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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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

CHAPTER 4
CUMULATIVE IMPACTS

4.1 INTRODUCTION

Although the environmental effects of an individual project may not be significant when that project is considered independently, the combined effects of several projects may be significant when considered collectively. Such impacts are "cumulative impacts." Section 15355 of the California Environmental Quality Act (CEQA) Guidelines defines cumulative impacts as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts" (14 CCR 15000 et seq.). Section 15130 of the CEQA Guidelines provides guidance for analyzing significant cumulative impacts in an Environmental Impact Report (EIR). According to this section of the CEQA Guidelines, the discussion of cumulative impacts "need not provide as great detail as is provided for the effects attributable to the project alone. The discussion should be guided by standards of practicality and reasonableness." The discussion should also focus only on significant effects resulting from the project's incremental effects and the effects of other projects. According to Section 15130(a)(1), "An EIR should not discuss impacts which do not result in part from the project evaluated in the EIR."

However, substantial cumulative impacts more often result from the combined effect of past, present, and future projects located in proximity to the project under review. Therefore, it is important for a cumulative impacts analysis to be viewed over time and in conjunction with other related past, present, and reasonably foreseeable future developments whose impacts might compound or interrelate with those of the project under review.

4.2 METHODOLOGY

According to Section 15130(b) of the CEQA Guidelines, cumulative impact analysis may be conducted and presented by either of two methods: (1) a list of past, present, and probable activities producing related or cumulative impacts; or (2) a summary of projections contained in an adopted general plan or related planning document, or in a prior environmental document that has been adopted or certified, which described or evaluated regional or area-wide conditions contributing to the cumulative impact. Other than for transportation and traffic, the cumulative list approach has been utilized in the cumulative analysis presented in this chapter, as discussed below. Cumulative traffic and transportation impacts have been analyzed utilizing the summary of projections method.

4.2.1 Cumulative Projects List

The cumulative impacts analysis is based on a list of projects within the proposed project's study area that either have applications submitted or approved, are under construction, or have recently been completed. Based on information provided by the City of Vallejo staff under the Draft EIR,

three cumulative projects were considered in this analysis. One of these projects, the quick service restaurant, did not move forward and thus has been removed from this list. The other two projects are still considered current as planned. One project in the planning stages at California State University Maritime Academy has been added to this list.

~~1. Proposed 2,580-square-foot quick-service restaurant and 1,300-square-foot convenience store with gasoline sales located at 1217 Fifth Street/Sonoma Boulevard.~~

~~2.~~1. Anchor Storage – 925-unit self-storage facility with an on-site manager's unit on 3.9 acres, located at 501 Solano Avenue.

2. Former Vallejo Manufactured Gas Plant (MGP) Site Cleanup – Remediation of 26-acre former MGP site located at the southwest corner of Curtola Parkway and Sonoma Boulevard. Remediation is expected to occur in phases between 2017 and 2019 and would be under the oversight of the California Department of Toxic Substances.

3. The California State University Maritime Academy Master Plan includes one project that is planned for completion within the same timeframe as the proposed project. This project would remodel and replace a 250-bed residence hall to a facility that would accommodate 550 beds.

4.3 CUMULATIVE IMPACT ANALYSIS

The discussion below evaluates the potential for the proposed project to contribute to an adverse cumulative impact on the environment. For issues addressed in this EIR, the thresholds used to determine significance are those presented in each of the sections of Chapter 3, Environmental Analysis. For issues in which project impacts were determined to be less than significant during the preliminary environmental review process, the thresholds consist of the questions posed for that respective issue in Appendix G of the CEQA Guidelines. For each resource area, an introductory statement is made regarding what would amount to a significant cumulative impact in that resource area. Discussion is then presented regarding the potential for the identified cumulative projects to result in such a cumulative impact, followed by discussion of whether the project's contribution to any cumulative impact would be cumulatively considerable.

4.3.1 Aesthetics

As described in Section 3.1, Aesthetics, the proposed project would not have any significant impacts to aesthetics aside from a potentially significant impact due to proposed lighting; however, this impact would be reduced to a less-than-significant level with mitigation. The cumulative projects are not located within sight of the proposed project and would therefore not impact the aesthetics of the proposed project site. Although the cumulative projects may introduce new sources of lighting, the lighting would not be visible from the proposed project site. Cumulative impacts to aesthetics would therefore be less than significant.

4.3.2 Air Quality

As described in Section 3.2, Air Quality, by its nature air pollution is largely a cumulative impact; no single project is sufficient in size to, by itself, result in nonattainment of ambient air quality standards. In developing thresholds of significance for air pollutants, the Bay Area Air Quality Management District (BAAQMD) considered the emission levels for which a project's individual emissions would be cumulatively considerable. If a project exceeds the identified significance thresholds, its emissions would be considered cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions. ~~The proposed project would conflict with the Bay Area 2010 Clean Air Plan due to the proposed rezoning of the 5.25-acre portion of the project site.~~ In addition, the proposed project would exceed annual emission thresholds for NO_x during operations and would exceed the BAAQMD threshold for cancer risk. Mitigation as described in Section 3.2.5 would help reduce project impacts, including reducing the potential for cancer risk to below a level of significance. However, impacts related to the conflict with the 2010 Clean Air Plan and NO_x emissions during operations would remain significant and unavoidable. Project operations would therefore result in significant cumulative air quality impacts.

As described in Section 3.2, Air Quality, construction of the cumulative projects would be short term and temporary in nature. Con<u>version of the California Maritime housing facility</u>~~struction of the quick-service restaurant and gas station convenience store, and self-storage facility~~ would contribute minimal emissions during construction, and would not be anticipated to result in substantial emissions when considered in combination with the proposed project. Construction of the Pacific Gas & Electric (PG&E) Southern Waterfront site would consist of demolition of on-site structures, site preparation, and remediation activities. Pollutants generated as a result of these activities would consist primarily of fugitive dust as a result of demolition and site preparation/ remediation activities. The PG&E remediation project would include on-site fugitive dust monitoring as part of its demolition work plan and health and safety plan. On-site monitoring would ensure adequate implementation of fugitive dust control measures during dust-generating activities, and would mitigate visible dust plumes and related fugitive dust impacts to a level below significance. As fugitive dust impacts are generally localized to individual project sites, and on-site emissions would be sufficiently mitigated through demolition and dust control measures, coupled with implementation of BAAQMD best management practices for all cumulative projects, cumulative impacts related to fugitive dust would be considered less than significant. Construction of the proposed project would not exceed BAAQMD construction thresholds for any criteria pollutants; therefore, cumulative impacts would be considered less than significant during the temporary construction period.

4.3.3 Biological Resources

As described in Section 3.3, Biological Resources, the proposed project would have potentially significant impacts on both marine and terrestrial species due to construction activities (noise and structure demolition) and alteration of habitat from facility operation; however, these impacts would be reduced to less-than-significant levels with mitigation. The cumulative projects are proposed for sites that are in highly impacted areas with limited biological resources. Thus, significant biological resources are not expected from these projects. Therefore, the proposed project in combination with the cumulative projects would not result in significant cumulative effects related to biological resources.

4.3.4 Cultural Resources

The proposed project would contribute to a cumulative impact on cultural resources if its incremental effects coincided and potentially compounded with effects from other reasonably foreseeable future projects to result in a significant impact on local cultural resources. As described in Section 3.4, Cultural Resources, the proposed project would result in a significant and unavoidable impact to historic resources due to demolition of the existing flour mill, grain silos, and dock. In addition, construction of the proposed project could result in significant impacts to buildings not proposed to be demolished as well as significant impacts to archaeological resources, fossils, or human remains, if discovered on site. However, with implementation of mitigation measures, these impacts would be reduced to less-than-significant levels.

The cumulative projects are located on vacant sites or with the exception of California Maritime, sites that do not contain any historic resources and would therefore not result in the demolition of any historic structures. The California Maritime campus may contain historic structures; however, mitigation included in that project calls for a qualified architectural historian that meets or exceeds the Secretary of the Interior's Standards for History and/or Architectural History to record project design based upon professional standards and assess its significance under CEQA Guidelines. The campuses distance from the project site and the fact that the two facilities did not overlap in purpose or landscapes, would result in less-than-significant cumulative impacts related to historic resources.

Although there could be potential for the discovery of unknown archaeological or paleontological resources, it is anticipated that standard measures would be in place to ensure impacts are less than significant. Therefore, although the proposed project would result in a significant and unavoidable impact to historic resources, the cumulative impact in combination with the cumulative projects would not be significant.

4.3.5 Geology and Soils

As described in Section 3.5, the proposed project would not result in any significant impacts related to geology and soils aside from the potential for landslides; however, this impact would be reduced to less than significant with mitigation. Both the proposed project and the cumulative projects would be required to comply with the California Building Code to ensure impacts due to seismic activity are minimized. In addition, the cumulative projects are located on generally flat sites that are not at risk for landslide. Therefore, the proposed project in combination with the cumulative projects would not result in a significant cumulative impact to geology and soils.

4.3.6 Greenhouse Gas Emissions

As described in Section 3.6, Greenhouse Gas Emissions, operational emissions of both the Orcem and VMT components of the proposed project would exceed the BAAQMD threshold for operational greenhouse gas (GHG) emissions. In addition, while the proposed project would comply with applicable implementation measures of the City's 2012 Climate Action Plan, it cannot be guaranteed that the project would be consistent with the objectives of the City's Climate Action Plan to achieve reduction targets established for 2020 and 2035. This is because the City's adopted CAP does not cover marine and rail operations which are an important part of the proposed project. The proposed project would also be exposed to impacts due to sea level rise that would be reduced to below a level of significance with mitigation. The cumulative projects include small commercial and educational operations and a temporary remediation project that are not expected to generate significant GHG emissions. However, the BAAQMD considers any project that would generate GHG emissions above the BAAQMD threshold, to contribute substantially to a cumulative impact. Therefore, a significant cumulative impact to GHG emissions would occur as a result of the project, and this impact would be significant and unavoidable.

4.3.7 Hazards and Hazardous Materials

As described in Section 3.7, Hazards and Hazardous Materials, construction of the proposed project would require the temporary use of hazardous materials, such as diesel fuels, lubricants, solvents, and asphalt. Without mitigation to ensure proper handling, storage, disposal, and emergency response planning, impacts could be significant but are reduced to less-than-significant levels with mitigation as outlined in Section 3.8. The cumulative projects would likely involve similar temporary use of hazardous materials during the construction phase, particularly the former MGP site cleanup. However, the cumulative projects would be required to manage hazardous materials in compliance with both state and federal regulations on hazardous materials such that their individual effects would be mitigated to less-than-significant levels. In addition, the former MGP site cleanup would be overseen by the California Department of Toxic Substances Control to ensure that impacts related to hazards and hazardous

materials are minimized. Given that mitigation would be required, the proposed project would not contribute a cumulatively considerable effect.

The proposed project would also involve the dredging of sediment in Mare Island Strait which may contain elevated concentrations of metal contaminants. Transport and disposal of the dredged material could result in a significant impact. With mitigation, this impact is reduced to less-than-significant levels as outlined in Section 3.7. The cumulative projects do not involve dredging or the transport or disposal of dredged material; therefore, the proposed and cumulative projects would not result in cumulative effects related to dredging.

The proposed project involves the demolition of buildings that were found to contain asbestos-containing materials. Disposal, transport or use of these materials as engineered fill could result in a significant impact. These impacts are reduced to less-than-significant levels with the mitigation outlined in Section 3.7. The cumulative projects are located on vacant sites or with the exception of California Maritime, sites with minimal buildings and therefore would not require demolition and subsequent transport or disposal of any asbestos-containing materials. The renovation of the existing student housing building may require disposal of asbestos-containing materials, but mitigation would be applied to disposal for this project that would remove the ~~Therefore, there is no~~ risk of a cumulative effect due to the handling of asbestos-containing materials.

4.3.8 Hydrology and Water Quality

Cumulative Impacts to hydrology and water quality would result if the proposed project and the cumulative projects contributed incrementally to a net effect on water quality and hydrology in the project vicinity, or any downstream body of water. As described in Section 3.8, Hydrology and Water Quality, the proposed project would result in a potentially significant impact from the risk of mobilizing pollutants currently sequestered in bay sediments and the pilings of the former General Mills wharf during dredge and fill, and piling removal as part of the VMT project component. These impacts are reduced to less-than-significant levels as outlined in Section 3.8, with mitigation measures MM-3.8-1, MM-3.8-2, MM-3.3-3, and MM-3.3-4. Two of the cumulative projects—the ~~convenience store~~renovation of student housing and storage unit facility—would be located away from the shoreline and would not involve any proposed marine construction activities. The former MGP site cleanup would be located adjacent to the shoreline; however, no in-water work would occur that would contribute to a potential cumulative impact. Therefore, there is no risk of a cumulative effect due to those dredge and fill or piling removal activities, and the proposed project's contribution to a cumulative effect would not be cumulatively considerable.

4.3.9 Land Use and Planning

A cumulative impact to land use and planning could occur if the proposed and cumulative projects contributed incrementally to a land use impact that is inconsistent with local plans and policies, including those set by the Bay Conservation and Development Commission, the City of Vallejo General Plan, and the Solano County General Plan. As described in Section 3.9, Land Use and Planning, the proposed project does not result in any significant impacts. ~~However, the proposed project would involve the annexation and re-designation of 5.25 acres of land currently designated as "Park and Recreation" use in the Solano County General Plan, into "Employment" use by the City of Vallejo. This impact is considered to be less than significant as described in Section 3.9. Similarly, t~~The other cumulative projects do not involve any changes in land use designation under the Solano County General Plan and are not anticipated to result in any significant impacts since the City would ensure consistency with applicable plans and policies. Therefore, cumulative impacts to land use and planning would be less than significant.

4.3.10 Noise

A cumulative impact on the noise environment in the project vicinity would result if the proposed project and the cumulative projects in combination resulted in a noise impact greater than either project generates independently. ~~At least one of the areas designated as a potentially noise-sensitive location for the proposed project (the Seawitch Drive Apartments) is located within 0.5-mile of the cumulative project located at 1217 5th Street, meaning that there is potential for noise from the proposed project to have a cumulative effect in that area.~~ The operational noise impact of the proposed project is considered to be less than significant based on the railroad's policy that does not allow trains with worn wheels to operate on tracks (thus removing the former potential noise impact).~~and unavoidable after mitigation since the mitigation cannot be guaranteed. The project located at 1217 5th Street would include a quick-service restaurant and convenience store with gasoline sales, which are not expected to generate long-term permanent noise increases.~~ In addition, the long-term permanent noise impact of the other cumulative projects is not likely to be significant given the location and nature of these projects. Therefore, a cumulative effect due to operational impacts is not anticipated.

If the timing of construction of the cumulative projects coincides with the proposed project, the projects could contribute to a temporary cumulative impact on noise in the area. However, given the location of the proposed project in relation to the cumulative projects, the potential for cumulative noise effects during construction is unlikely. As described in Section 3.10, the construction noise impacts of the proposed project would be mitigated to less-than-significant levels. Therefore, cumulative noise impacts would be less than significant.

4.3.11 Public Services and Recreation

As described in Section 3.11, Public Services and Recreation, the proposed project would not result in any significant impacts to public services and recreation. Although the project would slightly increase demands for police and fire services, the impact would not be significant. Similarly, the cumulative projects may cause a slight increase in demands for police and fire services; however, the projects are located in developed areas of the City that are currently served by the City's police and fire departments or served by California Maritime service providers. Neither the proposed project nor the cumulative projects would cause an increase in demands for recreation facilities. Therefore, cumulative impacts to public services and recreation would not be significant.

4.3.12 Transportation and Traffic

As described in Section 3.12, Transportation and Traffic, the proposed project would result in increased truck traffic to and from the project site that could temporarily inhibit vehicular and non-vehicular travel. This impact is reduced to less-than-significant levels with mitigation described in Section 3.12. However, two of the cumulative projects are located ~~on~~ near Sonoma Boulevard along one of the truck routes that connects the project site to Interstate 80 (I-80) West. Further increases in traffic due to added truck trips, or construction equipment for the cumulative projects on Sonoma Boulevard, could result in a temporary cumulative effect on local traffic congestion during the construction phase, but due to the minor short-term increase, this impact is not expected to be significant.

