX (YY) AM (PM) Peak Hour Traffic Volumes

Signalized Intersection

Stop Sign

Study Intersection

Project Site

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SOURCE: Fehr and Peers 2014

FIGURE 3.12-9A

Existing + Combined Project Peak Hour Intersection Traffic Volumes

VALLEJO MARINE TERMINAL AND ORCEM PROJECT

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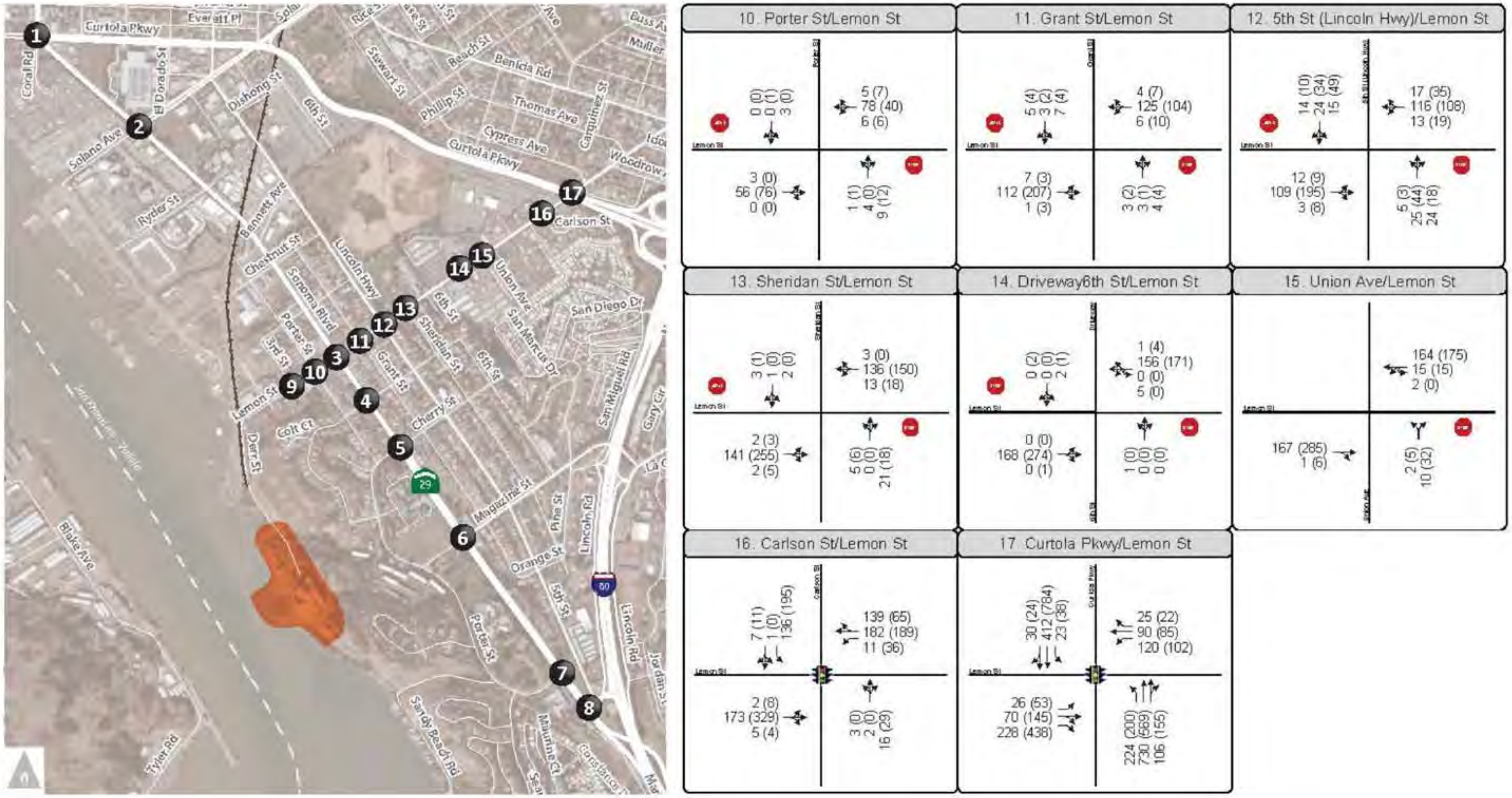

XX (YY) AM (PM) Peak Hour Traffic Volumes

Signalized Intersection

Stop Sign

Study Intersection

Project Site

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SOURCE: Fehr and Peers 2014

FIGURE 3.12-9B

Existing + Combined Project Peak Hour Intersection Traffic Volumes

VALLEJO MARINE TERMINAL AND ORCEM PROJECT

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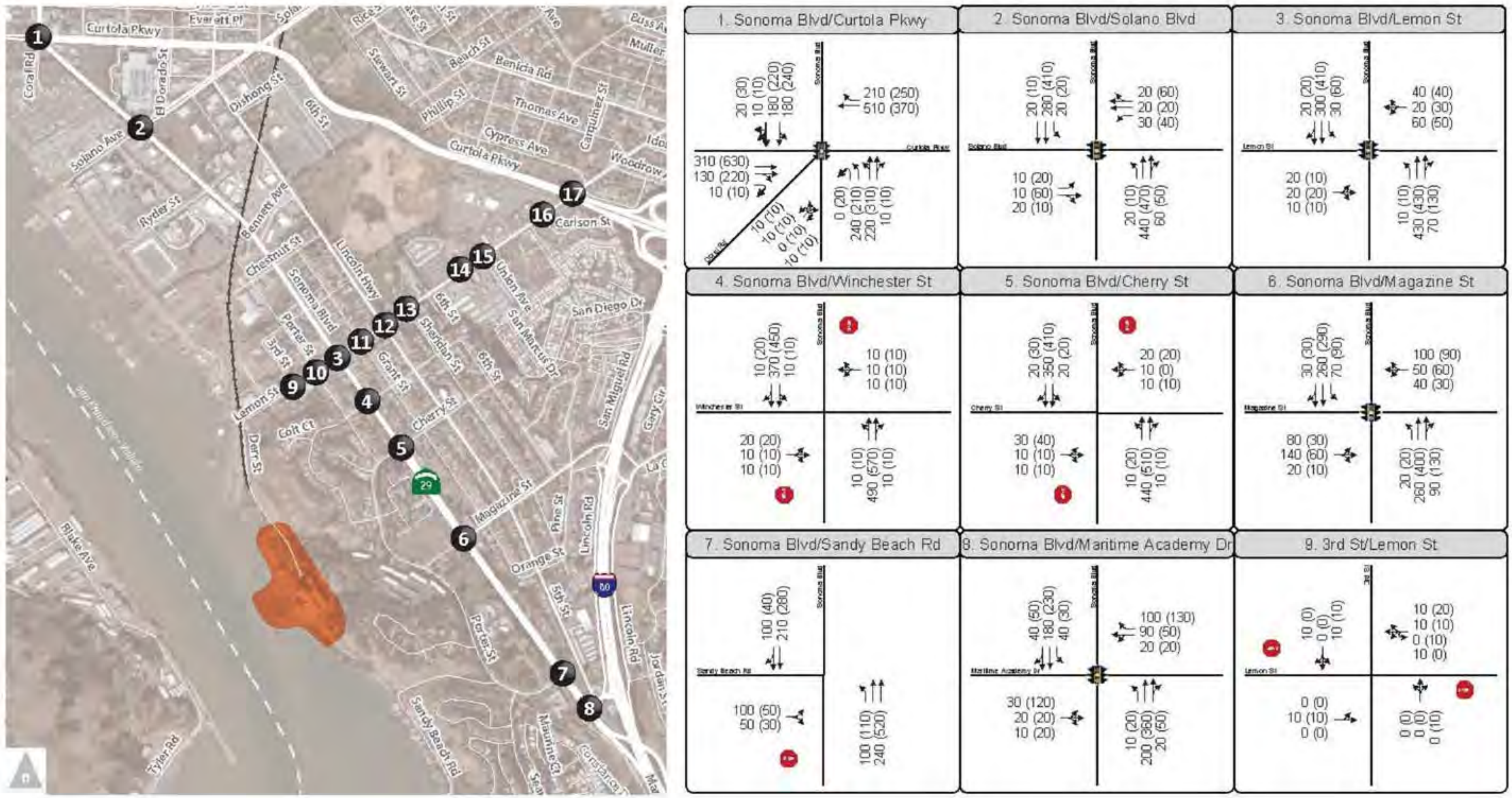

XX (YY) AM (PM) Peak Hour Traffic Volumes

Signalized Intersection

Stop Sign

Study Intersection

Project Site

DUDEK

8301

SOURCE: Fehr and Peers 2014

FIGURE 3.12-10A

Cumulative (2040) No Project Peak Hour Intersection Traffic Volumes

VALLEJO MARINE TERMINAL AND ORCEM PROJECT

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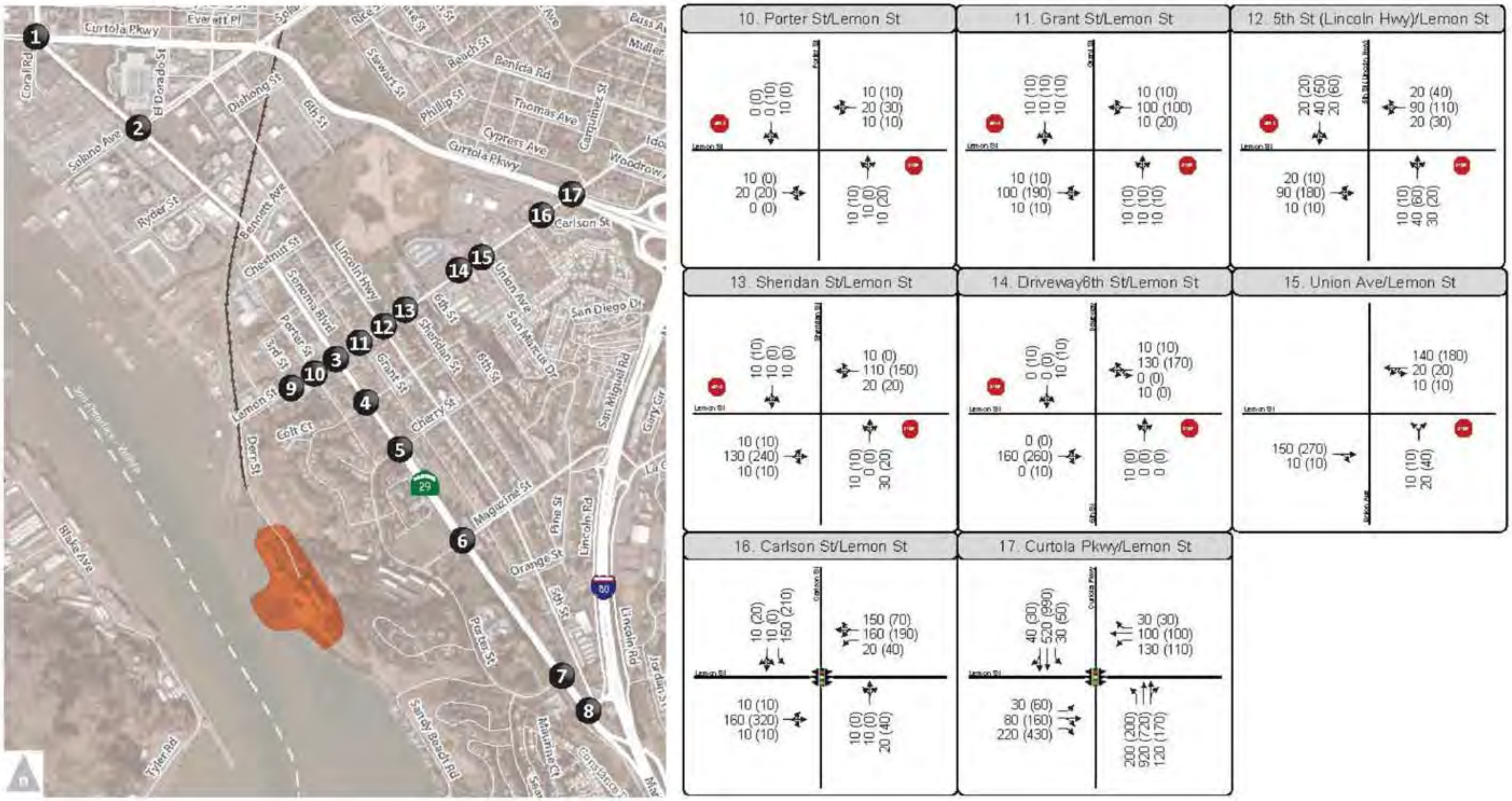

XX (YY) AM (PM) Peak Hour Traffic Volumes

Signalized Intersection

Stop Sign

Study Intersection

Project Site

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DUDEK

8301

SOURCE: Fehr and Peers 2014

FIGURE 3.12-10B

Cumulative (2040) No Project Peak Hour Intersection Traffic Volumes

VALLEJO MARINE TERMINAL AND ORCEM PROJECT

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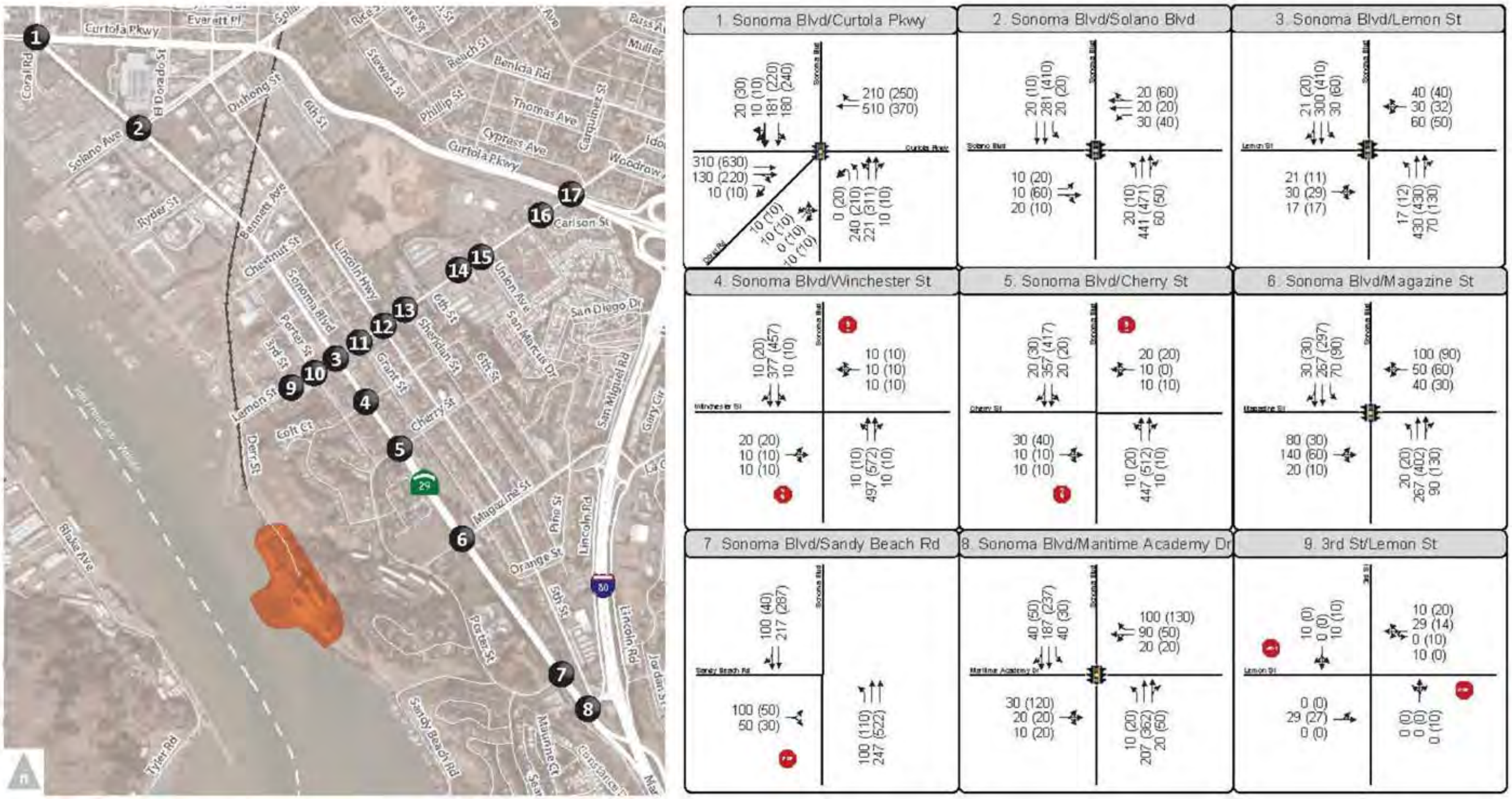

XX (YY) AM (PM) Peak Hour Traffic Volumes

Signalized Intersection

Stop Sign

Study Intersection

Project Site

DUDEK

8301

SOURCE: Fehr and Peers 2014

FIGURE 3.12-11A

Cumulative (2040) + Vallejo MarineTerminal Peak Hour Intersection Traffic Volumes