The proposed project is projected to generate train trips that would cause increased delays at train crossings. As described in Section 3.12, this impact would remain significant and unavoidable with mitigation since the mitigation cannot be guaranteed. The cumulative projects would not utilize railways. Therefore, although the project's impacts due to delays at train crossings would be significant, there would not be a significant cumulative effect on transportation and traffic as a result of train traffic from the cumulative projects.

The proposed project would also require improvements to roads in order to safely handle the increased truck traffic associated with daily operation of the proposed project which constitutes a significant impact but is reduced to less-than-significant levels with mitigation. Two of the cumulative projects—the ~~convenience store~~student housing replacement and storage unit facility—are likely to involve a small number of truck trips due to operational increases, ~~for~~ construction, restocking and delivery. However, the volume of truck traffic for those purposes is unlikely to warrant any capital improvements to roadways. Therefore, there would not be a significant cumulative effect as a result of increased demand for road maintenance and improvements.

The increase in train, automobile, and truck trips resulting from operation of the proposed project is likely to result in a significant impact on pedestrian and bicycle transit by making those modes of transportation less safe and convenient. This effect would be reduced to less-than-significant levels with mitigation. The cumulative projects would have minimal operational impacts on automobile and truck traffic. Therefore, there would be no cumulative impact on pedestrian and bicycle traffic as a result of the proposed project in combination with the cumulative projects. Cumulative traffic impacts would be less than significant.

4.3.13 Utilities and Service Systems

A significant cumulative impact would result if the proposed project and other nearby projects contributed to a net impact on local utilities and service systems such as overburdening municipal waste management services or depleting available municipal water. As described in Section 3.13, Utilities and Service Systems, the proposed project would have less-than-significant impacts on wastewater treatment and water consumption. These impacts would be reduced to less-than-significant levels with mitigations outlined in Section 3.13. The cumulative projects would also contribute an incremental increase on demand for water and wastewater treatment. However, the cumulative projects are small in scale and therefore are unlikely to result in a cumulative effect when added to the demands of the proposed project.

The proposed project would result in the generation of 170 tons of debris during construction and a projected 10 cubic yards/week during operation that would need to be disposed at Keller Canyon Landfill. As described in Section 3.13, this impact is considered to be less than significant. The cumulative projects would likely be served by the same municipal waste management service and disposed at the same location at Keller Canyon. Keller Canyon currently receives 3,500 tons of solid waste per day and has a remaining capacity of 63,408,410 cubic yards. Given those capacities, the combined impacts of the proposed project and cumulative projects would not result in a cumulative effect.

The proposed project is likely to be a large consumer of natural gas and electricity to power milling equipment and to dry the slag used in the production of the cement product. PG&E performed a feasibility study for the proposed project and concluded that existing circuits in Vallejo have capacity to accommodate the projects demands. This impact is also considered to be less than significant. The cumulative projects would have a small impact on electricity and natural gas relative to the proposed project. Therefore the cumulative effect from the combined impacts of the cumulative projects and proposed project would not be significant.

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CHAPTER 5
OTHER CEQA CONSIDERATIONS

This chapter includes the following other considerations that are required to be discussed in an Environmental Impact Report (EIR):

- Effects Not Found to be Significant (Section 5.1)
- Significant and Unavoidable Environmental Impacts (Section 5.2)
- Significant and Irreversible Environmental Effects (Section 5.3)
- Growth Inducement (Section 5.4)

5.1 EFFECTS NOT FOUND TO BE SIGNIFICANT

Based on the analysis provided in the Initial Study, the proposed project would not result in significant impacts related to the following topics, which are not further evaluated in the EIR:

- Agricultural and Forest Resources
- Mineral Resources
- Population and Housing

Additional information and discussion regarding the effects found not to be significant can be found in the Initial Study, which is included as Appendix A of this EIR.

5.2 SIGNIFICANT AND UNAVOIDABLE ENVIRONMENTAL IMPACTS

Implementation of the project-specific mitigation measures identified in the Chapter 3 analysis would reduce all significant impacts to below a level of significance, with the exception of the following impacts:

Section 3.2, Air Quality

~~***Impact 3.2-1***~~

~~The proposed rezoning of the 5.25-acre portion of the project site has the potential to introduce a more intensive land use to the property, and this potential change was not taken into account in the most recent state ozone plan – the Bay Area 2010 Clean Air Plan, adopted by the Board of Directors in September 2010. As described in Section 3.2, there is no feasible mitigation to reduce or avoid this impact; therefore, the impact would be **significant and unavoidable**.~~

Impact 3.2-2

The proposed project would result in an exceedance of the Bay Area Air Quality Management District (BAAQMD) NO_x threshold, which would conflict with the Clean Air Plan's goal of bringing the San Francisco Bay Area Air Basin into attainment for ozone since NO_x is a precursor to the development of ozone. Although implementation of MM-3.2-1 would reduce NO_x emission levels, it cannot be quantitatively determined whether emissions levels would be reduced to a level that is less than significant. As such, Impact 3.2-2 would remain **significant and unavoidable**.

Impact 3.2-4

The proposed project would result in a considerable contribution to a significant cumulative impact because it would exceed the BAAQMD threshold for NO_x emissions during project operations. Although implementation of MM-3.2-1 would reduce emission levels, it cannot be quantitatively determined whether emissions levels would be reduced to a level that is less than significant. As such, Impact 3.2-4 would remain **significant and unavoidable**.

~~***Impact 3.2-5***~~

~~The proposed rezoning of the 5.25-acre portion of the project site has the potential to introduce a more intensive land use to the property, and this potential change was not taken into account in the most recent state ozone plan – the Bay Area 2010 Clean Air Plan, which would result in a cumulatively considerable impact. As described in Section 3.2, there is no feasible mitigation to reduce or avoid this cumulative impact; therefore, the impact would be **significant and unavoidable**.~~

Section 3.4, Cultural Resources

Impact 3.4-2

The proposed demolition of the flour mill, grain silos, and dock, and extensive new construction and site work would have a significant adverse effect on documented historic resources. Implementation of MM-3.4-2a and MM-3.4-2b would reduce the impact, but not to a less-than-significant level. Thus, the impact would remain **significant and unavoidable**.

Section 3.6, Greenhouse Gas Emissions

Impact 3.6-1

The proposed project would exceed the BAAQMD threshold for operational GHG emissions of 10,000 metric tons of carbon dioxide equivalent (MT CO_2E) per year. Implementation of MM-3.6-1 would require fuel supply measures to reduce GHG emissions associated with operation of the proposed

project; however, emissions would not be reduced to below a level of significance. Impact 3.6-1 would remain **significant and unavoidable**.

Impact 3.6-2

Although the proposed project would not directly conflict with or obstruct implementation of the City of Vallejo Climate Action Plan (CAP), because the City's adopted CAP does not cover marine and rail operations, 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. 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, emissions would not 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. Impact 3.6-2 would remain **significant and unavoidable**.

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. This is because the City's adopted CAP does not cover marine and rail operations, and therefore emissions cannot be assured of being consistent with the CAP. 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, emissions would not 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. Impact 3.6-3 would remain **significant and unavoidable**.

~~**Section 3.10, Noise**~~

~~***Impact 3.10-1***~~

~~The increase in noise levels due to operation of the VMT project component would exceed established policies and standards at the following two locations:~~

- ~~NSL5 (Colt Court Residences)~~
- ~~NSL10 (3rd Street Residence)~~

~~Mitigation measure MM-3.10-1a would, if implemented, reduce these impacts; however, implementation is 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 3.10-1 would remain **significant and unavoidable**.~~

~~***Impact 3.10-3***~~

~~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. Mitigation measure MM-3.10-1a would, if implemented, reduce these impacts; however, implementation is 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**.~~

Section 3.12, Transportation and Traffic

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 and early evening when traffic volumes are at or near their peak hour levels) relative to delays and queues without the project. Mitigation measure MM-3.12~~0~~-2~~1~~a would, if implemented, reduce these impacts; however, implementation is 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 3.12-2 would remain **significant and unavoidable**.

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 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. Mitigation measure MM-3.10-1a would, if implemented, reduce these impacts; however, implementation is 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. 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. Therefore, Impact 3.12-3 would remain **significant and unavoidable**.

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. Mitigation measure MM-3.12~~0~~-2~~1~~a would, if implemented, reduce these impacts; however, implementation is 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. 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. Therefore, Impact 3.12-5 would remain **significant and unavoidable**.

5.3 SIGNIFICANT AND IRREVERSIBLE ENVIRONMENTAL EFFECTS

California Environmental Quality Act (CEQA) Guidelines mandate that the EIR must address any significant irreversible environmental changes that would be involved in the proposed action should it be implemented (CEQA Guidelines, Section 15126(c)). An impact would fall into this category if:

- The project would involve a large commitment of nonrenewable resources;
- The primary and secondary impacts of the project would generally commit future generations to similar uses;
- The project involves uses in which irreversible damage could result from any potential environmental incidents associated with the project; and/or
- The proposed consumption of resources is not justified (e.g., the project results in wasteful use of energy).

Determining whether the proposed project may result in significant irreversible effects requires a determination of whether key resources would be degraded or destroyed in such a way that there would be little possibility of restoring them.

Implementation of the proposed project would reestablish industrial uses on the project site, including construction and operation of a modern deep-water terminal that would be capable of handling a wide range of commodities, including construction materials and break-bulk items. In addition, the proposed project would result in the construction and operation of an industrial

facility for the production and export of ground granulated blast furnace slag (GGBFS) cement, a product which is intended to meet the needs of construction projects for cement with a substantially reduced associated carbon footprint compared to traditional portland cement products, and the import of the raw material precursors of that product. This process necessarily consumes limited, slowly renewable, and nonrenewable resources. Resources consumed in this process include fossil fuels burned for the production of electricity that would power the main milling equipment and natural gas burned in the process of drying GGBFS materials. As an industrial process, the operation of this facility would by nature be resource-intensive; however, as an alternative to conventional cement production, the finished product could result in potential carbon savings and emissions reductions.

The construction of this facility would require the demolition of existing structures and the subsequent use of construction supplies including certain types of lumber and other forest products; aggregate materials used in concrete and asphalt such as sand, gravel and stone; metals such as steel, copper, and lead; petrochemical construction materials such as plastics; water; and fossil fuels such as gasoline and oil. All of these resources are frequently used in most general construction processes and are potentially nonrenewable.

The implementation of this project would commit future generations to the use of this site for the industrial production of GGBFS and or cement for the foreseeable future. As it stands, the site is already developed for industrial purposes and is in a state of vacancy and disrepair. The proposed project would not alter the use of the terrestrial site other than to utilize the currently unoccupied industrial space and erect one small building on a currently undeveloped portion of the property. The re-construction of the marine terminal would commit current and future generations to the use of the site as a terminal for bulk carrier ships delivering raw materials for the production of GGBFS and or cement. So long as the facility continues to operate, the area would experience increased traffic from bulk carrier ships delivering raw materials and transporting finished products from the facility. As described in Section 3.3, the benthic marine environment in the vicinity of the proposed marine terminal is not considered to be high value habitat for any sensitive or special-status aquatic species and fits predominantly within the footprint of the current decomposing General Mills wharf.

The project is not expected to result in any wasteful use of energy, as discussed in greater detail in Section 3.13, Utilities and Service Systems. The proposed project would be dependent on optimizing production and thus would have a vested interest in maximizing the efficiency of its use of resources.

5.4 GROWTH INDUCEMENT

CEQA requires a discussion of ways in which the proposed project could induce growth. The CEQA Guidelines identify a project as growth inducing if it fosters economic or population growth, or the construction of additional housing, either directly or indirectly in the surrounding

environment (CEQA Guidelines, Section 15126.2[d]). New employees from commercial or industrial development and new population from residential development represent direct forms of growth. These direct forms of growth have a secondary effect of expanding the size of local markets and inducing additional economic activity in the area. A project could indirectly induce growth by reducing or removing barriers to growth or by creating a condition that attracts additional population or new economic activity. However, a project's potential to induce growth does not automatically result in growth. Growth can only happen through capital investment in new economic opportunities by the private or public sectors. Under CEQA, growth inducement is not considered necessarily detrimental, beneficial, or of little significance to the environment.

The proposed project does not include any residential development nor would it expand infrastructure in a way that facilitates future growth. The project would utilize an existing but currently non-operational site, already zoned and developed for industrial use, using the existing public utilities and infrastructure. The project is therefore not expected to directly induce growth by creating new housing, commercial, or industrial developments.

The proposed project is expected to generate jobs; the Orcem Plant estimates 100 jobs during the 15-month construction phase and up to 40 full-time jobs during operation. The VMT component of the project estimates 25 full-time jobs during regular daily operation, and up to 40 jobs during vessel loading and unloading periods. The generation of these new jobs could be considered indirectly growth inducing; however, a high demand for those skilled jobs exists within the City of Vallejo. As of 2010, approximately 3,184 Vallejo residents commuted out of the City to work in a manufacturing industry. About of one-third of these workers are in production occupations. Additionally, approximately 2,700 Vallejo residents commuted outside the City to work in the transportation and warehousing industry, including 61% in materials moving occupations such as truck drivers and ship packers (City of Vallejo 2012). Given the high number of Vallejo residents commuting outside the City for manufacturing and transportation/warehousing jobs, it is anticipated that the jobs generated as a result of the proposed project could be filled by existing Vallejo residents without resulting in growth from an influx of labor. The temporary spike in jobs during the construction phase is not expected to be growth inducing because of the short duration and temporary nature of those jobs.

This project could be considered to promote economic growth as it is likely to expand local markets and induce additional economic activity in the area through the import of raw materials for the production and export of "green cement." This effect is considered an indirect effect on growth.

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CHAPTER 6
ALTERNATIVES

6.1 INTRODUCTION

Pursuant to the California Environmental Quality Act (CEQA) Guidelines, Environmental Impact Reports (EIRs) are required to "describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives" (14 CCR 15126.6(a)). An EIR "must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation" (14 CCR 15126.6(a)). The alternatives discussion is required even if these alternatives "would impede to some degree the attainment of the project objectives or would be more costly" (14 CCR 15126.6(b)).

The inclusion of an alternative in an EIR does not constitute definitive evidence that the alternative is in fact "feasible." The final decision regarding the feasibility of alternatives lies with the decision maker for a given project who must make the necessary findings addressing the feasibility of alternatives for avoiding or substantially reducing a project's significant environmental effects (California Public Resources Code Section 21081; see also 14 CCR 15091).

Following is a list and summary of the alternatives to the VMT and Orcem Project which have been considered in this chapter of the EIR:

1. **Alternate Site:** A possible alternative location to implement the same project. This alternative was found to be infeasible and was therefore not further evaluated.
2. **Preservation Alternative:** A possible alternative in which the historic resources on the project site are structurally repaired and reused. This alternative was found to be infeasible and was therefore not further evaluated.
3. **Reduced Truck and Rail Alternative:** A possible alternative in which 40% of the project's truck and rail volumes are shifted to barges. This alternative was found to be infeasible and was therefore not further evaluated.
4. **Reduced Scale Alternative:** A possible alternative in which the volume of goods and materials processed through the Terminal and produced by Orcem are reduced by 25%. This alternative was found to be infeasible and was therefore not further evaluated.
5. **No Project Alternative:** An alternative in which the project site would remain in its current condition and no construction would occur. As required under CEQA, this alternative has been analyzed below.
6. **Revised Operations Alternative:** An alternative in which a series of plan refinements and operational changes to both the Orcem and VMT components are implemented focusing on retaining project feasibility while reducing environmental impacts.