VALLEJO MARINE TERMINAL AND ORCEM PROJECT

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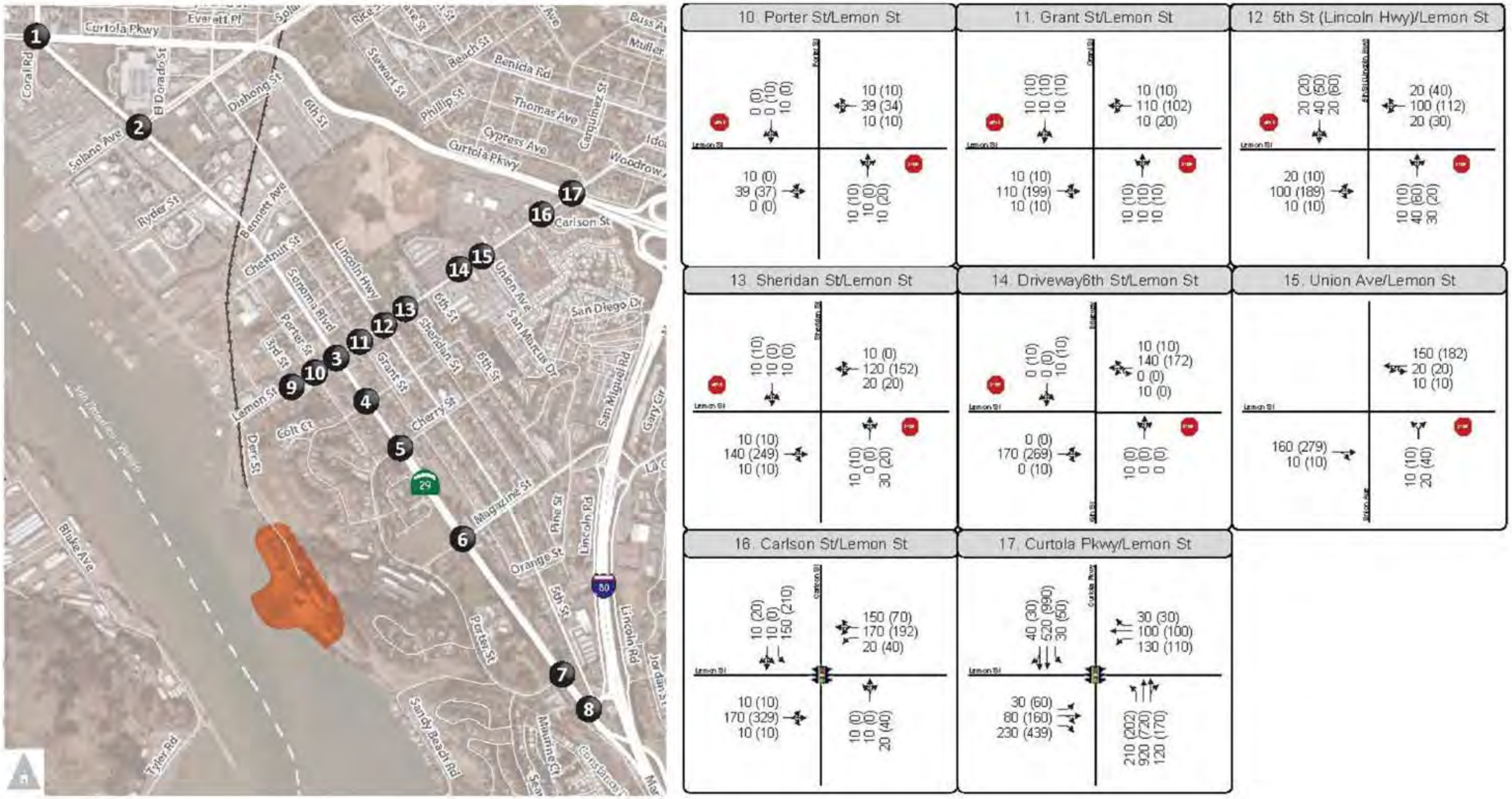

XX (YY) AM (PM) Peak Hour Traffic Volumes

Signalized Intersection

Stop Sign

Study Intersection

Project Site

DUDEK

SOURCE: Fehr and Peers 2014

FIGURE 3.12-11B

Cumulative (2040) + Vallejo MarineTerminal Peak Hour Intersection Traffic Volumes

8301

VALLEJO MARINE TERMINAL AND ORCEM PROJECT

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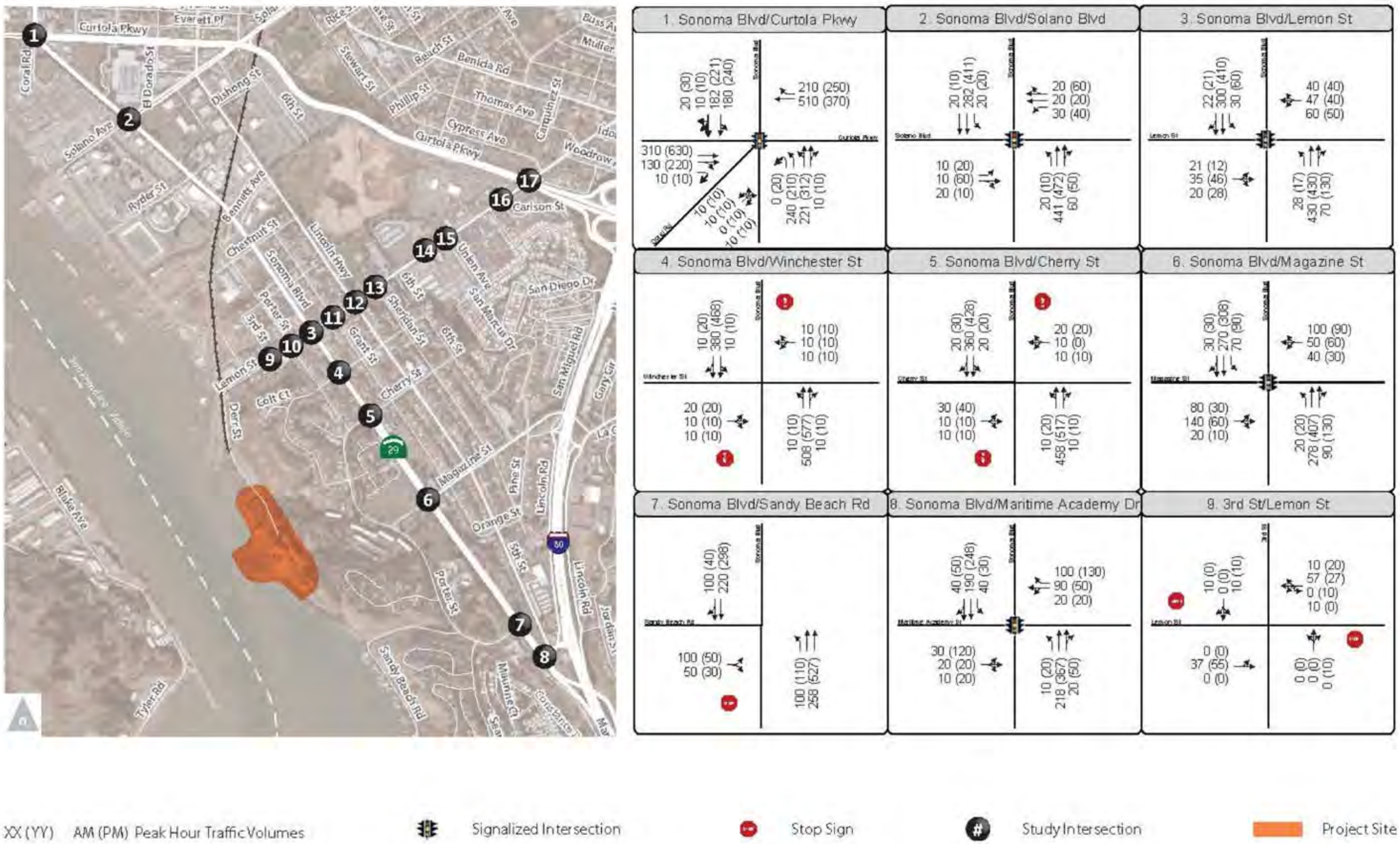

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SOURCE: Fehr and Peers 2014

FIGURE 3.12-12A

Cumulative (2040) + Orcem Peak Hour Intersection Traffic Volumes

VALLEJO MARINE TERMINAL AND ORCEM PROJECT

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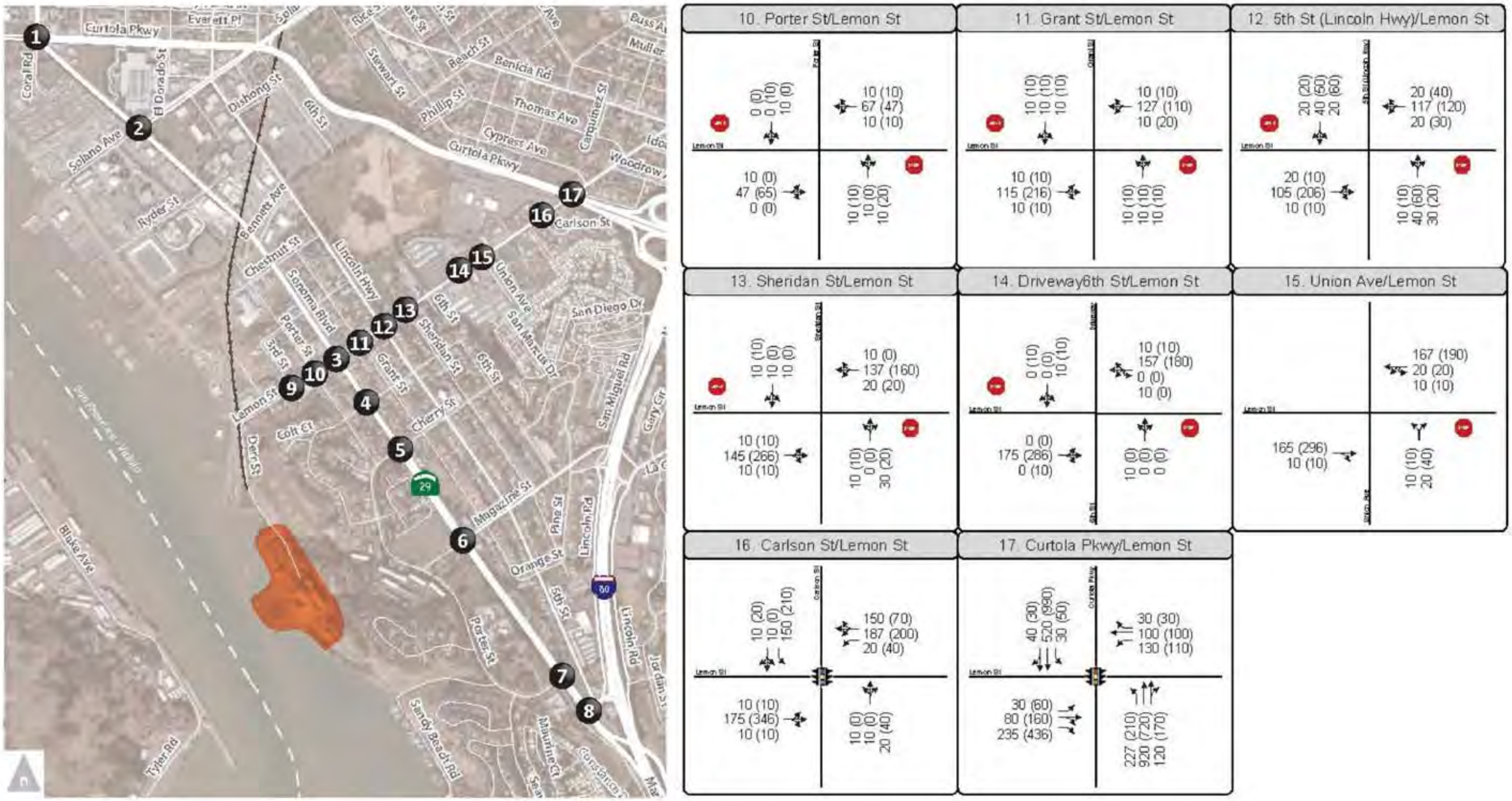