6.2 PROJECT OBJECTIVES

The primary objectives of the proposed project are set forth in Chapter 2, Project Description, of the EIR and consist of the following:

- Establishment of the VMT Terminal as a key site of multi-modal and intermodal transportation and logistics, thereby enhancing Vallejo's role in the regional and international trade economy and providing a means for locally manufactured products to be transported and distributed, increasing the viability of and the potential for attracting further manufacturing operations to Vallejo.
- Maximize the potential for the manufacture of ground granulated blast furnace slag (GGBFS), a product that helps to meet the needs of the construction industry for high-performance, environmentally favorable concrete and sustainable building materials, by providing for an efficient scale of production at a plant which would operate around the clock as a multi-modal receiving, storage, processing, and distribution facility.
- To provide management and skilled labor employment opportunities for local and regional residents in the construction phases, as well as the long-term operations of commercial and industrial uses on the project site.
- To generate various tax revenues including property taxes and assessments, possessory interest tax, and utility user fees.
- To reestablish and optimize the industrial use of this centrally located marine industrial property through removal of those remaining components of the severely damaged timber wharf and construction of a modern deep-water terminal.
- To maximize accommodations for shipping and receiving of a wide range of products through the VMT Terminal, including loading and unloading of vessels, including deep draft vessels and barges, of up to 70,000 metric tons (MT) in size with draft of up to 38 feet through the restructured project. The improvements would help to further develop Vallejo's capabilities for water-based shipping.
- To maximize throughput capacity through the implementation of intermodal upgrades designed to optimize cargo handling operations as well as modern design initiatives enabling the most efficient use of the ground area and taking advantage of existing truck, rail, and shipping access for import and export of raw materials and finished products.
- To reliably provide competitively priced and environmentally preferable cement products and offer GGBFS and non-GGBFS cementing products, in order to provide a complete line of competitive products that meet long-term client and project needs, and to have the ability to respond to potential worldwide shortages of GGBFS supplies, thereby assuring sustainability of Orcem's operation over time.

- To follow the federal Short Sea Shipping Highway Initiative where possible by focusing on short sea shipping opportunities that move cargo by coastal and inland waterway barges, reducing both truck and rail environmental impacts.

6.3 ALTERNATIVES CONSIDERED BUT REJECTED

An EIR must briefly describe the rationale for selection and rejection of alternatives. The lead agency may make an initial determination as to which alternatives are potentially feasible, and therefore merit in-depth consideration, and which are not feasible. Alternatives whose implementation is remote or speculative, or the effects of which cannot be reasonably predicted, need not be considered (CEQA Guidelines, Section 15126.6(f)(3)). Factors that may be considered when addressing the feasibility of an alternative include site suitability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries, economic viability, and whether the proponent can reasonably acquire, control, or otherwise have access to the alternative site.

6.3.1 Alternate Site

Alternate locations for the project site were considered; however, the applicants do not own any waterfront property in the area that would be suitable for the proposed project. The project site was selected by VMT on the basis of its unique capability to accommodate deep-water berthing for vessels of up to 70,000 tons, in combination with rail and truck access, with sufficient space for transloading of goods and materials as described in Chapter 2.0, Project Description. The project site was previously used for water-related industrial uses, with access to deep-water shipping, interstate highways, and rail infrastructure. The proposed project would reestablish this water-related industrial use.

This combination of functional amenities suitable for operation of both the VMT and Orcem project components is not easily accommodated in other Bay Area sites. Since VMT currently owns a majority of the 31.4-acre project site and leases a portion of the project site from the City of Vallejo (City), and Orcem is sub-leasing their 4.88 acre portion of the site VMT, it is not feasible for the applicants to reasonably acquire another site with comparable amenities for the proposed project. An alternate site alternative is therefore infeasible, and is not evaluated further in this EIR.

6.3.2 Preservation Alternative

The Preservation Alternative would protect the historic characteristics of the project site by complying with the Secretary of the Interior's Standards for Rehabilitation. Section 15064.5(b)(3) of the CEQA Guidelines states, "Generally, a project that follows the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings or the Secretary of the Interior's Standards for

Rehabilitation and Guidelines for Rehabilitating Historic Buildings … shall be considered as mitigated to a level of less than a significant impact on the historical resource."

The grain silo is a concrete structure that would require extensive structural and infrastructure improvements for either reuse as a storage facility or other adaptive use. The flour mill is a reinforced concrete building with brick infill panels and veneer that would have to be brought up to current code standards. The State Historical Building Code could be used to address some of the codes issues, but there would likely be a need for extensive seismic strengthening of the buildings. Structural work, accompanied by mechanical, electrical, and plumbing upgrades for the Mill and Silo buildings, would be needed prior to or in conjunction with any kind of tenant improvements. Orcem would not reuse any portions of the grain silos and flour mill for their proposed mill building, filter building, workshop control room, and storage silos because the functional and structural requirements associated with the production of GGBFS would make reuse infeasible. The existing buildings occupy the majority of the Orcem Site and would preclude use of these areas for accommodation of necessary equipment, finished material storage, and raw material storage. The proposed raw material storage areas would be necessary for project operations. There is not sufficient space within the Orcem Site to accommodate the mill, outload silos, raw material storage areas, and other proposed GGBFS Mill improvements without demolishing the grain silos and flour mill. Therefore, the Preservation Alternative would not be feasible for the Orcem project component.

The remnants of the existing dock would not lend themselves to rehabilitation due to their deteriorated condition. To serve as a functioning wharf, removal of the 440 decaying creosote pilings and construction of a modern reinforced concrete wharf is necessary. In order to accommodate deep water shipping and a water-related industrial use, as called for in the project description, reconstruction would require a larger berthing area and a reinforced concrete wharf structure to accommodate modern vessels that would transport materials to and from the site. Although it may be possible for VMT to construct new wharves on either side of the existing dock, this option would: (1) Be problematic because of the relationship to the Mare Island Strait, designated shipping lanes, water currents, and insufficient water depth; (2) Conflict with the functional operation of a modern deep water marine terminal, including the need to accommodate vessels of up to 70,000 MT; and (3) Require a substantial additional amount of bay fill, which would increase impacts to marine biological resources and may conflict with policies in the San Francisco Bay Plan.

It would not be feasible for the VMT project component to move forward under the Preservation Alternative, because VMT is dependent on removal and replacement of the severely damaged wooden piles and deck remnants with a modern wharf capable of accommodating deep-water vessels of up to 70,000 MT capacity. In addition, the need for site grading and reuse of materials recycled from the mill and silo structures to complete the terminal operations portion of the VMT

Site would not be feasible under this alternative. While the VMT component could move forward with a different tenant for the 4.88-acre portion of the site proposed for use by Orcem, elimination of this key project component would eliminate a substantial portion of the shipping volume currently relied upon in determining the feasibility of the VMT operations. Additionally, it is unlikely that the existing buildings proposed for demolition could be used by another manufacturer. As a result, the Preservation Alternative is therefore infeasible, and is not evaluated further in this EIR.

6.3.3 Reduced Truck and Rail Alternative

The objective of the Reduced Truck and Rail Alternative is to decrease potential project impacts related to noise, traffic, and greenhouse gas (GHG) emissions and air quality. The Reduced Truck and Rail Alternative would develop the project site in a similar manner as the proposed project; however, the operations would be altered by shifting the mode of import and export of materials away from truck and rail and toward barges in all phases of the project. This alternative would replace approximately 40% of the truck and rail transport with barge transport. If this alternative were implemented, it would reduce truck and rail volumes, but would not eliminate the significant noise and vibration impacts identified in connection with the proposed project. Reduction in truck and rail volumes would further reduce the identified less-than-significant traffic impacts associated with truck transport; however, it would not eliminate the significant traffic impacts associated with temporary roadway closures at rail crossings identified in connection with the project. Finally, a Reduced Truck and Rail Alternative would further reduce the less-than-significant air quality impacts associated with the emissions of criteria pollutants resulting from trucks and rail traffic with the proposed project, but it would not result in a reduction of NO_x emissions to a less-than-significant level.

The Reduced Truck and Rail Alternative would not meet the basic project objectives because: (a) It would preclude accommodation of the same level of throughput as the proposed project, (b) It would interfere with the critical market-driven operations of both the VMT and Orcem components of the project, thereby precluding feasibility; and (c) The Reduced Truck and Rail Alternative would preclude the necessary shipping of Orcem's finished products via truck and rail, as it is in the proposed project. Because the majority of Orcem's primary markets are in the inland areas and are only accessible via truck and rail, this alternative would not be feasible, as it would prevent the Orcem component from operating competitively. While the VMT operations may be able to incentivize shipment of goods via barge over time, a 40% reduction in rail and truck volumes would interfere with market contracts that are only accessible by rail and truck. As a result, the Reduced Truck and Rail Alternative would prevent development and operation of the Terminal. This, in turn, would preclude both VMT and Orcem components. As a result, the Reduced Rail and Truck Alternative is therefore infeasible, and is not evaluated further in this EIR.

6.3.4 Reduced Scale Alternative

The objective of the Reduced Scale Alternative is to decrease potential project impacts related to noise, traffic, and GHGs and air quality. If it were feasible, the Reduced Scale Alternative would develop the project site in a similar manner as the proposed project; however, the volume of materials moved through the VMT Terminal and Orcem Plant would both be reduced by 25% compared to the proposed project. This reduction in maximum operating capacity would affect the VMT component by reducing the maximum monthly shipping cargo volume at the terminal from 160,000 to 120,000 MT. It would also reduce the maximum annual production volume for the Orcem Plant from 900,000 to 675,000 MT. This alternative would reduce the total average monthly number of vessels expected to arrive at the VMT Terminal (as shown in Table 2-3 in the Project Description) from 7.5 to 6 vessels. The ratios of distribution for finished products and goods by truck, rail, and barge would be expected to remain unchanged, with proportionate volume reductions in all modes of transportation. Similar to the Reduced Truck and Rail Alternative, were the Reduced Scale Alternative implemented, it would lead to across-the-board reductions in operational volumes, and would further reduce noise and traffic impacts associated with truck and rail transport for the proposed project. Traffic impacts associated with temporary roadway closures at rail crossings under a 25% reduction in rail traffic would continue to be significant and unavoidable, as the duration of roadway closures would remain unchanged from the proposed project. The Reduced Scale Alternative would also reduce air quality impacts associated with the emissions of criteria pollutants resulting from trucks and rail traffic, and would proportionately reduce GHG emissions; however, GHG and certain criteria pollutant emissions levels would remain significant and unavoidable, as in the case of the proposed project.

The Reduced Scale Alternative would preclude Orcem's ability to ensure the revenue required to justify: (1) The high level of fixed capital cost associated with construction of the plant; (2) The high fixed acquisition costs of equipment and operating systems involved in the state-of-the-art production and handling of GGBFS which also satisfies the Best Available Control Technology mandates of the Bay Area Air Quality Management District (BAAQMD); and (3) The high costs of operating the plant which are relatively inelastic with respect to scaling back of output volumes, making this component of the project infeasible. The Reduced Scale Alternative is therefore infeasible for the Orcem component of the project.

In addition, the Reduced Scale Alternative would also preclude the feasibility of VMT to construct and operate the Terminal because of: (1) Very high initial fixed capital costs associated with demolition of the existing flour mill, silos, and wharf; initial dredging for deepwater accessibility to accommodate larger vessels; and overall site preparation and construction of the wharf; (2) On-going fixed costs involving maintenance dredging, and terminal and equipment maintenance; and (3) The need to achieve a level of throughput scale required to support operation of barges as well as larger ocean-going deep-water vessels with access to international and local markets. The 25% reduction in

production and throughput volumes, and therefore efficiency, as reflected in the Reduced Scale Alternative therefore makes this alternative to the proposed project infeasible for construction and operation of the VMT component, and consequently also for the Orcem component. As a result, the Reduced Scale Alternative is infeasible, and is not evaluated further in this EIR.

6.4 ALTERNATIVES ANALYSIS

This section discusses two alternatives to the proposed project, including the No Project Alternative. The No Project Alternative is a required element of an EIR pursuant to Section 15126.6(e) of the CEQA Guidelines that examines the environmental effects if the project were not to proceed. The Revised Operations Alternative (ROA) is also discussed, as part of the "range of reasonable alternatives" as the only other meaningful alternative to the proposed project which could result in substantial reductions in project environmental impacts, while achieving most of the basic objectives of the project, including achieving a level of economic feasibility.

The consideration of a range of potentially feasible alternatives in this EIR was limited based on the following facts: (a) A substantial portion of this site is within the Public Trust Tidelands Area, and pursuant to State Lands Commission requirements imposed on the City. Since 1913, several grants of state tide and submerged land have been made to the City of Vallejo to administer in compliance with the Public Trust Doctrine and for the benefit of the statewide public. The Commission is statutorily required to oversee the management of sovereign public trust lands and assets by legislative grantees who manage these lands on behalf of the state. These lands are therefore limited to use for maritime industrial activities, commercial activities, and recreational, and open space; and (b) The site also contains a large area which was subject to clean-up of hazardous materials from the former mill operations use, as well as a closure plan, which preclude use of the site for most types of residential, playgrounds, child care, or other uses where exposure would otherwise create safety concerns. Additional alternatives, including the Reduced Scale Alternative, capable of substantially reducing certain environmental impacts of the proposed project, are identified and discussed in Chapter 6.3; however, these alternatives have been dismissed because they would preclude project feasibility, and would therefore have the same outcome as the No Project Alternative.

6.4.1 No Project Alternative

Under the No Project Alternative, the project site would remain in its current condition. No buildings or structures would be demolished, and no construction of new buildings or structures would occur. The existing wharf structures would also remain, and no dredging or filling of Mare Island Strait would occur. The project site would remain vacant and no new operations would occur. The No Project Alternative would not meet any of the project objectives since the site would remain unchanged. The site would not generate new employment opportunities or increased tax

revenues. The site would not become a marine terminal and would not provide for the production of GGBFS; therefore, the objectives related to maximizing the capabilities of the site for shipping and GGBFS production would not be achieved under this alternative.

6.4.2 Revised Operations Alternative

Under the Revised Operations Alternative, the overall operations of the proposed project would be modified to decrease potential project impacts related to air quality, GHG emissions, noise, transportation and traffic. The Revised Operations Alternative would develop the project site in an identical manner as the proposed project; however, the operation of some project components would be altered with the resulting reductions in impacts, as outlined below. It should be noted that should this alternative be approved, each of these components would be included in the MMRP and/or be included as a condition of approval. The alterations to the project include:

1. **Revised Orcem Truck Loading & Weight Confirmation System:** Through the use of vehicles that are capable of carrying slightly larger loads, this ROA element improves the efficiency of Orcem tanker trucks leaving the site by 4% from 22.68 to 23.59 MT, thereby reducing the number of project trucks trips by less than eight trips and reducing NO_x, CO_2, and $PM_{2.5}$/PM_{10} emissions by a comparable percentage. This change reduces the maximum average number of daily truck trips from 189 to 181 trucks per day.
2. **Enhanced Orcem Truck Scheduling Efficiency and Operations and Increased Trucking Days:** Shipping of finished products by Orcem would be more efficiently spread out on a monthly basis, utilizing an average of 26.0 trucking days per month (six days per week) in comparison to the 17.5 trucking days per month (five days per week) utilized in the Original Project. This component of the ROA project would further reduce the number of average daily trucks leaving the Orcem Mill, in comparison to the proposed project. The revised scheduling reduces daily truck trips under Orcem Mode 2 / Milestone 5 operations (when clinker is ground to produce cement) from 181 identified above to 122. However, the number of days the trucks run would increase from five days per week to six days per week. A 10% variation in Orcem's daily truck trips could occur due to holidays, vacations and illness. Therefore, the number of Orcem's daily truck trips under Mode 2 / Milestone 5 would range be between 110 and 134 trips. With the Loading & Weight Confirmation System and the Scheduling Efficiency the maximum number of daily truck trips for VMT and Orcem would be 221 round trips (87 trips + 134 trips = 221 trips) or 442 one-way daily trips.[1]

[1] These truck trip counts represent the highest impact scenario and were therefore used for purposes of impact analysis. It is possible that lower trip counts could occur under Orcem operating Modes 2 and 3, both with and without rail, translating to the following combined Orcem plus VMT figures: (1) 202 total trucks in Mode 2 without rail (115 Orcem + 87 VMT=202 trips or 404 one-way daily trips); (2) 119 total trucks in Mode 2 with rail (115 Orcem + 4 VMT=119 trips or 238 one-way daily trips); (3) 183 total trucks in Mode 3 without rail (96

3. **Reduced Train Lengths:** To reduce impacts on emergency services and traffic at railroad/road intersections from long trains, the maximum length of trains serving the project site is reduced from 77 cars in the proposed project, to 50 cars in this alternative for both Orcem and VMT.
4. **Tier 4 Equipment:** VMT and Orcem will use Tier 4 construction equipment (new technology which reduces exhaust gases from diesel powered equipment) for all land-based construction activities (excluding wharf pile drivers and diesel hammer).
5. **Elimination of Late Night Orcem Operations:** As part of the ROA, Orcem will eliminate late night (between 12:00 midnight and 6:00 a.m.) operations within 300 feet of the nearest residential boundary. This restriction's effect on noise levels has not been separately quantified in this report; the Noise Chapter analyzes the maximum noise effects of the project without the additional benefit of this ROA component.
6. **Reduced VMT Trucking:** The original project envisioned a large dike in addition to the wharf which is included in both the project and the ROA. This dike would have enabled additional whipping and would have created a large laydown area for the management of bulk and break bulk goods. This dike was removed from the project to lessen several significant impacts associated with the project. However, due to removal of the dike, space constraints would reduce VMT's ability to load material by truck and rail simultaneously for material that exceeds 12 VMT ships (480,000 tones/yr). Therefore, in order to reach the terminal's maximum capacity of 29 VMT ships per year, rail will need to be operational. Once rail is operational VMT will switch to using rail solely (no trucks) to export goods from the site, thereby eliminating 83 one-way truck trips per day. There will continue to be up to four delivery trucks serving the site on a daily basis.