XX (YY) AM (PM) Peak Hour Traffic Volumes

Signalized Intersection

Stop Sign

Study Intersection

Project Site

DUDEK

8301

SOURCE: Fehr and Peers 2014

FIGURE 3.12-12B

Cumulative (2040) + Orcem Peak Hour Intersection Traffic Volumes

VALLEJO MARINE TERMINAL AND ORCEM PROJECT

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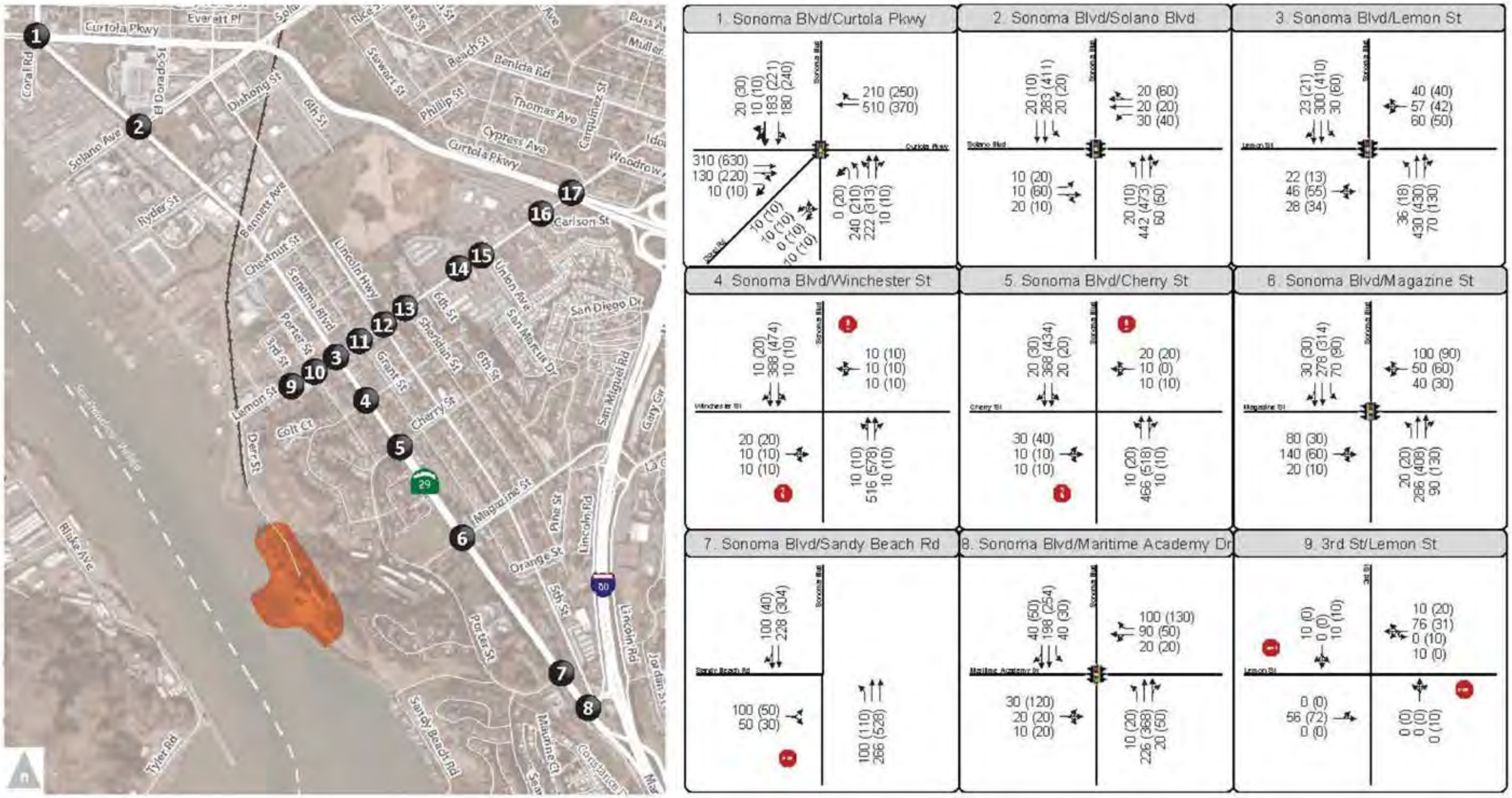

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DUDEK

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SOURCE: Fehr and Peers 2014

FIGURE 3.12-13A

Cumulative (2040) + Combined Projects Peak Hour Intersection Traffic Volumes

VALLEJO MARINE TERMINAL AND ORCEM PROJECT

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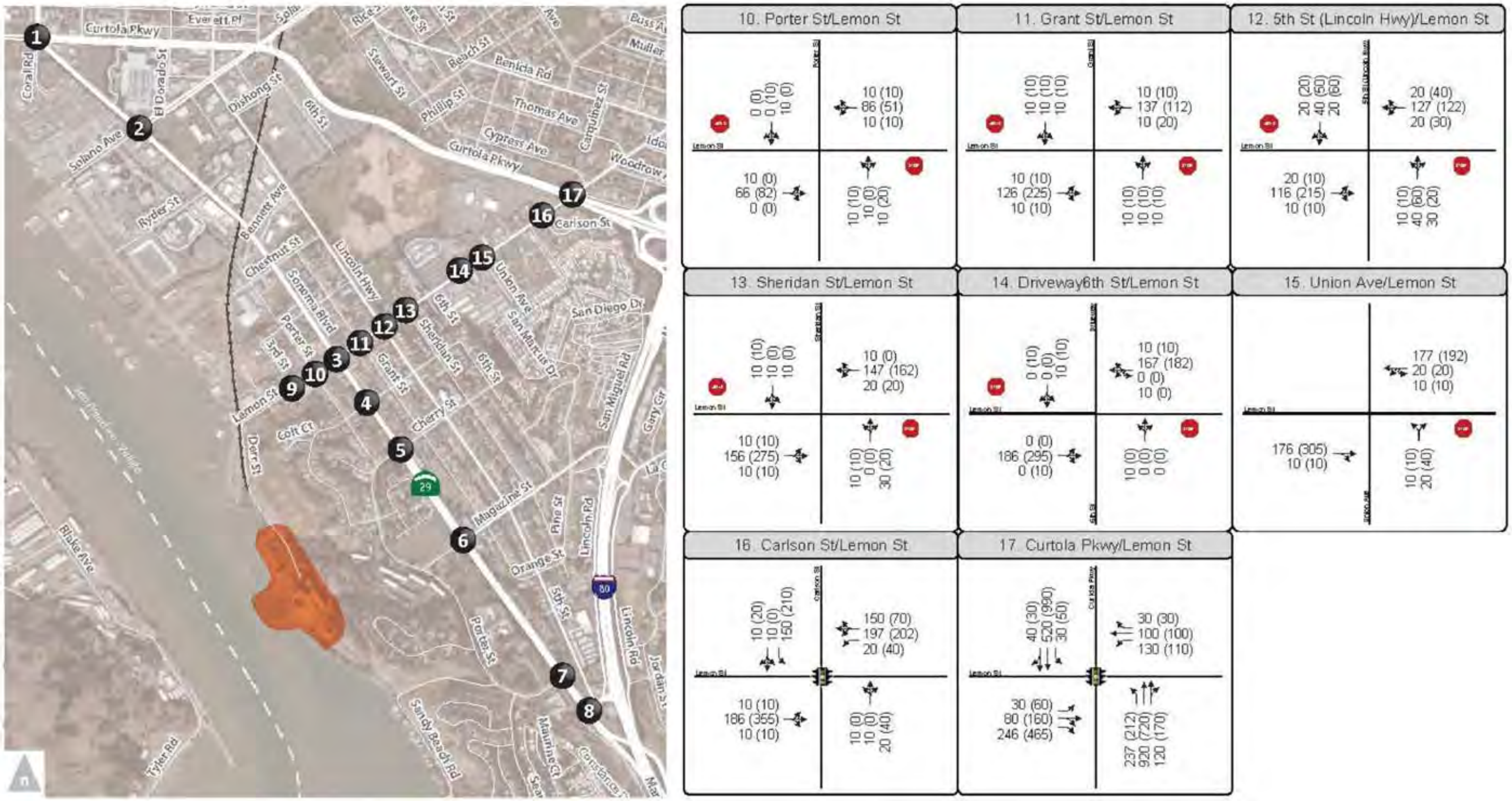

XX (YY) AM (PM) Peak Hour Traffic Volumes

Signalized Intersection

Stop Sign

Study Intersection

Project Site

DUDEK

8301

SOURCE: Fehr and Peers 2014

FIGURE 3.12-13B

Cumulative (2040) + Combined Projects Peak Hour Intersection Traffic Volumes

VALLEJO MARINE TERMINAL AND ORCEM PROJECT

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3.13 UTILITIES AND SERVICE SYSTEMS

This section analyzes the potential impacts of the Vallejo Marine Terminal (VMT) and Orcem project (proposed project) with respect to utilities and service systems and recommends mitigation measures where necessary to reduce or avoid significant impacts.