Supplemental Landscape Screening for Orcem Mill Operations: Stockpiles and equipment within the southerly portion of the Orcem site were partially visible under the project, even with installation of the planned 6-foot perimeter fence. This was not considered a significant visual impact in the DEIR. Under the ROA the landscape plan for this portion of the site has been modified. Additional trees and shrubbery will run along the west and south sides of the Material Storage Area. The additional landscaping will serve to further screen the open material stockpile and equipment in the background, from the south and west.

A Fleet & Equipment Management Plan to commit to the use of newer technologies (than currently required pursuant to BAAQMD standards) on trucks, front-loaders and other powered equipment was proposed by the applicant but not produced in time for analysis in this document. Similarly the applicant discussed development of a Barge Preference Implementation Strategy that would be used by VMT to actively market to and select users of barges over users exclusively relying on

Orcem + 87 VMT=183 daily trips or 366 one-way daily trips); and (4) 80 total trucks in Mode 3 with rail (76 Orcem + 4 VMT=80 daily trips or 160 one-way trips).

trucks and rail, during periods when the Terminal is not operating at maximum capacity. This Strategy was also not produced in time for analysis in this document. While these elements could be produced in the future, their implementation has not been quantified and therefore has no effect on the project's expected impacts as analyzed in this report.

The Revised Operations Alternative would meet all of the basic objectives of the proposed project, since it accommodates the same level of maximum throughput and, unlike the Reduced Truck and Rail Alternative ensures access to critical markets. Like the proposed project, the Revised Operations Alternative increases employment opportunities and tax revenues for the City. The Revised Operations Alternative was designed to accomplish the following:

1. Maintain economic feasibility by not substantially altering the volume of production or throughput for either the Orcem Mill or the VMT Terminal, including the objective of maximizing the potential for the milling of ground granulated blast furnace slag (GGBFS);
2. Fulfill other basic objectives of the project, including: (a) establishment of the VMT Terminal as a key site of multi-modal and intermodal transportation and logistics, thereby enhancing Vallejo's role in the regional and international trade economy; and (b) providing a means for locally manufactured products to be transported and distributed, increasing the viability of and the potential for attracting further manufacturing operations to Vallejo.
3. Reduce some of the potentially significant environmental effects of both proposed project components by implementing a coordinated set of related and interdependent alterations to the manner in which the project as a whole would operate.

Community Benefits Package: The project applicants have submitted a Community Benefits package that includes a one-time $1 million Community Grant Program where $200,000 of grant funds would be available for five years. The funds are intended to support job training, education, youth services and environmental sustainability.

6.4.3 Aesthetics

With the exception of additional landscape screening (trees and shrubbery) along the west and south sides of the Material Storage Area (see Figures 6-1 and 6-2) within the Orcem Site, the ROA would involve identical physical changes to the project site as the proposed project, including planned demolition of existing on-site structures and construction of identical facilities for VMT and Orcem. Views of and from the project site would be similar to the proposed project with similar potential for impacts due to lighting (reduced through mitigation). The ROA would also provide more landscape screening of the Material Storage Area compared to the proposed project.

The ROA could result in an increase in ship traffic and the number of days vessels would be docked at the VMT Terminal due to the potential shift away from trucks and trains for material transport.

However, the presence of a small number of additional ships and corresponding trucks on additional days would not be considered a significant impact to aesthetics since ships, boats, trucks, and trains are frequent users of the waters, roadways, and rail that surround the project site, and therefore would not detract from the existing visual character or quality of the site. For these reasons, aesthetic impacts from the ROA would be similar to aesthetic impacts from the proposed project.

6.4.4 Air Quality

This section evaluates the potential construction and operational impacts of the Vallejo Marine Terminal (VMT) and Orcem California Inc. (Orcem) ROA with respect to air quality impacts, and includes mitigation measures required to mitigate the original proposed project (in Chapter 3 of this document) where necessary to reduce or avoid significant impacts.

Because reductions in air quality impacts are the most noteworthy change when comparing the ROA to the original proposed project, this section describes the ROA analysis in much greater detail than other areas of potential impact. A comprehensive summary of the analysis is found below, followed by a more detailed analysis that corresponds in format and elements analyzed to the impact discussion found in Section 3.2 of this document. Information provided in this section is based on analysis done for the original proposed project and a technical study prepared for the ROA found in the following appendices:

> **Appendix D-1:** Ramboll Environ. 2015. *Orcem/VMT Project – Air Quality and Greenhouse Gas Evaluation.*
>
> **Appendix M:** Ramboll Environ. 2018. VMT/*Orcem Revised Operations Alternative Air Quality and Health Risk Assessment, Vallejo, CA.*

Details regarding methodology, emissions calculations and model outputs can be found in Appendix D-1.

6.4.5 Summary of ROA Air Quality Analysis

In June 2018, Ramboll, VMT/Orcem's air quality consultant, analyzed the Revised Operations Alternative (ROA) for the VMT/Orcem project. Whereas the Project Alternative (Project) had been quantitatively analyzed in the 2017 Draft Final Environmental Impact Report (DFEIR), the ROA had only been assessed qualitatively.[2] Ramboll's 2018 ROA analysis quantifies ROA impacts by building on the calculation methodology used in DFEIR analysis and revises the methodology, assumptions, and emission factors to better reflect current industry practices.

[2] The DFEIR was based on analyses prepared by AWN and Ramboll, and submitted by the applicant.

This following summarizes the revised ROA assumptions, revised calculation methodology, revised emission factors, and results of the 2018 ROA analysis and compares the 2018 ROA analysis results to the project impacts described in the DFEIR.

The 2018 ROA is different from the DFEIR Project Alternative as follows:

ROA Construction Components

- The 2018 ROA proposes to use equipment meeting Environmental Protection Agency (EPA) Tier 4 off-road engine emission standards for all land-based construction activities (excluding wharf pile drivers and diesel hammers). This measure reduces criteria pollutant emissions as compared to the DFEIR Project Alternative.

ROA Operational Components

- The 2018 ROA proposes a Revised Orcem Truck Loading & Weight Confirmation System, which increases truck capacity, thereby reducing the number of trucks associated with Orcem operation by 4%.
- The 2018 ROA proposes an Enhanced Orcem Truck Scheduling Efficiency System, which reduces the average daily number of Orcem trucks from 189 to 122 by increasing the average monthly trucking days from 17.5 to 26. This measure, on average, increases trucking days from five days per week to six days per week.
- The 2018 ROA proposes to reduce train lengths from 77 rail cars per train to 50. This ROA component reduces the time required for trains to cross local city streets but increases the number of trains required to transport product.
- Ramboll proposed Revised Project-Sponsored Technology Upgrades to ensure the ROA avoids significant air quality and Health Risk Assessment (HRA) impacts. The specific technologies are presented in Table 6 of the Orcem-VMT ROA Summary Report for the HRA (see Appendix M). HRA mitigation measures that are included in the 2018 ROA are based on the Revised Project-Sponsored Technology Upgrades.

ROA Maximum Combined Scenario

The 2018 ROA analyzes various operating scenarios and concludes that maximum impacts, except cancer risk, would occur when (1) Orcem operates at Mode 3 / Milestone 5 (producing maximum Ground Granulated Blast Furnace Slag (GGBFS) and blended cement products), using 19 (average 40,000 MT) annual vessel shipments of raw materials, where processed materials are loaded into trucks and rail for distribution; and (2) VMT operates using 29 annual vessel shipments, where all imported goods are loaded onto rail for distribution. This is referred to as the Maximum Combined Scenario in the 2018 ROA Analysis. In the 2018 ROA maximum cancer risk occurs when the Orcem Mill operates

at Mode 2 / Milestone 5 (producing cement products only) and VMT operates as described above. The 2018 ROA analysis concludes that air emissions and health impacts would not exceed BAAQMD California Environmental Quality Act (CEQA) thresholds following mitigation.

ROA Revisions and Impacts: Construction

The 2018 ROA quantifies diesel particulate matter (DPM) emissions and associated cancer risk due to construction. In comparison to the DFEIR, the 2018 ROA construction DPM emissions are reduced by approximately 89% and the corresponding construction cancer risk is reduced by approximately 80%. These reductions are due to the following revisions in the ROA:

- The ROA assumes the use of Tier 4 diesel equipment for all construction equipment, except pile drivers and diesel hammer, as a component of construction. Tier 4 engines are significantly cleaner than lower tier engines. In addition, the elimination of activities associated with VMT Phase 2 construction (i.e., construction of an expanded laydown area that was eliminated from the Project Description) from the ROA also reduces construction emissions. These revisions result in a DPM decrease from 0.301 tons to 0.032 tons, a decrease of 0.27 tons of DPM compared to the DFEIR.
- Although the 2018 ROA does not quantify criteria pollutants associated with construction, it is unlikely that these emissions would exceed BAAQMD significance thresholds because they would be lower than the DFEIR emissions, which did not exceed BAAQMD significance thresholds. Criteria pollutant emissions would be reduced in the ROA compared to the DFEIR for the reasons identified above.
- The 2018 ROA analysis uses the 2015 Office of Environmental Health Hazard Assessment (OEHHA) Guidance to quantify health impacts, which is more stringent than the methodology used in the DFEIR. Specifically, the 2018 ROA incorporates increased daily breathing rates per the 2015 OEHHA guidance. Although this revision increases cancer risk associated with construction activities, the increase is offset by reduction in DPM emissions described above.

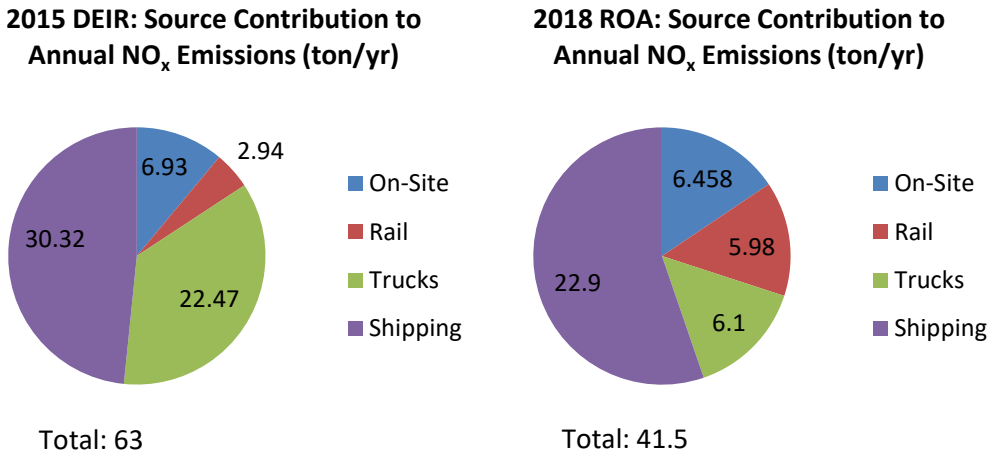
ROA Revisions and Impacts: Operation

The following discusses 2018 ROA changes in activity, assumptions and the resulting air quality impacts compared to the DFEIR. Exhibits 6-3 and 6-4 show the contribution of each source category to annual operational NO_x and PM_{10} emissions, respectively, for the 2018 ROA and DFEIR.[3] Figure 6-3 shows that NO_x emissions are approximately 34% lower in the 2018 ROA compared to the DFEIR. Figure 6-4 shows that PM_{10} exhaust emissions do not change appreciably.

[3] Numbers may not add exactly due to round off.

Although not shown in the figures below, the 2018 ROA analysis shows that VOC emissions are approximately 14% lower in the 2018 ROA compared to the DFEIR.

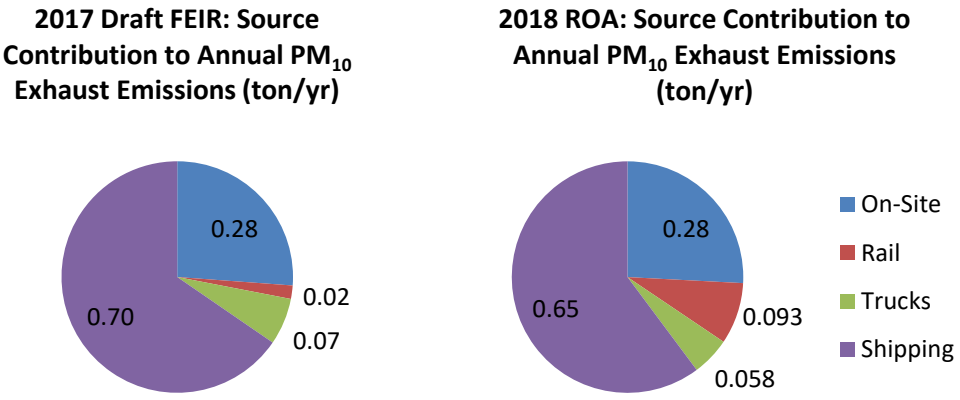
Exhibit 6-3
Source Contribution to Annual NOx Emissions



Total: 63

Total: 41.5

Exhibit 6-4
Source Contributions Annual PM_{10} Emissions



Total: 1.07 ton/yr

Total: 1.08 ton/yr

On-Road Truck Impacts

In comparison to the DFEIR, the 2018 ROA reduces 1-way truck trips from approximately 81,058 to 49,152 per year. The reduction in truck trips in combination with the items discussed below reduce NO_x and PM_{10} truck emissions by approximately 73% and 17%, respectively, for the Maximum Combined Scenario. These reductions are due to the following:

- Orcem Revisions
  - The 2018 ROA analysis subtracts material that would be transported via rail from total truck trips. This had not been accounted for in the AWN report submitted by the applicants and was therefore not included in the DFEIR. This revision reduces truck trips.
  - The 2018 ROA proposes an ROA condition, Orcem Truck Loading & Weight Confirmation System, which increases the capacity of Orcem trucks from 20 to 23.58 tones. This revision decreases truck trips because fewer trucks with larger capacity would be needed to transport the same amount of product.
  - The 2018 ROA proposes an ROA condition, The Enhanced Orcem Truck Scheduling Efficiency System, which reduces the average daily number of trucks from 189 to 122 by increasing the average monthly trucking days from 17.5 to 26. Per the transportation analysis, this increase in monthly trucking days would correspond to an increase from 5 to 6 days per week.[4]
- VMT Revisions
  - The 2018 ROA eliminates construction of VMT Phase 2. Without construction of VMT Phase 2, which had expanded the laydown area for the bulk and break bulk materials delivered to the site, space constraints preclude VMT from loading material by truck and rail simultaneously, for material throughput above 12 VMT vessels (480,000 MT per year). Although, rail and truck loading could occur sequentially, rail and trucks could not be loaded simultaneously, in the same month. The reason for this is that during the truck transloading process, the terminal would be fully occupied for one full month and another vessel would be unable to unload to rail until the terminal is cleared due to lack of transloading space. Transloading to trucks one month and rail the next month could occur during years of lower throughput, but this practice would not be possible at the maximum scenario of 29 VMT vessels, which is when maximum ROA impacts are calculated to occur. Therefore, the 2018 ROA assumes that all material, for operation above 12 ships per year is transported by rail.

[4] DFEIR, Appendix L, Fehr and Peers. 2016. *Transportation Technical Data.*

- The only trucks associated with VMT ROA activity in the Maximum Combined Scenario are 4 supply delivery trucks per day of terminal operation, operating for a maximum of 26 days per month.