3.13.1 Regulatory Setting

Federal

Federal Clean Water Act of 1987

The Clean Water Act is the primary federal law that protects our nation's waters, including lakes, rivers, aquifers, and coastal areas. Section 401 of the Clean Water Act requires that any applicant for a federal permit to conduct any activity, including the construction or operation of a facility that may result in the discharge of any pollutant, must obtain certification from the state.

Section 303 of the Clean Water Act requires states to identify surface waters that have been impaired. Under Section 303(d), states, territories, and authorized tribes are required to develop a list of water quality segments that do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology. Section 404 of the Clean Water Act established a permit program to regulate the discharge of dredged material into waters of the United States.

National Pollution Discharge Elimination System

Section 402 of the Clean Water Act established the National Pollutant Discharge Elimination System (NPDES) to regulate the discharge of pollutants from point sources. The U.S. Environmental Protection Agency (EPA) has authorized the State of California to administer its NPDES permitting program. The NPDES permitting program prohibits the unauthorized discharge of pollutants from a point source (pipe, ditch, well, etc.) to U.S. waters. The permitting program addresses municipal, commercial, and industrial wastewater discharges and discharges from large animal feeding operations. Permittees must verify compliance with permit requirements by monitoring their effluent, maintaining records, and filing periodic reports. The program is administered at the local level by the Regional Water Quality Control Boards (RWQCBs).

Resource Recovery and Conservation Act of 1976

The Resource Conservation and Recovery Act (RCRA; 42 U.S.C. 6901 et seq. (1976)) gives the EPA the authority to control hazardous waste from "cradle to grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of nonhazardous solid wastes. The 1986 amendments to RCRA enabled the EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances.

The federal Hazardous and Solid Waste Amendments are the 1984 amendments to RCRA that focus on waste minimization and phasing out land disposal of hazardous waste as well as corrective action for releases. Some of the other mandates of this law include increased enforcement authority for the EPA, more stringent hazardous waste management standards, and a comprehensive underground storage tank program.

State

State Water Resources Control Board

The State Water Resources Control Board (SWRCB) preserves, enhances, and restores the quality of California's water resources, and ensures the proper allocation and efficient use for the benefit of present and future generations. Wastewater generators must obtain a permit to discharge their wastewater. Pursuant to the federal Clean Water Act and California's Porter–Cologne Water Quality Control Act, the SWRCB regulates wastewater discharges to surface waters through our NPDES program. Some wastewater discharges are exempt from federal NPDES requirements, but California law may still apply. Under California law, the SWRCB requires Waste Discharge Requirements for some discharges in addition to those subject to NPDES permits. Permits contain specific requirements that limit the pollutants in discharges. They also require dischargers to monitor their wastewater to ensure that it meets all requirements. Wastewater dischargers must maintain their treatment facilities, and treatment plant operators must be certified. The SWRCB routinely inspects treatment facilities and strictly enforces permit requirements.

California Senate Bills 221 and 610

Two articles of legislation were passed that address the provision of water, Senate Bill (SB) 221 (codified at California Government Code Section 66473.7) and SB 610 (codified at California Water Code, Section 10910 et seq.). Both of these bills place requirements on individual projects and require cities and counties to consider water supplies and demands for a proposed project.

Water Code Section 10910 requires that cities and counties include a water supply assessment in the environmental impact report (EIR) for projects specified in California Water Code Section 10912. These include, among others, residential projects of more than 500 units, shopping centers of more than 500,000 square feet, and industrial facilities with more than 650,000 square feet of floor area. California Government Code Section 66473.7 requires the City of Vallejo (City) to verify that there is a sufficient water supply as a condition of approval for residential subdivisions of 500 or more dwelling units and would include significantly less than 650,000 square feet of industrial floor area. Proof of a sufficient supply of water is not required for the proposed project since it does not include a residential component.

California Senate Bill 7

SB 7 (SB X7-7) was enacted in November 2009 to require all water suppliers to increase water-use efficiency. The legislation sets an overall goal of reducing per capita urban water use by 20% by December 31, 2020 (California Water Code Section 10608.20). In order to reach this goal, SB X7-7 requires each urban retail water supplier to report progress in meeting water-use targets (California Water Code Section 10608.40). The law also requires wholesale water suppliers to support their retail member agencies' efforts to comply with SB X7-7 through a combination of regionally and locally administered active and passive water conservation measures, programs, and policies, as well as the use of recycled water.

California Water Code

California's Porter–Cologne Water Quality Control Act (1969), which became Division 7 (Water Quality) of the California Water Code, establishes the responsibilities and authorities of the nine RWQCBs and the SWRCB. Among other things, it directs each RWQCB to formulate and adopt a water quality control plan—known as a basin plan—for all areas within the region. The water quality objectives used for this study are primarily those set forth in the Basin Plan (San Francisco Region 2) adopted by the RWQCB. The Basin Plan defines existing and potential beneficial uses and water quality objectives for coastal waters, groundwater, surface waters, imported surface waters, and reclaimed waters in the basin (RWQCB 2015).

State Agency Model Integrated Waste Management Act of 1999

Assembly Bill (AB 75) was passed in 1999, and the State Agency Model Integrated Waste Management Act (Chapter 764, Statutes of 1999, Strom-Martin) took effect on January 1, 2000. The State Agency Model Integrated Waste Management Act mandated that state agencies develop and implement an integrated waste management plan. The act also mandated that community service districts providing solid waste services report disposal and diversion information to the city, county, or regional agency in which the community service district is located. Provisions of the act require all state agencies and large state facilities to divert at least 50% of solid waste from landfills after 2004 and that each state agency and large facility submit an annual report to the California Department of Resources Recycling and Recovery (CalRecycle) summarizing its yearly progress in implementing waste diversion programs.

California Integrated Waste Management Act

Enacted by AB 939 and signed into law in 1990, the California Integrated Waste Management Act established an integrated system of solid waste management whereby each city and county is required to develop and implement plans consistent with the mandated diversion rates of 25% by 1995 and 50% by 2000. In 2011, AB 341 was passed, which sets a statewide policy goal that by the year 2020, not less than 75% of solid waste generated be source reduced, recycled, or composted (California Public Resources Code, Section 41700).

California Energy Commission

The California Energy Commission (CEC) is the state's primary energy policy and planning agency. Responsibilities of the CEC include, but are not limited to, forecasting future energy needs and keeping historical energy data, licensing thermal power plants 50 megawatts or larger, promoting energy efficiency, supporting renewable energy by providing market support, and planning for and directing state response to energy emergencies. SB 1389 requires the CEC to conduct "assessments and forecasts of all aspects of energy industry supply, production, transportation, delivery and distribution, demand, and prices." The CEC reports the results of these assessments and forecasts every 2 years to the governor, the legislature, and the California public in the Integrated Energy Policy Report.

Title 20 and Title 24, California Code of Regulations

New buildings constructed in California must comply with the standards contained in Title 20, Public Utilities and Energy, and Title 24, Building Standards Code, of the California Code of Regulations (CCR). Title 20 contains standards ranging from power plant procedures and siting to energy efficiency standards for appliances to ensuring reliable energy sources are provided and diversified through energy efficiency and renewable energy resources. Title 24 contains energy efficiency standards for residential and nonresidential buildings based on a state mandate to reduce California's energy demand. Specifically, Title 24 addresses a number of energy efficiency measures that impact energy used for lighting, water heating, heating, and air conditioning, including the energy impact of the building envelope such as windows, doors, skylights, wall/floor/ceiling assemblies, attics, and roofs.

The CEC adopted the 2005 changes to the Building and Energy Efficiency Standards to address California's energy crisis and reduce energy bills, increase energy delivery system reliability, and contribute to an improved economic condition for the state. The standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods. The current standards went into effect on October 1, 2005.

CEQA Guidelines, Appendix F

Appendix F of the California Environmental Quality Act (CEQA) Guidelines contains energy conservation measures that promote the efficient use of energy for projects. In order to ensure that energy impacts are considered in project decisions, CEQA requires that EIRs include a discussion of the potential energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy. The goal outlined in

Appendix F of the CEQA Guidelines is to conserve energy through the wise and efficient use of energy. The means of achieving this goal include the following:

- Decreasing the overall per capita energy consumption.
- Decreasing reliance on natural gas and oil.
- Increasing reliance on renewable energy sources.

Local

City of Vallejo General Plan

The City of Vallejo adopted the General Plan 2040 in August 2017 (City of Vallejo 2071a). The General Plan 2040 replaced the previous General Plan, most recently amended in 1999. The General Plan 1999 was the basis of earlier drafts of this EIR. This document, where necessary and appropriate, updates any policies pertaining to utilities and service systems that may have changed in the General Plan 2040. This discussion is shown in underline and/or strikeout in this document for ease of review.

The following goals and policies in the General Plan 2040 are applicable to utilities and service systems.

POLICY CP-1.13 Clean Water. Provide a safe, adequate water supply citywide.

- *Action CP-1.13A Periodically assess the need to repair or replace aging water supply infrastructure, and incorporate upgrades and improvements into the Capital Improvement Program as needed.*

POLICY NBE-1.14 Water Conservation. Promote water conservation through a range of proactive City efforts.

- *Action NBE-1.14C Update the Green Building Standards Code to require the use of low flow plumbing fixtures, low volume irrigation systems, and drought-tolerant plant palettes.*

POLICY NBE-1.15 Energy Efficiency. Support measures to reduce energy consumption and increase energy efficiency in residential, commercial, industrial, and public buildings.

POLICY NBE-1.16 Solid Waste Reduction. Promote reduction of the production of solid waste throughout Vallejo.

City of Vallejo 2005 Urban Water Management Plan

Urban water management plans (UWMPs) are prepared by California's urban water suppliers to support their long-term resource planning and ensure adequate water suppliers are available to meet existing and future water demands. Urban water purveyors are required to prepare and update a UWMP every 5 years. The UWMPs address water supply, treatment, reclamation, and water conservation, and include a water shortage contingency plan.

The City of Vallejo's 2005 UWMP, adopted in February 2006, is the most recent UWMP for the City. The 2005 UWMP estimates water demands through the year 2025 based on unit water factors, housing and employment projections for the City, and projections for unaccounted-for-water. The total projected water demand for the City of Vallejo Water System in 2025 is 24 million gallons per day (mgd) or 27,140 acre-feet per year (AFY). In addition to the City of Vallejo water system, the UWMP covers the small Vallejo Lakes system, wholesale customers, and other demands. With the inclusion of these other demands outside of the City of Vallejo, the total demand for 2025 is projected to be 35,610 AFY. These projections do not include proposed conservation measures that would help to reduce water demand (City of Vallejo 2006).

The UWMP also assesses the adequacy of the projected water supply to meet the projected demand under normal and dry water year conditions. The City's projected water supply for normal water years between 2010 and 2025 is 46,444 AFY. With a projected demand of 35,610 AFY in 2025, the projected supply would meet the service obligations with a 23% surplus in a normal water year. Similarly, in a single dry year, supplies would meet the demand with a 13% surplus in 2025. Under projected second and third dry year conditions, the water demands would be met by the supply; however, the demand would exceed 90% of the supply in 2025 and would therefore trigger a water shortage response (City of Vallejo 2006).

The City's UWMP includes a Water Shortage Contingency Plan that addresses the short-term or emergency water management practices required during a drought or other shortage conditions. It includes a five-stage response program that consists of specific prohibitions, regulations, fines, penalties, and a rate structure to encourage the appropriate level of conservation. Each stage and set of prohibitions are tied to a water use reduction goal (Stage 1= 0% reduction, Stage II=10%, Stage III=20%, Stage IV=35%, Stage V=up to and above 50%). Though all five stages have both voluntary and mandatory components, none can be considered a rationing program because they do not strictly limit water use (City of Vallejo 2006).

Sanitary Sewer Management Plan

The Vallejo Sanitation and Flood Control District (VSFCD) Sanitary Sewer Management Plan (SSMP) was adopted in December 2008, and certain sections have been updated since then. The goal of the SSMP is to reduce blockages and sanitary sewer overflow occurrences in the VSFCD collection system. The SSMP consists of 10 sections, including the sanitary sewer overflow response plan; fats, oils, and grease control program; legal authority; measures and activities; design and construction standards; capacity management and measurement program; and communication and public outreach (VSFCD 2008).

City of Vallejo Construction and Demolition Debris Recycling Ordinance

Chapter 7.53 of the City's Municipal Code, the Construction and Demolition Debris Recycling Ordinance, is intended to meet the goals of the California Integrated Waste Management Act of 1989 (AB 939). The goal is to divert, by recycling or reuse, 50% or more of the materials (by weight) and 75% of concrete and asphalt. The ordinance applies to all demolition projects and all construction or renovation projects with a valuation of $50,000 or higher or projects equal to or greater than 5,000 square feet.

3.13.2 Existing Conditions

Water

The City of Vallejo Water Division provides administrative, engineering, water treatment, and maintenance support for the City's potable water treatment and distribution. As of the 2005 UWMP, the City served approximately 37,800 water connections in the City and adjacent unincorporated portions of Solano County (City of Vallejo 2006).

The City uses surface water from five different sources: Solano Project Water, State Water Project, Vallejo Permit Water, Lakes Frey and Madigan, and Lake Curry. No groundwater sources are currently used for the City's water supply. The City utilizes the Fleming Hill water treatment plant (WTP) to treat water that is delivered from the Sacramento River Delta, Lake Berryessa, and Lake Curry. The maximum design flow rate of the Fleming Hill WTP is 42 mgd (City of Vallejo 2006).

As described earlier, the City's 2005 UWMP includes projections for water supply and demand through the year 2025. Based on the projections for normal and dry year conditions, the UWMP determines that the City would have adequate supply to meet the City's future water demand (City of Vallejo 2006).

Wastewater

VSFCD provides wastewater treatment, collection, and disposal of wastewater to the City of Vallejo and outlying areas. The current population served by the VSFCD is 125,731, which includes both Vallejo residents (121,055) and residents who live in the unincorporated areas within VSFCD's service area (4,676) (VSFCD 2008).

The wastewater collection system in Vallejo consists of a 370-mile network of pipes that carry wastewater from homes and businesses to the Ryder Street Wastewater Treatment Plant (WWTP). The pipes of the collection system range in diameter from 4 to 6 inches for lateral pipes to 12 to 54 inches for interceptor pipes.

In the project area, there is a 30-inch sanitary sewer line in Derr Street that splits into two separate lines as it enters the project site (a 24-inch line and 8-inch line). The 24-inch line extends along the waterfront and then into the area of the existing buildings on the site. The 8-inch line extends north from the site into the adjacent neighborhood. Wastewater in the pipes is conveyed by collection system pump stations that range in age and capacity.

During high rainfall events, stormwater enters the VSFCD wastewater collection network through cracks and fissures in the pipes, resulting in capacity overload of the system. This condition, in turn, has historically led to the release of untreated wastewater through manhole surcharges and overflows at pump stations. Many of these system overflows are not authorized by VSFCD's NPDES. The NPDES Permit is issued by the San Francisco RWQCB and limits the amount and type of effluent that can be released by sanitary sewer facilities.

All wastewater collected in the area served by VSFCD is treated at the Ryder Street WWTP. The Ryder Street WWTP discharges treated wastewater through two export pipelines, the Mare Island Strait outfall and the Carquinez Strait outfall. Only secondary-treated wastewater can be discharged into Mare Island Strait, while both primary and secondary-treated wastewater can be discharged in the Carquinez Strait. The Ryder Street WWTP has a permitted dry weather capacity of 15.5 mgd. As of the 2005 UWMP, a total of 12.1 mgd of wastewater was being treated at the WWTP (City of Vallejo 2006). The short-term wet weather capacity of the Ryder Street WWTP is 60 mgd. During the rainy season, the Ryder Street WWTP has a capacity of 35 mgd for full secondary treatment and an additional 25 mgd for primary treatment.

During periods of high precipitation in the winter months, surplus flow is diverted to the Ryder Street Storage Basin when the Ryder Street WWTP's 60 mgd capacity has been exceeded. The Ryder Street WWTP does not experience capacity overloads during the dry season.

Water recycling is not currently performed by VSFCD facilities but is under evaluation. The VSFCD has recommended a recycled water program for the City that would require the construction of a treatment facility at the Ryder Street WWTP. However, there are no current plans to construct a transmission line and pumping station, which are needed to return treated wastewater to the water utility service area for distribution.

Stormwater

Stormwater is discussed in Section 3.8, Hydrology and Water Quality, of this document.

Solid Waste and Recycling

Recology Vallejo provides solid waste, recycling, and yard waste collection services in the City of Vallejo. Solid waste collected by Recology is transported to the Devlin Road Transfer Station, a regional facility operated by the Napa–Vallejo Waste Management Authority. Recyclable materials and green waste are sorted and sent to various facilities. Solid waste that cannot be recycled is sent to the Keller Canyon Landfill, located at 901 Bailey Road in Pittsburg, Contra Costa County. The Keller Canyon Landfill has a permitted capacity of 75,018,280 cubic yards and a remaining capacity of 63,408,410 cubic yards. Currently, the landfill receives 3,500 tons of garbage a day, and the anticipated closing date of the landfill is December 31, 2030 (CalRecycle 2014).

Energy

Pacific Gas and Electric Company (PG&E) provides electricity and natural gas service to customers in the City. PG&E charges connection and user fees for all new development, in addition to sliding rates for electrical and natural gas service based on use. These services are currently available at the project site.

3.13.3 Thresholds of Significance

The following criteria, included in Appendix F and Appendix G of the CEQA Guidelines (14 CCR 15000 et seq.), will be used to determine the significance of potential utilities and service systems impacts. Impacts to utilities and service systems would be significant if the proposed project would:

A) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board.

B) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

C) Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

D) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed.

E) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments.

F) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs.

G) Comply with federal, state, and local statutes and regulations related to solid waste.

H) Increase the demand of energy resources to exceed the available supply or cause a need for new or expanded facilities.

I) Result in a wasteful, inefficient, or unnecessary use of energy.

3.13.4 Impact Discussion

A) Would the project exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?

VMT and Orcem Project Analysis

No process water would be generated from either the VMT or Orcem components of the project; these project components would require only domestic service for bathroom and incidental office demands. The VMT project component is projected to generate a maximum of 1,800 gallons of wastewater per day, and the Orcem project component is projected to generate a maximum of 600 gallons of wastewater per day, for a total maximum of 2,400 gallons of wastewater generated on the project site per day. All wastewater collected from the project site would be treated at the Ryder Street WWTP, which is a VSFCD facility. The Ryder Street WWTP discharges treated wastewater through two export pipelines: the Mare Island Strait outfall and the Carquinez Strait outfall. Only secondary-treated wastewater can be discharged into Mare Island Strait, while both primary and secondary-treated wastewater can be discharged in the Carquinez Strait. VSFCD and the Ryder Street WWTP are subject to the waste discharge requirements set forth in RWQCB Order No. R2-2012-0017 (NPDES No. CA0037699), which was adopted on February 8, 2012, and expires on March 31, 2017. Since the proposed project would be served by the Ryder Street WWTP, which operates in compliance with the treatment and discharge requirements of the San Francisco Bay RWQCB, impacts would be **less than significant**.