- Revisions Common to Orcem and VMT
  - The 2018 ROA calculates the one-way truck transit distance of 41.9 miles, as described in the Orcem VMT one-way trip distance, included in Appendix M. The AWN report submitted by the applicants and consequently relied upon in the DFEIR incorrectly calculated a round-trip transit distance of 50 miles (25 miles one-way). Although this revision increases truck transit, the increase in emissions associated with longer transit is offset by other revisions discussed below.
  - The 2018 ROA revises the operational year to 2025 compared to the DFEIR 2020 operational year. This revision decreases truck engine emission factors because trucks in future years are expected, by CARB, to be cleaner per existing regulatory requirements.
  - The 2018 ROA uses speed-specific emission factors and aggregated emission factors. Speed-specific emission factors reflect a speed of 10 miles per hour (mph) for on-site transit and 20 and 40 mph for transit along surface streets. For freeway transit, the 2018 ROA uses emission factors that are based on aggregated speeds in the County.[5] In comparison, the FDEIR used emission factors for 40 mph for all transit.

Shipping Impacts

The 2018 ROA does not reduce ship calls. However, in comparison to the DFEIR, the 2018 ROA results in a 24% and 7% reduction in NO_x and PM_{10} shipping emissions, respectively, for the Maximum Combined Scenario. These reductions are due to the following revisions:

- Revisions Common to Orcem and VMT - The 2018 ROA revises emission factors to reflect the "lower emission factors" and "low load adjustment factors" in the anticipated 2018 CARB shipping inventory database. In 2018, CARB plans to release a shipping inventory database that incorporates newer ship engine information than what was available at the time of the DFEIR, including lower emission factors and lower adjustment factors.

Rail Impacts

In comparison to the DFEIR, the 2018 ROA increases annual train trips from 114 (77-rail car trains) to 288 (50-rail car trains) and increases annual railcars from 11,421 to 14,393 (14,400 was assumed in the DFEIR Project Description). In combination with the items discussed below, these

[5] Aggregated speed refers to a combined speed distribution that is developed by the CARB as part of the EMFAC database.

revisions contribute to an increase of over 100% in NO_x and PM_{10} rail emissions for the Maximum Combined Scenario.[6] These increases are due to the following:

- Orcem Revisions - The 2018 ROA assumes that Orcem trains arrive full, bringing raw material to Orcem, offload the raw material, are loaded with finished product, and then leave full, transporting finished product from Orcem. This had not been accounted for in the AWN report, submitted by the applicants, which was used in the DFEIR and which assumed that (1) trains bringing raw material arrived full, offloaded the raw material, and left empty; and (2) trains transporting finished product arrived empty, were loaded with finished product, and left full. Because this information had not been included in the AWN report submitted by the applicants, it was not included in the DFEIR. Although the 2018 ROA assumption reduces the number of Orcem trains serving the facility because it eliminates empty train trips, the corresponding emissions reduction is offset by revisions described below.
- VMT Revisions - As discussed under truck impacts, due to removal of VMT Phase 2, space constraints preclude VMT from loading material by truck and rail simultaneously, for material throughput above 12 VMT ships. Therefore, the 2018 ROA assumes that all material, for operation above 12 ships per year is transported by rail. This revision increases VMT rail trips.
- Revisions Common to Orcem and VMT
    - The 2018 ROA assumes shorter trains for both Orcem and VMT. Train length is reduced from 77 rail cars per to train in the DFEIR to 50 rail cars per train in the 2018 ROA to accommodate traffic considerations. This reduction increases the number of trains because twice as many shorter trains are needed to transport the same amount of material.
    - Based on information from CalNorthern, the rail line operator, the 2018 ROA assumes that 50 rail-car trains require the use of two locomotives per train for line-haul trains. This is a revision from the DFEIR, which assumed one locomotive for an empty train and three for a full train.
    - The DFEIR states that the National Railway Equipment Company would provide "ultra-low emission" equipment for switching activity, which at the time of the DFEIR was equivalent to EPA Tier 2 engines. Since the DFEIR was published, the NREC has begun to offer switcher locomotives that meet EPA Tier 4 engine standards. For this reason, the 2018 ROA assumes Tier 4 engines for switcher locomotives. This revision decreases emission factors and emissions associated with switching operations.
    - The DFEIR states that NREC would provide "ultra-low emission" equipment for line haul activity, which the DFEIR assumed to be primarily Tier 4 locomotives. The 2018 ROA

[6] Please note that the DFEIR Project Description assumed that an average of 2.6 77-car trains would run per week.

revises the DFEIR assumption and instead, conservatively assumes a 2025 CARB fleet mix for line haul trains, which consists of Tier 2 through Tier 4 locomotives. This ROA revision increases emission factors and associated emissions from line haul locomotives.

On-Site Operations

On-site emissions would be generated by Orcem and VMT equipment. Orcem equipment includes stack, hopper and conveyors, bag filters, excavators, and front end loaders. VMT equipment includes front end loaders and forklifts. Both Orcem and VMT would generate fugitive dust from material handling. On-site emissions would primarily be driven by the natural gas-fueled Orcem stack emissions, which comprise more than 85% of on-site equipment NO_x emissions; other on-site equipment would be diesel-fueled. In comparison to the DFEIR, the 2018 ROA results in a 7% decrease in NO_x and a negligible decrease in PM_{10} emissions for the Maximum Combined Scenario. This decrease is due to the following revisions:

- Revisions Common to Orcem and VMT
  - The 2018 ROA revises diesel emission factors to reflect the 2025 operational year and equipment model year 2020. In comparison, the DFEIR was based on the 2020 operational year and 2015 model year equipment.
  - The 2018 ROA assumes that diesel-fueled equipment (i.e., hoppers, conveyors, front end loaders, excavators, and forklifts) meet CARB/EPA Tier 4 Final engine standards. In comparison, the DFEIR assumed Tier 4 engines for Orcem front end loaders and excavators, but not for Orcem hoppers and conveyors or for VMT front end loaders or forklifts.
  - The 2018 ROA assumes that diesel-fueled equipment (i.e., hoppers, conveyors, front end loaders, excavators, and forklifts) use fuel with a 20% biodiesel content (B20). In comparison, the DFEIR assumed that Orcem and VMT front end loaders, and Orcem excavator used B20 fuel, VMT forklifts used conventional diesel fuel and, Orcem hoppers and conveyors used conventional diesel fuel.

NO_x Offsets

The 2018 ROA results in NO_x emissions greater than the BAAQMD significance threshold. The BAAQMD, as part of their permitting process, requires that emissions from the combination of ocean going vessels, rail, and stationary sources be offset if those emissions are greater than 10 tons per year. Each facility with emissions greater than 10 tons per year, but less than 35 tons per year can obtain offsets from the BAAQMD's Small Facility Offset Banking Account. Shipping,

rail and stationary source emissions are eligible for offsets from BAAQMD's Small Facility Offset Banking Account.[7] Emissions greater than 35 tons per year must be offset by purchasing offsets.

2018 ROA NO_x emissions eligible for offsets, as shown in Table 5 of Appendix M, are 15.5 tons per year for Orcem and 18.9 tons per year for VMT, for a total of 34.5 tons per year. Following the application of BAAQMD offsets, total NO_x emissions are 7 tons per year, and as such are below the BAAQMD significance threshold for NO_x.

Cancer Risk

In comparison to the DFEIR, the 2018 ROA results in a negligible change in operational cancer risk. Cancer risk remains above the BAAQMD threshold of 10 in a million under the ROA, triggering the need for mitigation. In comparison to the DFEIR, mitigation is triggered sooner under the 2018 ROA for the following reason:

- The 2018 ROA implements a self-imposed threshold of 9 in a million cancer risk, which is below the BAAQMD threshold of 10 in a million. This revised threshold is implemented in part to allow for potential minor overlap between construction and operation, and in part to allow sufficient time for implementation of mitigation. Table 6.1 presents a comparison of DFEIR and 2018 ROA cancer risk and shows that mitigation (discussed under the proposed project in Section 3.0) is triggered above 14 vessels (i.e., sooner) under the 2018 ROA in comparison to 16 vessels under the DFEIR.

Table 6.1
Cancer Risk in a Million

	DFEIR	ROA
Construction Cancer Risk	5.57	1.14
Operation Cancer Risk at 48 Vessels	18.33	18.25
Operation Cancer Risk at 16 vessels	9.94	
Operation Cancer Risk at 14 vessels		8.96
Mitigation Required	Mitigation is required above 16 vessels	mitigation is required above 14 vessels

[7] The BAAQMD funds the Small Facility Banking Account by deposit of unclaimed emission reductions from source or facility closures, and by a small facility growth allowance established in the District's Clean Air Plan. In general, BAAQMD's Emissions Banking Program allows for the creation of air pollutant emission reduction credits (ERCs). ERCs are created when companies introduce new emissions controls, such as upgrading or replacing old equipment, shutting down equipment, upgrading processes and materials, adopting stricter operating guidelines and adding control equipment to existing sources. These new controls must go beyond the requirements of current regulations and must be real, permanent, quantifiable, and enforceable. ERCs can then be used to offset emissions increases from new, permitted projects and traded or sold to other companies for their use. Over time, the offset program drives down the overall burden of pollution in the region because ERCs can only be generated by closures or introduction of control technologies that exceed regulatory requirements.

6.4.6 ROA Detailed Air Quality Analysis

The following information repeats some of the material presented in the above summary, but is presented to correspond in format and elements analyzed to the impact discussion found in Section 3.2 of this document

Regulatory Setting

Federal

Federal regulations applicable to the ROA are the same as those applicable to the proposed project in DFEIR Section 3.2.1.

State

State regulations applicable to the ROA are the same as those applicable to the proposed project in DFEIR Section 3.2.1.

Local

Bay Area Air Quality Management District

BAAQMD regulations applicable to the ROA are the same as those applicable to the proposed project in DFEIR Section 3.2.1 with the exception of the 2010 Clean Air Plan (CAP), which was revised in 2017. The 2017 CAP addresses nonattainment of the national 1-hour ozone standard in the San Francisco Bay Area Air Basin (SFBAAB) and defines a vision to achieve California's GHG reduction targets for 2030 and 2050. The purpose of the 2017 CAP is to:

- Update the Bay Area 2010 CAP in accordance with the requirements of the California Clean Air Act to implement "all feasible measures" to reduce ozone;
- Reduce transport of ozone and its precursors to neighboring air basins;
- Reduce emissions of fine particulate matter and toxic air contaminants;
- Present a long-range vision of how the Bay Area could function in a year 2050 post-carbon economy; and
- Review progress in improving air quality in recent years.

The 2017 CAP contains 85 control measures aimed at reducing air pollution in the SFBAAB including stationary, transportation, building and energy, agriculture, waste, water, and super-GHG control measures.

6.4.7 Existing Conditions

Background Concentrations

BAAQMD operates a regional 32-station monitoring network that measures the ambient concentrations of criteria pollutants.

Representative background concentrations for ozone, NO_2, and $PM_{2.5}$ are based on the ambient monitoring station located on Tuolumne Street, Vallejo, California (Station No. 06-095-0004) and covers the three most recent complete years (2015–2017). The Tuolumne Street station does not collect data for CO, SO_2 or PM_{10}. The station is designated a neighborhood scale station (with a range of 500 meters to 4 kilometers) and is suitable for assigning a background concentration for determining project impacts. The monitoring station is located 2.5 kilometers northeast of the proposed project. The monitoring station is also located approximately downwind of the project, based on the wind data for both Vallejo and Conoco-Phillips Rodeo meteorological stations, and thus should be broadly representative of the location at which the maximum emissions from the facilities will occur. In relation to fugitive emissions from the project, the use of the Tuolumne Street station is likely to overestimate the background levels of $PM_{2.5}$ due to the remote nature of the project site relative to the ambient monitoring station. The background data for the relevant pollutants is outlined in Table 6.2 for the last 3 years for which data is available.

Table 6.2
Ambient Air Quality Data

Pollutant	Averaging Period	Standard	Highest Monitored Concentration [a] / Number of Days Above Standard		
			2015	*2016*	*2017*
Ozone (ppm)	1-hour State [b]	0.09	0.08 / 0	0.08 / 1	0.08 / 1
	8-hour National [c]	0.07	0.061 /0	0.063 / 1	0.061 / 2
	8-hour State [b]	0.07	0.061 /0	0.063 / 0	0.061 / 2
CO (ppm)	1-hour National	35	—	—	—
	1-hour State	20	—	—	—
	8-hour National and State	9	—	—	—
NO_2 (ppm)	1-hour National [d]	0.100	0.038 / 0	0.036 / 0	0.042 / 0
	1-hour State [d]	0.18	0.050 / 0	0.050 / 0	0.050 / 0
	Annual National	0.053	0.008	0.007	0.008
	Annual State	0.030	0.009	0.008	0.008
SO_2 (ppm)	1-hour National	0.075	—	—	—
	1-hour State	0.25	—	—	—
	24-hour State	0.04	—	—	—

Table 6.2
Ambient Air Quality Data

Pollutant	Averaging Period	Standard	Highest Monitored Concentration [a] / Number of Days Above Standard		
			2015	*2016*	*2017*
PM_{10} (µg/m^3)	24-hour National	150	— / —	— / —	— / —
	24-hour State	50	— / —	— / —	— / —
	Annual State	20	—	—	—
$PM_{2.5}$ (µg/m^3)	24-hour National [e]	35	30.7 /3	19.0 / 0	41.5 / 9
	Annual National [f]	12	9.8	9.0	9.6
	Annual State [g]	12	11	10	12

Notes:
[a] Exceedances of the standards are shown in bold. All reported values represent the highest recorded concentration unless otherwise noted.
[b] The concentrations reported for the state 1-hour and 8-hour O3 standards represent the California designation values.
[c] The concentrations reported for the national 8-hour O3 represent the national standard design value.
[d] The concentrations reported for the national 1-hour NO2 standard represent the 98th percentile national standard design value. The concentrations reported for the national annual NO2 standard represent the annual national standard design value. The concentrations reported for the state 1-hour and annual NO2 standard represent the CA designation values.
[e] The concentrations reported for the national 24-hour PM2.5 standard represent the 98th percentile national standard. High values are likely due to area wildfires.
[f] The concentrations reported for the national annual PM2.5 standard represent the annual standard design value.
[g] The concentrations reported for the state annual PM2.5 standard represent the CA annual standard designation value.
Source: iADAM Database (CARB, 2015-2017).

6.4.8 Thresholds of Significance

Thresholds of significance are the same for the ROA as for the proposed project, in Section DFEIR 3.2.3. The analysis questions (originating from CEQA Appendix G) are repeated in this Section to facilitate ROA analysis.

6.4.9 Impact Discussion

This section presents a summary of the ROA activities and discusses potential impacts to air quality. The goal of the ROA is to provide an alternative to the proposed project that would accomplish the applicant's objectives but would reduce the potential environmental impacts associated with the project.

ROA Construction

The ROA would differ from the proposed project as follows:

- The ROA proposes to use construction equipment meeting EPA Tier 4 Final off-road engine emission standards. These engine emission standards are significantly cleaner than lower tier engines standards analyzed in the proposed project. Tier 4 Final engines would

be used for land-based construction activities, excluding wharf pile drivers and diesel hammers because the availability of Tier 4 Final engines for these types of equipment is uncertain. Although this component would reduce criteria pollutant emissions as compared to the proposed project, the ROA analysis does not recalculate criteria pollutant construction emissions and so does not take credit for this component in evaluating construction emissions.

- The ROA analysis does calculate and take credit for the use of Tier 4 Final engines in quantifying cancer risk associated with ROA construction. The discussion under Impact Threshold Questions B and D (discussed below) address this in greater detail.
- The ROA also calculates and takes credit for emission reductions associated with the elimination of VMT Phase 2 construction, described in the DFEIR, in quantifying cancer risk associated with ROA construction. The discussion under Impact Threshold Questions D (discussed below) addresses this in greater detail.

In addition to the above, the same Best Management Practices (BMPs) identified for the proposed project in DFEIR Section 3.2.4 would be used for the ROA. These BMPs, recommended by BAAQMD, would be required during all ROA construction activities.

ROA Operation

Tables 6.3, 6.4, 6.5, and 6.6 provide further detail regarding how ROA components and ROA analysis differ from the proposed project for on-road trucks, ships, rail, and on-site equipment, respectively. Table 6.7 identifies revisions to the health risk assessment. These Tables also identify where these changed elements originated: Either as a new "component of the ROA," a change due to updated analysis methodology, or a change in the project description of the original project that transferred to the ROA.

Table 6.3
ROA On-Road Truck Revisions

Orcem Revisions	
The ROA proposes an Orcem Truck Loading & Weight Confirmation System, which would increase the capacity of Orcem trucks from approximately 20 to 23.58 MT. This ROA component would decrease truck trips compared to the proposed project because fewer trucks with larger capacity would be needed to transport the same amount of product.	Component of the ROA
The ROA proposes The Enhanced Orcem Truck Scheduling Efficiency System, which would reduce the average daily number of trucks from approximately 189 to 122 by increasing the average monthly trucking days from approximately 17.5 to 26. Per the transportation analysis, this increase in monthly trucking days would correspond to an increase from 5 to 6 days per week.[8]	Component of the ROA

[8] DFEIR, Appendix L, Fehr and Peers. 2016. *Transportation Technical Data.*

Table 6.3
ROA On-Road Truck Revisions

The ROA analysis subtracts material that would be transported via rail from total truck trips. This had not been accounted for in the proposed project analysis. This revision would reduce truck trips compared to the proposed project.	Change in analysis methodology
VMT Revisions	
VMT Phase 2 was removed from the project based on comments received on the Draft EIR. Without construction of VMT Phase 2, which would have expanded the laydown area for the bulk and break-bulk materials delivered to the site, space constraints preclude VMT from loading material by truck and rail simultaneously, for material throughput above 12 VMT vessels. Although, rail and truck loading could occur sequentially, rail and trucks could not be loaded simultaneously in the same month. The reason for this is that during the truck transloading process, the terminal would be fully occupied for one full month and another vessel would be unable to unload to rail until the terminal is cleared due to lack of transloading space. Transloading to trucks one month and rail the next month could occur during years of lower throughput, but this practice would not be possible at the maximum scenario of 29 VMT vessels, which is when maximum ROA impacts are calculated to occur. Therefore, the ROA assumes that all VMT material, for operation above 12 ships per year would be transported by rail.	Change in the project description
Revisions Common to Orcem and VMT	
The ROA analysis increases the one-way truck transit distance to 41.9 miles, from the 25 miles one-way distance analyzed in the proposed project.	Change in analysis methodology
The ROA revises the operational year from 2020, which was analyzed for the proposed project, to 2025. This revision would decrease truck engine emission factors compared to the proposed project because trucks in future years are expected to be cleaner per CARB's existing regulatory requirements.	Change in analysis methodology
The ROA analysis uses speed-specific emission factors and aggregated emission factors for truck transit. Speed-specific emission factors reflect a speed of 10 miles per hour (mph) for on-site transit and 20 and 40 mph for transit along surface streets. For freeway transit, the ROA analysis uses emission factors that are based on aggregated speeds in the County.[9] This is a more conservative assumption than the proposed project, which assumed emission factors based on 40 mph for all transit. Since emission factors increase at higher speed, this revision would increase ROA truck emission factors compared to the proposed project.	Change in analysis methodology

Table 6.4
ROA Ship Revisions

Revisions Common to Orcem and VMT	
The ROA analysis revises emission factors to reflect the "lower emission factors" and "low load adjustment factors" in the anticipated 2018 CARB shipping inventory database. In 2018, CARB plans to release a shipping inventory database that incorporates newer ship engine information than what was available at the time of the proposed project analysis in the DEIR, including lower emission factors and lower adjustment factors. A CARB documentation e-mail is included in Appendix M. This revision would reduce emission factors compared to the proposed project.	Change in analysis methodology

[9] Aggregated speed refers to a combined speed distribution that is developed by the CARB as part of the EMFAC database.

Table 6.5
ROA Rail Revisions

Orcem Revisions	
The ROA analysis reduces the number of Orcem trains serving the project by eliminating empty train trips. The ROA assumes that Orcem trains would arrive full bringing raw material to Orcem, offload the raw material, be loaded with finished product, and would then leave full, transporting finished product from Orcem. This had not been accounted for in the proposed project analysis because it was only recently addressed by the applicants. In comparison, the proposed project assumed that (1) trains bringing raw material would arrive full, would offload raw material, and would then leave empty; and (2) trains transporting finished product would arrive empty, be loaded with finished product, and would leave full.	Component of the ROA
VMT Revisions	
As discussed in Table 6.3, due to removal of VMT Phase 2, space constraints would preclude VMT from loading material by truck and rail simultaneously, for material throughput above 12 VMT ships. Therefore, the ROA analysis assumes that all material, for operation above 12 ships per year would be transported by rail. This revision would increase VMT rail trips (up to a maximum of 4 rail trips a year).	Component of the ROA
Revisions Common to Orcem and VMT	
The ROA assumes shorter trains consisting of 50 rail cars per train for both Orcem and VMT, compared to the proposed project, which assumed 77 rail cars per train. Shorter trains reduce (but do not eliminate) impacts from intersection delay and the delay of emergency vehicles. This revision would increase the number of trains, compared to the proposed project, because a greater number of shorter trains would be needed to transport the same amount of material.	Component of the ROA
Based on recent information from CalNorthern, the rail line operator, the ROA assumes that 50 rail-car trains require the use of two locomotives per train for line-haul trains. This is a revision from the proposed project, which assumed one locomotive for an empty train and three for a full train.	Component of the ROA
The ROA incorporates the use of switcher locomotives that meet EPA Tier 4 engine standards. These locomotives have only recently become available from The National Railway Equipment Company and were not available at the time of the proposed project analysis, which assumed EPA Tier 2 engines. This revision would decrease emission factors associated with switching operations.	Component of the ROA
The ROA conservatively assumes a 2025 CARB fleet mix for line haul locomotives, which consists of Tier 2 through Tier 4 locomotives. In comparison, the proposed project assumed the use of all Tier 4, line haul locomotives. This ROA revision would increase emission factors associated with line haul locomotives.	Component of the ROA

Table 6.6
ROA On-Site Equipment Revisions

Revisions Common to Orcem and VMT	
The ROA revises diesel emission factors to reflect the 2025 operational year and equipment model year 2020. In comparison, the proposed project analysis was based on the 2020 operational year and 2015 model year equipment. This revision would decrease emission factors because equipment in future years are expected to be cleaner per CARB's existing regulatory requirements.	Change in analysis methodology
The ROA assumes that diesel-fueled equipment (i.e., hoppers, conveyors, front end loaders, excavators, and forklifts) would meet EPA Tier 4 Final engine standards. In comparison, the proposed project assumed Tier 4 engines for Orcem front end loaders and excavators, but not for Orcem hoppers and conveyors or for VMT front end loaders or forklifts. This revision would reduce emission factors because more equipment would comply with cleaner Tier 4 Final engine standards.	Component of the ROA
The ROA assumes that all diesel-fueled equipment (i.e., hoppers, conveyors, front end loaders, excavators, and forklifts) would use fuel with a 20% biodiesel content (B20). In comparison, the proposed project assumed that Orcem and VMT front end loaders, and Orcem excavator used B20 fuel, VMT	Component of the ROA

Table 6.6
ROA On-Site Equipment Revisions

Revisions Common to Orcem and VMT	
forklifts used conventional diesel fuel and, Orcem hoppers and conveyors used conventional diesel fuel. This revision would reduce particulate and diesel particulate emissions.	

Table 6.7
ROA Health Risk Assessment Revisions

Revisions Common to Orcem and VMT	
The ROA analysis implements the 2015 Office of Environmental Health Hazard Assessment (OEHHA) Guidance to quantify health impacts. This methodology was not available at the time of the proposed project air quality analysis and is more stringent.	Change in analysis methodology
The ROA proposes a self-imposed threshold of 9 in a million cancer risk, which is below the BAAQMD threshold of 10 in a million. This revised threshold is proposed in part to allow for potential minor overlap between construction and operation, and in part to allow sufficient time for implementation of mitigation.	Component of the ROA

In addition to the above, the same Project Design Features (PDFs) identified for the proposed project in Section 3.2 would be used in the ROA to reduce on-site emissions during operations.

As with the proposed project, the ROA anticipates that material throughput for both VMT and Orcem would ramp up over time. Operational throughput would depend on market demand and is difficult to predict. However, for the purposes of the ROA analysis, it was assumed that maximum material throughput would not be reached until 2025 (as detailed in the operating scenarios [modes] described above).

It is important to note that given the nature of VMT and Orcem facilities, certain operations could only be undertaken by one of the operators at any given time. For example, ship unloading could only occur from one ship at a time, either a VMT ship or an Orcem ship. Thus, when Orcem would be unloading product from a ship, VMT would not be able to unload from a ship. Likewise, when VMT would be loading export material into railcars, Orcem would not load railcars at the same time. These exclusions would result in a Combined Maximum Scenario that is lower than individual VMT or Orcem throughput, if facilities were to operate independently.

Table 6.8 presents material throughput and annual activity associated with the ROA Maximum Combined Scenario for criteria pollutants. Individual facility maximums are presented in Appendix M.

Table 6.8
Material Throughput and Activity:
Maximum Combined Scenario for Criteria Pollutants

	VMT	Orcem
Material Throughput (metric tons per year)		
Material Imported by Ship	1,160,000	760,000
Material Imported by Truck	0	22,306
Material Imported by Rail	0	120,000
Material Exported by Truck	0	557,196
Material Exported by Rail	1,160,000	145,732
Annual Activity		
Ships	29	19
Trucks	0	49,152
Delivery Trucks	2,496	0
Trains	512	65
Rail Cars	12,790	1,607

Notes:
1. Values are rounded.
2. In the Maximum Combined Scenario for criteria pollutants is when Orcem would operate in Mode 3 / Milestone 5, producing GGBFS and cement products.
3. Trucks reflect 1-way trips. In the Maximum Combined Scenario for criteria pollutants, all VMT product would be moved via rail. Rail loading is more efficient than truck loading, allowing the greatest material throughput and greatest number of ships per year. Since ships have a greater emissions profile than trucks, the analysis is maximized with the maximum number of ships. An analysis that includes VMT trucks would result in greater truck emissions, but lower ship emissions, thereby resulting in lower overall emissions. Table 6.1 provides additional explanation as does Appendix M.
4. Delivery trucks would be used to deliver miscellaneous supplies to the VMT facility. These trucks would be smaller than trucks used to export and import product.
5. Trains represent line haul 1-way trips. Each line haul train would be comprised of 50 rail cars.
6. During production of GGBFS the moisture content is greatly reduced, thus less material is exported than imported.

6.4.10 CEQA Appendix G Threshold Questions

The following questions were presented in Section 3.2.3 of the EIR and are repeated here to facilitate ROA analysis.

A. Would the ROA conflict with or obstruct implementation of the applicable air quality plan?

The ROA would have similar activities as the proposed project. As described in Tables 6.3 through 6.7 several ROA components were added to the ROA and calculation methodologies were revised to reflect current industry practice.

The most recent Bay Area air quality plan is the 2017 CAP. The CAP provides a regional strategy to protect public health and protect the climate. The 2017 CAP updated the 2010 Clean Air Plan, which was used for significance determination of the proposed project because that was the current plan at the time of proposed project analysis. The 2017 CAP sets goals to fulfill state ozone

planning requirements via reduction of ozone precursors, meet the state's 2030 and 2050 GHG targets, and builds upon the BAAQMD's efforts to reduce emissions of fine particulate matter and toxic air contaminants.

Projects are considered consistent with, and would not conflict with or obstruct implementation of, the local air quality management plan if the growth in socioeconomic factors (e.g., population, employment) is consistent with the underlying regional plans used to develop local air quality management plans. Demographic growth forecasts for various socioeconomic categories, developed by the Metropolitan Transportation Commission, the Association of Bay Area Governments, and local and regional agencies were used to estimate future emissions in the 2017 CAP.

The 2017 BAAQMD CEQA Guidelines recommend consideration of the following three questions to determine consistency with the relevant air quality plan:

1. Does the project support the primary goals of the air quality plan?
2. Does the project include applicable control measures from the air quality plan?
3. Does the project disrupt or hinder implementation of any CAP control measures?

Regarding question number 1, the primary goals of the 2017 CAP are to attain air quality standards under the NAAQS and CAAQS, protect public health, and reduce regionally generated GHG emissions. The 2017 CAP includes strategies designed to bring the SFBAAB into attainment of the CAAQS and NAAQS. Strategies include more stringent standards for new engines and cleanup of existing fleets, new measures for port trucks, statewide truck fleets, ships traveling and in port, locomotives, and harbor craft that are enforced at the state and federal level on engine manufacturers and petroleum refiners and retailers, ROA operation would comply with such strategies. The BAAQMD also adopts CAP control measures into its rules and regulations, which are then used to regulate sources of air pollution in the SFBAAB. Therefore, compliance with these requirements would ensure that the ROA, like the proposed project, would not obstruct implementation of the CAP.

As explained in the discussion under Impact Threshold Questions B below, there would be no significant impacts for criteria pollutant emissions during ROA operations. Therefore, impacts associated with the ROA would be **less than significant**.

Regarding question number 2, the CAP includes control measures related to four primary categories: Stationary Source Measures, Transportation Control Measures, Buildings and Energy Control, and Air District's Tools. Many of the control measures in the CAP would not apply to the ROA. However, the ROA would implement several measures that would also promote CAP control measures. Specifically, ROA construction would promote CAP Control Measure TR22 by requiring the use of Tier 4 engines on construction equipment. ROA operations would also

promote CAP Control Measure TR18, through the use of diversified material transport and distribution, through a combined use of truck, rail, and vessel transportation modes.

In addition, implementation of mitigation measures identified in Section 3.2, would include applicable control measures from the CAP. Specifically, MM-3.2-1 would require the use of 2010 trucks upon facility start-up; this mitigation measure is consistent with CAP Control Measure TR19. MM-3.2-2 would require an increase in or replacement of diesel-powered terminal equipment with either biodiesel, natural gas, or electric-powered equipment; MM-3.2-2 would be consistent with CAP Control Measure SS20. MM-3.2-2 would also require the use of a CARB-approved capture and control system to treat emissions from auxiliary engines on ocean-going vessels once the annual ship calls reaches 34; this would support BAAQMD measure SS20.

The ROA would also implement BAAQMD BMPs related to fugitive dust control and project design features PDF-AQ-1 through PDF-AQ-4 as described previously.

However, without mitigation presented in Section 3.2, this impact (regarding CAP control measures) would be **significant**.

Regarding question number 3, the ROA would have similar activities as the proposed project and would therefore result in similar impacts. The ROA would not disrupt or hinder implementation of control measures delineated in the CAP. Impacts, with regard to question number 3, would be **less than significant**.

B. Would the ROA violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Construction Impacts

Construction emissions were calculated using the year the proposed project (VMT and Orcem) was originally proposed and were not re-calculated in the ROA analysis. As described above, the ROA proposes to use Tier 4 Final engines, which are significantly cleaner than lower tier engines. Tier 4 Final engines would be used for land-based construction activities, excluding wharf pile drivers and diesel hammers because the availability of Tier 4 engines for these types of equipment is uncertain. Although this component would reduce criteria pollutant emissions as compared to the proposed project, the ROA analysis did not quantify these reductions because the criteria pollutant emissions associated with ROA construction were not recalculated. Since the proposed project construction emissions were below the CEQA thresholds for all criteria pollutants, the ROA construction emissions would also be below the CEQA thresholds and as such would be **less than significant**.

Operational Impacts

ROA operations would use trucks, ships, rail, and on-site equipment similarly to the proposed project. ROA revisions to operation of these sources, as compared to the proposed project, are

identified in Tables 6.2 through 6.5. ROA operational emissions were calculated for individual emission sources using EPA, CARB, and AP-42 methodologies, updated since the time of the proposed project analysis, and ROA activity as described in Table 6.9.[10]

Table 6.10 presents criteria pollutant emissions for the ROA Maximum Combined Scenario. The table shows that exhaust emissions would be driven by shipping, trucks, rail, and stack emissions. The table also shows that fugitive emissions would be driven by Orcem truck trips and both VMT and Orcem material handling emissions.

VMT and Orcem are subject to the New Source Review program and BAAQMD permitting. Given that neither VMT nor Orcem emissions would exceed the PSD threshold of 250 tpy per pollutant, neither VMT nor Orcem would be subject to PSD review (Appendix D-1).

The BAAQMD, as part of their permitting process, requires that emissions from the combination of ocean-going vessels, rail, and stationary sources be offset if those emissions are greater than 10 tons per year. Each facility with emissions greater than 10 tons per year, but less than 35 tons per year can obtain offsets from the BAAQMD's Small Facility Offset Banking Account.[11] ROA shipping, rail and stationary source emissions would reach 41.39 tons per year and would therefore be eligible for offsets from BAAQMD's Small Facility Offset Banking Account. Following the application of BAAQMD offsets, total NO_x emissions would be just below 7 tons per year, which would be below the BAAQMD significance threshold for NO_x.