~~**Off-Site Improvements**~~

~~The proposed project includes two off-site improvements (public access improvements and removal of existing deteriorated docks) that would take place at the City of Vallejo Municipal Marina located approximately 2 miles north of the project site. These improvements would not generate wastewater and would therefore result in **no impact** related to wastewater treatment requirements.~~

B) Would the project require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

VMT and Orcem Project Analysis

Water

The VMT project component would require water primarily for office uses and dust suppression during operations. During vessel loading/unloading operations, there could be up to 40 individuals working on the site at a given time, operating on a 24-hour basis in multiple shifts. During regular daily operations, it is expected that up to 25 individuals would be engaged in cargo loading and offloading, site maintenance operations, and administrative duties. Given the projected number of employees, VMT is projected to require 1,800 gallons of domestic water usage per day, or roughly 650,000 gallons per year, provided by the City of Vallejo (based on an average of 15 gallons per person per shift per day).

In addition, VMT operations may require up to 4,300,000 gallons of water annually (12,000 gallons per day maximum) for dust control purposes, also provided by the City of Vallejo. Water trucks may be required to apply 3,000 gallons per episode to stockpiled cargoes on site, as well as to the on-site road network for dust suppression, as many as three times per day (9,000 gallons per day maximum). This need could exist every day of the year, totaling 3,285,000 gallons annually. Additionally, misting operations on cargo-handling equipment (front-end loaders, hoppers, conveyors, etc.) may require an additional maximum of 3,000 gallons of water daily for dust suppression, for a potential 312 operating days per year, a total capacity of 936,000 gallons annually. These needs are in addition to the domestic water needs of employees mentioned above. Therefore, the total estimated water demand from VMT operations is estimated at a maximum of 4,950,000 gallons per year (13,800 per day).

Orcem operations would require water to support the manufacturing process proposed on the site. The following is a description of the Orcem water requirements:

- *Water Added to the GBFS to Enable the Grinding Process.* The proposed vertical roller mill operates most efficiently when the material (granulated blast furnace slag (GBFS)) is at 6% moisture when it reaches the grinding table. GBFS can be received at the project site from a ship at anywhere from 5% to 12% moisture content. In addition, the material can rest in the stockpile for several weeks before being milled and can dry out to as low as 3% moisture content. Therefore, the water demand from the manufacturing process to enable a steady 6% moisture GBFS at the mill table, would vary depending on the nature of the material leaving the stockpile. The maximum amount of water needed to mill would be 1,321 gallons per hour (as shown in Table 3-13.1), assuming a worst case of 3% moisture content.
- *Water Added to the Cooling Circuit for Equipment.* The proposed cooling water circuit for the mill equipment is a closed-circuit system. Up to 10 gallons of water per hour would be required to replenish evaporative losses (as shown in Table 3.13-1).
- *Water to Spray the Raw Materials Stockpiles (GBFS).* As described above, the GBFS would arrive on the site at moisture contents between 5% and 12%. In this state, the material on the surface of the stockpiles would be bound together as a cohesive material. As the GBFS dries in the sun and wind, it would form a crust and continue to encapsulate the stockpile. However, once the material is disturbed by the loader to remove it from the stockpile and the crust is broken, it would have a tendency to form migrant dust. In order

to prevent this, the stockpile would be sprayed with water to eliminate the tendency to create dust. As described in the Storm Water Management Plan, stormwater runoff would be stored in underground tanks and used to spray the stockpiles. It is expected that this method of spraying would be carried out during the rainy season from October through April. For the remaining months of the year—May through September—any spraying would be carried out using mains water. It is estimated that spraying would take place every day for approximately 20 weeks per year, requiring a maximum of 2,400 gallons of water per day (300 gallons per hour for 8 hours per day).

- *Water for Human Consumption.* In addition to the manufacturing processes that would require water, Orcem would require water for staff working on the site. Based on the assumption of having up to 16 staff on the site at any given time and a total of 40 total full time jobs, the estimated water consumption would be 600 gallons per day (again based on an average of 15 gallons per person per day operating in multiple shifts).

Based on the estimated water demands described previously, and as shown in Table 3.13-1, Orcem is expected to require up to 1,656 gallons of water per hour or 32,282 gallons per day. While the plant would operate on a 24-hour basis, since not all processes requiring water would occur every day of the year, the annual water demand was determined based on the maximum number of days and hours when water would be required. As shown in Table 3.13-1, a total maximum of 9,922,840 gallons per year would be required for Orcem's operations, assuming that no recycling of milling process water were to occur. In reality, this figure is likely to be smaller, based on Orcem's plans to recapture and reuse a substantial portion of this process water.

Table 3.13-1
Orcem Estimated Water Demand

Process	Maximum Water Required (gallons/hour)	Hours/Day	Water Demand (gallons/day)	Number of Days/Year	Maximum Annual Hours	Water Demand (gallons/year)
Milling Process	1,321	22	29,062	320	7,040	9,299,840
Cooling Circuit	10	22	220	350	7,700	77,000
GBFS Spraying	300	8	2,400	140	1,120	336,000
Employees (Multiple Shifts)	25	24	600	350	8,400	210,000
TOTAL	1,656	—	32,282	—	—	9,922,840

The proposed project would require a combined maximum of 46,082 gallons of water per day (13,800 gallons for VMT and 32,282 gallons for Orcem). As described previously, the project site is currently served by the City of Vallejo Water Division. The City utilizes the Fleming Hill WTP to treat water that is delivered from the Sacramento River Delta, Lake Berryessa, and Lake Curry, and it has a maximum design flow rate of 42 mgd (City of Vallejo 2006). The proposed project's demand for 46,082 gallons of water per day constitutes 0.1% of the maximum design flow rate of the Fleming Hill WTP. The increase in the need for treated water would be easily accommodated by the City's existing WTP; therefore, no expansion of the Fleming Hill WTP or construction of new water treatment facilities would be required, and impacts would be **less than significant**.

Wastewater

As described above, the VMT project component is projected to generate a total of 1,800 gallons of wastewater per day, and the Orcem project component is projected to generate a total of 600 gallons of wastewater per day, for a total of 2,400 gallons of wastewater generated on the project site per day. All wastewater collected from the project site would be treated at the Ryder Street WWTP. The Ryder Street WWTP has a permitted dry weather capacity of 15.5 mgd. The short-term wet weather capacity of the Ryder Street WWTP is 60 mgd. During the rainy season, the Ryder Street WWTP has a capacity of 35 mgd for full secondary treatment and an additional 25 mgd for primary treatment. The addition of 2,400 gallons of wastewater per day would constitute less than 0.02% of the total permitted dry weather treatment capacity of the Ryder Street WWTP. The Ryder Street WWTP has existing capacity to serve the proposed project, and no new or expanded wastewater treatment facilities would be needed. Therefore, impacts would be **less than significant**.

~~**Off-Site Improvements**~~

~~The proposed project includes two off-site improvements (public access improvements and removal of existing deteriorated docks) that would take place at the City of Vallejo Municipal Marina located approximately 2 miles north of the project site. These improvements would not require water service, nor would they generate wastewater. Therefore, **no impact** would occur as a result of the off-site improvements.~~

C) Would the project require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

Stormwater is discussed in Section 3.8, Hydrology and Water Quality, of this document.

D) Would the project have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?

VMT and Orcem Project Analysis

As described under Threshold B, above, the proposed project would require a combined maximum of 46,082 gallons of water per day (13,800 gallons for VMT and 32,282 gallons for Orcem). The

City's UWMP, described in the Regulatory Setting section, evaluates the City's ability to provide water supply to meet the projected demands through year 2025. The City's projected water supply for normal water years between 2010 and 2025 is 46,444 AFY (41,462,585 gallons per day). The proposed project's demand for water would be less than 0.01% of the City's daily water allocation through 2025, and would therefore be accommodated by the City's existing water supply. In addition, the City has a Water Shortage Contingency Plan to ensure that the water supplies will be sufficient to serve the project and other planned growth in normal, dry and multiple-dry years. Therefore, impacts would be **less than significant**.

~~**Off-Site Improvements**~~

~~The proposed project includes two off-site improvements that would take place at the City of Vallejo Municipal Marina located approximately 2 miles north of the project site as described earlier. As also described earlier, these improvements would not require water service. Therefore **no impact** would occur as a result of the off-site improvements.~~

E) ***Would the project result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?***

VMT and Orcem Project Analysis

As described previously, the proposed project would generate a total of 2,400 gallons of wastewater per day (1,800 gallons from the VMT project component and 600 gallons from the Orcem project component), which would be collected by VSFCD sewer lines and treated at the Ryder Street WWTP. The Ryder Street WWTP has a permitted dry weather capacity of 15.5 mgd. The short-term wet weather capacity of the Ryder Street WWTP is 60 mgd. During the rainy season, the Ryder Street WWTP has a capacity of 35 mgd for full secondary treatment and an additional 25 mgd for primary treatment. The addition of 2,400 gallons of wastewater per day would constitute less than 0.02% of the total permitted dry weather treatment capacity of the Ryder Street WWTP. The Ryder Street WWTP has existing capacity to serve the proposed project and additional capacity would not be needed as a result of the proposed project. Therefore, impacts would be **less than significant**.