Table 6.9 shows that the ROA emissions would be similar to and, in the case of NO_x, lower than the proposed project (DFEIR Table 3.2-13) due to the revisions described in Tables 6.3 through 6.6.

Following application of BAAQMD-required NO_x offsets, the Maximum Combined Scenario would not exceed the BAAQMD threshold for any criteria pollutant. Impacts would be considered **less than significant**.

[10] It is not anticipated that portable diesel generators will be used during routine activities. Portable diesel generators may be used during the initial phase of construction until Pacific Gas & Electric (PG&E) completes new electric service installation. Portable diesel generators may be used during unanticipated events or repairs. If such events arise, diesel generators shall be registered under the California Air Resources Board's (CARB's) Portable Equipment Registration Program (PERP).

[11] The BAAQMD funds the Small Facility Banking Account by deposit of unclaimed emission reductions from source or facility closures, and by a small facility growth allowance established in the District's Clean Air Plan. In general, BAAQMD's Emissions Banking Program allows for the creation of air pollutant emission reduction credits (ERCs). ERCs are created when companies introduce new emissions controls, such as upgrading or replacing old equipment, shutting down equipment, upgrading processes and materials, adopting stricter operating guidelines and adding control equipment to existing sources. These new controls must go beyond the requirements of current regulations and must be real, permanent, quantifiable, and enforceable. ERCs can then be used to offset emissions increases from new, permitted projects and traded or sold to other companies for their use. Over time, the offset program drives down the overall burden of pollution in the region because ERCs can only be generated by closures or introduction of control technologies that exceed regulatory requirements.

Table 6.9
Emissions Summary: Maximum Combined Scenario

Facility	Source	Emissions (tons/year)							
		ROG	*CO*	*NO_x*	*SO_x*	*PM_{10} exhaust*	*PM_{10} fugitive*	*$PM_{2.5}$ exhaust*	*$PM_{2.5}$ fugitive*
VMT	Shipping	1.3	2.4	13.8	1.2	0.39	—	0.38	—
	Rail	0.18	2.3	5.1	0.009	0.08	—	0.07	—
	Trucks	0.00	0.03	0.10	0.00	0.00	0.02	0.00	0.00
	Workers	0.02	0.22	0.02	0.00	0.00	0.23	0.00	0.06
	Storage Piles	—	—	—	—	—	0.00	—	0.00
	Material Handling	—	—	—	—	—	1.0	—	0.13
	Front End Loader	0.13	1.0	0.12	0.00	0.09	0.058	0.09	0.001
	Forklift	0.00	0.09	0.02	0.00	0.00	0.04	0.00	0.04
	VMT Total	*1.61*	*6.03*	*19.15*	*1.2*	*0.48*	*1.32*	*0.46*	*0.20*
	BAAQMD Offsets	—	—	*18.92*	—	—	—	—	—
	VMT Total After Offsets	*1.61*	*6.03*	*0.22*	*1.2*	*0.48*	*1.32*	*0.46*	*0.20*
Orcem	Shipping	0.84	1.5	9.1	0.78	0.26	—	0.25	—
	Rail	0.03	0.41	0.88	0.00	0.01	—	0.01	—
	Trucks	0.08	0.94	6.0	0.03	0.06	1.1	0.06	0.3
	Workers	0.03	0.35	0.025	0.00	0.00	0.38	0.00	0.09
	Storage Piles	—	—	—	—	—	0.00	—	0.00
	Material Handling	—	—	—	—	—	0.68	—	0.10
	Front-End Loader	0.22	1.2	0.13	0.00	0.01	0.10	0.01	0.01
	Excavator	0.03	0.52	0.09	0.00	0.01	0.02	0.01	0.00
	Stack	0.69	11	5.6	0.18	0.25	—	0.25	—
	Hopper/conveyor	0.06	2.4	0.50	0.00	0.01	—	0.01	—
	Bag Filters	—	—	—	—	0.18	—	0.16	—
	Orcem Total	*1.98*	*18.68*	*22.24*	*1.00*	*0.60*	*2.43*	*0.59*	*0.66*
	BAAQMD Offsets	—	—	*15.53*	—	—	—	—	—
	Orcem Total After Offsets	*1.98*	*18.68*	*6.72*	*1.00*	*0.60*	*2.43*	*0.59*	*0.66*
Total VMT + Orcem After Offsets		3.59	24.71	6.94	2.20	1.08	3.75	1.05	0.86
BAAQMD CEQA Thresholds		—	—	10	—	15	—	10	--
CEQA Determination		—	—	No	—	No	—	No	—

Notes:

1 Emissions are rounded and may not add exactly. Detailed emissions are presented in Appendix M.

2 Annual emissions and BAAQMD annual thresholds are equivalent to average daily emissions and daily thresholds, assuming 365 days/year of operation.

3 Shipping emissions include ship transit, ship hoteling, and tugboat emissions.

4 Rail emissions include line haul and switcher emissions.

C. Would the ROA result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?

Past, present and future development projects may contribute to the region's adverse air quality impacts on a cumulative basis. Per BAAQMD's CEQA Guidelines, by its nature air pollution is largely a cumulative impact: no single project is sufficient in size to, by itself, result in nonattainment of ambient air quality standards. In developing thresholds of significance for air pollutants, BAAQMD considered the emission levels for which a project's individual emissions would be cumulatively considerable. BAAQMD holds that if a project exceeds the identified significance thresholds, its emissions would be considered cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions.

Construction Impacts

ROA construction activities and potential projects within the ROA's vicinity would be similar to those discussed under the proposed project evaluation in Section 3.2. Construction of cumulative projects would be short term and temporary in nature. As fugitive dust impacts are generally localized to individual project sites, and on-site emissions would be sufficiently mitigated through demolition and dust control measures, coupled with implementation of BAAQMD BMPs as listed in Section 3.2, cumulative impacts related to fugitive dust would be considered **less than significant**.

ROA construction emissions were not calculated but are expected to be lower than proposed project construction emissions because ROA construction would include the use of EPA Tier 4 Final standard engines for construction equipment, as described in DFEIR Section 3.2-4. As is the case with the proposed project, the ROA would implement BAAQMD's BMPs to control fugitive dust. Moreover, once construction activities are completed, construction-related emissions would cease.

Thresholds established by the BAAQMD as shown in DFEIR Table 3.2-6 are used to evaluate air quality impacts, including cumulative impacts. Thresholds established by the BAAQMD reflect the attainment status of the project area and provide for the consideration of project impacts in light of the region's nonattainment status for certain criteria pollutants. As such, these thresholds also provide a basis to evaluate the ROA's contribution to air pollutant emissions and concentrations under the cumulative criterion.

DFEIR Table 3.2-9 shows that construction of the proposed project would not exceed BAAQMD construction thresholds for any criteria pollutants. Since ROA construction emissions are expected to be less than the proposed project, as discussed above, ROA construction activities would also not result in cumulatively considerable impacts. Cumulative project impacts would be considered **less than significant** during the temporary construction period.

Operational Impacts

Table 6.9 shows that the ROA would generate operational emissions that would not exceed the significance threshold for any of the criteria pollutants. The ROA would therefore, not result in cumulatively considerable impacts. Cumulative project impacts would be considered **less than significant**.

D. Would the project expose sensitive receptors to substantial pollutant concentrations?

The BAAQMD has adopted project and cumulative thresholds for three risk-related air quality indicators to sensitive receptors: cancer risks, non-cancer health effects, and increases in ambient air concentrations of $PM_{2.5.}$ These impacts are addressed on a localized rather than regional basis, in relation to sensitive receptors within 2.5 miles of the project identified in DFEIR Table 3.2-14. Cancer risk is the probability or chance of contracting cancer over a human life span. Carcinogens are assumed to have no threshold below which there would be no human health impact. In other words, any exposure to a carcinogen is assumed to have some probability of causing cancer. Cancer risk is expressed as excess cancer cases per one million exposed individuals, typically over a lifetime of exposure. Non-carcinogenic substances differ in that there is assumed to be a safe level of exposure below which no negative health impact is believed to occur. These levels are determined on a pollutant-by-pollutant basis. Acute and chronic exposure to non-carcinogens is expressed as a hazard index (HI), which is the ratio of expected exposure levels to an acceptable reference exposure levels.

As with the proposed project, many of the ROA emission sources would be diesel-powered. Diesel particulate matter, classified as a toxic air contaminant by CARB, is a key pollutant evaluated in assessing health risk. As in the proposed project analysis, $PM_{2.5}$ emissions from diesel engine combustion were used as a surrogate for DPM in the ROA, and ship boiler emissions were speciated into their individual TAC components using speciation data in Appendix D-1. Fugitive TAC emissions, associated with the storage, handling, and processing of GBFS and gypsum, were also speciated into their individual TAC components using speciation data in Appendix D-1.

The ROA analysis used the same dispersion model results that were calculated for the proposed project analysis (See Appendix D-1 for details regarding model input parameters). In other words, dispersion modeling was not re-run for the ROA. Cancer risk, however, was recalculated to incorporate the 2015 Office of Environmental Health Hazard Assessment Guidelines for both construction and operation cancer risk, as well as the revisions noted in Tables 6.3 through 6.7. Construction and operational impact discussions below provide greater detail regarding cancer risk methodology and specifics used in the ROA.

Construction Impacts

Cancer risk associated with ROA construction was calculated by scaling the proposed project construction cancer risk by the DPM emission reductions specific to construction of the ROA.

ROA DPM reductions would be due to 1) the removal of VMT Phase 2 construction and 2) the use of Tier 4 Final construction equipment.[12]

In addition, the ROA analysis incorporates OEHHA's 2015 Guidance, which has been adopted by the BAAQMD since the proposed project analysis was conducted. OEHHA's 2015 Guidelines revised breathing rates, used to calculate inhalation cancer risk for different years of exposure, to be more conservative. This guidance was incorporated into the ROA construction cancer risk and is described in detail in Appendix M.

The ROA construction cancer risk was then scaled from the proposed project to reflect the reduction in DPM emissions and the change in 2015 OEHHA Guidance. Table 6.10 shows that ROA DPM emissions would be reduced compared to the proposed project and shows that the corresponding cancer risk would also be reduced. This reduction in construction cancer risk indicates that although the use of OEHHA's 2015 Guidance tends to conservatively increase cancer risk, this increase would be offset by elimination of Phase 2 VMT construction and, in particular, by the use of Tier 4 Final construction equipment.

Non-cancer health effects due to chronic and acute exposure were not recalculated for the ROA but would be less than the proposed project due to the reductions described above. Therefore, construction impacts would be **less than significant**.

Table 6.9
Emissions Summary: Maximum Combined Scenario

Construction Phase	DPM Emissions without Tier 4 (tons)	DPM Emissions with Tier 4 (tons)	DPM Emission Reduction (tons)
Orcem	0.16333	0.01579	0.14754
VMT	0.05017	0.01579	0.03536
Emissions Reduced from Removal of VMT Phase 2			0.086
Total DPM Reduction for the ROA			0.2689
Total Proposed Project DPM Emissions			0.301
Total ROA DPM Emissions			0.032
DPM Emissions Reduction (%)			89.34%
Proposed Project Maximum Construction Cancer Risk			5.7 in a million
ROA Maximum Construction Cancer Risk			1.14 in a million

Notes:
1 Orcem-VMT ROA Summary Report FINAL
2 VMT Phase 2 and total DFEIR emissions taken from DFEIR Appendix D-1 Table 4

[12] Although the ROA did not recalculate criteria pollutant emissions and so did not take credit for the use of Tier 4 Final construction equipment in determining impacts associated with criteria pollutants, the ROA analysis of construction cancer risk did take into account DPM reductions associated with the use of Tier 4 Final construction equipment.

Operational Impacts

Local Carbon Monoxide Concentrations

The thresholds of Significance for local CO emissions are the 1-hour and 8-hour CAAQS of 20.0 parts per million (ppm) and 9.0 ppm, respectively. By definition, these represent levels that are protective of public health. The BAAQMD has developed screening conditions below which projects are considered to meet the thresholds without having to conduct dispersion modeling for CO. BAAQMD's screening conditions are discussed in DFEIR Section 3.2.4. ROA sources of CO emissions are the same as the proposed project: stationary source, rail traffic, truck traffic, on-site mobile equipment, and ship traffic. As with the proposed project, the ROA Transportation and Traffic section shows that there are no intersections or grade crossings affected by the ROA with a maximum hourly traffic volume of 24,000 vehicles per hour, the BAAQMD screening threshold.

The CO impact from rail traffic is expected to be low because rail emissions are stringently controlled (Appendix M). In addition, although the ROA would increase rail traffic with the use of shorter trains and greater reliance on VMT rail for the Maximum Combined Scenario, ROA rail emissions would not increase compared to the proposed project for the reasons noted in Table 6.5. Specifically, the ROA would eliminate empty Orcem trains trips and incorporate the use of NREC Tier 4 switcher locomotives.

As with the proposed project, ROA impacts from hoteling vessels, and the Orcem stack (stationary source equipment) would have the greatest potential to result in off-site impacts of CO (Appendix D-1). ROA CO vessel emissions and Orcem stack emissions would be comparable to the proposed project as shown in ROA Table 6.9 and proposed project DFEIR Tables 3.2-11 and 3.2-12. CO dispersion modeling was conducted for the proposed project and showed CO off-site concentrations below BAAQMD thresholds in DFEIR Table 3.2-16. Therefore, since ROA CO emissions would be lower than the proposed project and since the source and receptor locations would not change, ROA CO off-site concentrations would also be below BAAQMD thresholds. For the reasons discussed above, ROA CO impacts would be **less than significant**.

Cancer Risks and Hazards

Operational cancer risk was calculated with the methodology revisions and components identified in Table 6.7. Specifically, the ROA analysis implements the 2015 OEHHA Guidelines and imposes a threshold of 9 in a million, which is more stringent that the standard BAAQMD threshold of 10 in a million. In addition, per Table 6.6, the ROA analysis, assumed the use of Tier 4 engines and the use of B20 (fuel with 20% biodiesel and 80% regular diesel) in all diesel-fueled on-site equipment.

The cancer risk was calculated by combining ROA DPM emissions with the dispersion modeling conducted for the proposed project. This is an appropriate methodology because the ROA source locations, source parameters, and receptor locations would be the same as for the proposed project. Noncancer chronic health impacts, acute health impacts, and the $PM_{2.5}$ concentration were not recalculated because the methodology for these impacts has not changed since the proposed project analysis and the proposed project analysis showed that these impacts would be well below BAAQMD thresholds.

The ROA analyzed various operating scenarios and determined that maximum impacts for cancer risk would occur during the Maximum Combined Scenario when:

- Orcem would operate in Mode 2 / Milestone 5. This production mode reflects Orcem production of blended cement only and would use 19 annual vessel shipments of raw materials, where processed materials would be loaded into trucks for distribution.
- VMT would operate using 29 annual vessel shipments of raw materials, where imported goods would be loaded onto rail for distribution.

As described previously, the Maximum Combined Scenario would be different for cancer risk than for other air quality impacts. The Maximum Combined Scenario for cancer risk would occur when Orcem would operate in Mode 2, when only cement would be produced. During this production Mode, all processed material would be loaded onto trucks for distribution. Other air quality impacts would be maximum when Orcem would operate in Mode 3 during production of GGBFS and cement products, when processed material would be loaded onto both truck and rail. Since trucks would be the closest sources to sensitive receptors and since trucks would result in greater emissions than rail, the maximum cancer risk was determined to occur during Orcem Mode 2, when all processed materials would be loaded onto trucks.

Table 6.11 shows that the ROA cancer risk for the Maximum Combined Scenario would exceed a cancer risk threshold of 9.0 in a million. The 9.0 threshold was established by the applicant and is lower than the 10.0 threshold established by BAAQMD in order to allow for potential minor overlap between construction and operation, and in part to allow sufficient time for implementation of mitigations.

The ROA cancer risk would be approximately the same as the proposed project cancer risk of 18.33 in a million. It should be noted that the ROA cancer risk would not reach the level of significance of 9.0 in one million until the annual number of ship calls exceeds 14 ships per year. A detailed explanation of ROA cancer risk is included in the Orcem-VMT ROA Summary Report Final, Appendix M.