~~**Off-Site Improvements**~~

~~The proposed project includes two off-site improvements that would take place at the City of Vallejo Municipal Marina located approximately 2 miles north of the project site as described earlier. These improvements would not generate wastewater. Therefore **no impact** would occur as a result of the off-site improvements.~~

F) Would the project be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?

VMT and Orcem Project Analysis

Construction

Construction of the proposed project would involve demolition of several existing buildings and structures on the project site, which would generate solid waste. The VMT project component would require demolition of the existing wharf structures, the 42,500-square-foot warehouse building, and the 4,700-square-foot bakery bulkhouse building, which would generate a total of approximately 105 tons of debris. Of this total, 75 tons would be transported to the Keller Canyon Landfill, and the remaining 30 tons would be recycled.

The Orcem project component would require the demolition of 156,000 square feet of existing buildings and structures, which would generate approximately 40,720 tons of debris. Of this total, 39,500 tons of concrete would be crushed on site and retained for use as recycled engineered backfill for use on site. An additional 1,050 tons of steel would be recycled. The remaining 170 tons would be transported to the Keller Canyon Landfill.

In total, 245 tons of demolition debris from the proposed project would be disposed of at the Keller Canyon Landfill. The Keller Canyon Landfill has a remaining capacity of 63,408,410 cubic yards and currently receives 3,500 tons of solid waste each day. In addition, the landfill is anticipated to be open until December 31, 2030 (CalRecycle 2014). Since the project would be served by a landfill with sufficient remaining capacity through the year 2030, impacts due to construction and demolition debris would be **less than significant**.

Operations

Once operational, the VMT project component is expected to generate up to 5 cubic yards of solid waste per week. The Orcem project component is also expected to generate up to 5 cubic yards of solid waste per week, for a total weekly volume of 10 cubic yards. Annually, the total solid waste generated as a result of the proposed project would be approximately 520 cubic yards. Solid waste collection service would be provided by Recology and transported to the Keller Canyon Landfill. As described above, the Keller Canyon Landfill has a remaining capacity of 63,408,410 cubic yards and currently receives 3,500 tons of solid waste each day. The additional 10 cubic yards of solid waste per week from the proposed project would be accommodated within the existing Keller Canyon Landfill, which has sufficient remaining capacity through the year 2030. Therefore, impacts due to operations of the proposed project would be **less than significant**.

~~**Off-Site Improvements**~~

~~The proposed project includes two off-site improvements that would take place at the City of Vallejo Municipal Marina located approximately 2 miles north of the project site as described earlier. Installation of the launch ramp would not generate solid waste, nor would solid waste be generated during operation of the ramp. However, the dock removal would generate approximately 113 tons of debris. Of this total, approximately 68 tons would be transported to the Keller Canyon Landfill and the remaining 45 tons would be recycled. As described above, the Keller Canyon Landfill has a remaining capacity of 63,408,410 cubic yards and currently receives 3,500 tons of solid waste each day. The additional 63 tons of solid waste generated by removal of the docks would be accommodated within the existing Keller Canyon Landfill, which has sufficient remaining capacity through the year 2030. Therefore, impacts would be **less than significant**.~~

G) Would the project comply with federal, state, and local statutes and regulations related to solid waste?

VMT and Orcem Project Analysis

Construction

As described above, both the VMT and Orcem project components would generate construction and demolition debris. Together, the VMT and Orcem project components would generate approximately 40,825 tons of construction and demolition debris. Of this total, 39,500 tons of concrete would be crushed on site and retained for use as recycled engineered backfill, and 1,080 tons would be recycled. The remaining 245 tons would be transported to the Keller Canyon Landfill. Chapter 7.53 of the City's Municipal Code, the Construction and Demolition Debris Recycling Ordinance, sets a goal of diverting, by recycling or reuse, 50% or more of the materials (by weight) and 75% of concrete and asphalt. The project would recycle or reuse approximately 99% of the construction and demolition debris generated on the project site. The project would therefore exceed the goal of the City's Construction and Demolition Debris Recycling Ordinance. Impacts would be **less than significant**.

Operations

Recology would provide solid waste and recycling collection services for both the VMT and Orcem project components. Recyclable materials would be sent to the appropriate recycling facilities, while solid waste would be disposed of at the Keller Canyon Landfill. A total of 10 cubic yards of solid waste is expected each week from the proposed project. Recycling programs would be implemented as part of both projects to ensure the amount of solid waste sent to the landfill is minimized. The proposed project would comply will all applicable regulations related to solid waste and recycling. Therefore, impacts would be **less than significant**.

~~**Off-Site Improvements**~~

~~As described above, installation of the launch ramp would not generate solid waste, nor would solid waste be generated during operation of the ramp. However, the dock removal would generate approximately 113 tons of debris. Of this total, approximately 68 tons (60%) would be transported to the Keller Canyon Landfill and the remaining 45 tons (40%) would be recycled. Chapter 7.53 of the City's Municipal Code, the Construction and Demolition Debris Recycling Ordinance, sets a goal of diverting, by recycling or reuse, 50% or more of the materials (by weight) and 75% of concrete and asphalt. Although the off-site improvements would not meet the goal of diverting 50% of construction and demolition debris from the landfill, when combined with the overall construction of the VMT and Orcem facilities, the goal would be exceeded since the VMT and Orcem project would recycle approximately 99% of all construction and demolition debris. Therefore, impacts would be **less than significant**.~~

H) Would the project increase the demand of energy resources to exceed the available supply or cause a need for new or expanded facilities?

VMT Analysis

The VMT project component would require electricity and natural gas, which would be provided by PG&E. Natural gas demands would be minimal since natural gas would only be used for heating of the administration building, which is connected to an existing PG&E gas line. VMT would, however, require electricity to power the various terminal facilities and buildings. It is estimated that the peak electric load for VMT would be approximately 645 kilowatts (kW). PG&E has provided a will-serve letter, confirming its ability to provide this service from the facilities currently available near the site (PG&E 2015). Since the VMT project component would not result in natural gas or electricity demands that exceed the available supply, impacts would be **less than significant**.

Orcem Analysis

The proposed Orcem project component would be a large consumer of electricity and natural gas. The main milling equipment would be powered by a large electric motor, which when combined with all other equipment would require a supply of up to 6 megawatts (MW). The existing General Mills facility has a 12-kilovolt (kV) supply, which accesses the site via twin overhead lines on poles. These lines and poles remain on the site, and PG&E has confirmed that they can be upgraded to provide the new supply to the Orcem project component. In addition, PG&E prepared a feasibility study for Orcem that determined there is capacity on existing circuits in Vallejo to accommodate the services requested by Orcem (PG&E 2014).

The Orcem production process would require natural gas to dry the moist ground granulated blast furnace slag (GGBFS). The estimated peak natural gas load needed for the Orcem project component is 35.9 million cubic feet per hour. PG&E has determined that adequate natural gas supply is available to serve the Orcem project component; however, reinforcements of the existing gas system would be required to serve the proposed peak hourly load. A new plastic gas main would be required on Derr Street from Lemon Street to the Orcem Site, and a gas tie-in would be required at the intersection of Sonoma Boulevard and Lemon Street (PG&E 2014). Although a new gas line and other improvements would be necessary to serve the Orcem project component, the natural gas demand would be met by existing supplies, and no new natural gas supplies would be necessary. Since the Orcem project component would not result in natural gas or electricity demands that exceed the available supply, impacts would be **less than significant**.

~~Off-Site Improvements~~

~~The proposed project includes two off-site improvements that would take place at the City of Vallejo Municipal Marina located approximately 2 miles north of the project site as described earlier. These improvements would require energy during construction and demolition activities; however, this would only occur temporarily during construction and would not exceed the available supply of energy. Once operational, no energy would be required for the off-site improvements. Therefore, impacts would be~~ **~~less than significant~~**~~.~~

I) Would the project result in a wasteful, inefficient, or unnecessary use of energy?

VMT Analysis

As described above, the VMT project component would require the use of energy, in the form of electricity and natural gas, for daily operations. Natural gas usage would be minimal. Electricity would be used to power the various VMT facilities and would not be used in any way besides to support the operations necessary at an active deep-water terminal. Energy use associated with the VMT project component would not be wasteful or inefficient, and impacts would therefore be **less than significant**.

Orcem Analysis

As described above, the Orcem project component would require the use of energy during daily operations in the form of electricity and natural gas. Although the Orcem project component would result in an overall increase in energy use compared to the existing conditions, the use of energy would be necessary to support the proposed cement processing plant. The location of the Orcem Site adjacent to the proposed VMT facility would minimize energy use associated with transporting raw materials to the site. In addition, the processing of GGBFS (green cement) by Orcem is estimated to require nearly 90% less energy than the processing of an equivalent amount of portland cement. Orcem would therefore implement a more energy-efficient cement production process than traditional portland cement. Energy use associated with the Orcem project component would not be wasteful or inefficient, and impacts would therefore be **less than significant**.

~~**Off-Site Improvements**~~

~~The proposed project includes two off-site improvements that would take place at the City of Vallejo Municipal Marina located approximately 2 miles north of the project site, as described earlier. These improvements would require energy during construction and demolition activities; however, the use of energy would not be wasteful, inefficient, or unnecessary. Once operational, no energy would be required for the off-site improvements. Therefore, impacts would be **less than significant**.~~

3.13.5 Mitigation Measures

No mitigation would be required.

3.13.6 Level of Significance After Mitigation

No mitigation measures are required; therefore, impacts would remain less than significant.

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