Table 6.11
ROA Health Risks Impacts

	Threshold	Units	Estimated Value (unmitigated)	Threshold Exceeded?
ROA Cancer Risk	9.0	In one million	18.25	Yes (unmitigated)

Source: Orcem-VMT ROA Summary Report Final, Appendix M

As shown in Table 6.11, ROA operations would exceed the threshold for cancer risk. Impacts would therefore be **significant**. Mitigation Measures MM-3.2-2 and MM-3.2-3 described in Section 3.2.5, would be implemented to reduce cancer risk to **less-than-significant** levels.

Cumulative Risks and Hazards

The BAAQMD considers a project to have a cumulatively considerable impact if the aggregate total of past, present and foreseeable future sources within a 1,000-foot radius from the fence line plus the contribution from the project exceeds the significance thresholds identified in DFEIR Table 3.2-6. The ROA did not recalculate aggregate cumulative impacts because permitted stationary sources of TACs near the project site, identified using BAAQMD's Stationary Source Risk and Hazard Analysis Tool during the proposed project analysis, have not changed. Table 3.2-18 of the DFEIR shows that aggregate projects would not exceed BAAQMD thresholds. The ROA would also be in compliance with the BAAQMD's adopted Thresholds for Single Source and Cumulative community risks, as well as hazard index risks. The ROA would therefore have a **less-than-significant** cumulative health risk impact.

Would the project create objectionable odors affecting a substantial number of people?

Construction Impacts

ROA construction would increase air pollutants due to the combustion of diesel fuel. ROA construction would be identical in activity and duration to the proposed project and as such would have the same odor impacts as the proposed project. Since odor impacts associated with the proposed project were found to be less than significant, impacts associated with odors during ROA construction would also be considered ***less than significant***.

Operational Impacts

ROA operation would increase air pollutants due to the combustion of diesel fuel and processing of GBFS. ROA operation would be similar in activity to the proposed project and as such would have the same odor impacts as the proposed project. Since odor impacts associated with the proposed project were found to be less than significant, impacts associated with odors during ROA operation would also be considered ***less than significant***.

Biological Resources

The ROA would involve similar construction activities as the proposed project and would therefore result in similar impacts to terrestrial and marine biological resources during construction (potential impacts to special-status species and their habitats would be reduced through mitigation).

The ROA would involve similar operational activities as the proposed project that are intended to reduce potential impacts related to aesthetics, air quality, noise, and transportation. These activities include more efficient and spread out operation of ship, rail car, truck, and heavy equipment within the area of the existing developed site and developed off-site areas (six days per week instead of five days per week, with fewer truck trips per day). The number of trucks used by the VMT and length of trains would be reduced (from 77 rail cars to 50 rail cars), and preference would be given to increased use of barges over trucks and rail, thereby increasing the likely number of days that vessels would be docked at the VMT Terminal. Finally, late night operations (within 300 feet of the nearest residential boundary) at the Orcem site would be eliminated. These minor variations in operational activities are anticipated to have similar impacts to terrestrial and marine biological resources as the proposed project. For these reasons, biological resources impacts from the ROA would be similar to biological resources impacts from the proposed project.

Cultural Resources

The ROA would involve demolition of the same buildings and the similar construction activities as the proposed project. Therefore, cultural resources impacts from the ROA would be similar to cultural resources impacts from the proposed project, including the significant and unavoidable impact to historic architectural resources due to the loss of integrity of a potential Sperry Flour Mill Historic District associated with demolition of the flour mill, grain silos, and dock.

Geology and Soils

Under the ROA, the project site would be developed in a similar manner as the proposed project, and potential impacts due to geology and soils would therefore be similar. Geology and soils impacts, including slope instability, would also be similar to the proposed project (reduced through mitigation).

Greenhouse Gas Emissions

The ROA would result in similar construction emissions as the proposed project since the ROA includes change to the same facilities on the site. Construction GHG impacts would therefore be similar to the proposed project (reduced through mitigation).

Once operational, both components of the project would be subjected to the requirements of a BAAQMD permit (to regulate stationary on-site equipment), as in the proposed project. As part

of the ROA, Orcem would implement the Revised Truck Loading & Weight Confirmation System to improve the efficiency of tanker trucks leaving the site, reducing the overall number of project truck trips, and therefore resulting in reductions in daily NO_x, CO_2, and $PM_{2.5}/PM_{10}$. As required by regulation, VMT and Orcem would offset any remaining operational emissions through purchase of credits in a BAAQMD-certified emission bank program for each criteria pollutant. Purchase of these offsets would reduce impacts, but GHG emissions would remain significant and unavoidable because the City's adopted Climate Action Plan does not cover marine and rail operations, and there is no assurance that emissions would be reduced to a level that would ensure the project would be consistent with the overarching objective of the City's Climate Action Plan to achieve the reduction targets as established for 2020 and 2035, or the state's target reduction goals in 2030 and 2050. Overall impacts related to GHG under the ROA would be reduced compared to the proposed project, but would still result in significant and unavoidable impacts to GHG during operations.

Hazards and Hazardous Materials

The ROA would involve similar construction activities as the proposed project and would therefore result in similar impacts related to hazards and hazardous materials during construction (reduced through mitigation).

The ROA would involve similar operational activities as the proposed project. Under the ROA, potential operational impacts related to hazards and hazardous materials would be similar to the proposed project.

Hydrology and Water Quality

The ROA, would involve similar construction activities as the proposed project and would therefore result in similar impacts to site drainage and hydrology. 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 would be similar to the proposed project with similar potential for impacts (reduced through mitigation). For these reasons, hydrology and water quality impacts from the ROA would be similar to hydrology and water quality impacts from the proposed project.

Land Use and Planning

The ROA would involve similar land uses as the proposed project. The use of the site by VMT and Orcem is consistent with the City's existing General Plan and zoning designations, and most of the applicable land use plans, policies and regulations. However, similar to the proposed project, the ROA conflicts with the City's Public Access Policies. The City's policies rely on San Francisco Bay Conservation and Development Commission (BCDC) Design Guidelines and the proposed project and ROA are potentially significant. Therefore the City has proposed a mitigation measure

which the applicant has accepted to mitigate the potentially significant impacts to provide in-lieu access via the provision of monetary assistance to close the funding gap for the design phase of the Bay/Vine Trail project. This would reduce this impact to less-than-significant levels. Consistency of the ROA with regard to BCDC policies would be similar to land use impacts from the proposed project, including a potentially significant impact related to inconsistency with BCDC plans and policies that will be resolved during the permit issuance process.

Noise

With the exception of additional landscaping screening (trees and shrubbery) along the west and south sides of the Material Storage Area within the Orcem Site, the ROA would involve identical physical changes to the project site as the proposed project, including demolition of the existing structures on the site and construction of identical facilities for VMT and Orcem. Therefore, the ROA would have similar construction-related noise impacts.

The noise associated with operations of the project is primarily due to the transport of materials in trucks and by railcar to and from the site. The noise associated with transfer of incoming material by ship to export via barge would occur within the facility; whereas noise from truck operations and rail activity would affect surrounding neighborhoods. Under the ROA, the number of Orcem daily trucks trips would be reduced, shipping of finished Orcem product would occur over six days instead of five, the length of trains would be reduced from 77 cars to 50, operation of barges over trucks/rail for VMT would be prioritized, late night operations at the Orcem site would be eliminated, and limits on VMT trucking would be enforced. These changes would not result in a noticeable effect on the 24-hour average noise of the project (day-night average sound level (L_{dn}) or community noise equivalent level (CNEL). If VMT is able to incentivize an increase in the use of barges, total truck trips would be reduced, and the related noise impacts would be reduced. Because there is not a guarantee that VMT would be able to increase the use of barges, the noise impacts would be the same or similar to the proposed project. However, the ROA also would reduce late night operations at the Orcem site, so in the vicinity of that project component, noise impacts are anticipated to be reduced.

Public Services and Recreation

With the exception of additional landscape screening, the ROA would involve identical physical changes to the project site as the proposed project. Demands for police, fire, and recreation services and facilities would similar to the proposed project.

The ROA could result in an increase in ship traffic and the number of days vessels would be docked at the VMT Terminal due to the shift away from trucks and trains for material transport. However, the presence of additional ships and trucks on additional days would not be considered a significant impact to pubic services and recreation since ships, boats, and trucks are frequent users of the waters and roadways that surround the project site and are not anticipated to result in a measureable

change in demand for police, fire, and recreation services and facilities compared to the proposed project. For these reasons, public services and recreation impacts from the ROA would be similar to public services and recreation impacts from the proposed project.

Transportation and Traffic

With the exception of shorter train lengths (50 cars versus 77 cars) and additional landscape screening, the ROA would involve identical physical changes to the project site as the proposed project, including demolition of the existing structures on the site and construction of identical facilities for VMT and Orcem. Construction-period impacts including increased traffic from trucks and construction workers (reducing roadway capacity, worsening LOS, longer delays at study intersections), temporary closures of sidewalks, prohibition of on-street parking, and impacts to bus stops would all be the same or similar to the proposed project (reduced through mitigation).

The ROA would involve similar operational activities as the proposed project. Under the ROA, ship, rail car, truck, and heavy equipment operations within the area of the existing developed site and developed off-site areas would occur more efficiently, spread out on a monthly basis, six days per week instead of five days per week, with fewer truck trips per day (up to 442 trucks one way). The ROA would reduce the degree of impact on peak hour intersection operations from project truck traffic, but would not eliminate significant impacts because no peak hour intersection operation impacts are identified for the proposed project. Mitigations required under the proposed project would be required under the ROA as well. The reduced daily truck traffic associated with the ROA would reduce the degree of impact on Lemon Street related to the need for safe and efficient vehicle operations (Impact 3.12-4) and safe and convenient vehicle, pedestrian and bicycle movements (Impact 3.12-6), but not to a less than significant level based on the reduction in daily trucks: from 552 daily one-way truck trips (174 for VMT and 378 for Orcem) to 442 daily one-way truck trips (for 174 for VMT and 268 for Orcem). Thus, impacts would all be the same or similar to the proposed project (reduced through mitigation).

Under the ROA, the length of trains would be reduced, from 77 rail cars to 50 rail cars. This would reduce the potential for delays or queues at rail crossings and on emergency access compared to the proposed project (Impacts 3.12-2, 3 and 5), but not to a less than significant level, based on an analysis of the shorter "gate down" time with the ROA (refer to Appendix L). California Northern Railroad provided updated "gate down" times based on the new train lengths, ranging from 4.06 minutes (with one engine) and 4.16 minutes (with two engines). The analysis included an update with these shorter gate-down times. The new analysis found that, at most of the grade crossings in Vallejo, the 50-car trains would result in blockages of upstream intersections. In addition, delays would continue to be longer than 1 minute, which is part of significance criteria A.4 established in the EIR. These impacts would remain significant and unavoidable under the ROA, as the City cannot ensure that the California Northern Railroad will agree to modified hours of operation and

similar blockages may occur during non-peak hours because traffic levels remain at or above 70% of the peak hour traffic volumes.

Utilities and Service Systems

With the exception of additional landscape screening, the ROA would involve identical physical changes to the project site as the proposed project. Demands for utilities and service systems would be similar to the proposed project. Although there would be a need for minor increase in need for irrigation to water the additional landscaping, this demand is anticipated to be negligible.

The ROA could result in an increase in ship traffic and the number of days vessels would be docked at the VMT Terminal due to the shift away from trucks and trains for material transport. However, the presence of additional ships and trucks on additional days would not be considered a significant impact to utilities and service systems since ships, boats, and trucks are frequent users of the waters and roadways that surround the project site and are not anticipated to result in a measureable change in demand for utilities and service systems compared to the proposed project. For these reasons, utilities and service systems impacts from the ROA would be similar to utilities and service system impacts from the proposed project.

6.5 SUMMARY MATRIX

A matrix displaying the major characteristics and significant environmental effects of each alternative considered is provided in Table 6-12 to summarize the comparison with the proposed project. The matrix also indicates whether the alternative meets the proposed project objectives as defined in Chapter 2.0, Project Description.

Table 6-12
Summary of Impacts from Alternatives

Environmental Issue	Proposed Project Impacts Prior to Mitigation	Proposed Project Impacts with Mitigation	No Project Alternative	Revised Operations Alternative
Aesthetics	S	LTS	▼	—
Air Quality	S	SU	▼	▼
Biological Resources	S	LTS	▼	—
Cultural Resources	S	SU	▼	—
Geology and Soils	S	LTS	▼	—
Greenhouse Gas Emissions	S	SU	▼	—
Hazards and Hazardous Materials	S	LTS	▼	—
Hydrology and Water Quality	S	LTS	▼	—
Land Use and Planning	LTS	LTS	▼	—
Noise	S	SU	▼	—

Table 6-12
Summary of Impacts from Alternatives

Environmental Issue	Proposed Project Impacts Prior to Mitigation	Proposed Project Impacts with Mitigation	No Project Alternative	Revised Operations Alternative
Public Services and Recreation	LTS	LTS	—	—
Transportation and Traffic	S	SU	▼	▼
Utilities and Service Systems	LTS	LTS	▼	—
Meets Most Project Objectives?	Yes	Yes	No	Yes

▲ Alternative is likely to result in greater impacts to issue when compared to proposed project.
— Alternative is likely to result in similar impacts to issue when compared to proposed project.
▼ Alternative is likely to result in reduced impacts to issue when compared to proposed project.
LTS = Less-than-significant impact.
S = Significant impact.
SU = Significant and unavoidable impact.

6.6 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

As indicated in Table 6-12, the No Project Alternative would result in the least environmental impacts and would be the environmentally superior alternative. However, Section 15126.6(e)(2) of the CEQA Guidelines states that if the environmentally superior alternative is the No Project Alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives considered. In this case, the environmentally superior alternative is the ROA, since it would reduce some aesthetics, air quality, noise, and traffic impacts. The ROA would also meet all of the proposed project objectives. However, impacts that are significant and unavoidable under the proposed project (cultural resources, GHG, and traffic) would remain significant and unavoidable under the ROA.

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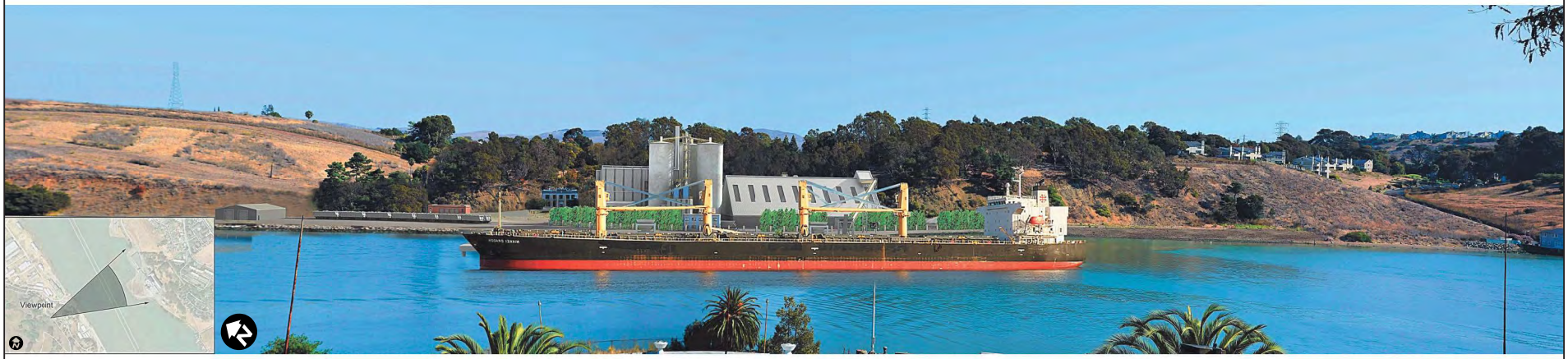

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FIGURE 6-1

VMT-Orcem ROA Project View 1, Orcem Modes 2-3

VALLEJO MARINE TERMINAL AND ORCEM PROJECT

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FIGURE 6-2

VMT-Orcem ROA Project View 2, Orcem Modes 2-3

VALLEJO MARINE TERMINAL AND ORCEM PROJECT

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CHAPTER 7
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CHAPTER 1 INTRODUCTION

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CHAPTER 3 ENVIRONMENTAL ANALYSIS

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